A Theoretical Review on Chinese Character Design in the Digital Art Context

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Abstract. In the digital age, Chinese character design has made breakthroughs in terms of its free deformation, multi-dimension, diverse composition, dynamic and virtual interaction. Particularly, plenty of excellent work and cases that have been created are the foundation for composing research clues of basic theories and connecting the ways of digital Chinese character design and creation. The paper deals with the summary of present theoretical study findings, the analysis of expression methods of technologies and art combined, and the construction of theoretical framework of digital Chinese character design, which provide the reference for the weakness of theoretical studies on Chinese character design.

Introduction

The theoretical research on the application of digital technology in Chinese character design is still under discussion at present. There is no systematic study in the theory focusing on the application nor theoretical discussion on Chinese character design from the aspect of digital technology and art. In order to figure out the visual form of the Chinese characters design under the help of the digital media, we should realize the impact of digital technology on Chinese characters design and make its development clear, and learn about the features and rules of the combination of the technology and art, which provides theoretical reference for building the theoretical system of digital Chinese character design, improving the innovation ability of character design in the context of new media art and the application in the field.

The Theories of Digital Art

Digital design offers more opportunities for people to devote themselves into the artistic creation. As long as there is a conception of art, it can be realized through computer graphic technology. Digitization overturns the traditional art thinking, for example, by computer designing and rendering technology, the architectural renderings and product renderings can be more realistic and visualized. Digital design achieved the combination of “visible” and “invisible” design, such as the webpage design of Internet and dynamic virtual interaction design.

In 1990s, people’s lives have been gradually involved into the multimedia technology, in which comprehensive interaction was integrated into a system so that people could complete complicated and comprehensive information exchange. Through the interface created by hyperlink, art creation can realize the delivery of data, words, pictures, animation, as well as dynamic audio and video. As a result, multimedia art developed. With its vivid images, sound and rich interaction means, the multimedia art had a wide range of applications in culture, education, film and television, advertising and entertainment industry. During this period, some young artists began their exploration of multimedia art. At the same time, there was a development trend that the art and art design transferred from machines to electronic, and then to computer art. The new theories came into our eyes continually, such as hyper text proposed by Nelson in 1965, interactive fantasy system introduced by
Laurel, natural performance proposed by Causey, aesthetic of digital media proposed by Murry in 1997, digital novel proposed by Sloanc in 2000, which received a ready response [1]. And work of art created through the computer and new media has gradually come into the international expositions, sports and big art exhibitions. With the digital technology rapidly entering the field of art design, people have to accept and utilize it. The technologies of webpage design, computer graphic and new media synthesis have profound influence on the art design.

**Digital Design in the Digital Media Art.** In the book of *Essentials of Digital Media Art*, Li Shida believed digital media art can be defined as the digital art work itself, or refer that computer and digital technologies are used in whole or part of the creative process, which is the creative art [2]. In the book of *Digital Art Theory*, Liao Zhongxiang gave account of the digital. He thought the digital art, as an new form of art, refers that, the new kind of art is an process in which artists use computer digital information processing device to realize their own creative ideas on the platform of digital processing technology, and distribute their work to the people who appreciate the work through the network in an interactive way [3]. And other scholars presented the idea that the digital media art is the process of creating, carrying out and publicizing their work by the artists on the basic of the computer multimedia and Internet technology. As a consequence, it gives birth to numerous new forms of art work. The process of creating, carrying out and publicizing their work by the artists on the basic of the computer multimedia and Internet technology. As a consequence, it gives birth to numerous new forms of art work.

In 1952, the oscillogram entitled Electronic Abstractions released by Ben Laposke via computer simulation indicated the beginning of the computer art. In 1968, the first world computer art exhibition in London marked that digital art had entered the stage of applied research. In 1984, microcomputers and workstations further promoted the application of computer graphic design. A large number of commercial art design software came on to the market, the desktop systems of the Mac computer and graphic software developed by Apple Inc being acknowledged widely. For instance, full 2D animated film called Toy Story produced by Pixar, founded by Steve Jobs premiered in North America on 24th November, 1999. Then, Dreamworks Studio began to enter the field of 3D animation, where a batch of cartoons has been created, breaking the box office records constantly.

From the middle of 1990s, Internet has enjoyed the great popularity all over the world, and relevant multimedia art has been well developed. On the Basis, video, audio, animation, games, virtual reality technology and network combined together perfectly. With the increasing growth of computer graphics animation, multimedia and online games, digital art, as a new interdisciplinary subject, has gained the recognition by scientists and artists.

**Concept of Digital Art.** The concept of Digital Art was put forward in the late 1990s. There are various definitions of the term: digital art is a kind of art or 4D art created with the help of computer; digital art is the computer art, a new school of art; digital art is the result of computer graphics development; The so-called digital art refers to the application of the computer technology in the art work, and an artistic form emerged from digital media.

In the digital art, prior to the advent of the word “media”, due to the features of digital, “bits” could be easily mixed with each other and reused individually or simultaneously. The mixture of text, data, images and animation is called multimedia, which gained wide usage. The so-called multimedia refers to a comprehensive technology of collecting, storing, editing, displaying and disseminating the information from various carriers and storage through computer.

Digital media is developed from information media obtained through computer producing, recording, processing and disseminating (*Basic Communication of Digital Media*, Liu Huifang). Digital media functions as the carrier of information communication, that is, a computer device that disseminates information in an interactive and comprehensive way, taking an electronic signal called “bit” which is different from previous analog signals and exists in a “discontinuous” form as the carrier (*The Present and Future of Digital Media*, Xi Chunyan) [4].

**Methods of Digital Art Design.** In the book of *Digital Media Art*, Wang Hu proposed that digital media art refers to a multimedia art form realized through utilizing the computer digital technology,
and a new art form showing the characteristics of normalization, diversification, replication and dissemination in unlimited times with the unified digital tools and technical languages. The methods of digital art combine the digital media technology, network technology, as well as the application and service of the two technologies, which focus on the technology, communication and people [5]. As a result, methods of the digital design include computer and multimedia microprocessor, digital products, and Internet technology equipment, the video system, remote sensing technology and telecommunication system. The art work can be created by using digital means.

From photographs to films, from TVs to the Internet, from mobile phones to the application of 5G wireless interconnection and virtual reality technology, the fascination of digital media features fast-changing and interaction. World Expo 2010 Shanghai has kept over its 150 years of its history tied firmly to the media revolution. It has made a breakthrough in the introduction of the concept of digital media. The philosophy of interactive design puts the design itself, the design results and process throughout people’s communication and interaction. Consequently, interactive technology has turned into a medium.

Like other technology advances in the history, digital design embodies the unique and insatiable pursuit of human beings. In the field of design art, the design means has gone beyond the traditional limitation. Nicholas·Negroponte thought digitization possesses huge power to help find hope and dignity in the field that didn’t exist before. The convenience of the digital media art and Internet provides an art platform for people to communicate with machines, which can create the new artistic work and changes the methods of the design art. As digital technology has made further progress, different kinds of digital design are integrated, such as digital character design, digital package design, digital fashion design and so on.

Discussion on the Theory of Digital Chinese Character Design

Digital Chinese character design means that the advance of digital and information technology offers a new space for character-shape design. From simple organically-shaped from and geometry form to three-dimensional form, computer graphic technology changes the shape of Chinese characters, and realizes the effect of color, material, three-dimension ray, dynamic and virtual interaction, greatly enhancing the realism and forecasts of Chinese character design. In particular, the advantage complementation of the digital new media technology platform and content-making platform of traditional media reinforces artistic effect of Chinese characters in the film media. In the age of digitization, Chinese character design is facing new challenges, and computer character design gives a sense of modernity, bringing the revolutionary breakthrough in the aspect of free variation, multi-dimension, diversity, dynamic and virtual interaction. However, according to the relevant materials I have collected and mastered, I have not found any relevant subjects at home and abroad. Although there have been several papers that discuss character design in China, these papers lacks systematic and overall study.

Looking up the research articles about digital Chinese character design published from 1990 to 2018 from Chinese periodical network, we only found 96 papers discussed the digital character design by domestic scholars, whose subjects are related with the the design of word database design of multimedia dynamic words, the design of web text, dissemination of characters, the design of Chinese character images, of them over 20 papers studied the core issues of character design in the digital age. Proposed in Computer Typesetting by Luo Baoshu, Dynamic Words Design of Digital Media by Sun Wei, Chinese Character Design of Film Titles by Wang Mingrui and other papers, the viewpoints are helpful for the study of digital Chinese character design.

At present, there is no literature about digital Chinese character design, but the description of Chinese character design technology has been found in some work of digital media art. For example, the performance technique of advertising titles—The Making of Font Special Effects in Chapter 4 of Advertising Titles Design (Tie Zhong), the theme of network art--ASCII art is character design in Chapter3 of New Media Experimental Art&Design (Cao Haiquan). The book of Among the
Characters published by the committee of Founder Type Design Competition and Center for Chinese Font Design and Research mainly talked Chinese characters have solved the problem of entering the field of computer under the influence of the wave of information technology. Chinese character printing font is in great variety gradually, and character culture is becoming more attractive. *Secrets of Video Special Effects Production* (Wang Yizheng) is the reference book for understanding the production process of film and television special effects industry and learn about the typical and practical skills [6]. *Digital Media Art* (Wang Hu) deals with the design and typesetting of Chinese character in the digital graphic design of the sixth chapter.

What’s more, the book of *Computer Aided Design* wrote by Fu Zhiyong, Yang Jing, Li Lin and Liu Donglei, *Digital Computer Design* wrote by Jiang Jun, Wang Chuanlong and Luo Pingyun, *Dynamic Media Design: from the Composition to Creation of Interface* wrote by Zheng Jun, *Digital Art: Technology, Application and Technology* wrote by Long Xiaoyuan, *An Introduction to Digital Media* wrote by Zhang Wenjun, *Digital Foundations* wrote by Burrough.x., Mandiberg.M. and Zhang Jian, *Digital Interactive Advertising Design* wrote by Liang Feng, Tian Shaoxu and Liang Yuhong, most of the books are about the computer courses and the techniques of digital media art. To some extent, the studies on digital Chinese character design are found in microscopic and scattered state. Now, the logic and venation of the development of digital character design should be further studied systematically.

**Summary**

Digital technologies have completely changed the way of design. It breaks the limitation of two-dimensional plane and its stillness, and realizes free deformation, diverse composition and multi-dimensional space of artistic font, bringing new visual presentation to the Chinese character art, which has profound influence on the design of Chinese character. The integration of computer and design has created plenty of experimental work with high aesthetic, which manifest very great varieties. And the new ideas are presented constantly, providing the important reference for the visual reading and creation of the digital Chinese character design. In our viewpoint, digital art and Chinese character design are characterized by standardization and diversification. The standardization not only lies in the requirement of the type and stroke, but also in the precision and accuracy of computer production. Its diversification is result from breaking the theory of plane, from the original two-dimensional representation to the three-dimensional representation. Therefore, the few theoretical studies were collated in this paper, which provides some clues and examples for later fundamental research. The negligence of scholars and weakness of theories are reflected from another side.

**References**


