A study on attributes of interaction of a social network service on the web

Eun Yu

NCsoft Corporation
Seoul, Korea, eunpresent@gmail.com

Abstract: Despite the fact that there has been an increase in the research on a social network service, we still lack well-defined practical knowledge of how to design interaction of the service. This paper is an attempt to develop an understanding of the interaction of the social network service as its own distinctive entity, emerging between individuals and a user interface of the social website. In order to grasp interaction of the social network service, we defined four basic factors of interaction, namely time, space, information, and relationship. After that, we extracted a variety of attributes from the combination of them, and classified the key attributes. In addition, we performed a case study on how the attributes are applied to various social websites such as Facebook, Cyworld, and etc. These attributes will provide a conceptual tool to help designers to make a decision about how to design interaction of the social network service which potential users may experience in a desired way.

Key words: social network service, interaction design, user experience design

1. Introduction
Interaction is experienced through using interactive systems, and the collection of the interactions generates the quality of user experience. Many approaches to create theories of user experience exist, but we think that an interaction-centered perspective is the most practical for understanding how a user experiences a designed product [1]. In this research, we attempt to propose a tool which could be applied to designing interaction of web services. In order to design form of invisible interaction, we will extract basic factors of interaction, and define attributes of interaction according to mixing the factors. Designers can generate various interactions, choosing the level of each attribute.

2. Relationship among user interface, interaction, and user experience
Interaction is basically viewed as a phenomenon that emerges in-between users and interactive system. Interaction design is the skill of manipulating interaction happening while people use the system. It is related to invisible behavior of the system, and it works behind interface of the system. The reason why we feel different as we use similar web services such as Twitter and Me2day, even though they have similar functions, is that their
interactions are different. The style of interaction defines the unique concept, feeling, and personality of the web service. In order to deliver the user experience to people in a desired way, designers need to have knowledge about how to design interaction. Visual communication designers are able to make great design outcomes, manipulating a variety of key attributes—e.g., layout, typography, color, shape, texture, and etc. In this way, it is critical to develop basic attributes of interaction in order to manipulate them. In order to extract attributes of interaction, we have to separate interaction itself from the interface of the system and users. This means that seeing interaction as a "thing" that goes on between a designed system and a user. This perspective better helps designers more concretely explore the interaction to design user experience.

This perspective of viewing interaction is already emphasized in Lim et al.’s research [2]. Our research is in that line with regard to the perspective of viewing interaction. However, their study is totally focused on the aesthetic aspect of interaction. Our research is not about design of aesthetic interactions. Furthermore, the scopes of digital artifacts which they deal with are too wide and all embracing, so there is a lack of analysis of concrete website examples. Therefore, we will explore the attributes of interaction more focusing on conceptual and functional aspects, not aesthetic aspects in this study.

3. Attributes of interaction of social network service

First of all, we analyzed key characteristics of interactions of many internal and external social network websites, and extracted basic factors from that analysis. Those factors are namely time, space, information, and relationship. All interactions happen in a place over time. And Users of social network service deal with every kind of information generated through relationships in the service. Various attributes of interaction are made by the combination of such factors. The framework of this research is represented graphically in (figure 1).

Figure 1. The framework of this research

3.1. Connectivity (Mutual / one-sided)

According to whether the relationships are mutual or one-sided, users’ feeling may be different (Table 1). In addition, the kind of relationship may have an effect on the strength of a tie. The strength of a tie is determined
by the degree of intimacy and connectivity there is between two individuals. The strong ties networks are close-knit but small, while weak tie networks are loose but can be quite expansive [3].

Table 1. The level of connectivity

<table>
<thead>
<tr>
<th>Mutual</th>
<th>One-sided</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="cyworld.com" alt="Image" /></td>
<td><img src="cnnbrk" alt="Image" /></td>
</tr>
<tr>
<td>If one wants to become a friend with an individual, he/she has to get the permission from the person on Cyworld.</td>
<td>If one wants to be linked with someone’s profile page on Twitter, he/she could follow the person very easily anytime without his/her permission. And also the user could break off the connection easily when he/she wants.</td>
</tr>
</tbody>
</table>

3.2. Openness (closed network/open network)

On Linkedin, people expand their social relationships according to their schoolmates, colleagues, and friends of friends. It is almost impossible to meet strangers who are not within my network area. In that regard, those kinds of services provide a closed network. In contrast, people can meet new persons by chance in an open space and add them as their new friends on Plurk, Me2day, and etc. A user can build his/her relationships in the almost boundless open networks (Table 2).
My friends on Linkedin are the same friends, acquaintances and colleagues that I know in the real life. It is actually difficult to meet someone else by chance whom I have never had any relationship with.

Plurk provides the feature to connect me with somebody whom I never know. In the open space, I could meet my potential online friends accidentally.

### 3.3. Controllability (high/low)

There are different levels of controllability on web services, and the level of controllability affects the style of the information that users create (Table 3).

<table>
<thead>
<tr>
<th>high</th>
<th>low</th>
</tr>
</thead>
</table>

Facebook provides many kinds of privacy settings by which a user can control in detail who can see information on his/her profile page, who can search for him/her, what they can see, and how they can contact him/her.

On Me2day, there is no privacy control. Every post which a user writes is exposed to all people who visit his/her homepage on Me2day. Therefore, users tend to leave public messages rather than their private thoughts and feelings that can be shared with only their close friends.

### 3.4 Directness (direct/indirect)

It means the level of directness of representation of information. Cyworld lets every user have a diagram which shows the degree of how active they use the service, how famous the user’s homepage is, and how many...
interactions the user has with their friends, namely ‘active’, ‘famous’, ‘friendly’ on the profile page. The numerical value of the diagram represents various kinds of user’s activities indirectly. Plurk also has a similar feature, namely ‘karma’. Contrarily, sometimes people can see direct representation of information showing the numbers straightforwardly. Direct representation of number can show information to people more explicitly (Table 4).

Table 4. The level of directness

<table>
<thead>
<tr>
<th>Indirect</th>
<th>Direct</th>
</tr>
</thead>
</table>
| ![Graph](image) | ![Profile views: 1741](image) Friends invited: 3  
Plurks: 836  
Plurk responses: 4108  
Member since: Dec 2008  
Last login: 24 May 2009 |
| The graph on Cyworld and ‘karma’ on Plurk show information of how active a user use the service in a symbolical representation. | Direct representation of information shows the numbers straightforwardly. Those methods can deliver information to people more explicitly. |

3.5. Speed (rapid/delaying)

When there are some updated information relating to a user on Facebook, soon he/she gets emails about that news without any delay, even though he/she doesn’t log in the service for a long time. Such services make users get information very rapidly. On the other hand, on some services like Cyworld, people have to log in the service in order to get informed of the updates. In those cases, the speed of delivery of information becomes much slower (Table 5).

Table 5. The level of speed

<table>
<thead>
<tr>
<th>Rapid</th>
<th>Delaying</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Image" /> Min-Jeong Kim commented on your wall post...</td>
<td><img src="image" alt="Image" /> When there are some updates relating to a user on Facebook, before long he/she gets emails about that news, even though he/she doesn’t log in the service for a long time.</td>
</tr>
<tr>
<td><img src="image" alt="Image" /> In case of Cyworld, people can not know the updates until they log in the service. The service doesn’t provide any other notification channel about updates outside the service.</td>
<td></td>
</tr>
</tbody>
</table>
3.6. State (buzz/calm)
On Cyworld, without persistent updates of contents, the profile page would become empty and calm, because a user’s homepage contains only his/her own making contents. If the user had not generated anything for a long time, the message, “there has been no update for the last 4 weeks” is shown on the first page. But, even though a user could not update any contents, his/her home page could be full of new updates of his/her friends on Facebook. It is because Facebook delivers the life stream of his/her friends on his/her homepage (Table 6).

Table 6. The level of state

<table>
<thead>
<tr>
<th>Buzz</th>
<th>Calm</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.jpg" alt="Buzz Image" /></td>
<td><img src="image2.jpg" alt="Calm Image" /></td>
</tr>
<tr>
<td>Even though a user didn’t update any content, the homepage feels noisy and active.</td>
<td>If a user does not update anything persistently, the profile page becomes empty and calm.</td>
</tr>
</tbody>
</table>

3.7. Customization (diverse/uniform)
Social network sites enable users to create personal profiles that allow them to express themselves. But the degree of freedom is different according to services (Table 8). While some sites like Facebook and Orkut provide only one kind of default skin, other sites like Cyworld, Plurk, and Twitter provide a gallery of decorative profile skins and items for users to choose from. Furthermore, other sites such as Myspace allow users to manually insert HTML or CSS code to modify and customize their profiles (Table 7).
Table 7. The level of customization

<table>
<thead>
<tr>
<th>Diverse</th>
<th>Uniform</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Diverse" /></td>
<td><img src="image2" alt="Uniform" /></td>
</tr>
</tbody>
</table>

On Cyworld, people can change their online space as they want. There are many kinds of skins and items to decorate the profile page with.

On Facebook, people use only one skin and layout. Every user’s profile has the same look.

3.8. Productivity (high/low)

In order to create new contents, we have to upload some photos and movies, or write some texts. Most of people are apt to feel burdensome and annoying for that. But we could find different levels of productivity on web services (Table 8).

Table 8. The level of productivity

<table>
<thead>
<tr>
<th>High</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3" alt="High" /></td>
<td><img src="image4" alt="Low" /></td>
</tr>
</tbody>
</table>

Just clicking ‘metoo’ button, people can deliver their sympathy for their friends on Me2day. It does not need much effort to represent their thoughts. Plurk also provides some emoticons which let users write posts easily by just clicking one of them.

On Cyworld, posting contents needs much effort and time. It may be burdensome for users to manage their online space, updating some contents regularly.
4. Conclusions
This paper attempted to develop an understanding of interaction of a social network service as its own distinctive entity, separated from users and a social network web service. In order to understand interaction of the social network service, we extracted four basic factors of interaction, namely time, space, information, and relationship. After that, we came up with a variety of attributes from the combination of them, and classified the key attributes. In addition, we performed a case study on how the attributes are applied to various social websites such as Facebook, Cyworld, and etc. Designers can generate various interactions, choosing the level of each attribute.

5. References