

Application of Information Fusion in Product Packaging Art Design

Mengnan Ding*

Academy of Arts, Anyang Normal University, Anyang, 455000, Henan, China

**Corresponding author*

Abstract

At present, the contents and forms of environmental protection cultural and creative products in the market are mostly the same, generally lack of cultural connotation, and it is difficult to meet the diversified needs of consumers. Therefore, combined with practice, this paper studies the innovative design method of environmental protection cultural and creative products. Based on the design concept of cross-border integration and people-oriented, this paper discusses new ideas for the design and development of environmental protection cultural and creative products from the four dimensions of "excavating demand, getting close to life", "stimulating emotion and shaping experience", "inheriting wisdom and carrying forward culture" and "combining current politics and seeking development". This paper puts forward nine key points of innovative design of cultural and creative products, such as cultural depth, ancient and modern integration, exclusive characteristics, artistic aesthetics, practical functions, interesting experience, educational influence, green environmental protection and brand concept, and creatively analyzes them in combination with design practice. This paper provides a certain reference value for promoting the dissemination of China's environmental protection culture.

Keywords: Environmental protection, cultural creation, packaging design, environmental culture, sustainable development.

AIMS AND BACKGROUND

Multimodal metaphor was originally applied to systemic functional linguistics, mainly reflecting conceptual metaphor and interpersonal metaphor in language¹. Nowadays, multimodal metaphor theory has been applied to all aspects of art design because of its unique order and similarity, such as product design, dynamic advertising production, music and video creation. Especially in the field of product design, multimodal metaphor theory has been used to analyze and describe the design works in recent years, which gives a more standardized design idea to product design²⁻³. Although the use frequency is increasing gradually, there has been no summary and demonstration of relevant theoretical research. Therefore, this research introduces the methods and advantages of applying the concept of multimodal metaphor to the design of cultural and creative products, which has practical significance.

EXPERIMENTAL

2.1 MULTIMODAL METAPHOR

Firstly, the author combs the meaning of "mode". Zhu Yongsheng, a Chinese scholar, summarized modality as a channel and medium of communication between people, including language, image, color, music and other symbol systems. Charles Forceville, a foreign scholar, subdivided modes into visual (image) mode, auditory (Acoustic) mode, olfactory mode, taste mode and tactile mode in 2005⁴⁻⁵. In order to facilitate the research, he subdivided the modes into nine specific types: visual (image) symbols, written symbols, oral symbols, gestures, sound, music, smell, taste and tactile symbols (see Table 1).

Table 1. Modal classification

Modality	Modal symbol	Specific forms of modal symbols
Visual (image) mode	Visual (image) symbols	Size, color, structure, shape, texture, spatial layout, etc
	Written symbol	Written words
	Gesture symbols	Action
Auditory (Acoustic) mode	Verbal symbols	Language
	phonetic symbol	Nonverbal voice
	music notation	Music

Olfactory modality	Odor symbol	The smell of flowers, rice, sweat, etc
Gustatory modality	Taste symbol	Sweet bed, salty, sour, etc
Tactile modality	Tactile symbol	Texture, soft and hard, temperature, roughness, etc

Secondly, when the author collects the differences between multimodal metaphor and monomodal metaphor, it is found that monomodal metaphor refers to that the mapping between target domain and source domain is one-to-one correlation, while the mapping of multimodal metaphor is parallel and multifaceted at the same time. Using multimodal metaphor, we can understand unknown things or behaviors through known things or behaviors⁶.

2.2 RESEARCH STATUS OF MULTIMODAL METAPHOR IN DESIGN FIELD

In foreign countries, the research of multimodal metaphor in the field of art design is also in the development stage. When scholars represented by Charles Forceville study multimodal metaphor, they not only pay attention to the research of modality itself, the value and significance of modal interaction and the dynamic construction between metaphor and metonymy, but also pay attention to the stylistic dimension, experience basis and cultural basis of metaphor. In 2009, Charles Forceville published a collection of papers "multimodal metaphor", which contains nearly 20 literatures on multimodal metaphor in the field of design, and extends the application of multimodal metaphor from advertising language to comic language, oral and gesture language, film language, music language and other language categories⁷. This provides more reference directions for the theoretical research and practical application of multimodal metaphor. Although the book does not cover the field of industrial design, the author states in the preface that the transition trend of multimodal metaphor from two-dimensional graphic design to three-dimensional design is inevitable⁸. The relevant theoretical exploration and application research in the book can inspire and guide industrial design.

In recent five years, domestic scholars have begun to pay attention to the research on multimodality and the interactive relationship and mode between modes. By searching the data of "multimodal metaphor in" HowNet from 2010 to 2018, it can be found that the number of such documents is increasing year by year, from more than 200 in 2010 to nearly 800 in 2018⁹. The research contents include communication, cognitive language, social symbols, art design and other disciplines.

Domestic scholars' research on multimodal metaphor, on the one hand, is the application research in the field of two-dimensional graphic design, such as static advertising, dynamic advertising, poster design, logo design and so on. On the other hand, the research on the application of multimodal metaphor in the field of three-dimensional design has begun to appear in China, such as the graduation thesis "Research on the design of household air purifier based on multimodal metaphor theory" by Liu Dantong, a graduate student of Zhejiang University¹⁰. It discusses the feasibility of multimodal metaphor theory in product design, and summarizes three types of multimodal metaphor design: concrete metaphor, abstract metaphor and decorative metaphor, which provides theoretical guidance for the design practice of this topic.

2.3 OVERVIEW OF CHAHAR FOLK CULTURE

Chahar culture has a special status and characteristics in Mongolian culture. The core elements of this national culture are the national character of advocating nature, the spirit of inclusive openness and profound cultural accumulation. As one of the representatives of Mongolian mainstream culture since the Mongolian Yuan Dynasty, Chahar culture is a form of grassland culture. It includes ASR music, eating customs, wedding customs, clothing customs, funeral customs, entertainment events, animal husbandry production, annual customs and etiquette, living habits, sports and entertainment and other customs and habits. It is a gorgeous artistic treasure in grassland culture.

The dietary customs of Chahar tribe not only have the commonness of Mongolian dietary culture, but also have significant individual characteristics. Because Chahar tribe has served as a guard for the Khan court for a long time, it has the responsibility of processing and paying tribute to meat and milk for the internal affairs office of the court of the Qing Dynasty. Therefore, it has complex and unique processing technology, product types, etiquette and other dietary characteristics. The diet types of Chahar tribe are roughly divided into chaganid, ulanyid and baoriid, namely white food (dairy products), red food (meat products) and gray food (pasta and

grain).

Because of its vast geographical distribution and numerous tribes, Mongolian marriage etiquette has both similarities and differences. However, some Chahar people still retain marriage customs with strong national traditional characteristics and local characteristics. These Chahar tribal women's headwear have been handed down to this day with their unique patterns, colors and decorative accessories. Chahar tribe women are extremely rich in jewelry for dressing up when they get married. They prefer precious metals such as gold and choose to inlay various styles of headwear, rings and hair accessories with red agate, red coral, turquoise, pearl and other gemstones. These headdresses not only have the function of distinguishing different regions, but also have great aesthetic and cultural research value. A large number of patterns are also used in these women's ornaments, such as the hatunzig pattern representing the unity of husband and wife, the hanbaogu representing emotional happiness, the Puhe symbolizing eternal life and so on.

As a branch of Mongolian, Chahar tribe has the same religious belief Shamanism as Mongolian. Therefore, Chahar tribe believes that Gods exist in all things in the world, thus giving birth to the sacrificial custom of pleasing gods if you want to be protected. The sacrificial customs of Chahar tribe come from Mongolia, among which the more important sacrificial rituals are Oboo sacrifice in May, fire sacrifice in the new year, stove sacrifice on the 23rd day of the twelfth lunar month, sulde sacrifice in August, and traditional heaven sacrifice rituals.

Chahar tribe, like all Mongols, also has the religious belief of "respecting fire". The fire sacrifice ceremony is also an important part of Chahar tribe's sacrifice culture. The fire sacrifice ceremony is held within seven days after the 23rd of the twelfth lunar month every year. Fire is an essential item for Mongolian people to protect themselves, scare off wild animals, cook food, reduce diseases and other living needs in the primitive period, so the fire sacrifice ceremony is particularly important for Mongolian tribes. When offering fire, special tulaga is needed as sacrificial utensils, and luma wind flags other than red are tied together and tied to the red food for sacrifice, so as to express the meaning of respect.

RESULTS AND DISCUSSION

3.1 ANALYSIS ON THE CURRENT SITUATION OF CHAHAR FOLK CUSTOM MUSEUM

Chahar folk custom museum is located in Wulanchabu City, Inner Mongolia Autonomous Region. The Museum covers an area of more than 24000 square meters. The main hall of the venue is designed as a three storey building, with the central hall as the axis and symmetrical left and right. As the education base of Ulanqab City, Mongolian folk culture education base, youth education base and national culture education base, Chahar folk museum plays a good role in publicizing the development of Chahar folk culture. Through field investigation and interview with the curator of Chahar folk custom museum, the author learned that at present, Chahar folk custom museum has a total exhibition area of 3200 square meters, more than 5000 collections in the museum, and more than 3000 collections with accurate historical research. According to the display content, the museum is divided into seven exhibition areas: preface hall, living customs, historical evolution, agricultural culture, horseback culture, the legacy of the ancient city and culture and art. Among them, the living customs area and culture and art area have the most abundant collections and the most colorful content.

In the interview with the curator of Chahar Folk Museum, the author learned that Chahar Folk Museum is one of the larger folk museums in Inner Mongolia Autonomous Region. From May 2013 to December 2018, the museum received more than 300000 visitors, including more than 60000 minors. Chahar Folk Museum is a public welfare exhibition hall, which is mainly responsible for displaying Chahar folk culture and Chahar tribe's living customs and traditional culture to all sectors of society. At present, the museum mainly introduces and carries forward the history, culture and art of its area to the public through collection display and commentator introduction. Affected by the quantity and type of collections and financial and other factors, the museum currently focuses on the exhibition of collections and undertaking theme activities. The development and guidance of the museum's cultural and creative industry is still blank, and the museum does not sell cultural and creative products with Museum cultural characteristics.

3.2 DESIGN PROCESS

According to the results of the author's survey on user needs, it is found that students and company staff aged "18-25" account for the majority of respondents, and the proportion of women is much higher than that of men, which further reduces the scope of users. Now the author arranges the survey results of users in this range as follows: the preference for Museum derivatives in this user range from high to low is arts and crafts, cultural and creative products, daily necessities, antique copies and clothing accessories. The author found that the number of people supporting crafts and cultural and creative products is almost the same, which also shows that most users have a purchase preference for cultural and creative products. When asked about "which of the following characteristics do you think the cultural and creative products of Chahar folk museum should have", 91.89% of the users said that they should have the characteristics of "fashion, refinement and strong national characteristics".

Next, the author sorted out the survey results of these user groups on the price range and purchase purpose of cultural and creative products of Chahar Folk Museum. Nearly 70% of users said they could accept 50-200 yuan, and 24% of users thought that less than 50 yuan was the best price range. When asked about the purchase purpose of the product, nearly two-thirds of users said they would keep it as a souvenir, and 16% of users would give it to relatives and friends as a gift.

The author also found that nearly 92% of users will buy unique items, but rarely buy series products, which should be related to users' age and economic ability; For the outer packaging of products, 3 / 4 of users said that simple packaging is enough, and nearly 14% of users said that cultural and creative products need fine packaging.

The method of multimodal metaphor mainly focuses on the grasp and application of the concept of "metaphor". Metaphor, as a form of meaning transformation, is a careful and incisive way to express ideas, and is projected onto another thing through the understanding and memory of known things. The culture of Chahar Folk Museum is expressed in cultural and creative products in a new way by means of multimodal metaphor, forming a new way of cultural expression. According to the above multimodal metaphor method, the steps of multimodal metaphor method for creative design are summarized as shown in Table 2.

Table 2. Design model of cultural and creative products of Chahar folk museum with multi-mode set of metaphorical ideas

Step	Preliminary research	Cultural type	Cultural carrier		Source domain	Target domain
Specific process	Discovery and collection	Sorting and analysis	Extract element	Immaterial	Mapping	
Content	User Research	Dietary customs	Material	Clothing	Modal symbol	Product attributes
	Market research	Wedding etiquette and customs	Clothing	Music	Visual modal symbol	Modelling
	Social Research	Recreation and sports	Musical Instruments	Pattern	Auditory modal symbol	Color
		Sacrificial custom	Building	Ceremony	Tactile modal symbol	Texture of material
			Milk food	Festival activities	Olfactory modal symbol	Function
					Taste modality symbol	Structure

This time, the concept of multimodal metaphor is introduced into the design of cultural and creative products to explore how the concept of multimodal metaphor guides product design. Through a series of literature research and case collection, this paper analyzes and summarizes the design methods of cultural and creative products under the concept of multimodal metaphor. This design will try to break through the existing impression of cultural and creative products of Chahar Folk Museum in terms of product materials, color and appearance modeling. From the design level, cultural communication, aesthetic art and other levels, a series of cultural and

creative products are created with scientific, systematic and objective design concepts, which makes the cultural and creative products of chanhar folk custom museum glow with new vitality.

CONCLUSIONS

Through the investigation of the existing consumer groups and user groups of cultural and creative industries in Chahar Folk Museum, the author knows that the cultural and creative products of Chahar Folk Museum are still in an initial stage. Through the research on the analysis method of multimodal metaphor in the field of design, the author puts forward the theoretical system of cultural and creative product design with multimodal metaphor. Finally, the theoretical results are applied to the practical link of cultural and creative product design of Chahar Folk Museum to verify, so as to verify the guiding significance of the cultural and creative product design method with multimodal metaphor concept.

REFERENCES

- [1] M. A. HAMOUDA, M. M. NOUR EI-DIN, F. I. MOURSY: Vulnerability Assessment of Water Resources Systems in the Eastern Nile Basin. *Water Resour Manage*, **23** (13), 2697 (2009).
- [2] M. AL-SENAFY, J. ABRAHAM: Vulnerability of Groundwater Resources from Agricultural Activities in Southern Kuwait. *Agric Water Manage*, **64** (1), 1 (2004).
- [3] D. JACKSON: How Personal Trainers Can Use Self-efficacy Theory to Enhance Exercise Behavior in Beginning Exercisers. *Strength Cond J*, **32** (3), 67 (2010).
- [4] J. MIDDELKAMP, M. V. ROOIJEN, P. WOLFHAGEN: The Effects of a Self-efficacy Intervention on Exercise Behavior of Fitness Club Members in 52 Weeks and Long-term Relationships of Transtheoretical Model Constructs. *J Sports Sci Med*, **16** (2), 163 (2017).
- [5] M. J. FOCAZIO, Th. E. REILLY, M. G. RUPERT, D. R. HELSEL: Assessing Ground-water Vulnerability to Contamination: Providing Scientifically Defensible Information for Decision Makers. *J Chromatogr*, **1136** (1224), 210 (2003).
- [6] N. M. ELDAKHLI, M. ABOUL-ELA, A. ABDALLA: Air Pollution Forecasting Model Based on Chance Theory and Intelligent Techniques. *Int J Artif Intell T*, **26** (06), (2017).
- [7] W. CHEN, A. SHIRZADI, H. SHAHABI et al.: A Novel Hybrid Artificial Intelligence Approach Based on the Rotation Forest Ensemble and Naïve Bayes Tree Classifiers for a Landslide Susceptibility Assessment in Langao County, China. *Geomat Nat Haz Risk*, 1 (2017).
- [8] L. R. POPESCU, M. IORDACHE, L. F. PASCU, E.-M. UNGUREANU, G.-O. BUICA: Applications of the Mathematical Model ANOVA in the Area of an Industrial Platform for Assessment of Groundwater Quality. *J Environ Prot Ecol*, **17** (1), 33 (2016).
- [9] D. J. GIBSON et al.: Can Weeds Enhance Profitability? Integrating Ecological Concepts to Address Crop-weed Competition and Yield Quality. *J Ecol*, **105** (4), 900 (2017).
- [10] C. P. MONDY, N. SCHUWIRTH: Integrating Ecological Theories and Traits in Process-based Modeling of Macroinvertebrate Community Dynamics in Streams. *Ecol Appl*, **27** (4), 1365 (2017).