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The experience expansion of typography utilizing the five senses.

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Abstract: Typography is a very old traditional area, but only sense of sight area has been studied until now. But from now on, multidimensional models might be studied and expanded including other four senses of touch, hearing, smell and taste, as well as sense of sight. In addition, technological developments enable us to apply such multidimensional experiences to physical products and publications. This is a research feasibility verification case study, together with theoretical proposal about expansion of typography experiences, and we exhibited this "Expansion of Typography experiences using five senses". Core significance of this paper is a proposal of expansion of typography experiences and detailed researches for each five senses are required for future study verification and developments.

Key words: experience design, five senses.

1. Backgrounds and Objectives

Typography is a long and traditional practical study. Typography has been developed as means of visual communication in human life and so will do in the future. As times go by, typography definition and research objectives are changing a lot. In traditional typography, aesthetic decoration concept was more important than just the ways and means to read characters. But these days, more important thing is whether readers could read characters more easily and fast.

Typography related researches have been much influenced and changed by technological developments. As printing on paper materials has passed, various independent fonts used in digital display are also studied actively. But one of the big limitations in typography is that these studies cannot surpass the visual category. When people are communicating

with each other, they are not only using sight sense but also using other senses of touch, hearing, smell and taste. And such multiple communications are providing more diverse information to people and enable multidimensional experiences. In this typography study, its objective lies in suggesting the possibilities for expanding experience through other four senses including sight sense.

2. Relating Researches

Relationship study of typography and five senses has not been unstudied at all. Hong Dong Sik has studied to combine five senses and inspirations with editing design and made "Sensibility Book", which tries to draw five senses experiences for editing design. In this study, he made "Sensibility Book", where characteristics and definitions of five individual senses were utilized. But again, he didn't overcome the limitation of visual media. It was just a visually described book; such sensible characteristics are described just with sense of sights, not through whole human senses including touch, hearing, smell and taste.

Figure.1 Sample of the work related five senses

As in introduction, typography has been influenced, developed and changed by technological advances. Current IT development shows possibility of expanding experiences by five senses through digital equipments. In retina display above i-phone 4 version, there are 326 pixels in one square inch (326 ppi). This resolution exceeds the limitation which human retina can see and people cannot tell resolution difference in paper printing and screen display. Digital technology, related with visual technology has already come with paper printing quality.

Touch recognition technology which senses on display panels has been introduced. Last international CES show, Senseg introduced a tablet PC which enables to sense a touch through micro electric current on its display. This technology looks commercialized soon and products will be available in the near future.

Regarding sense of smell technology, there is an "aromatic telecommunication" developed by "NTT DOCOMO". Aromatic telecommunication technology is to make suitable aromatic smells when listen to music in internet radio environments. Users can experience radio broadcasting, not only acoustically but also by olfactory sense.

Stereo system technologies related with acoustic sense is too common in our lives, and therefore we don't need mention. Finally, sense of taste is one of the most difficult areas to approach technically. Technical reproduction of taste is not easy. Because we have negative thought that unique human sense of taste is very difficult to combine with mechanical things, technology developments in this area are not active yet.

Figure.2 Examples of Retina display, Display that recognize touch, Aromatic communication

Even if we have many technical deficiencies, technical cases regarding expansion of experiences through these five senses means to come close to human lives.

3. Expansion of experiences of typography using five senses
In order to discuss expansion of experiences of typography, we need to mention first regarding signifier and signified, in view of semiotics. Saussure, one of the classic semiologist, defines symbol is composed of "signifier, which transfers its meaning, and "signified", which is an abstractive concept. "Signifier" is real things that we see and hear, like characters, voice, object, and image; "signified" is its meaning which these things are describing. For example, in the word of "Rose", characters of "Rose" exist as a "signifier" and likewise, it also includes its implicative meaning of passion. Together with these "signifier" and "signified" combined, a symbol plays a role.

Figure.3 Case regarding "signifier" and "signified"

When we apply this semiologic approach to typography, we can call it a "signifier", which our design fonts have. And each separate character is to be called as "signified". Even if we have more meanings regarding "signified", we will set limits to simple meaning in each character in this study, based on this definition, two approaches are possible. One is to apply expansion of five senses at "signifier" stage. For example, we identify the differences of smells of Ming-style fonts and Gothic type fonts. Another approach is to apply five senses with "signified" stage, we identify smell differences of each characters like A, B, C. This study is to be based on first "signifier" viewpoint and expansion of experiences through five senses to be approached. This is mainly because approaching from "signifier" has more practical values than from "signified" in applying five senses. In "signified" approach, we apply five senses to each character. Generally, "signifier" approach is much more suitable with typography study.

In case of "signified" viewpoint, its hypothesis is whether each font has a unique impression. It is known that each font is recognized as a visually unique impression. Times New Roman font gives very traditional and vintage impression and Impact gives very heavy and strong impression. When people approach with different senses except visual, they might feel different impressions in the same fonts. This might be because people didn't experience such impressions before and these impressions are not already formed but seem to be newly formed through new experiences later. Even though these impressions might be visually same or different and each people have similar or different experiences, expansion of experiences seems to be more vivid.
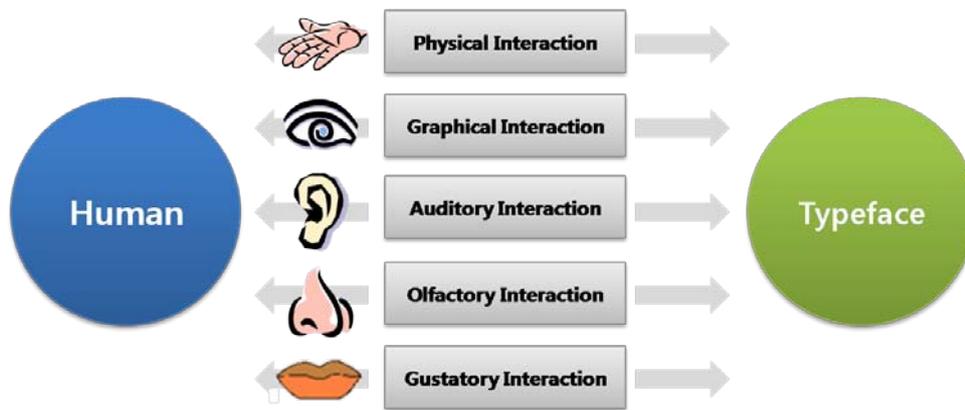
Figure.4 Concept diagram of experience expansion through five senses in typography

4. Case studies

In order to research this hypothesis physically, we execute "expansion of experiences typography through five senses. In the exhibition, we display exhibits in 5 categories and each display has individual concept for "expansion of experiences typography through five senses.

1) Expansion of experiences typography through touch sense

We made three dimensional plastic characters in order to experience fonts by sense of touch. And it could be sensed only by hand touch, and special case was made and hanged on the wall. People touched the fonts by hand and could guess and compare with the next font samples. Through trying these fonts, people could experience which font impression physically exists. Although these impressions don't always coincide with each other, recognizing fonts through sense of touch is a new experience.

2) Expansion of experiences typography through touch sense

We made PC applications of 9 fonts in order to experience fonts through sense of hearing. If an applicant chooses a favorite font, related music is played. There were no relationships between selected fonts and music, and every music was selected and played randomly. When an applicant uses the exhibits, he forms his own musical impression that his favorite fonts match. And he evaluates coincidences and differences of randomly selected music impressions and his self-formed impressions. An applicant will have font recognition experience through this sense of hearing.

3) Expansion of experiences typography through sense of smell

Three cards are displayed in the exhibition in order to experience the fonts through sense of smell. Different perfumes are sprayed on each card and different fonts which shows

company's unique brand identity are recorded on its back side. Applicants smell the cards and they form their own impressions and its fonts. They compare and evaluate their chosen fonts based on their impression with fonts on the back side. Applicants are experiencing this recognition through this sense of smell.

4) Expansion of experiences typography through sense of taste
Sense of taste is most difficult in approaching through five senses. In order to approach through sense of taste, we use dried sea weed, one of our traditional food, and we made sans serif and serif fonts. Applicants could eat foods of different fonts. Tastes and ingredients are the same but have different fonts. Applicants compare and evaluate each fonts impression of different foods. Applicants are forming font impression through sense of taste and recognizing sense of tastes.

5) Experiences typography through sense of taste
Existing researches about sense of sights are studied a lot and sense of sight is least important in this exhibition. However, in consideration of five senses point of view, we didn't exclude displays for sense of sights. Exhibition is covered with four white painted walls and in the exhibition, watercolors are provided to paint on the walls. When they paint on the wall, hidden fonts appear. This work is not for comparing with visual impression but for exhibition concept which is a new experience expansion and through its physical participation.

Figure.5 Exhibition poster

Figure.6 Tactile sense Exhibit

Figure.7 Auditory sense Exhibit

Figure.8 Visual sense Exhibit

Figure.9 Gustatory sense Exhibit

Figure.10 Olfactory sense Exhibit

5. Conclusions

This study and exhibition are executed for expansion of experiences of typography through five senses and researching its possibilities. This study has a significant meaning that typography could expand the experiences not only through sense of sight, but also through other senses. Study of expansion of experiences in typography has just started and in the future, individual and independent studies for each sense should be executed. In addition, studies of physically commercialized products are to be done, as well as just exhibitions. For physically commercialized products, technological and physical studies are required, which enable experimental expansion.

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