Study on the Application of Chinese Fonts in the Computer

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Abstract. A font library is a collection of fonts with different shapes but the same styles, sizes, and forms. It is made based on the number of Chinese characters and the standard of font shape in accordance with the regulations of our country, and there is no originality in choosing and arranging the contents and number of fonts. Therefore, a computer font library is not a compiled work, but a database, a frequently used computer font library. By the end of the 1980s, the computer font library has basically replaced the traditional type printing, accelerating the diversification of China's print fonts design. This paper discusses the design and creation of computer font libraries and the diversification of fonts design, and explores the application of computer fonts in the press and multimedia.

Introduction

By the end of 1980s, the type printing technology which has been used in China for nearly a hundred years has been replaced by laser typesetting, computer font library, and computer typesetting technology. China’s printing industry bade farewell to the era of lead and fire and ushered in a technological revolution featuring light and electricity. The computer font library of Chinese characters firstly entering in printing and typesetting was developed and used. The design of printing fonts through computer is convenient and fast, and has various art forms. Fonts design is no longer the only medium for printing and typesetting, and printing fonts, as a medium for disseminating screen information, are designed and developed. Unlike the type fonts, the design and creation of computer fonts is more convenient and faster. In the early computer font libraries, there were not only traditional printing fonts, such as SimSun, SimHeiti, KaiTi, and LiSu, but also new printing fonts, such as XingKai, YaoTi, ShuTi, XinWei, CuHei, HuPo, and CaiYun. With the gradual increase in font brands and forms, Chinese character input in a computer and fonts design have been becoming diversified, and fonts have been gradually moving on the multimedia video and Internet.

Design and Creation of China’s Computer Font Libraries

Due to the limitation of font sizes, the traditional type printing has few font types, and the selection of font types and size is accordingly limited. In particularly, type printing can not solve the problem of very fine strokes. The poor printing effect of fine strokes, along with the full shift to lithographic print, leads to the natural elimination of type printing. At the end of 1980s, the gradual popularity of computers in our country promoted the development and design of computer font libraries of Chinese character, creating more than 60 fonts, such as Wending, Hanyi, Huakang, Handing, Huawen, and Founder. The fonts created by Founder, which has great capital and technical advantages, have been the major printing fonts used in the press publishing market. Hanyi fonts are focused on the design of advertising fonts, while Huakang fonts registered a sales record of one hundred thousand pieces of soft disk in the Japanese market. In early 1990s, the development of laser typesetter successfully promoted the further development of computer printing fonts. Take Hanyi Company (founded in 1993) as an example. The company brought its first 56 font libraries of Chinese characters into the
market in 1995, making it become Asia's largest Chinese making company. In 2002, the number of its font libraries reached 130, including SimSun, SimHei, KaiTi, LiSu, YuanTi, WeiBei, and so on. Afterwards, the online download of computer fonts or the spreading of pirated software and CD resulted in the reduction of the number of development and design companies and the slowing of the design and development of Chinese characters. The lack of font copyright protection system has become an obstacle to the development of Chinese character font industry.

In the early days, the creation of computer fonts in China is to process the existing print fonts, and then input a computer and create a font library. The font types mainly include SimSun, SimHei, KaiTi, and FangSong, and there are not too many changes in font styles. This is because that computers have not been widely used, and the application of font libraries is mainly completed by software engineers. There is no aesthetic of fonts design, and the focus is to achieve the compatible application of computer fonts, most of which follow the type style. Computer typesetting is to directly install font libraries in the computer, select the needed fonts in various libraries, and generate books or typesetting documents in the corresponding computer typesetting software, by which different-sized pages are created. This is the early work done for printing. The process of designing computer fonts is very complex. In the early stage, the design and creation of library fonts is a bit different from that of the traditional type, from sketch designing, underlining, to ink-filling, white-painting, and revising, finalizing. The design of computer fonts, from the strokes of new fonts to standardized and unified font styles, needs to be revised constantly. The design and creation of computer fonts covers font format, font shape, creating tools. From designing to finalizing, it takes at least three years to complete the process of creating a set of library fonts.

**Design and Innovation of Computer Fonts**

The creation of Chinese character fonts includes the design of new fonts and the improvement of old fonts. For example, Mr Pei-yuan Xie created NBaoSong in 1995. To meet the needs for fast reading, NBaoSong created more space in the center of Chinese characters, making the strokes clearer and sparser, and reflecting the characteristics of Chinese characters and unity of its overall structure. Using a computer to design and create fonts and to typeset can achieve free zoom, so the kerning and row spacing become freer. The computer has freed the design of print fonts from the boring handmade work, and it created innovation thinking. By the end of the 1990s, the designers of computer print fonts have created some influential print fonts, such as BoYaSong designed by Zhi-wei Zhu; LiSong designed by Chi-jian He; ZhanBiHei, XiShanHu, ShaoErTi, and ShuiHeiTi designed by Chu-wan Ni; PangWa, YaYi, LanTingSong, Microsoft YaHei, and ChaoXiHei designed by Li Qi; and YaYiTi and ShiYiTi designed by Xuecheng Xu. It can be said that it is their hard efforts that effectively promote the process of the design of China’s computer fonts.

The increasing types of print fonts are helpful for the design of fonts. The direct selection of certain fonts from the computer for advertising, packaging, and book-binding designing pushes the design of print fonts toward diversification. In 2000, Shanghai Institute of Technology and Founder jointly developed the font of PangWaTi, which is not used in books and periodicals due to its unsuitableness for the publishing industry, but is welcomed for graphic design. In 2001, Founder organized a competition for print fonts design, in which participants, mainly university students majored in art, promoted the innovation of print fonts design. In 2003, Founder held a seminar to discuss the development a new font of art combining basic characteristics of SimHei and SimSun, which marked the first collective innovation in the history of Chinese characters print fonts design. Afterwards, a series of print fonts are developed, such as ZhengHei, LanTingTeHei, XingTiLi, DaCao, TeXi, and Microsoft YaHei. For example, LanTingHei is a complete family of fonts, and addresses the problem of existing inconsistent styles of SimHei fonts. Afterwards, a series of print fonts are developed, such as ZhengHei, LanTingTeHei, XingTiLi, DaCao, TeXi, and Microsoft YaHei. For example, LanTingHei is a complete family of fonts, and addresses the problem of existing inconsistent styles of SimHei fonts. The free selection of styles by users--from the text to the title--greatly meets the practical needs for newspapers and magazines. The LanTingHei font, with unique characteristic, strict structure, recognizable shape and good block effect, is clear and readable. Its design breaks through the old "clumsy" and "heavy" model of boldface font, focuses on the visual
effect of fonts, and pursues the overall aesthetic, plainness, and elegance of fonts. At the awards ceremony held in Hong Kong Design Center on December 4, 2009, LanTingHei series and YaSong series selected by Founder won the Asia's most influential design prize. In 2007, the Microsoft Corp used Microsoft YaHei in the Windows Vista operating system, promoting the innovative design of fonts towards the application in multimedia screen. Technically, YaHei fonts of small size are, to some extent, clearer than SimSun in LCD screen. YaHei changed the situation that the display screen only choose SimSun as text fonts. (SimSun Chinese + English Tohom2 solution). YaHei font creates more space in the center of the font, making it more suitable for screen reading due to its display effect. So since its development, Microsoft YaHei font has widely been used as advertising subtitle and text in the video screen.

Application of Fonts in the Design of Media

New media has been changing the ways that texts exist completely and isolatedly in books, and text design begins to transit to hypertext. Thus, the use of texts, including the selection, copying, restructuring and modification of texts, has gone beyond the traditional meaning. Today, all kinds of texts (readable and browsable) come into our vision in different ways, which require fonts design to adapt to the requirements for new media technological fonts quickly. China has long used the first generation of FZSimSun fonts as newspaper and periodical words, which, with fine strokes, lax structure, and botchy font shapes, can cause readers to get the visual feeling of text hopping. For that reason, Founder unveiled the third generation of press print font BoYaSong in 2004, which has been used as text font by over 100 domestic newspapers, such as Beijing daily, Shanghai Securities News, and National Business Daily. BoYaSong print font reduced the proportion of horizontal stroke to vertical stroke, and internal white space in font stroke structure, making it conspicuous and readable, and reducing readers' visual fatigue. China has created a relatively uniform standard for the text print fonts of its newspapers and magazines. Usually, the main text uses SinSun font-size five, and the annotation uses font-size little five. In the typesetting of newspapers and periodicals, the size of title font is usually bigger than that of text font for the purpose of attracting attention. The general rule is that the font selected for the first-level title is the largest, and the font for the second-level title is the second largest, and descending in that way. In his paper the Impact of Chinese fonts on Chinese Media, Zhang Qingjun describe as follows: "The mixed typesetting application of newspaper fonts will have an impact on the overall visual communication and the quality of the media. For a newspaper or magazine, the mainstream standard fonts takes up 80% of title fonts of the entire media product. The use of auxiliary fonts is subject to the characteristics of the media and its products."

The increasingly abundant computer fonts make it more convenient and faster for the input and output of the print media. In the text application and graphic design of newspapers and books, it can directly select Heiti Bold, Songti Bold, KaiShu, XingShu, LiSu fonts from computer font libraries, and use computer design tools to elongate, flatten, or widen these fonts, making it simple and standard for the design of the books and the titles. For example, the binding titles of A Thousand of Words by Zhu Xi, Heavenly Creations, and Travel to Chinese Ancient Towns directly use library fonts, and only elongate them. The titles of New Weekly and the Architects directly use the print fonts. Although these print fonts are typeset, amplified, and improved in strokes, they still look dull and thin, and have no various binding effects. This suggests that the direct use of fonts as the title design of a book cover has the defects of similar style, neat font strokes, and little changes in font shape. So, only by giving up the idea of laziness and designing the title fonts based on the content of a book, can the effects of binding and title fonts appear.

Since computer fonts are used in the video media, the fonts basically have three kinds of use: the SimHei fonts have the largest proportion of use, followed by Songti Bold and KaiTi, so as to avoid visual fatigue. Because the text fonts supported by browsers are restricted by the multimedia technology, the types of font installed in multimedia operating system, although unrestricted, usually point to commonly used font brands. For Example, Morning News uses the SimHei fonts, and uses
color effects to distinguish different fonts, allowing the audience to get clear information. The shopping advertising page on DangDang.com in December 2012 used Heiti Bold fonts for advertising and highlighted the content information through color contrast and dynamic effects. The multi-dimensional and dynamic words in the video media break through the static effects of traditional words. Readers no longer passively read as they used to. They can actively choose information to read. The application of fonts in the multimedia can create a dynamic effect and a stronger visual impact. The application of fonts is vivid, and their position can be changed frequently. Along with rich colors of font words, the fonts can form a variety of color matching, stereoprojection, and optical effects in a limited time. This new change presents a variety of effects and is dynamic, yet undefined, Chinese character images.

Conclusion

The computer has the advantages of accuracy and precision and replication technology. With the strokes created in the computer, the arcs and curves of computer fonts are more accurate and precise than that of hand drawings as long as the font shape can control the positional relation between the lines. By using the design of point-selecting of strokes, can smooth curves achieve. These, along with modifiable and replicable advantages, improve the design speed of print fonts. In typesetting, the kerning and row spacing of computer print fonts can be freely arranged, creating a visual diversity of fonts typesetting. In the creation of font libraries using computer, it can clone the fonts of the same stroke shape and the same thickness. The use of a uniform standard has become a basic principle for the design of computer print fonts. The era of computer fonts obviously comes faster than the era of type fonts, and the font types of the former is more than the latter.

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