Non-linear Language Research on Font Art Design

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ABSTRACT
This paper takes "non-linear architecture" as the starting point, and through analysis and induction, it integrates the characteristics of non-linear thinking. As the carrier of culture and the trace of the times, there must be a certain related connection between character and architecture, which leads to the research on the application of nonlinear thinking in font art design, as well as the expounding on both spatial font and interactive font. The essence of non-linear font art design is to inspire people to pay more attention to the visualization of character expression, the spatialization of text content and the interaction of character communication. Under the fusion of new media, non-linear thinking enriches and develops the visual expression language of font art design from another perspective, expands the performance dimension of time and space of font art design, gives a multi-sensory interpretation of the interactive experience of font art design, realizes the perfect combination of text information and digital media, and brings more visual interpretation space for text creativity.

Keywords: font art design, nonlinearity, spatial font, interactive font

I. INTRODUCTION

Characters have a long history in the long history of human development. The cuneiform of the Sumerians, the hieroglyphics of Egypt, and the Chinese characters of China can be said to be the historical testimony of the development of human civilization. Their unique charms all make people marvel at the wisdom of the ancients. In the whole process of the development of character, character initially existed in the form of pictographic symbols. In order to facilitate memory and use, these visually felt graphical symbols began to gradually simplify, separate and evolve, and then move towards the final form and develop into characters.

Nowadays, information is increasingly booming, and characters, as a symbol for recording and conveying language, have become one of the main factors of visual communication function. However, with the development of the times, people's cognitive level and aesthetic level are constantly improving. In the process of acquiring knowledge, people prefer to enjoy the joy of value and aesthetic pleasure. Here, the character is no longer a simple graphic symbol for conveying information and communication; in the cultural context of the new media at this stage, the character shows the higher spiritual needs given by the times, and puts forward some new requirements for the development of font art design, emphasizing some non-linear characteristics of font art design.

II. LINEARITY AND NONLINEARITY

The term "nonlinearity" comes from nonlinear science, that is, complex science, which is completely different from modern classic linear science that originated from Newton's principle. It can reasonably explain phenomena such as dynamics, irregularities, self-organization, and far from equilibrium and so on. It is a new theory of human understanding of nature and society [1]. The concept of nonlinearity is relative to linearity. Linearity emphasizes a rule, a property that is easy to be recognized, and its characteristics are single, uniform, and constant. It can be a single direction, uniform distribution, or constant speed, etc. Everything feels like a sense of convention. There is no innovation in linear systems, no surprises, and everything is certain and predictable. Non-linear systems are just the opposite. They emphasize non-proportional and non-linear relationships, representing irregular movements and sudden changes, such as variable directions, non-uniform distribution, variable speeds, etc. So it has all kinds of inherent uncertainty, eternal novelty and random contingency. Nonlinearity breaks away from the linear sequence of physical space and enters the reversible non-linear structure of time and space. Reversal of order, dislocation of time and space, etc. have all become possible here. It is this mode of thinking that makes the overall structural form no longer simply equal to the sum of the parts, but instead

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[1] Xu Weiguo. Pleat Thought, Nomadic Space — an Interview on the Parametric Design of Non-linear Buildings [J]. World Architecture, 2009 (8): 16-17.

has a dreamy rhythm, giving people a space for unpredictable reverie.

III. NON-LINEAR FONT ART DESIGN

Non-linear theory first emerged in the architectural design industry, and then penetrated into all areas of design. Under the influence of the non-linear concept, the building structure breaks through the original state, and begins to get rid of the immutable combination of geometric shapes, and gradually transforms into a continuous and flowing shape that adapts to various architectural performance and surrounding environmental factors. Through the intervention of modern computer software technology, it converts various architectural-related influencing factors into computer logic language by means of parameters, programming and other forms, and generates a virtual building shape. Perhaps the resulting architectural form is irregular and non-standard, but it should be an architectural design work that is truly suitable for a certain site. The non-linear design of the architectural form makes the finished product that people see is no longer imitated or reproduced, but more unique, for example, "Absolute Towers", "Nanjing Zhengda Himalayas Center", and "Harbin Cultural Island" by Chinese architect Ma Yansong. These architectural works full of creative power and dynamic of the times bring people not only a visual impact, but also thinking about future design.

In the long history of human development, architecture has always been remembered as a monument of human history. Each building carries the breath of a civilization and an era. As a human creation, the characters that have undergone the evolution and development of the times also reflect the temperament of the times. With the carrying of culture and the trace of the times, there must be some inexplicable connection between the character and architecture. For example, the modernist movement in the architectural world and the modernist movement in the font world originated from the same starting point, with the same ideas and expressions. Based on this, the author wants to try to explore the non-linear characteristics of font art design in the new era.

The fast-paced life of the bustling crowds and prosperous cities makes people deeply feel that from food, clothing, housing, transportation to online media, characters are omnipresent in people's eyes. The font art design has also begun to transform the "reading symbols" in people's life into the modern "visual language", and assumes the role of transmitting information and communicating the visual perception in the entire visual communication. The process of font art design is a process of visualizing and symbolizing creativity. From a linear perspective, the traditional font art design thinking model is mainly reflected in the design of character strokes, the integration of character colors, the combination of character and character, and the combination of character and graphics. The fixed thinking mode will naturally affect the creative innovation and the visual effect of the work. Compared with linear font art design, non-linear font art design is more inspiring people to pay attention to the visualization of character expression, the spatialization of character content and the interaction of character communication, strives for more visual interpretation space for characters, and makes the font art design stand out from the simple deconstruction of strokes and become more agile and vivid in the sight of multicultural integration, improving the visual performance potential of characters and the visual competitiveness of character information in dissemination.

IV. THE FORMATION OF NON-LINEAR FONT ART DESIGN

A set of font art design with rich cultural connotation and strong visual impact is like a wonderful stage show. While it shows people the internal structure of the character, it needs a lot of breakthroughs in conventional variable design, so as to create countless surprise forms and images to impress the viewer. The birth of any excellent font art design work is the result of repeated thinking and weigh by the designer, and the use of disorderly expansion to achieve the meaning of the content. Non-linear theoretical thinking enriches and develops the visual language charm of font art design from another perspective. Here, this paper analyzes the non-linear characteristics of font art design, and discusses the application of non-linear concepts in font art design.

A. Spatial font

In the traditional two-dimensional space, the font art design only gives people a pure visual impact on the plane carrier. Along with the creative innovation of font art design, people gradually expand their thinking, expand the text from the traditional two-dimensional space to three-dimensional space or even to multi-dimensional space, and the artistic visual effects produced by different spaces are not the same, so that font art design has more possibilities.

In this mode of thinking, people can try to feel the three-dimensional text image from different visual angles. The spatial font can be full of breath of life sometimes. The Alphabet in the Sky ("Fig. 1") can be taken as an example: when the German female photographer Lisa Rinierman was shooting up the sky in Barcelona, Spain, she found that her sight was almost always blocked by the buildings, and it was this wonderful feeling that gave her creative inspiration. On the streets of Barcelona old city, looking up at the sky

inadvertently, you can feel the unexpected surprises that life brings — asymmetrical architectural corner cut, random deconstruction and reorganization, and letter forms that can produce images... People are always willing to find answers that can enlighten themselves. They like to find abstraction in concretization and existence in nothingness. Such a way is more like an enjoyable adventure. Spatial font can sometimes show great characteristic of installation. Today, when art is booming, the term "installation art" has long been known and understood by people. Its meaning is the artistic combination, design and transformation of material and cultural entities that have been consumed or not consumed by the daily masses in a specific time and space environment, to deduce the artistic form of the artist's rich spiritual and cultural connotations. In short, it is a comprehensive display art of "site + material + emotion"[2]. For example, in the works of the famous designer Xu Bing, the three most famous and favorite works by him are all related to Chinese character graphics. From the incomprehensible "pseudo Chinese characters" — "Book of Heaven" ("Fig. 2"), to the comprehensible "New English Calligraphy" that uses square Chinese characters to interpret English words, to the "Book of Earth" that returns to graphic symbols, Xu Bing puts characters through the art form of installation, playing tricks on and subverting the form and meaning of traditional Chinese characters, while creating and interpreting new forms of Chinese characters in his own unique way. This unique design concept makes the font art design works full of novelty and interest, gives the viewer a different visual experience, and enhances the "dialogue" between the viewer and the work.

Fig. 1.   German female photographer Lisa Rinierman: "Alphabet in the Sky".

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[2]   Jin Yanxiu, Yan Herong, Jin Baiyang. Public Installation Art Design [M], Shanghai: Donghua University Press, 2017.
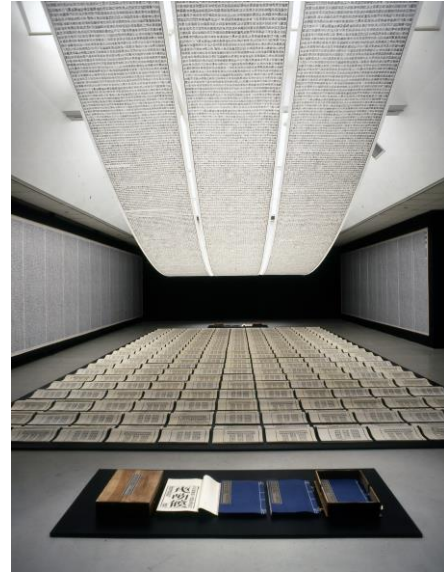

Fig. 2.   Xu Bing: "Book of Heaven".

With the advent of the information age, as well as the development and intervention of digital media, the integration of multiple media has become a trend, which has also given more methods and carriers for information dissemination. Here, the spatial font can be synthesized by computer software to achieve a three-dimensional effect; at the same time, spatial font can also be dynamic and virtual... The application of multi-media breaks the existence form of traditional characters in the static plane, and the dissemination of information begins to become jumpy and interesting. Just as in the poster of "China's Shadow" by designer Chen Feibo, he glues the words "China's Shadow" on transparent film. When the light passes through the film and changes its angle, it produces a colorful, bizarre and motley light and shade effect, which is exactly the same as the performance form of shadow puppets. These design elements, such as characters, graphics, and images, which are constantly changing in the state of motion, are continuously deconstructed and reorganized, and then combined with dynamic fonts with sound effects, greatly expanding the spatial depth of people's visual senses. Another example is the "Mirror" design exhibition by the well-known Chinese designer Han Jiaying, where the spatial font displayed is based on the camera, and the camera is moved in the design space through the input of different motion commands such as push, pull, shake, and move. Due to the change of lens angle and depth of field, the character also presents a visual effect with a sense of depth and space with the movement of the field of view. The character forms are stacked on top of each other and converted one after another, producing a rhythmic dynamic picture. The shocking three-dimensional effect makes the viewer unconsciously enter the multi-dimensional sensory and visual space of

the font art design, with a certain sense of freshness and fashion.

B. *Interactive font*

Nowadays, as society enters the era of digital media, the boundaries between media have been broken. "Cross-media" and "interaction" have become keywords in today's design field. More and more designers are beginning to explore continuously, and through novel design techniques, changeable materials and free technical means, in an open and communicative space-time platform, they have brought a brand new communication experience for characters and viewers. An interactive relationship is established between characters and viewers, which reflects the interactive nature of the font art design.

The font art design tries to break out of the single shackle pattern of the paper medium and begins to develop into a more diversified dynamic interactive medium. Here, the font art design has a dynamic display space, characters and graphics begin to transform each other, and the main performance is to express the character in the form of graphics or symbols, or to show the change from graphics to the character. The intervention of "pictures" makes the content presented by the character no longer monotonous. Through the interactive association of "graphics" and "characters", it shows the charm of different formal languages in the visual communication of information. Here, the image of the character gradually loses the traces of writing and printing, but has a new character form from the multi-dimensional perspective of the designer. In 2014, a dynamic font show with "SHANGHAI" and "上海" as the basic elements of font art design was staged on the large LED screen by the Huangpu River in Shanghai. It used a dynamic visual form to show the understanding and perception of Shanghai by 78 Chinese and foreign designers from 17 countries ("Fig. 3"). People can find the shadow of old Shanghai font art design in dynamic works, or rely on people, landmark buildings, neon lights and other elements to awaken Shanghai in people's visual memory and awaken people's unique Shanghai accent. With the help of self-media communication and outdoor media communication, this dynamic font show shows exceedingly fascinating and charming styles of old Shanghai and new Shanghai through the "picture" and "character" elements that represent Shanghai, reflecting the non-linear characteristics of font art design.
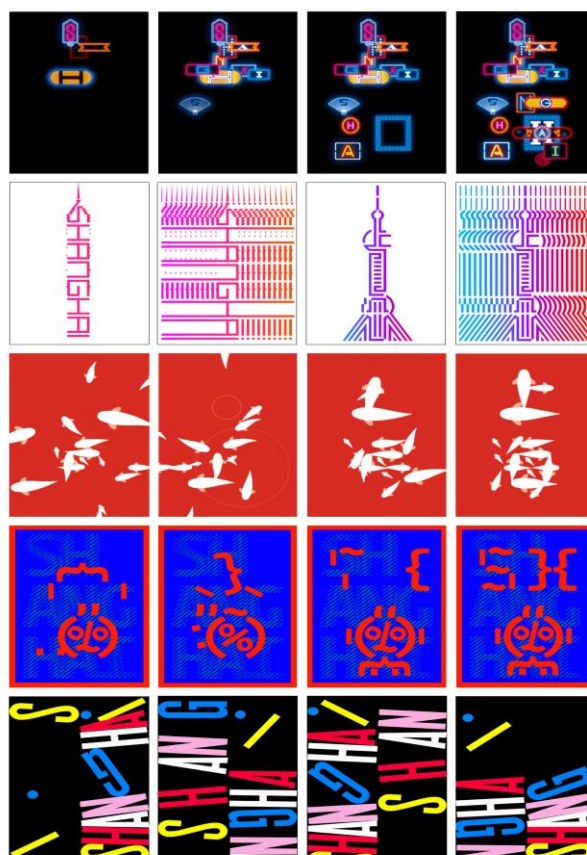

Fig. 3. Dynamic font show work of Shanghai Type (partial screenshots).

The most important thing for the interactivity of font art design is to observe and feel the aesthetic interactive experience of the viewer in the appreciation process, which means that designers have to understand and feel the process of font art design, and the life of the process is often also an emotional factor of interaction. With the intervention of new media technology, many designers have begun to record, process, and disseminate their own writing behaviors through new media devices, which exist independently as an experimental writing form. The designer initiates the interaction between people and character through "behavior", and penetrates the form and meaning of character into people's lives. These emerged character forms are called "behavioral character". Behavioral character comes from daily life. Compared with other creative forms of font art design, it pays more attention to the process experience of "behavior" for font art design. For example, the designer finds the integrating point of behavior and character between finger gestures, and records the behavior process of gestures through videos. Then the post-production will combine the characters and gestures, edit and play, so that the viewer can feel the fun and creativity of the design.

At this stage, computer technology has brought great challenges and unlimited opportunities to art. As the most direct visual expression symbol, font art design has begun to evolve from plane to three-dimension, from static to motion, from paper reading to screen interaction, and from layout to dynamic display. Fonts participate in people's lives in various ways, and form a multimedia platform that integrates reading, viewing, listening, and interaction. As Negroponte said: "The true direction of the multimedia field is the ability to switch from one medium to another at will; it must be able to tell the same thing in different ways; it must be able to touch various human sensory experiences.[3]" Just like the French dance — Cinématique's visual stage play brings people a sensory experience that transcends reality. Through the holographic 3D imaging system, around the "dream (digital)" landscape theme, and relying on intuitive senses to build seeing and hearing, it subverts the traditional display technology, creates a dreamlike stage, and realizes the perfect combination of vision, drama and interaction. Here, the digital character medium embodies its unique characteristics of "hypermedia", and extends the font art design that originally belonged to the field of visual communication into a new art form that includes the integration of multiple senses such as sight, hearing, and touch. At the same time, with the emergence of new media technologies, character has begun to actively participate in the multicultural interaction of computers and new media, making the font art design

present a more colorful visual form and artistic taste. For example, Lu Wenjie's interactive font art design work is through the understanding of artificial intelligence and interactive technology, uses related programming software, and uses the editing code language in the background to present the changing laws of character movement through precise conversion. Through the unique participation and interactivity of computer technology, the distance between human arms and limb sensors can control the morphological movement trajectory presented by the character on the computer screen. This interactive experience of character elements allows viewers to immerse themselves in the virtual world of character. The character begins to break the passive receiving state of pure visual information, and provides the viewer with an immersive interactive experience of multi-sensory integration such as sight, hearing, and touch; because of its relatively novel form, it brings richer content artistic conception and visual beauty to the viewer. The introduction of this interactive technology makes the font art design present a fun visual interaction, and expands the time and space performance dimensions of the font art design, which is incomparable to the traditional two-dimensional static character.

V. CONCLUSION

Both "non-linear architecture" and "non-linear font art design" reflect the characteristics of an era. In the above-mentioned exploration of non-linear font art design, people can see the splendid and interesting visual feast brought by spatial fonts, interactive fonts, and derived dynamic character, behavioral character, digital character, etc. When viewers appreciate the excellent font art design works, they can not only feel the momentary sensory stimulation, but also experience the meaning of the character in the interlacing of time and space and the interaction of graphics and character. Nevertheless, non-linear font art design does not completely negate the creative way of traditional font art design, but seeks a lightspot in long-term rationality: in the cultural context of new media, character has begun to surpass the unicity of traditional static media expressions, breaking through the two-dimensional limitations of printed paper media, and trying multi-form space display from static state to dynamic state, from two-dimension to three-dimension, multi-dimension and other forms. By carrying the diversity of media, it enables the viewer and the character to have multiple interactive experiences of body and five senses, realizing a real dialogue between humans and the virtual character world. In a sense, non-linear font art design expands the temporal and spatial virtuality and visual interaction perception of character, gives new visual vitality to the font art design, and deduces a novel visual art of character that combines cross-media

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[3]   [The United States] Nicholas Negroponte, Hu Yong, Fan Haiyan trans. Digital Survival [M], Beijing: Electronic Industry Press, 2017.

and cross-domain. This undoubtedly provides a broader design space for the future development of font art design. In short, the forward-looking design not only looks forward to the future, but also guides the future.

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