Someone Somewhere Some Time in the Middle of Nowhere:

Some Observations of Spatial Sense Formation in the Internet

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Following a previous study which investigated the verbal and visual elements of cyberspace, this study examines the relationship different academic training and the perceptions of the verbal and visual elements found in the previous study. The results of this study seems to indicate that the perception of the verbal elements is not relative to the subject's academic training while the perception of the visual elements is.

Keywords. *theory of space, virtual reality, virtual space, web-based design, visual perception*

Introduction

Architecture can be roughly defined as a combination of solid mass and void space. 'Space" has therefore been an important concept in architecture. In the history, architectural space has been continuously evolved due to the emergence of new concepts of space, such as timeless spaces in Greek and Roman, dynamic spaces in Baroque, void spaces in Tao of Chinese literature, and inside-out spaces in modern. On the other hand, there are various factors that can invoke the emergence of new concepts of space; the invention of new technology is one of them. Given this, we are not surprised to see that the invention of Internet has already influenced not only the design and construction process but also the concept of space in architecture (Mitchell, 1995, 1999; Liu 2001).

According to the definitions in traditional architecture theories, "space" is generated whenever people define a finite void by some physical elements (Zevi, 1985). However, although Internet is a virtual, immense, invisible and intangible world, navigating in it, we can still sense the very presence of ourselves and others in a space "out there". This sense that Internet is a space could be even more obviously testified by our naming of Internet as Cyberspace — an exotic kind of space. But what is indeed the nature of the virtual space in the Internet? How is the sense of space created and experienced by Internet dwellers? What is the relationship between human participants and Internet spaces? To answer these questions, this study attempts to explore the spatial phenomena in Internet from the perspectives of Internet users. Following a previous study (Liu, 2001) that explored the verbal and visual elements involved in Internet space creation, the main objective of this study is to investigate whether Internet participants from different academic disciplines experience Internet spaces in different ways. We hope that through the observations of the Internet users with different academic training, we could reach a more comprehensive understanding of the nature of these new forms of space.

Previous study

To understand the nature of the new virtual and digital spaces and to discover the implications of the new concepts of space into the physical architectural world, a previous study (Liu, 2001) had been conducted to

investigate the verbal and visual elements involved in the creation of a sense of virtual spaces. The focus on these two cognitive aspects is based on our assumptions that in the real physical space, human beings experience spaces mainly through sensory perceptions, and that visual and verbal codes are two crucial cues for human sensory perceptions. (Bahrick and Boucher 1968; Glanzer and Clark 1964; Reed 1974; Simon 1972).

In Liu (2001), a commonly used research method in social sciences – participant observation (Milroy, 1987) – was adopted. At the first stage of this study, our research team members navigated various "genres" in Internet, such as BBS, homepages, chatrooms, MUDs, MOOs, and online games. In addition to being silent observers, we sometimes also tried to provoke informal discussions on the issue of "space" in our verbal interactions with the many Internet hangouts from various places in the real world. After two months of observation and participation in various Internet activities, we selected several target websites to collect data for a thorough and systematic analysis at the later stage. The data collected include the verbal records (mainly in Chinese) of the interaction(i.e., verbal communications) in three chatrooms and one MUD as well as the visual presentations of 13 websites as graphical data.

To synthesize the findings obtained, the results reveal that the verbal and visual elements involved in the creation of the virtual space cover a wide range. Both of them can be divided into 7 categories respectively: (For a more thorough discussion, please see Liu , 2001)

The verbal elements fall into the following categories:
(1) explicit space description
(2) description of movements
(3) implicit spatial references
(4) description of spatial condition
(5) identity of participants
(6) graphical expression
(7) description of voice, sound or odor.

On the other hand, the visual elements can be categorized as follows:
(1) movements
(2) acoustic effects and background music
(3) simulation
(4) human-computer interaction
(5) volumetric presentation
(6) change of viewing state
(7) referential presentation

In this study, it was found that three elements appeared in both of the verbal and visual categories; they were "movements," "interaction," and "acoustic effects" (directly perceived or perceived through the verbal description). We could therefore consider these three categories as the core elements that might play the most crucial roles in the creation of virtual spaces. An additional finding of this study was that the subjects with different background seemed to experience and define virtual spaces in different ways. Given this interesting finding, we believed that in order to obtain a more appropriate understanding of the nature of the virtual space in the Internet, we should study the Internet participants more carefully. The main objective of the present paper is therefore to examine the Internet participants from different academic disciplines to discover the verbal and visual elements involved in their perception of the Internet virtual space.

Methodology and steps

In the present study, we recruited 8 Internet regular users to approach this topic from different point of views. These 8 subjects are currently graduate students at National Chiao-Tung University in Taiwan. They are from four academic disciplines: linguistics, industrial design, architectural design, and visual communications (two subjects from each discipline). The chatrooms and websites used in this study are identical to those collected in Liu (2001) as described in the previous section. Figure1 illustrates some examples of the websites. We first invited our subjects to navigate the websites and participate the chatrooms. After they logged out, we conducted a

systematic and thorough interview with each of the subjects. They were then asked to conduct a text and a graphics analysis.

In this procedure, the subjects were asked to highlight all the words in the textual data and describe all the elements in the visual data which prompt a sense of space to them (figure 1).

Results and discussions

Perception of verbal elements
The results of our study show that the subjects in this study perceived and reacted to the verbal elements of the virtual spaces differently. (Table 1). As can be seen in Table 1, generally speaking, only four participants identify all the verbal elements reported in Liu (2001) as reviewed previously. These four subjects are from three different academic desiciplines: one from linguistics, one from industrial design, and two from visual communications. For the other four subjects, variation of their perceptions can be easily observed.

As far as the individual verbal elements, "explicit space description", "description of movements", and "implicit spatial references" are the three elements reported by all the 8 participants. The "description of spatial condition" is another most frequently reported element; all the subjects identify this element except for one subject with industrial design background. Overall, the results show that there is no obvious relationship between subject's academic training and their perceptions of the verbal elements of virtual spaces (tables 1 & 2).

Perception of visual elements
Table 2 shows the relationship between the subjects

Figure 1. a-d: some examples of the target websites in the present study and Liu(2001).

Table1: different subjects and verbal elements of virtual space formation

Subject	space description	movement	implicit reference	space condition	identity participant	graphical expression	voice/ odor
Lin.1	V	V	V	V	V	V	V
Lin.2	V	V	V	V	V		
ID1	V	V	V	V	V	V	V
ID2	V	V	V		V	V	
Arch.1	V	V	V	V			V
Arch.2	V	V	V	V		V	
VC1	V	V	V	V	V	V	V
VC2	V	V	V	V	V	V	V

Table2: different subjects and visual elements of virtual space formation

Subject	movement	acoustic music	simula-tions	human-computer	volu-metric	change viewing	change spatial
Lin.1	V	V	V	V			
Lin.2	V	V	V	V			
ID1	V	V	V	V	V		
ID2	V	V	V	V	V	V	
Arch.1	V	V	V	V	V	V	V
Arch.2	V	V	V	V	V	V	V
VC1	V	V	V	V	V		
VC2	V	V	V	V	V		

and the their perceptions of the visual elements.

As we can find in Table 2, different from the results found for the verbal elements, the subjects' perceptions of the visual elements are apparently different. The two subjects with linguistic background identify only 4 visual elements while two architectural graduate students identify all 7 elements. The visual elements which prompt a sense of space to linguistics are: (1) movements, (2)acoustic effects and background music, (3)simulation, and (4)human-computer interaction; that is the first 4 categories shown in Table 2. On the other hand, in addition to the 4 elements reported by the subjects from linguistics, the subjects from industrial design and visual communications reported one more element "volumetric presentation". One industrial design subject could even sense the sixth category "change of viewing state". From the above results seem to point out a tendency: That is, unlike in the case of verbal elements, there seems to exist some kind of relationship between the perception of visual element of virtual space and the subjects' academic training.

Comparison

According to our interviews with the subjects in this study, the perception of verbally created virtual spaces is different from that of visually created ones. All subjects pointed out that when viewing the visual presentations on the screen, the kind of space they felt is a space "out there". They felt like they were watching TV, movies, or cartoons. The spaces presented in front of them are thus separated from

them by the appearance of the computer. On the other hand, verbally created virtual spaces are not physically seen, they are spaces in the mind; they are spaces of imagination; and they are spaces of uncertainty. However, although invisible, as our subjects testify, once they log in and enter, say a chatroom, they feel that they are in a space. This feeling will become stronger while they participate in the activities in that space and have interactions with other participants.

In addition, we could also find that while different academic backgrounds seem to have no obvious relationship to the perception of verbal elements, they seem to be relative to that of visual elements of virtual spaces. This phenomenon could be explained by the fact that in our daily life, we function mostly through language: we communicate through language; we think through language; and we work through language. We are all experts of verbal codes in some sense. Therefore, it is easier for us to work with the verbal codes and to sense the verbally constructed spaces.

In contrast, for the perception of visual elements, it is not as intuitive as that of the verbal elements. Designers usually use particular visual symbols to represent the space. Those kinds of symbols must to be formally learned, and are very often easily seen only by the designers. That is why the subjects from linguistics who have no formal design training sense the least visual elements. For the other subjects from the the three design disciplines, they can sense more various visual elements probably because of their

academic training. Especially for the architectural designers, the creators of the physical world who employ these visual elements to construct spaces, they can point out the most visual elements of virtual spaces.

Conclusion

Since the invention of Internet, Internet users have been experiencing a new and magic "world". On the other hand, more and more new spaces have been created through the computer. These spaces constructed verbally and visually are open to people from various backgrounds all over the world. The creators of these virtual spaces, for example the architects, have long focused mainly on the visual representation, and ignored the verbal representation which, according to the subjects in this study, could

provoke a stronger sense of space. An additional result of this study reveals that the verbal and visual elements work in different ways in the provocation of the sense of virtual spaces. Verbal elements provoke visual imagery and other sensory perceptions by "imagining" and then excite personal experiences of space. Visual elements, on the other hand, provoke and excite visual experiences of space directly by "mapping". However, the ability of "mapping" is relative to subject's spatial and design training.

To conclude, the results reported in this study are still preliminary. To obtain a fuller picture of the nature of Internet spaces, further research is needed to study the same issue by examining more Internet participants from more different backgrounds. It would also be interesting for future studies to investigate how the findings of this study influences architectural designers in their real-world practices in this digital age.

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