

Dwelling Places in KakaoTalk: Understanding the Roles and Meanings of Chatrooms in Mobile Instant Messengers

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ABSTRACT

Recently, a great amount of conversation is taking place through mobile instant messaging (MIM) applications. The emergence of mobile messengers has enabled people to spend significant time in MIM, *dwelling* with close people. To investigate how this persistent use of MIM shaped the roles and meanings of MIM chatrooms, we conducted semi-structured interviews with ten users of KakaoTalk, one of the most popular MIM applications in South Korea. By understanding how participants determine the notion of centrality in MIM, we discovered three functional regions, namely, *primary*, *secondary*, and *tertiary regions*, which respectively support different functions not only in communication, but also in social interaction with various types of relationships: *performing everyday life*, *connecting to the maintained social capital*, and *connecting to the expired relationship*. Based on the valued meanings and user behaviors in those regions, we highlight two approaches that would trigger a new perspective in the design of messaging applications.

Author Keywords

Mobile Instant Messaging Application; Human Territoriality; Virtual Possessions; Personal Boundary; Design

ACM Classification Keywords

H.5.m. [Information interfaces and presentation (e.g., HCI)]: Miscellaneous.

General Terms

Human Factors; Design.

INTRODUCTION

Recently, a great amount of conversation has taken place through mobile instant messaging (MIM) applications such as KakaoTalk [11], WhatsApp, WeChat, LINE, and Facebook Messenger. As people spend a significant amount of time in MIM applications, O'Hara et al. [14], from a reflection on Ingold's notion of dwelling [10], proposed that people are *dwelling* in MIM. According to O'Hara et

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al., in MIM, intimacy is enacted through sharing small and continuous tidbits and moments of life, thereby developing the knowledge of others and a sense of being together with those whom they care about. Given that people can dwell in a *place*, this work enabled us to rethink the differences of *virtual places* where we communicate, such as chatrooms in MIM and traditional CMC applications. A chatroom, in PC-based IM and Internet Relay Chat (IRC), has been regarded as a *temporal place* that is repeatedly created and extinguished whenever users want to talk to other users in the systems. As those chatrooms are demonstrated in mobile systems through MIM, however, they become a more *persistent place* that is carried by people everywhere. Thus, MIM provides a sustained spatial anchor in which the previous conversation threads are kept and people keep staying and continuing the conversation whenever they want. In this sense, O'Hara et al. claims that MIM provides "a particular way of being together, knowing, and dwelling, that is casual and never-ending [14]."

Since such shift in the nature of chatroom experience makes MIM more pervasive in everyday life, we thought that it has become very important to understand the roles and meanings of MIM chatrooms in people's social life in order to better support their digital dwelling. In this sense, we aim to investigate how people perceive and value chatrooms in the context of MIM. To do so, we draw a concept of *centrality* from the theory of human territoriality [20, 23], which refers how *critical a place is* in the life of a person or group. We thought that investigating how the concept of centrality can be defined in the MIM context would provide a new perspective in the design of MIM as well as other forms of social media. It is because the territories, which can be classified by the level of centrality, are closely related to personal boundary regulation, privacy experiences, and the practices around virtual possessions, which are all emerging issues in the design of social media.

As a result of this motivation, we conducted semi-structured interviews with ten regular users of KakaoTalk, the most popular MIM application in South Korea (i.e., where we conducted this study). Through the analysis, we classified three types of dwelling places in KakaoTalk by the level of centrality in MIM, namely, the *primary*, *secondary*, and *tertiary region*. By explaining the characteristics of each region and the regional behaviors, we will discuss how the concept of centrality can be

interpreted in the MIM context and how this perspective can inform the design of messaging applications.

BACKGROUND

In this section, we provide an introduction of themes that are closely related to this work: human territoriality in the physical and virtual world and the characteristics of MIM.

Human Territory & Centrality

Human territory refers to fixed spaces that, in some way, belongs to a person or a group. Altman distinguished three types of territories, namely, primary, secondary, and public territory, according to the amount of control an individual or a group expects to have on an area [1]. Individuals or groups exclusively own, use, and control *primary territory* on a relatively permanent basis, and it plays a central role in the daily lives of the occupants. It is often marked or personalized by the owners to identify ownership, and outsiders need permission to enter this area, otherwise the owners may generate defensive responses. *Secondary territory* is less central, pervasive, and exclusive area where an individual or a group has some control and ownership, but not to the same degree as they have over a primary territory. Secondary territories are a bridge between primary territory and the *public territory* that is accessed and temporarily used by almost every individual.

This typology came from Altman's privacy regulation model, which regards *territorial behaviors* as one of the mechanisms that people use to achieve the desired level of privacy [1]. Taylor, however, argues that territorial experience cannot be treated merely as a subset of privacy experience, because territorial behaviors, such as the personalization of a place and the practices around possessions, do not always intend for privacy to be achieved. Rather, he classifies human territory by the *centrality*, which refers to how important a space as a supportive context for individual's or group's daily functioning [23].

Our approach to understand human territoriality in this study is to start from exploring how Taylor's centrality concept works in an MIM context, because Taylor's approach suggests a primary criterion that defines human territory. Then, we will determine whether or not Altman's typology can be extended in the MIM environment. By doing so, we aim to discuss not only the privacy experience, but also more diverse behaviors within the MIM environment, such as personalization and possessions.

Territory in Social Media

In the online environment, where the boundary between "my space" and "your space" become unclear, territoriality has been studied in the perspective of personal boundary regulation and privacy [17, 24, 27]. This body of work has discussed the coping strategies for privacy concerns in SNSs (e.g., filtering, blocking, and withdrawal) and the self-disclosure practices in Facebook. While this body of work has built the understanding of how people regulate

personal boundary in SNSs, little work has been done in the MIM context. Also, the results of those works were primarily focused on information disclosure management, rather than the role of virtual space as a person's dwelling place. Among few works, we could find several initial attempts that regard online as a personally meaningful space. For instance, Lindley et al. proposed that the web becomes a personal storage area [12]. Also, Zhao et al. elaborated that people experience Facebook Timeline as a space for performing and exhibiting self-presentation and keeping personal archives [28]. To extend such initial works and to overcome the lack of research, we will explore how people's notion of territory is shaped in MIM.

Mobile Instant Messaging Applications

For this research, we decided to recruit the users of KakaoTalk because it is a representative application that realizes the digital dwelling of people in South Korea. KakaoTalk is a dominant MIM application, which holds 88% of the domestic market share. Also, it is deeply pervasive in Korean's everyday lives, as they often say, "Kakao me," or "Let's Ka-talk." While KakoTalk is not very dominant in the Western market, it still has common features with popular MIM applications such as WhatsApp and WeChat that enable the digital dwelling in MIM.

More specifically, like many other instant messaging applications, KakaoTalk is an over the top application, which is independent from network providers. Since it does not charge for sending and receiving messages, people see MIM as more fluid and never-ending compared to SMS, which limits the way people create messages within a single packet due to the cost [5]. Users can send and receive texts, photos, videos, digital gifts, and GPS information about certain locations to individuals or a group of people. Also, the application provides delivery notification and a timestamp of incoming messages. The number of people who did not read yet will be displayed beside each message, and it will be removed if (all) receiver(s) read the message. Users can control the delivery notification of chatrooms both selectively and as a whole.

STUDY METHOD

The approach we adopted for the study was to enable us to deeply understand individuals and their diverse types of relationships in KakaoTalk. To do so, 18 applicants were screened through the pre-interviews about their occupations, family types, domestic environments, and daily or weekly activities, to ensure that we recruited people with different lifestyles. As a result, we recruited 10 participants (6 female and 4 male) who are in their 20s or 30s and are regular users of KakaoTalk. Although our participants were a part of main user groups that do not encompass teens and people over the age of 40, we expected that the range of their relationships in KakaoTalk would be sufficient to be firstly explored because they were the people who, as young adults, actively build, interact, and thereby, dwell with various relationships. The ages of the participants varied

from the early 20s to mid-30s. Their occupations varied from university and graduate students to researchers and office workers. Most of them were away from family and living alone or with housemates. Also, they were involved in the various types of relationships with their partners (i.e., a pre-marriage couple, distant/campus couple, recently broken-up couple, and a married couple with a child) and social groups (e.g., work, study, hobbies, and religion).

Semi-structured interviews with each participant were conducted for 60 to 120 minutes. Interviews aimed to probe what kinds of chatrooms were persistently used and how their behaviors (e.g., managing relationships, privacy, and possessions) were related to the roles and meanings of those chatrooms. For a deep understanding of each participant, we deployed two drawing activities: a network map and a centrality map. We began by asking participants to draw a *network map* that describes the KakaoTalk chatrooms in which they were involved. We encouraged the participants to review the list of their previous chatrooms and to draw a range of chatrooms as diverse as possible (Figure 1(a)). We also asked them to either explain or draw the chatrooms that were formerly used, but had been removed from the list. We then asked the participants to describe each chatroom by explaining what kinds of people they interact with, what they talk about, and how they behave in each chatroom. They were also asked to color the chatrooms to indicate which are similar or different according to their own criteria.

Since participants naturally introduced themselves while drawing and explaining chatrooms and their behaviors in those chatrooms, this drawing activity was not only helpful for participants to be easily engaged in the activity, but also useful for researchers to comprehensively learn and build knowledge about each participant's use of chatrooms. Also, although we did not intentionally guide them to use specific visual elements, the participants spontaneously exploited those elements, which were meaningful in seeking to understand their perceptions toward, and the relations among chatrooms. For instance, P4 differentiated the thickness and the length of lines connected to the circles, which indicates individual or group chatrooms, to represent the frequency of conversation. Also, the colors represent how private the conversation is in each room and the dashed lines define how chatrooms are related to the kinds of his social life. In this sense, the network map (Figure 1(a)) enabled us to walk through the "tour" of participants' vivid perceptions and experiences of their chatrooms.

The second activity we requested for the participants was to draw a *centrality map*, which visualizes the chatrooms that appeared on the network map in the order from high centrality to low centrality. For instance, as shown in Figure 1(b), P6 arranged her chatrooms from high centrality (left) to low centrality (right) and divided them with several segments. Since the purpose of this activity was to investigate how and why people think of a chatroom as a "central" space in KakaoTalk, we did not provide a specific

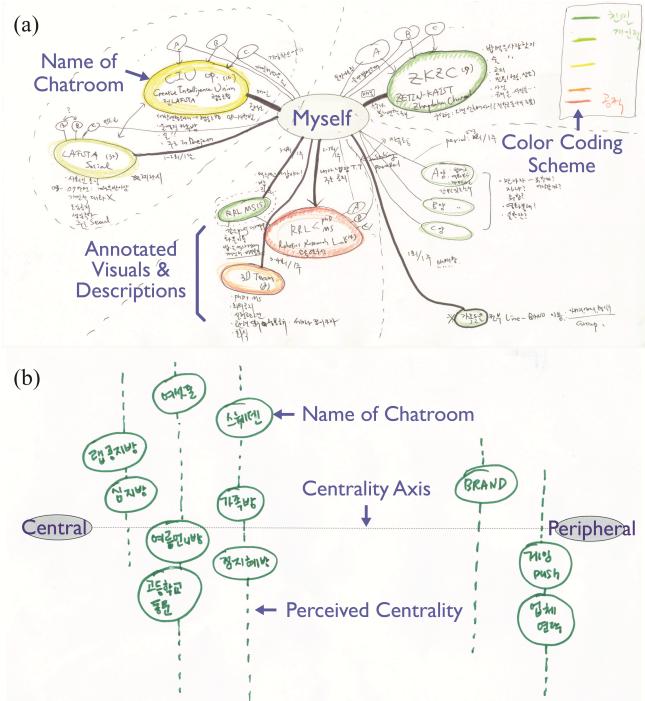


Figure 1. (a) P4's network map and (b) P6's centrality map

definition of centrality. Rather, we had more focus on how they describe the rationales of their centrality maps. Based on these centrality maps, we also triggered further discussion on the reasons for their territorial behaviors in each chatroom (e.g., control over interpersonal interaction, information access and preservation, and personalization).

All interviews were audio-recorded and nearly 15 hours of recordings were transcribed. The transcripts were segmented by each entity of chatroom, which produced 161 chatrooms and verbal descriptions about each chatroom. Although we had only ten participants, the study with them produced 161 chatrooms that are the sample data for our study. In addition, since we thoroughly inquired about each chatroom during the interview, the rich verbal and visual expressions regarding each chatroom created a significant amount of data to confirm the analysis results. Indeed, the data was saturated when we got to the analysis of the chatrooms from six participants, and the rest of data from the other four participants further confirmed our analysis.

THREE FUNCTIONAL REGIONS IN ONE PLATFORM

We first analyzed how participants explained the rationales when they decided upon the position of each chatroom on their own centrality maps. Although the rationales varied according to the participants (e.g., intimacy, frequency of use, amount of conversation, the level of attention), there were two overlapping dimensions that determined "central" places in MIM: *i) the relevance of a conversation to a user's current life (from high to low relevance)* and *ii) the degree of actual participation in the conversation (from active to no participation)*. These were quite well matched with the original concept of centrality by Taylor [23], since

it refers how critical a space is as a supportive context for performing daily life. For example, while we first thought that a chatroom for an intimate chitchatting group would be placed as more central space than a chatroom for a work-related group, all of the participants clearly explained that both of them are central in terms of their personal and professional life respectively.

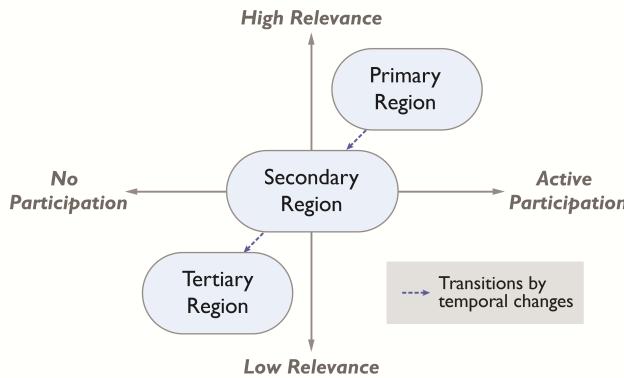


Figure 2. Three regions in KakaoTalk

Based on these dimensions, we arranged the 161 chatrooms and came up with three groups of chatrooms by centrality, namely, the *primary*, *secondary*, and *tertiary region* (Figure 2). The numbers of chatrooms in each region were 79, 64, and 18, respectively. In each region, we also identified chatrooms that are in a transitional stage from one region to another region as time goes on. Also, we could find that participants attempted to visually express the boundary of different centralities by remarkably distancing one group of chatrooms from others or by drawing a clear division line (see Figure 1(b)), which further supported our classification.

We adopted Altman's typology of human territoriality, as the characteristics of the three regions we found from the analysis were quite overlapping with those of the three territories he proposed. However, the concept of publicity and privacy did not fully resonate with the characteristics shown in KakaoTalk; given that a user can enter a chatroom only by the invitation of a member of the chatroom, there was no specific public space that everybody can access in MIM. Therefore, we selected the term *tertiary region* to refer chatrooms with the least centrality, instead of using the term *public territory* in Altman's typology.

In what follows, we describe the definitions and general characteristics of conversation in each region. Also, we present representative relationships that were often discovered in each region, although these were a bit different, in some cases, depending on the individual differences in the level of intimacy with each type of relationship. We refer to each participant and their chatroom by participant number and the relationship with chat partners (e.g., P1, family group). In addition, we connect the related visual expressions in both the network map and centrality map with each region's characteristics.

Primary Region: Performing Everyday Life

Consistent with the characteristics of a *primary territory*, the chatrooms in the *primary region* was the most central spaces where people were actively engaged in ongoing conversation as they performed daily life at home, work, and in social places. In this region, participants usually communicated with family members, romantic partners, colleagues, close friends, and groups of those individuals. Most of them were geographically close and interacted with the participants on a daily or regular basis, both in KakaoTalk and in other offline places. Although some family members and couples were geographically distant, their chatrooms were also included in the primary region, because their conversation was as highly relevant to their lives as other chatrooms in this region and the participants were actively using them. As the word "primary" suggests, the circles of chatrooms in this region in the network map were often centered, highlighted, color-marked, contoured, and connected through thick lines by participants to denote the frequency of use and significant relevance to their lives.

Conversation in this region was usually never-ending and did not have typical starting and ending talk, as illustrated in [5, 14]: "(P5, lab mate) *We talk about just everything.*" "(P7, boyfriend) *We talk from morning till night.*" With intimate relationships, they were engaged in chitchatting and sharing gossip and every single moment of life second by second. The use of chatrooms was similar, even with colleagues. Chatrooms with co-workers were pervasively used for efficient communication during the work hours. Thus, their conversations were also continuous and somewhat mixed with casual conversations. By doing so, they had a high level of understanding about others' lives.

Secondary Region: Connecting to the Maintained Social Capital

A *secondary region* is not directly related to everyday performance, but is essential in order to keep regular or irregular offline social interactions. Although most people in this region were geographically distant and had a lower frequency of offline gathering than the primary region, the participants still cherished the relationships with those people, which called *Maintained social capital* [6]. It usually encompasses school reunions, social groups to which the participants have belonged for enjoying hobbies and religious activities, and family or relatives who live far away. The role of the secondary region was closely aligned with the arguments that the persistent and pervasive nature of ICTs (such as SNSs) contributes to maintain relationships that would have otherwise faded [3, 8, 25].

In general, conversation in this region was sporadically activated and used to keep updated on others' lives and to plan and comment on important events for group. Unlike the primary region, however, the degree of participation varied in this region. In the chatrooms where participants were actively engaged in the conversation, the members were intimate and the size of the groups was usually small (i.e., encompassing less than ten members). On the

contrary, in the chatrooms where participants do not talk much, the size of the groups was often very large (e.g., sometimes including more than 100 members). Thus, it seemed hard to find a common identity or topic of interest. For this reason, the size of a group sometimes, but not always, forced a group that is supposed to be used as the chatroom in the primary region to move to the secondary region. As a result, individuals' or small group's chatrooms in this region, once activated, were usually perceived and used just as a primary region, while even sometimes providing serendipitous experiences: “(*P10, friends from school days*) *Although we talk once every six months, it's still fun. If I receive a message from this group, it gives me serendipity.*”

However, in a bigger group's chatroom, conversation could be continued only when there were regular offline gatherings or a significant amount of life sharing through KakaoTalk. Otherwise, conversations were easily deactivated or loosely continued only by a few people, who kept chitchatting anyway, or by the people who announced important social events in the group: “(*P5, elementary school union*) *When this [chatroom] was opened, I got 400 incoming messages in only a few minutes. In the beginning, we were all busy to catch up on each other's lives... There was a spark in the conversation due to the delight that we felt because we had all gathered and connected. However, since we are a bit far from each other's daily lives, this chatroom becomes inactive afterward. We only talk and gather when we have very important affairs to announce, such as one's wedding or a parent's funeral.*”

As P5 illustrated, this *falling conversation* seems natural as the relationships change over time and conversations with those people become less related to everyday life. These chatrooms with falling conversation were often placed at the outer circle of the network map and at the right part of the centrality map, which indicates the chatroom's low priority and the participant's limited participation in these chatrooms: “(*P10, past group*) *These rooms are almost all over the 'milky way,' out of my attention. I barely respond and read.*”

One interesting relationship that belongs to the secondary region was a relationship with a brand account, which is called “Plus Friend” in KakaoTalk. Two of the participants had several Plus Friends on their chatroom list for the purpose of receiving useful information, such as ongoing events of a brand or news from a daily food recipe magazine. Another interesting relationship was the friends who only send and receive the Kakao Game push. While participants were not engaged in the normal forms of conversation, they tried to maintain these relationships because they saw them as a kind of social capital which broadens the examples related to the concept of maintained social capital: “(*P7, Plus Friend*) *I often look through the news from McDonald to check the discount information.*” “(*P6, game friend*) *We are not intimate and we haven't talked for years. Game push is annoying for everybody, but we are a kind of a partner in Kakao game, who understand each other.*”

Tertiary Region: Connecting to the Expired Relationship

The *tertiary region* refers to the chatrooms in which social relationships have expired and the conversation is no longer

active. Although some relationships were explicitly expired, such as dating situations, some relationships implicitly expired as one's status changed over time (e.g., by graduating) or as they gathered for event-specific purposes (e.g., to plan a social event or to do a group assignment). Except for the past romantic partners (e.g., an ex-boyfriend and ex-girlfriend), participants could not easily come up with the specific relationships in this region. One reason is that chatrooms in the tertiary region were subsets of those in the primary group, as P1 illustrated, “(*P1, birthday party group currently deleted*) *On his (a lab member's) birthday, I and my lab members created a secret chatroom that excluded him. We talked through the chatroom to prepare a party, and when it ended, all of us went back to our original chatroom, where every member is, and we no longer talk here.*”

Another reason of unawareness of the chatrooms seems to have a relation with the way KakaoTalk displays the chatroom history. It shows the chatrooms that were recently used by the members at the top in the list of all of the past and the current chatrooms. Unless users explicitly leave the rooms, those chatrooms will remain on the list. They will be automatically moved from the top to the bottom of the list. Therefore, participants often predicted that a chatroom they had been using every day would soon “*disappear*,” which implies that those chatrooms would be out of their sight and mind, unless they intentionally searched for it: “(*P8, temporary study group*) *We gathered temporarily to carry out a group assignment. This chatroom will disappear in the next week when we finish the presentation.*”

This example clearly shows why a chatroom for an event-specific purpose might be easily moved from the primary region to the tertiary region. Thus, reflecting on such volatility, the circle of chatrooms in the tertiary region was often drawn with a dashed line or signified with black color to express the temporal nature.

REGIONAL BEHAVIORS

Regarding the aforementioned regions, we also analyzed how their characteristics were related to the behaviors within each region. To highlight the differences between the regions and the tensions that people experience in the transitional region, we drew four regional behaviors that seem to trigger a worthwhile discussion in the CSCW community: i) personal boundary regulation and self-disclosure, ii) maintaining group boundaries, iii) keeping and sharing virtual possessions, and v) personalization.

Personal Boundary Regulation & Self-Disclosure

Since the use of KakaoTalk is very pervasive and sometimes disturbs people, each participant had their own strategies to manage their social interactions within it. One way to do so was to selectively control the delivery notifications of each chatroom. For example, participants usually did not turn off the delivery notifications from the primary and tertiary regions, since the former is important and sometimes requires their prompt action, and the conversation in the latter is usually deactivated at that moment and, thus, there is little possibility to be disturbed

by this region. However, they often turned off the notifications from chitchatting groups in both the primary and secondary regions. In this case, participants turned off the notifications in the primary region in order to read and respond to the messages by freely pausing and resuming the conversation whenever they are available. In contrast, in the secondary region, participants turned off the notifications in order not to be involved the unnecessary interactions with the people with whom they do not keep the normative behaviors. Following examples show some *avoidance behaviors* [2, 4] in social media within the context of MIM: “(P6, past club members who are still close, primary region) *Since I receive 300 messages every 30 minutes from this group, I can't do anything if I don't turn off the notification. I check it all at once. It is like receiving a news feed in Facebook.*”

“(P8, department batch, secondary region) *There are 120 people in this group, but only five close people keep talking to each other. I can't understand why they are chitchatting in this room. However, I should scan through their conversation just to make sure that I didn't miss something important to me.*”

While aforementioned practices were a kind of static setting that were controlled in advance, as Altman claimed [1], the participants also dynamically regulated their personal boundaries to achieve the desired level of privacy from over-loading messages. The privacy was achieved through intentionally pending or selectively replying to the messages, as P9 contrasted his behaviors in response to messages from his girlfriend and other chitchatting groups: “(P2, girlfriend vs. housemates) *Even if I am too busy, I reply [to her] something like, ‘Sorry, I am busy now,’ because she is an important person to me and she worries if I don't reply. But I just delay the response to my housemates.*”

Another way of regulating a personal boundary was to differentiate self-disclosure practices depending on the audience of each chatroom, which resonates with Goffman's notion of self-presentation [7]. For example, participants behaved differently, as P6 clearly contrasted her behaviors when she talks with her friends and clients: “(P6, best friend vs. clients) *In this chatroom with my best friend, I often use shortened words or dynamic emoticons without any hesitation. I even use this chatroom for leaving my personal notes or for uploading personal files so that I can check it later without using cloud storages. In contrast, when talking to clients, I use very formal and professional words.*”

As a final strategy to manage personal boundaries, we observed the attempts to manage *context collapse* [13, 24, 26], the way that social media group individuals' various relationships into a single context, which is often termed like “KakaoTalk friends.” For example, one participant turned off the auto sync function that automatically adds user's contacts to the KakaoTalk friend list in order to avoid potential interaction with her professional network in KakaoTalk. In extreme cases, P2 and P6 decided to use another MIM to exclusively communicate with their strong ties, instead of fighting for their space in already-buzzing KakaoTalk. This also resonates with the example of creating another Facebook account to divide one's

professional and personal networks, which was noticed in the recent study [26]: “(P6, KakaoTalk vs. LINE) *Since there are so many group chatrooms and incoming messages, I couldn't distinguish the messages I should really care about. Therefore, I migrated to LINE and now I am exclusively using LINE with people who are most important and intimate.*”

Maintaining Group Boundary

While managing an individual's boundary was a troublesome practice for the users, maintaining group boundaries was another practice into which people put a tremendous effort. Given that outsiders cannot come into the chatroom or even know about its existence without an insider's invitation, unlike the physical world, the attempts to maintain the group boundaries were focused on the people who intentionally or accidentally leave the room.

Whereas the tertiary region is no longer active and the primary region has a relatively stable boundary, the struggles to keep the social boundary were mostly observed in the secondary region. This was also well described in the analogies that P1 used to describe her sense of boundary in two different chatrooms: “(P1, family group) *This [room for my family and fiancé] is like a building that was firmly established, but when it comes to these rooms [in the secondary region], it's like a temporary frame tent where everybody comes and goes.*”

As a region that is not directly connected to daily lives, some people left the room without any explanation. Then, the other members who care about their departure, usually a representative or creator of the group, re-invited those who had left. However, we could speculate *the tensions between the departees and inviters* from P3's description: “(P3, past social group) *I really want to leave, but they (inviters) don't let me, because they have to re-invite me when they have things to say to me. I don't have any option. I give up.*”

In addition, most people were worried about the mark that notifies who had left the room, which is automatically shown in the application. It is because others could misunderstand it as a sign of withdrawal from a relationship: “(P1, past project group) *I am worried what the others [in this chatroom] would think about me if I left with the mark that I have left.*”

Nevertheless, those chatrooms were likely to enter the tertiary region at the end, as people no longer care about other's departures and get into the stage of estrangement: “(P4, past social group) *We (all the members) don't talk here and ten people already left, but nobody re-invited them. There's no reason that I have to be here.*”

On the other hand, in the primary region, another concern arose when one of the members became *an accidental outsider* as the member's status changed. We observed *an emotional tension between the accidental outsider and the remaining occupants* when they disclosed secured information or noticed the absence of previous members: “(P6, colleague group) *She finished her summer internship at our company, but didn't leave the chatroom for a while. At that time, another member asked for the password of our FTP server. It was a bit embarrassing to provide the information because the*

password shouldn't be shared with the outsider. It was also awkward to ask her to leave the room by herself. We finally created another room for the current members."

"(P1, lab mates group) When she (a junior student) graduated and left this chatroom, I was sad. It was like the end of our conversation and relationship."

Keeping and Sharing Virtual Possessions

Although KakaoTalk is a communication platform, we observed the practices of keeping and sharing virtual possessions [15] that were created across the three regions. In the primary region, we observed compelling evidence that the ritual exchange of trivial messages in KakaoTalk often embodied the meaning as a *virtual gift-giving* [22] and enhanced the sense of connectedness. All of the participants exhibited their attachments to the ritual exchange of meaningful digital things, which varied from trivial text messages, to the web links of which the contents would be interesting to their conversation partners, and to photos of a distant romantic partner or a distant family member including pets: *"(P3, a group of three friends who decided to exercise together) In the morning, we check whether or not everybody woke up. Even after we exercise, we take care of each other's condition in the afternoon by exchanging small talks and photos of what each member had for lunch. At night, we plan when we are going to exercise tomorrow. Although the content is not very special, I want to keep this conversation since it enables me to feel that somebody is taking care of me every day."*

However, these gifts-like digital things were usually kept in the conversation stream in KakaoTalk and an actual attempt to locally store them happened less frequently than we expected based on the participants explanations of what they mean to them. This behavior seemed to be attributed from the belief that they will be persistently stored in the KakaoTalk server, as P3 add to the aforementioned morning exercise group, *"but I didn't try to save this conversation in a special way because I can always access to this chatroom on the application, unless I leave the room."*

Motivations of locally storing those digital things were often emerged around special events. For example, the cherished parts of conversation streams were saved in the form of digital photos by downloading the shared photos or by capturing screenshots: *"(P1, fiancé, while showing a series of screenshots of the chatroom with her fiancé) It was the day we announced our wedding on Facebook. I screen captured all of the conversation we had at that moment into five different pictures. It was quite an impressive and unforgettable moment, so I thought this [part of the conversation] was very special."*

Although they extracted those cherished digital items, it did not seem to be easy to create, retrieve, and reminisce over a meaningful collection of them. It is because once people download photos or capture the screen, then the extracted photos are automatically saved in a default photo application in a smartphone and mixed with other photo archives. Thus, such archiving mechanisms often interfered with the flow of revisiting experiences, as P9 illustrated: *"(P9, a group of his two sisters) It is inconvenient to launch the gallery app to see the photos that have been saved from*

KakaoTalk. The photos of my nephew are all mixed with work-related photos."

Thus, some of the participants preferred to use the application's function that displays all of the photos in a chatroom at once, even after they downloaded the copy of those photos in the local storage of their mobile phone. This reflects the fragmentation of archiving and revisiting experience, which would imply a concern of designing a personal archive in online services. Otherwise, participants collectively found a more systematic way of managing their co-owned digital items, especially with the people in the primary region. P1 created a Facebook group with close friends to create a collection of wedding items that had been shared through KakaoTalk. Also, P2 and his housemates created a Google spreadsheet to record and calculate their living expenses. In this way, those in the primary region, i.e., strong ties, were using multiple means of communication and it seemed to enhance their relationship as well, following the concept of *media multiplexity* [9].

While participants screen-captured the conversation stream to keep for a longer term in the primary region, they exhibited the same behavior in the secondary region for a temporary reason, such as to remember the notices of offline gatherings. Thus, the participants did not have much emotional attachment to the record. Rather, they cherished the presence of the chatroom that connects with distant people. Following examples clearly show how persistent and pervasive KakaoTalk maintain the relationships that would have otherwise faded:

"(P6, friends met during travel) Since I don't have the phone number of some friends [in this group], this room is the only way to be connected with those people."

"(P3, high school reunion) Nowadays, increasing number of my friends [in this group] plans to get married. I should keep this chatroom to maintain these relationship so that I can ask somebody [in this group] for a favor to deliver my money gift in the case I can't attend their weddings."

Also, some people cherished the symbolic meaning associated with those chatrooms:

"(P10, all members of her father's family and her cousins) I wonder how many families have this kind of Kakao room where we take care of each other. I am very proud of being in this family and in this Kakao room we share."

"(P5, high school reunion) We don't make a phone call to each other, but if this room is closed, I would feel like I was disconnected from these people. I feel [that] I am connected with these friends through this room."

"(P4, my high school teacher) He sends me lines of the Bible from time to time. Since I already get the Bible text everyday through a different application, the text itself does not mean much to me. Rather, I would say that this is the place where I can reminisce about my childhood with the teacher I respect."

Whereas aforementioned examples in the primary and the secondary region illustrate the attachments to the records of conversation and the chatroom themselves, the participants generally showed a lower attachment to the tertiary region. This may be attributed to the event-specific use of a

chatroom. Regarding the management of virtual possessions in the tertiary region, there were three types of people: deleter, holder, and keeper.

Deleters think that they do not have to keep the finished conversation and they regularly leave the rooms, which automatically deletes all of the conversation data in those chatrooms: “(*P1, finished project group*) *I can leave without any hesitation, because it's finished and all of the important information was shared through email or cloud storage.*”

Holders keep the expired conversation without any specific intention, just in case. Although they did not intentionally save those conversations, the records sometimes provided a clue to restart the conversation with people who do not regularly talk as illustrated by P4: “(*P4, friends who rarely talk*) *I don't remove all of the chatrooms from the list, just in case I need a record of the conversation. When I start talking with people I contact every six months, I was curious about what we have talked about before. By referring to the previous threads, I can naturally restart the conversation. If it has been deleted from the list, it is as same as deleting it from my memory.*”

Very occasionally, there were explicit *keepers* who strongly cherished the conversation as a personal record. Most of these chatrooms had been used in the primary region for a while. However, contrary to the typical practices in the primary region, the participants wanted to keep the whole range of conversation stream from the beginning to the end: “(*P4, ex-girlfriend who broke up a month ago*) *I exported all of the conversation we had as a text file. She was the most important person in my life. I am still keeping her Kakao room. I will leave when I can be convinced that the relationship has expired.*”

This example may imply that a sudden transition from the primary to tertiary region creates strong emotional attachment even to a single history of conversation, which has been taken for granted when a chatroom was still in the primary region, and motivate people to locally store the whole conversation stream as a kind of digital memento [19]. However, if so, there seemed to be a lack in maintaining the authenticity of data. For instance, P1 still remained in the chatroom, even after exporting the text files of whole conversation as well: “(*P1, a group of friends who helped her and her fiancé to take self-wedding photos*) *I downloaded all of the photos and texts, but I can't leave. It was a special event and this conversation stream shows the happy moment. However, when I review the exported text files, I cannot feel such vivid happiness. So, I won't leave here, even if all the others leave.*”

Personalization

As participants expressed their attachment to the data that had accumulated in the primary region, they also cherished the place itself. Therefore, they tended to personalize the virtual space, just as we do in our primary territory in the physical world, for example, as in our own homes. Participants often changed the title and the background of the individual's and group's chatroom in a way that reflects the relationship or group's identity: “(*P1, fiancé*) *I changed the title of the chatroom of my fiancé from his name, to his nick name, and to 'my husband.'*”

Occasionally, some participants treated a number of group chatrooms in special ways (e.g., making a logo of the group or assigning special title). Although the participants said that they personalized the chatrooms for a practical purpose (e.g., to quickly find them on the chatroom list), we could speculate that the participants were expressing their ownership and attachments to the relationship and the chatroom through the personalization that needed extra effort, as illustrated in the following excerpts: “(*P3, a group of three friends who decided to exercise together*) *It is my own group that I initiated and created. I didn't just name it something like 'close friends.' Rather, I thought for a while to come up with a special name.*”

As these examples indicate, many components of a chatroom could be exploited not only for decorating its appearance, but also for expressing and enhancing the shared identity among the members. In addition, the ways to deploy those elements in the secondary and tertiary region would be another area to be researched.

DISCUSSIONS

Before starting a discussion about this research, we must comment on the limitation of our data because the participants were recruited from only one part of Asia. Given that there is a well-known distinction between Western individualistic, low-context cultures and Eastern collectivistic, high-context cultures, there could be cultural differences in the use of MIM in terms of group interaction, possessions, and personalization. For instance, the attachment to the social groups and the efforts to maintain the social boundary and identity might have been more emphasized in this work. However, as studies in Europe have shown [5, 14], we can expect that users around the world may commonly use the MIM platform not only as a communication tool, but also as a place where they spend time and create memories while dwelling with people they care about. To better support such behaviors, we came up with two approaches in the design of MIM, based on the conceptual framework of three regions in MIM.

Improving the Workaround in Each Region

The first approach is to improve the workarounds in each room to reduce the tensions that people often experience in MIM applications. In the primary region, we have seen many workarounds when keeping and revisiting cherished virtual possessions. For this reason, *supporting the curation of digital artefacts*, such as a digital photo album that is connected to each chatroom, seems to have potential. Since people actively participate in the primary region, we can also think about the *collective creation or curation of digital collections* with a chat partner and group members. This may involve different kinds of co-creation, such as an example of a couple's co-evaluation of photos discovered in [15]. Thus, the reminiscing and revisiting experiences will also be enhanced, not only because those collections are not mixed with other archives, but also because they create an opportunity to collectively reminisce about memories.

In the secondary region, the most challenging issue was the tension between departees and inviters. We could find two layers of information that create this tension; one was for important notices or opinion-gathering discussions that everybody has to check and the other was for continuous chitchatting. In this context, dividing two layers of information and controlling them respectively could reduce the tension. This kind of function, which is called “announce,” already exists in KakaoTalk, which displays important messages over the conversation in chatroom. However, it needs to be more enhanced because users cannot control the notification of the announcement layer individually, and they cannot review the previous announcements, which are sometimes also important. Also, while pursuing this notion, the ways to enable users to fluidly move between the two layers should be further researched so that the advantages of a current streaming interface are not degraded.

Also, we can think of applying the characteristics of *third place* [16], which refers to the social surroundings that afford and foster the informal social interaction of a community, provides welcoming by the “regulars” and a playful mood through conversation and thus, giving sense of home away from home. If this kind of characteristics is affordable in the secondary region through, for example, a designation of regulars to a member, light-weight welcoming interactions, such as with an emoticon or the poke button in Facebook, then it might be able to smooth the interaction between small talkers and passive readers.

The tertiary region will be discussed in the following section because the value of chatrooms in this region can be better described in the second approach.

Supporting Functional Transitions over Time

Although the first approach highlighted the enhancement of the functional characteristics of each region, there has already been a similar effort in the MIM industries. For instance, KakaoTalk became a part of the Kakao platform and connected with many applications in the platform, such as Kakao Group and Kakao Story. Although those vertical SNSs are designed to support more diverse types of communications and activities, for example, through a shared calendar, a group photo album, and post-based news feed, we think that there will still be a unique value if these activities can be supported within MIM applications.

For this reason, we suggest the second approach: *supporting functional transitions over time*. To design and develop a MIM of which functions evolve along with the changes of a user’s social relationships, the collaborations among many professions, such as sociology, computer science, and design, will be essentially required. With that in mind, we will highlight three of many possible transitions among the regions, as those transitions inspire the new design implications.

Transitions from Primary Region to Secondary Region

One of driving factors of the transitions from the primary region to the secondary region is a geographical movement of users as the users’ status changes, such as moving to another city as a person graduates from school. Since these chatrooms become more cherished by their existence and symbolic meaning, *enhancing the sense of place* may orient these chatrooms as a place where people far away can visit and be connected with the maintained social capital. The personalization of a chatroom can be a mechanism that enhances the sense of place and the sense of ownership to the place. We can think of many spatial metaphors (e.g., a front entrance, wall, or signpost) that can be used for the personalization of individual or group chatrooms. By doing so, it can be a place which allows a user to feel a sense of belonging and connection to other people, thereby curing friendsickness [18] and homesickness.

Transitions from Primary Region to Tertiary Region

When a chatroom falls directly from the primary region to the tertiary region, we can assume that there have been dynamic changes in a relationship, such as the breakup of a couple. If this usage pattern can be identified by the system, then functions can be activated to support the practices around virtual possessions from the expired relationship. For instance, to overcome the authenticity problem of the exported data (as shown in P1 and P4’s experiences), the temporal metaphor, such as “time freeze,” could be used to support the maintenance of the digital collections as they appeared in the chatroom. Otherwise, a system could be designed to support forgetting the sore memory, as proposed in [21].

Transitions from Tertiary Region to More Central Regions

Instead of maintaining or enhancing the connections with the chatrooms that lost their centrality, we can also think of the chatrooms that suddenly gain centrality. In this context, the reasons for gaining centrality and the types of social relationships would inspire new approaches to design social interaction in MIM applications. For example, the first messages from the friends who were contacted long time ago could be delivered in a special way by maximizing serendipitous and gladsome experiences.

Although we described two approaches that focus on the mobile phone context, taking other platforms into account in the design of MIM application would create a richer user experience (e.g., collective reminiscence or management of family photos on TV at the dispersed family’s homes) because the findings of our study were also closely integrated with the parallel use of KakaoTalk in PCs or tablets.

CONCLUSION

From the study of KakaoTalk with ten participants, we suggested three types of regions that function differently in users’ lives. Such a group includes a primary region for performing various functions associated with daily life, a secondary region for connecting to maintained social

capital, and a tertiary region for connecting to the expired relationship. We discussed regional behaviors and tensions regarding the maintenance of social boundaries, the act of keeping virtual possessions, and the personalization of places. Although the proposed divisions of the regions should be examined in different cultures, as groundwork, this study provides a new perspective on the current discussion on the design of MIM and social media.

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