

On the Digital Design Using the Chinese Traditional Folk-Custom Color Culture Research

Yuxi Zhou^{1, a} and Ximiao Zhang^{2, b}

¹Faculty of Mechanical Engineering and Mechanics, Ningbo University, Ningbo 315211, Zhejiang, China

²Art School, Ningbo University, Ningbo 315211, Zhejiang, China

^anbdx.zhouyx@163.com, ^bzhang.ximiao@163.com

Key words: Traditional Folk-Custom color culture; culture innovation; digital design

Abstract. Based on economic and social development to discuss the application of traditional folk color culture in digital design, its purpose is to increase the national culture value in the digital design. Firstly, using Game theory analyzes the necessity of the application of traditional folk color culture in the digital design. Secondly, using computer graphics and mathematical language carry on the culture innovation of the traditional folk-custom color culture. Finally, explains practical application of the traditional folk-custom color culture in digital design. Through practice, proves the feasible of that the traditional folk color culture is used in the digital design.

Introduction

The computer digital design has become of the important means of the innovative design on the current economic and social development. Digital design is both the innovative design methods and the innovative design process. Among them, color design is one of the important factors of creating the national brands and brings honor to the national culture. However, whether the social digital innovation-design, or the universities design-education, at the current color utilization aspect, just only has one Modern Chromatology merely. Without doubt, the Modern Chromatology itself does not contain the elements of any national culture, that it is only a small branch of the color-culture domain subordinate. About the Color-culture Discipline[1], not only it produced time was earlier more than philosophy, architecture, linguistics and medicine and other disciplines etc., but also any nationality on the world has their own color-culture. Unfortunately, the nationality color-cultural issue has always not been paid attention to. As the world increasingly frequent intercourse always have not attach importance to this culture, more not value the different nationalities colour-cultural Worships and Taboos, so to result some misunderstandings and frictions, and caused significant economic losses, when the different nations or countries are between economic trading and culture exchanging. This situation not only to pay sufficient attention to, and must be addressed.

Because of this, using the national color culture on the digital design, to carry on the innovative design is imperative. The Chinese traditional color culture is not only the important foundation of building human Color-culture Discipline and the reference, but also is an important factor of creating national brands and increasing the cultural value-added products. This article, based on the digital design, only discusses the cultural innovation and practical application of the Chinese traditional folk-custom color cultural expressions, which is one of sub-systems of the Chinese traditional color-culture.

By the Game theory to analyze the necessity of culture innovation and practical application of Chinese traditional folk-custom color cultural expressions

Both developing economic and attaching importance to the Chinese traditional folk-custom colour culture are the complementary relationship, which can be expressed as the Game relationships.

The two-variable matrix of the Game. The traditional folk-custom colour culture using more or less in the innovative design, is directly related to the application-person to get income that is high or low. Namely: on the one hand, the traditional folk-custom colour culture is innovated and application the high, could write to 2. With a highly developed computer digital design but only application the Modern Chromatology, is recorded as 0. The computer digital design is lower, but national color-culture can be used, is written as 1. The digital design development and the national tradition color-culture displays are all low, only as -1. On the other hand, the development of computer digital design, not only is an important way of promoting each national culture development and communication, but also is a means of establishing the national image. So computer digital design highly development and emphasis on the national color-culture, can be written as 2. The highly developed digital design, but only using the Modern Chromatology to display the elements of national color-culture, because this condition does not has the system, can only count to 1. The digital design development and national colour-culture expression are all low, then only can be recorded as 0. The digital design development is low level and aslo has not the national color-culture, can only be -1. This Game relationships shown follows:

		Digital design development	
		high	Low
Application of traditional folk-custom colour culture	high	2,2	1,-1
	Low	0,1	-1,0

Figure 1. The Game relationships of the traditional folk-custom colour culture application and the computer digital design development

Figure 1, each number is expressed as: First, the left number represents profits of using national color-culture in the digital design, and the right number is the situation of the computer digital design development. Second, all the figures represent the high or low status for the application national color-culture or the computer digital design development.

Analysis and comment. Obviously, above the application of national color-culture with the development of the computer digital design in the Game, only (2,2) is a Nash equilibrium, other three sets of figures are strictly inferior strategy, should be excluded. So we can clearly get the best optimization strategy for decision-making. With the computer digital design development, the national color-culture should be carry on the cultural innovation and application. The Chinese traditional folk-custom color cultural expressions is one of sub-systems of the whole Chinese traditional color-culture. So, using the traditional folk-custom color culture on the computer digital design, is not only the best method to build the national culture brands, but also can promote national culture development.

About the overview of the traditional folk-custom color cultural application research area

The Chinese traditional folk-custom color culture application research field, is one of the the branch system of whole chinese traditional color culture subordinate. This research direction of the branch sub-system, mainly to investigate and research similarity or difference of in China's 56 ethnic's color culture characteristics and the customs of different ethnic's sub-color cultural Worships and Taboos. And also researches the regional sub-color culture changes under the Chinese traditional main-color culture leadership at the practical application and so on. It has three main aspects: first, The sub-color culture of various ethnic groups must follow the entire Chinese traditional major color culture norms. Second, must be complying with the national color culture Worships and Taboos norms. Third, this is important thing, both distinguishes the Yin or Yang properties of the color application occasions, and also matches colors according to the traditional "Harmonious Rule" culture.

The entire Chinese traditional major color culture norms. China has 56 different nationalities, although each nation had their own different sub-color culture, but all must follow the overall main cultural norms of the traditional color culture. That is to say, the Chinese traditional folk-custom color culture applications, uses not only the Chinese traditional Five-Elements Chromatology matching colors, but also the traditional Five-Colour Aesthetic theories collocating colors.

The national color culture Worships and Taboos norms. This was origin the ancient natives of totems's Worships and Taboos cultural factors, and development to the later formed the religious norms. It led to different customs or preferences at the colour-aesthetic and application aspects of that the different nationalities had gradually developed in history. But these changes just was formed the national sub-color aesthetic characters under the overall Chinese traditional color culture aesthetic's norms. That is, the ethnic Worships and Taboos been advocated, on the one hand, caused some the Worship's colors to be identified as the main colors that should use at the Yang properties occasion application. On the other hand, some the Taboo's colors to be identified as the main colors that should use at Yin properties occasions application. However, this does not mean that only used some kind of a situation just the right color, rather abandon other inappropriate color. Because it is inconsistent with the mainly norms of Chinese traditional color culture.

The auspicious concept of the traditional folk-custom color culture is expressed by modern semantic. Based on knowledge management, on the one hand, we can use the mathematical formula to express as:

$$f=5A/3B+3C/2NX+1/3(Na+Nb+Nc) \quad (1)$$

Among the formula (1), A, B and C respectively represents based on the Yin or Yang different occasions to produce the Secondary-colors. Arabic numerals indicates the colors usage amount of the different ratio relationship. N_a , N_b and N_c means that the Primary-colors have not been influenced condition when the Yin or Yang occasions changes.

On the other hand, Based on the computer digital design, we should use the computer graphics principle, to show the maps of matching-colors.

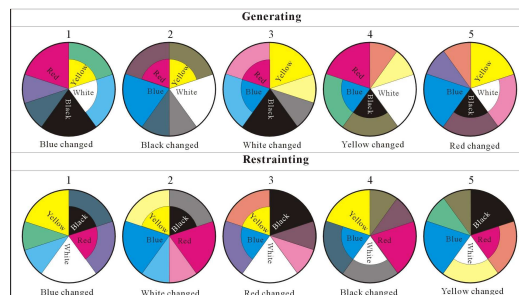


Figure 2. The traditional Four-Color Sub-Aesthetic paradigm changing

Figure 2 shows a kind of forms of subordinates multiple variants in traditional folk-custom color culture, that was based in the traditional Five-color Aesthetic mainly cultural norms. Namely sub-four-colors aesthetic variants. So called the sub-four-colors aesthetic variants, means that lacked some Primitive-colors in the traditional Five-Colors Aesthetics. That is to say, by one Primitive-color with another four Primitive-colors, based on "Generating" or "Overcoming" relationship, can get four Secondary-colors. Such as shown in "Figure 3" of "Generating" series 1, the blue of the traditional Five-Elements colors, according to the "Yin" or "Yang" different occasion when to avoid it, should get "Generating" two Secondary-colors of Qi(Pinyin, ancient Chinese color's name, means blue-black) and Purple, and further "Overcoming" development will produce Green and Piao(Pinyin, ancient Chinese color's name, means pale blue) Secondary-colors.

The application the traditional folk-custom color culture in design-teaching

The cultural innovation. China Folk colours of application should distinguish the circumstance of Yin or Yang attribute of different when use colors, and again according to the traditional "Harmonious Rule" culture to carry on color matching. So-called belong to Yin occasions, it is to point to grief and indignation or funeral, etc.. So-called belong to Yang occasions, refers to various festival, the atmosphere of happiness and so on. Because of specific using colours situation has complex changes, in this article, Only uses the sub three-colors aesthetic paradigm in the traditional folk color culture as example[2]. Namely, the basis of the "Figure 3" of "Generating" series 1 and 5 situations, and only based on the Han nationality for example, to show the real usage modes as follows:

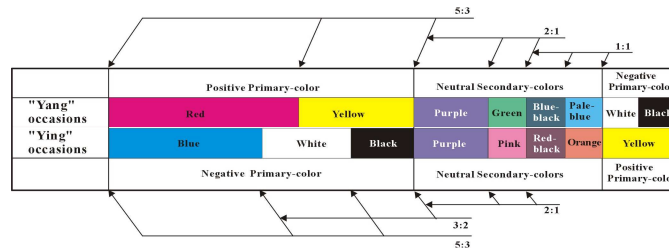


Figure 3. The traditional folk-psychological of using colours modes in the occasions of "Yin" or "Yang"

The practical application. Using the traditional folk-custom color culture in the modern design, its purpose is to restore and carry forward it. Firstly, teaches students to use it in digital design, Secondly, taking the traditional folk-custom color culture standard for colour configuration examples, according to the market positioning of product design to choose color model. Thirdly, as to the choice of products' material, not only noticing color aesthetic changes, but also paying attention to the practicality and collocation of materials. Again next, Practical application the traditional folk color culture, need rightly select the color combinations paradigm. Finally, to measure the proportion of selected colors by the traditional "Harmonious Rule" cultural genes.

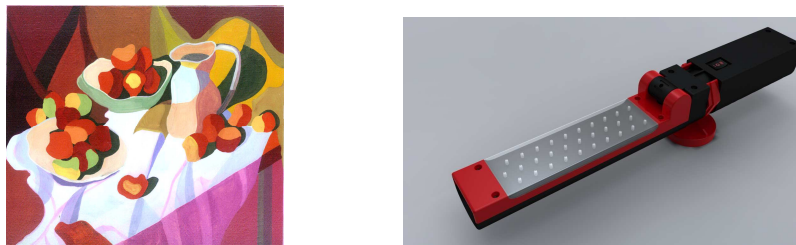


Figure 4. The main colors of the traditional folk custom color cultural application in the Yang situation

Conclusions

Through above the Game analysis, using the Management principle to manage the Chinese traditional color-culture is an optimal strategy. On the one hand, carrying on the knowledge management and cultural innovation of the Chinese traditional colour-culture is feasible. On the other hand, can be both using it in the university design-education and society computer design, in order to create national brands. At the same time, it will be for constructing the color-cultural discipline to lay a good foundation.

References

[1] Yuexi Zhou: Discussion on Building A Color-Culture Discipline. Journal of Ningbo University(Liberal Arts Edition), Vol 23, October 2010, pp.104-108. (In Chinese)

[2] Yuexi Zhou and Lili Yang: An Attempt of Using the National Color Culture on Product Design. Journals of Advances in Engineering Design and Optimization, TTP trans tech publications,Germany, Vol. 37(2010) , pp.94-97.