

Innovative Research on the Relationship between Visual Communication Art Design and Cultural Industry Development

Shanshan Gong

XI'AN University, Shaanxi 710065, China;

33427611@qq.com

Keywords: Visual communication art design; Cultural industry; Human interaction modeling; Sensory modeling

Abstract: In the process of global economic industry development and transformation, the development and innovation of cultural industries not only caused major changes in cultural forms, structures, and patterns, but also caused qualitative changes in the concept of consumption of cultural goods. The art of visual communication has also undergone earth-shaking changes in the form of form, acceptance, and overall pattern in the development of cultural industries. Based on this, the paper introduces several elements of visual communication art design and gives the idea of sensory modeling. The three-dimensional modeling of the virtual environment is realized by using the set model and the texture features and the real model. According to the system requirements, the human motion acquisition device is used for gesture design, and the gesture interaction is used to realize the tactile modeling. The conclusion of the thesis essentially shows that visual communication art design has become a cultural practice mode of high technology and communication media, and has become an important supporting force for the development of cultural and creative industries.

1. Introduction

The cultural and creative industry is a new concept put forward by developed countries in the 1990s, and it has gradually evolved into a new development concept. This philosophy holds that the true wealth of the contemporary economy is the idea of ideas, knowledge, culture, skills and creativity. Cultural and creative industries refer to "individuals that create their wealth and employment potential through the development and use of intellectual property from their personal creativity, skills and talents". The reason why it is called creativity rather than innovation is that it emphasizes the intelligent use of human creativity, human skills, human talents for culture and art and other intellectual products, and intelligent products. At this stage, the cultural industry has become an easy-to-expand, multi-dimensional, multi-level, and inclusive comprehensive concept. It is also a cross-industry and cross-disciplinary new cross-industry offering cultural, artistic, spiritual, psychological and entertainment products to the public. industry. As an important part of the cultural and creative industry, visual communication design, the connotation and nature of the new industrial form relationship are also quietly changing. It has gradually evolved from traditional arts and crafts, decoration and decoration to form a new category of more inclusive and rich content, extending to a wider range of emerging fields such as film and television, animation, advertising display, video news, digital, internet and games. In essence, it is a cultural practice based on contemporary high technology and media. From a realistic perspective, it has become an important supporting force for the development and selection of creative industries.

2. The evolution and characteristics of visual communication design in China

2.1 Development history

The visual communication design of China in 1840 was mainly composed of paintings of foreign paintings and Layang films. It was based on the market conditions of Shanghai Shiliyangchang, a few leases or important trading ports such as Hong Kong, Guangzhou, Qingdao and Tianjin. In the May Fourth Movement and later, although the color and enthusiasm of "Western Learning" was not diminished, and the "aesthetic education" advocated by Mr. Cai Yuanpei, the visual communication design of this period was obviously only a simple layout and text arrangement, in terms of shape, Woodcut prints have a certain influence on graphic design. During the Republic of China, due to the influence of Mr. Chen Zhifo's pattern studies and American culture, the so-called old Shanghai style or the old Shanghai style gradually formed: Firstly, the Art Deco style is mainly reflected in the book cover design; Secondly, the newspaper layout Especially for print advertisements, Chinese and foreign characters appear mixed, which is fashionable and modern [1]. Thirdly, it is influenced by the lines of woodblock prints, which is related to some visual communication design techniques at that time [2].

In the period of reform and opening up to around 1985, first, media advertisements first appeared in the form of "selling", and their utilitarianism was extremely strong. No matter whether TV or plane appeared in purely written form, it developed into a "beautiful figure". The form is "selling". Second, the font design is mainly composed of art characters, and English or pseudo-English (Hanyu Pinyin) letters are mixed among them, which is fashionable and modern.

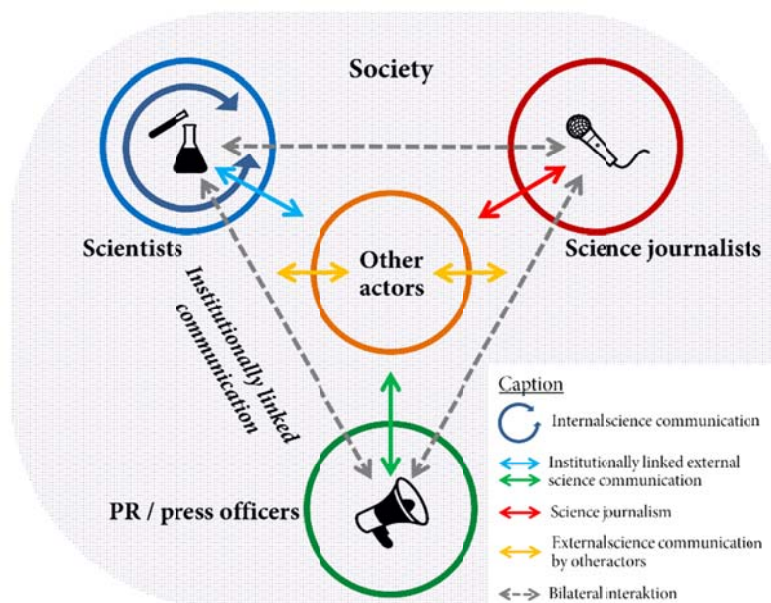


Fig.1 Three elements of visual communication technology

After the 1985s, visual communication design and its surrounding knowledge were enriched. First, various design materials (graphics, pictures, fonts, layouts) were increasingly enriched. Second, regardless of media advertising or print magazines (such as "watching movies" and "readers"), creativity is the key to design success. This is a higher-level culture after the design practitioners are proficient in designing technical elements. Contest. Third, foreign visual communication design works have brought in new forms and ideas, but the creativity of some works has also been resisted by Chinese traditional culture. Fourth, the domestic visual communication design producers have excellent works both in the absorption of the world trend and in the fusion of Chinese traditions, including the traditional art forms of ethnic minorities.

2.2 Characteristics of visual communication art design

First, the public. From its nature, visual communication design is also a popular culture. However, it is by no means "innocent". On the contrary, modern visual communication design has become a carrier of social ideology and the creator and embodiment of spiritual wealth in contemporary society. As an art different from classical culture and elite culture, visual communication design art is based on technology and uses mass media as a channel to realize the spread of popular culture and serve the public. Second, non-group. In the information age, the cultural communication of visual communication design cannot only cross nationalities and national boundaries, time and space, but also span traditional social groups. Culture no longer needs to be spread from one group to another, and often many social groups receive the same cultural information at the same time. Visual communication design sends rich cultural information to the world through mass media across social groups. Thirdly, openness. The advent of the information age has broken the closed state of all societies. The art of design with visual channels is no longer bound by time and space. Unlike the static stillness of words, visual communication design is a constant process in people's lives. It is omnipresent, omnipotent, and timeless. It conveys the value of society through various design images and shares knowledge and experience. Fourth, intuitive. Visual communication design spreads culture in the form of design images [3]. All knowledge information is directly displayed to the audience through pictures, images, shapes, colors, etc. Therefore, it has obvious intuitive characteristics. Fifth, multi-channel. Visual communication design can convey image information to the audience through various channels when conducting cultural communication. In other words, there are multiple media. The audience can accept design images and obtain cultural information at any time and in various ways.

3. Visual communication of environmental art design sensory experience modeling

This paper mainly implements sensory experience modeling from two aspects: virtual environment scene, external device and interaction mode.

3.1 Input signal acquisition

In order to get a more realistic sensory experience, relatively advanced peripheral devices such as touch devices and three-dimensional mice have been developed, which are mainly used to collect the basic behavioral actions of the experimenter. There are six kinds of object motion degrees of freedom in the art environment of virtual environment. In this section, we divide it into two categories: the first class moves horizontally along the X, Y, and Z axes; the second class rotates by X, Y, and Z axes. The shaft performs a rotary motion. Figure 2 depicts a schematic diagram of six degrees of freedom in a virtual three-dimensional space [4].

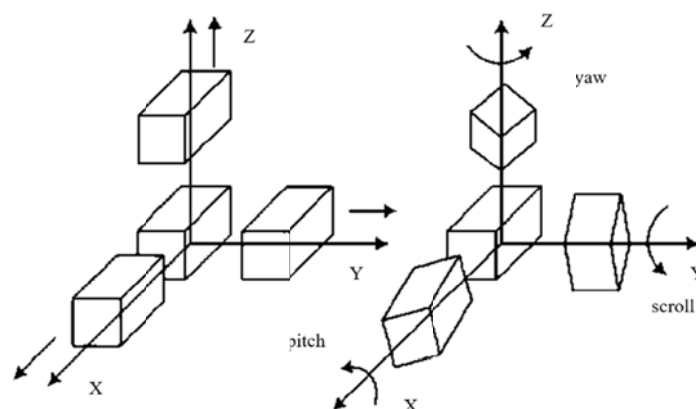


Fig.2 Schematic diagram of 6 degrees of freedom in virtual three-dimensional space

Explain from the sensory perspective of the experience, the content displayed in the virtual environment art design scene mainly includes: 1) Visual display: the virtual scene is constructed by

computer, and the scene and object in the scene will change correspondingly with the change of the perspective of the experiencer. In other words, it is the visible area of the output lens; 2) Hearing display: playing the generated stereo sound, requiring the stereo sound to have a certain sense of direction and distance; 3) Data presentation: realizing the experience to the virtual through certain behaviors the interaction of the scene.

3.2 Environmental Art Design 3D Visual Modeling

When constructing a three-dimensional model of environmental art design works, it is necessary to extract the geometric information and texture features of each object in the environment. Think of a simple object as a polyhedron and a relatively complex object as an object made up of several polyhedrons.

3.2.1 Construction of environmental art design geometric model

Firstly, the coordinates of the corner points of the edge of the object are collected to determine the vertices and bottom points of each point; then the sides of the object are constructed by the vertices and bottom points of the adjacent two corner points, and the top surface of the object is determined by the ordered vertex, through the ordered ground. The point determines the ground of the object; finally, the geometric model of the object is established based on the determined vertices, bottom points, and faces.

3.2.2 Texture feature extraction

Generally, aerial imagery can only collect the top physical information of objects in the environment, and the amount of side texture information is collected. This section uses multi-view aerial imagery to capture multi-faceted texture information of objects in the environment through aerial imagery using tilt photography. Through the object coordinates and image orientation elements, use the collinear equation to project it to the image to obtain the image coordinates of the objects in the environment:

$$X = X_0 - l \frac{\alpha_1(x-x_r) + \beta_1(y-y_r) + \gamma_1(z-z_r)}{\alpha_3(x-x_r) + \beta_3(y-y_r) + \gamma_3(z-z_r)} \quad (1)$$

$$Y = Y_0 - l \frac{\alpha_2(x-x_r) + \beta_2(y-y_r) + \gamma_2(z-z_r)}{\alpha_3(x-x_r) + \beta_3(y-y_r) + \gamma_3(z-z_r)} \quad (2)$$

Where: X, Y is the plane coordinate of the image point; X_0, Y_0, l is the inner orientation element of the image; x_r, y_r, z_r is the object space coordinate of the camera; x, y, z is the object space coordinate of the object point; $\alpha_j, \beta_j, \gamma_j$ is 9 of the image azimuth elements Direction cosine, where is $j=1,2,3$.

3.3 Real model construction

The use of 3D sound modeling tools to implement 3D sound modeling is an effective way, including the following: 1) Physical modeling: physical characteristics of different components when geometrically modeling objects in the environment Describe and use sound as a kind of physical feature. 2) Behavioral Modeling: Use the entity behavior description process to determine how the sound is triggered and stopped, matching the process to the sound [5]. 3) Collision detection modeling: The collision detection is used to distinguish the impact from the contact sound. In the absence of a modeling tool, you can implement 3D sound modeling through a design program, and design a table in memory that describes the relationship between the environment entity and the sound. The design table is checked by physical state over a period of time to determine the sound that needs to be emitted.

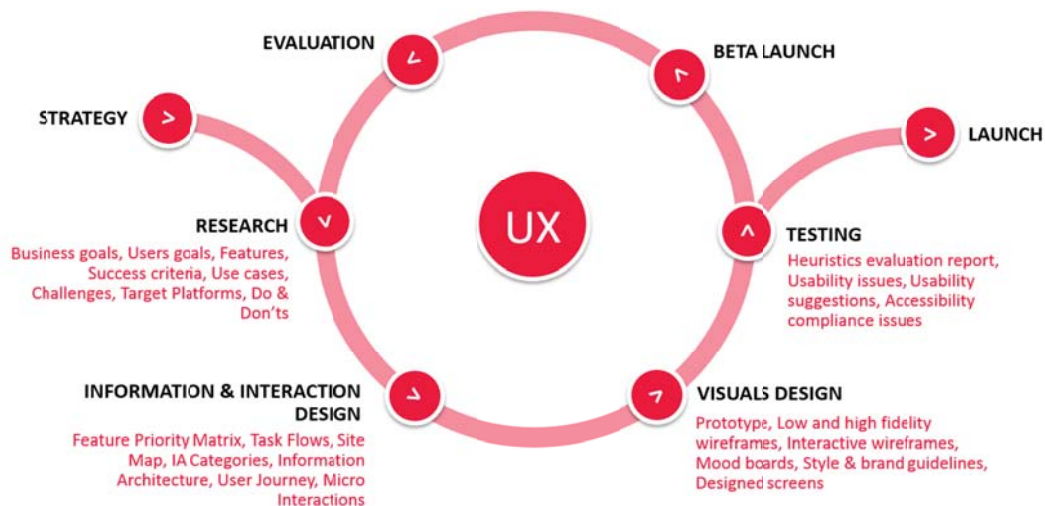


Fig.3 Gesture interaction design flow chart

In the tactile modeling, we first need to study the body language of people, and at the same time design the gesture according to people's action habits; then define the different actions through the designed gestures; finally, use the sensor to collect the human body motion signals and move the human body action. It is mapped with the tactile experience function to achieve a sensory experience through touch.

4. Cultural creativity is the theoretical framework of the visual communication design discipline

Culture is the soul of developing visual communication design and creative products. The cultural industry is a new type of industry that uses cultural resources as capital and market demand as the guide, through the use of cultural creativity and artistic wisdom, and ultimately serves cultural products and wins economic and social benefits. People's spiritual and cultural consumption needs can provide employment, training, economic growth and export revenue-generating industries. Visual communication design and creative products have a culture, have a reiki, have a taste, and have a stronger competitiveness [6]. China's history and culture are profound and profound, folk culture has a long history, red culture has distinct characteristics, and modern culture is rich and colorful. Our development of visual communication design must be deeply rooted in this fertile soil. It is necessary to rely on the excellent culture of the Chinese nation to make the visual communication design belonging to the cultural and creative industry bigger and stronger. As a visual communication design in the new era, it has different characteristics of the times and expressions of the times. Simply learning the tradition and simply imitating the traditional form has become an impossible reality. In fact, for the study of traditional creative thinking and methods, this problem that is often overlooked in the past is what we should pay attention to in the process of creating new cultural traditions of the times. It is an important research topic of visual communication design to give the traditional form a new era and make the traditional meaning of life.

5. Conclusion

In short, modern visual communication design "is a kind of cultural phenomenon and art form based on highly prosperous commodity economy and developed science and technology. The benign interaction between commercial operation and social consumption groups based on modern design media. The interaction effect has far exceeded the design art itself. The visual communication design is not the 'language' of the traditional design meaning, but a comprehensive and comprehensive cultural phenomenon--a new expression of social civilization and progress".

Acknowledgments

This work was supported by the 2018 annual theoretical and practical research project of the social science community in Shaanxi Province: "Research on the development and design of cultural and creative products in our province to specialization and high quality", Shaanxi Provincial Social Science Association, project number is 2018Z169.

References

- [1] Zu Yueying, Lu Zongye, Wu Haibo. Exploration of the Integration of Regional Characteristics and Higher Vocational Art Design Education in the Background of Cultural and Creative Industries——Taking Visual Communication Design Teaching as an Example. *Art Education Research*, Vol.1 (2017) No.13, p. 112-113.
- [2] Zhang Xu. On the relationship between visual communication art and the development of cultural industry. *Western Leather*, Vol.12 (2016) No.38, p.47-47.
- [3] Cao Jiaxin, Ma Li. The Influence of Cultural and Creative Industries on Teaching Reform of Visual Communication Design. *Art Education Research*, Vol.12 (2018) No.18, p.104-107.
- [4] Lian Yiming. On the Original Characteristics of Visual Communication Art Design from the "Creative Market". *Design Art Research*, Vol.4 (2013) No.17, p.35-40.
- [5] Ouyang Li. Innovative Research on Visual Communication Design Teaching under the Background of Cultural and Creative Industry. *Modern Decor (Theoretical)*, Vol.10 (2016) No.19, p.258-259.
- [6] Jing Lu. Culture-Based Creativity——From the Perspective of Visual Communication Design Education Concept. *Art 100*, Vol.4 (2007) No.23, p.99-101.