Western Mainstream Computer Typeface for Large Amounts of Information Design

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Abstract—**Information design is intended to complete the combing and optimization of modern information, and convey the logic-based and image-based content to the people. In the Digital Age, information design relies on the computer technology in a great extent. In the design of information using large amounts of writing, the different proportions of individual character recognition and sentence reading coherent make different typeface design and selection. Compared to other designs, large amounts of information design concerns the writing composition of contents more than typeface design itself. Whether the information is processed and communicated appropriately is the design's essence. The western mainstream computer typeface's development has not only manifested close relation of Serif and Sans-serif in readability and readable aspect of information content from design angle, but also reflected influence of social development and technological progress to typeface change.**

Keywords—***western mainstream computer typeface; the Digital Age; large amounts of information; information design***

I. INTRODUCTION

Information Design is a summary and visualization of information in order to control them and interpose them to exclude or prefer corresponding data. Then use a unique visual language and creative forms, to maximize the logicaliztion and visualization of information and ultimately achieve the purpose of communicating information. Therefore, communicating reliable information is the design's ultimate goal. The scope of information design in modern society is very broad, such as digital products, entertainment design, environmental design, software and hardware interface design, web design, virtual reality design and so on.

As the important testimony of the process of human culture's development, the language and the character are the main forms of access to information. The writing, the language's carrier, is the foundation of the society's informatization. Just like Language and writing scientist Zhou Youguang elaborates in his "World Writing History", the language is the most basic carrier of information. It is a kind of sound signal, but the writing transforms the sound signal into the visual identity symbol, which makes it the language's extension and expansion. It helps the language to break the limit of space and time, and be passed to further and left in future.

Since writing was produced, communicating information has been its most important value to exist. In the development of Western writing, the structure of writing is changing from handwriting to print form, from serif to sans-serif, etc. It communicates information more efficiently and retains the traces of history at the same time.

II. WESTERN MAINSTREAM COMPUTER TYPEFACE IN THE DIGITAL AGE

The advocation of succinct style in the Digital Age nearly causes people to forget the profound influence made by the complicated and florid style in the Middle Ages to the structure of the writing. The florid structure of writing brought difficulties to read. But the writing originally should be a kind of effective way of conveying thinking in visual forms.

On the basis of Johannes Gutenberg's letterpress, with the social cultural environment's vicissitude, the science and technology have developed in high speed, the printing technology has enhanced unceasingly, and the computer technology has substituted the manual skill gradually. Typeface quantity, design speed, and structure innovation have been not to be mentioned in the same breath. The distance between the lead characters can be arbitrarily changed now. Finally, digital technology completely discards printing letter, and makes the font design more inexpensive.

The Age of Serif had been greatly changed in 1816, since William Carlson IV designed the first sans-serif - English Egypt (Design industry called it Grotesque, meaning "ugly" in German). Relative to serif's different structures of horizontal and vertical strokes and modified corner, the structure of serif letters have not any modification, simple and intuitive, and the font's width and thickness can be changed at any time. Since the British government officially adopted the design of for the London Underground subway visual identity system designed by the famous designer Edward Johnston (later this typeface is named Johnston), the sans-serif has been used on all items related to London Underground in 1933 as the standard typeface, especially in tramcar schematic—Epoch-making masterpieces of the world's information design. Now, people often use serif and non-serif to refer to the traditional and modern typeface, and use them as a standard classification of the typeface.

Helvetica was originally designed for the type-setting, to compete with Akzidenz Grotesk in the Swiss market. The one who made Helvetica famous is German designer Otl Aicher. His design for the recreated logo of Lufthansa in 1955 used Helvetica, which led to imitation of the other corporations, and made it popular until now. People can find Helvetica in the logos of TOYOTA, Microsoft,

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Panasonic, 3M, BMW, MOTOROLA and other famous corporations.

The most famous case manifesting the Digital Age typeface's low cost is Arial which is designed in 1982 by Robin Nicholas and Patricia Saunders. It has a large degree of imitation of the Helvetica. It also has well-known operating system to support. Its appearance cannot be separated with Microsoft Corporation's practical commercial logic and the promoted idea, and it becomes the utilization ratio highest computer typeface.

The basic reason is the owner of Helvetica is not willing to authorize, and Microsoft is not willing to pay expensive royalties for the new development software for each time. They imitated Helvetica to design Arial, and installed it as accessory in the windows operating system which occupies the majority of market. At the same time, Arial is in the first location in arrangement of English alphabet. These make it successfully recognized by the public. In other words, the difference between Helvetica and Arial is probably like the difference between professional and general, patrician and plebeian.

Due to the readability factor, San serif has not substitute for the Serif to become the only standard. Take the Times, series transition serif, as the example, it has been used as "The Times"'s standard typeface since it was released in 1932 and gained a great success, because of the classics appearance and the good readability. Now, many applications and web browser regards it as the default font. In Microsoft's windows system and Apple's Mac systems, they are installed, only having a slightly difference in structure.

Each kind of typeface existing in the computer system, provides the diverse choice for the information design.

III. Large Amounts of Information and Its Elements

A. Meaning of Large Amounts of Information

Usually, the capacity refers to the information content. Common carriers of large amounts of information are books, newspapers, periodicals, reports, etc. In addition, the computer which cannot be separated with the people's routine work life. Large amounts of information's communicators and designers should not make the information overload in priority, which means, using appropriate visual language, establishing the lamination effective information management, simplifying and seeking styles can be understand and utilized appropriately in each kind of carrier.

Considering the design itself, large amounts of information may also refer to reading in motion, huge amount of information instantly because of abnormal information processing speed, for example road sign. The speed of acceptance of the information has great difference under normal static reading speed and the migration reading speed,. Mobile reading speed is far below the stationary within the normal range of 200 words to 400 words per minute. Speed reading also reflects the human Eye Quotient.

In this respect, character design of highway sign involves two key points, one is the accuracy of characters' recognition which is closely related to the distance and light, on the other hand is the recognition speed which is related to the person's age.

Take the American road as the example, for greatest degree of recognition security, many states used Clearview instead of FHWA(The Federal Highway Administration), which had been used over half a century. People found in two kinds of typeface's comparison experiments that Clearview comparing to FHWA in the night is more legible by 16% degree, and 14% higher in the daytime. Clearview makes the recognition distance 24 meters further or reaction time 1.2 seconds more of the vehicles in the speed of 72 kilometers in every hour. In the research of the night-time driving by older drivers, it is found that Clearview's identity increased by 16%, which is mix-arranged of capital and lowercase letter, than all uppercase FHWA.

B. Readability and Readable of Large Amounts Information

Although information can be communicated through language and graphics, most of them cannot be separated with the writing. And the reading of the string of character is inevitable in Large Amounts of Information Design. Therefore, the processing of the sentences' readability and readable becomes the key to success.

Usually readability refers to the individual character; Readable refers to the speed and the degree of comfort of reading in the process of receiving information. Generally speaking, the character basically is very easy to distinguish, but the question of readable is the conformity relations between the characters which create sentences, involving every essential factor, like typeface, size, color, page frame or screen, as well as the relation between them.

Serif's readable is stronger because of the guidance of structure line, meanwhile sans-serif seems simple and brief which was eliminated the dispensable decoration. More important is that the acceptance of a large amount of information needs continuous reading, except for some special arrangements made for fashion or other needs. Moreover, even if having the same content, the typeface for title and content may be in same type or not. For being coordinate, people may choose the same typeface; they may choose sans-serif for title in order to definite and be more authoritative; they may choose serif (for example Times New Roman) for content's continuity. In short, it depends on the information is continuously read, or sub-sub-section read, or just to emphasize the block's overall sense.

Here, it is necessary to highlight two special cases, first is highway's sign writing; second is OSD (on screen display) .The former needs to resolve issues of the speed and authority in receiving information, such as Clearview; the latter has to remove the burrs and jagged, and the level must be clear so that the user can look and use it repeatedly. For example, in 1996, Verdana which is designed by Microsoft Corporate composed of the pixels, guaranteed the typeface is also clear and legible in light-sized.

Many information designers think that Helvetica is the best typeface. It has the obvious mechanized brand mark, and is the best information communication symbol in the rational age.

From the date of birth, in the entire mid-and late last century, Helvetica became the magic weapon to solute

typeface design's difficulties. Many designers think that Helvetica is a kind of typeface to satisfy people's higher hope of readability.

IV. RATIONAL AND STANDARD DESIGN IDEA

Now, communication of a huge amount of information is more intense. Every time people consciously or are forced to listen, to watch, to respond, and to accept. Typeface designer Erik Spiekermann sends out shouts "information anxiety". By now, the information design's goal must be explicit especially. Easy to understood and interpreted is the standard to judge and communicate, even using the rational technological means, to intervene and refine the useful information and communicate information effectively to the people. Especially in the process of communication of large amounts of information which is text-oriented.

In the field of computer graphics design, the number of typefaces is constantly refreshed. However, the leading position is dominated by several categories.

Information designers' topic is around a few classic fonts such as Helvetica, Arial, and Times, etc. Except that these typefaces can proved in the long process of usage reasonably processing information, more important is that they are owned by the most famous computer system and promoted in global, especially Helvetica.

In the present, Helvetica is the professional typeface-standard in the field of information design, as the Sans-serif model. In the opening of the documentary <Helvetica>, which is in order to commemorate the Helvetica 50th anniversary, is the bustling New York time square full of Helvetica everywhere. Each kind of large billboard, advertisement light box, shop sign, packing box, mail box, roof sign of taxi, magazine cover and so on, express a very clear concept: massive symbols having the similar characteristic making people obtain suggestion—Helvetica fills people's lives, it's everywhere.

In fact, MOMA (The Museum of Modern Art) has already exposed Helvetica in the collection, at the same time they also held the special exhibition momentously for Helvetica 50 anniversary

Considering the characteristic of Helvetica, its stroke is very standardized, with a highly versatile. It is not like serif strokes over emphasizing on the details of the description and decoration. It does not emphasis on self-personality, is willing to speak up themes, and does not impose on the audience additional information. Although Helvetica is pursuable, it is challenged because of being too rational. The opponents think that Helvetica cannot transmit the emotion, and has no soul. And most of the designers are tired of Helvetica being over-used in variety of occasions, while they consider the Helvetica is still a very important one. Contradictory choices exit all time. Undeniably, however, focused on modern society intensive visual information, Helvetica takes full advantage of that people turn a blind eye to it, which makes it can communicate information better.

In fact, it should be recognized that the typeface itself is not good or bad. What is important is to use in an appropriate manner in appropriate occasions.

V. CONCLUSION

The machine time's technology and science play a very vital role in impelling the development of computer information. This social transformation has been reflected in many design practices. The great development of industry and technology promote information design to rapidly grow up. A large number of designers begin to focus on functionality, and think that the best typeface is that you pay attention to information not the typeface itself. Of course, the coin has two sides; the human cannot regard anything too absolutely. Society, technology, human and typeface factors, and information's factor can affect information design.

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