The Application of Artistic Design Symbol in Environmental Design

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Abstract

Artistic design symbol is an effective expression of art design and can accurately convey the language to be designed; it is an important carrier in the field of design. The range of environmental design is wide, and in many environmental design cases, it is often possible to see the relevant symbols of art design. Therefore, a comprehensive analysis is made in this paper on the application of artistic design symbol in environmental design; it gives a comprehensive summary of the meaning of artistic design symbol, the characteristics of artistic design symbol, and the transfer of artistic design symbol, and illustrates in detail the specific applications in the architectural design, landscape design, and interior design in environmental design. In addition, in order to promote the application and development of artistic design symbol in environmental design, it establishes the case-based reasoning model to help the environment design to formulate the best design solution, aiming to further understand the important role and the artistic value of artistic design symbol and provide the beneficial reference for the sustainable development of environment design in the future.

Keywords: Artistic Design Symbol, Environmental Design, Characteristics, Application.

1. RESEARCH BACKGROUND

1.1 Literature review

In the modern information society, more and more emerging materials, emerging areas and emerging technologies, etc., are not only changing people's way of life, but also keeping people's aesthetic idea changing. (Chen, 2015) Under the background of increasingly frequent international cultural exchanges, a variety of ideas from different countries and cultures as well as various schools of art design all pour into the contemporary Chinese society, bringing the unprecedented impact and challenges to China's traditional art and culture to some extent. Environmental design is in the predicament of development as to how to better cope with such situation and how the relationship between traditional art and modern design should be treated correctly. It is an issue that should be focused and solved in environment design as well as one raised for the status and value of traditional art. (Hu, 2002) Completely running counter to the traditional art is unable to continue to survive, and it is a huge taboo in the field of design; blind imitation or direct use of the modern western art will deprive the environment design of China of its original oriental taste and the whole work of the distinctive national character. The traditional culture should be fully inherited and actively carried forward, and it should be realized the essence of the saying "only the style of a nation can be accepted by the world" and that environmental art should develop a road of Chinese characteristics. Therefore, art design should be built on the traditional culture of the Chinese nation, and symbols in art design should be fully integrated into the design work; more importantly, traditions and modern styles should be integrated in an organic way in the design process, and the cultural connotation and artistic value of works should be enhanced by promoting the messages conveyed by artistic symbols making use of abstraction, deformation, reconstruction, and other ways. Only in this way can the sustainable development of environmental design be realized and the Chinese traditional culture be carried forward.

1.2 Research purposes

Environmental design is a subject to analyze the artificial things and a kind of scientific behavior to create new objects using different design methods, such as researching, integrating, summarizing, deducing, etc., as well as a variety of thinking models, such as design ideas, logic thoughts, etc., belonging to the category of modern methodology, it is a scientific subject to create more new methods for subsistence and the cultural philosophy of
science for the whole society with a rational perspective and rich artistic and cultural connotation. (Wang, 2003)

Based on these basic attributes of environmental design, we should endow the design in the cultural life and information communication with functions and part of the features similar to that of languages, so that more designers make the effective application of art design symbols and the basic linguistic theories and methods as much as possible to further the exploration of the true meaning and features of design symbols, master its information transfer mode, and clarify the relationship between the symbols and environmental design, so as to provide a more comprehensive guidance and design materials for the modern environmental design and lay a solid foundation for the guidance of systematic, scientific, rational and sustainable development of environmental design. (Ma and Zhu, 2015)

In addition, based on the constructed development model, different artistic symbols can be put together for analysis, and the commonness and differences as well as the identity and alienation among them can be summed up to make the objectives, ideas and subjects of environment design in developing new solutions clearer and more incisive.

2. OVERVIEW OF ARTISTIC DESIGN SYMBOLS

2.1 Implication of artistic design symbols

Symbols are the direct connection established by the subject for the corresponding objects and other things to make different objects represent concrete things; when such regulations are recognized by a certain group, they become the common agreed objects of the group, and symbols representing things hence come out. (Lin, 2012)

Artistic design symbols mainly refer to the artistic media of different fields and different forms used by artists to convey the most authentic feelings and thoughts of their own. Different symbols are different in approach but equally satisfactory in result. Therefore, it can be understood that art is a system of free symbols to express thoughts and emotions, and different art design symbols are the effective media used by designers to convey information and reflect emotions. Figure 1 shows the relationship between art symbols and designers.

![Figure 1. The Relationship Between Art Symbols and Designers](image)

2.2 Characteristics of artistic design symbols

Artistic design symbol is the effective carrier of the connotation and information in the designed works, which is the comprehensive information feedback endowed with people's thoughts, emotions, mental attitude, and values. As artist Langer once said, artwork refers to the form which is able to convey all emotions in an authentic and effective way, causing people's psychological resonance and turning the emotions into a faintly discernible state. It's a sign that transforms emotions into something that people can perceive, instead of something that is predictive or something that tells the level of reasoning. (Chen and Chen, 2013) The form of art is a pattern of the same structure as that of the dynamic pattern by which people's perception, thoughts and lives exist. However, what needs to be paid attention to is that although art symbols can reflect the concrete aesthetic form to some extent, it is the material carrier that dominates the leading role, and all kinds of material factors, functional
effects and organizational structures reflect their relevance, adaptability and compliance with the environment; therefore, artistic design symbols is limited in the ability to convey people's emotions. Directly linked to environmental design, artistic design symbol is the most effective carrier for embodying design works. It is a kind of formalized artistic language; this attribute leads to the case that artistic design symbols only represent the artistic expression of a single artwork, and such expression, though abstract, is representative of symbols and is one of the main features of artworks. Usually such works can lead people to wonderful and profound impressions, and even can make them believe that emotion is directly stored in the beauty of it or in the complete art form, which is always full of vigor and vitality. (Wang, 2006) The style of artistic design symbols in Figure 2 below, which is more traditional, is just the tip of the iceberg in the sea of symbols. Figure 3 is a combination of artistic design symbols shown in Figure 2 and other styles, which shows the new patterns formed by different design methods.

![Figure 2. Artistic Design Symbol Style](image)

![Figure 3. Works of Art and Design Symbols](image)

2.3 Transfer of artistic design symbols

The ultimate goal of the meaning transferred by artistic design symbols is to achieve the complete transfer of the meaning among communicators, which is also an idealized goal, mainly because that the requirements for the implementation of transfer effect of such a goal is extremely strict, and it is impossible to achieve it in the transfer taking people as the main objects. (Hu, 2014) However, it provides the basis of a favorable reference for the accurate understanding of the meaning of specific transfer by designers. Figure 4 shows the artistic design symbol transfer flow chart.

![Figure 4. Artistic Design Symbol Transfer Flow Chart](image)

In this chart, source refers to the design information, encoder refers to the designer, channel refers to the
designed products, decoder refers to the user, and sink refers to the achieved effect from the finalized products.

3. STUDY ON THE SPECIFIC APPLICATION OF ARTISTIC DESIGN SYMBOL IN ENVIRONMENTAL DESIGN

3.1 Application in environmental buildings

The application of artistic design symbols to outdoor buildings in environmental design is very extensive, as they can not only reflect the strong artistic design of the buildings, but also endow them with profound connotation. For example, Jin Mao Tower, once the highest building in China which is located in Pudong New Area on the bank of the Huangpu River, is the landmark and the financial and trade center of Shanghai. The focus of the whole building is the "tower", which is not the "tower" by its literal meaning but reveals a special artistic feature; it looks like a tower but actually not, with both the sense of modern style and the image of traditional Chinese symbols as well as the diversity and fluctuation in the romantic charm of its shape. (Tang, 2015) Seen from its floor plan, Jin Mao Tower is a symmetric biaxial square, and the side composition is composed of 14 inner separated tower structures, which accelerate one by one from the top to the bottom and the four corners of which extend outwards, forming two opposite optimal view in appearance. Seen from the two sides of the plane, the two sides of the tower are straight and hold high, giving the imposing air like the spiritual outlook of the Tablet of the Prince Qin in Mount Tai. Seen in the surrounding view, Jin Mao Tower always seems to be full of mystery in that people cannot find the changing points in its variation and that it shows different forms every time people look at it when it looks like unchanged at all. (Ma, 2015) The architectural significance of Jin Mao Tower is to convey the traditional Chinese culture to the world and to make people feel both familiar and strange in such a way. The traditional Chinese cultural symbols of artistic design symbol system it used are particularly unique and set each other off, and they have become symbols that people from other countries can understand and use. Jin Mao Tower always illustrates the cultural deposits it contained to the world with its own artistic style. Figure 5 is the design drawing of Jin Mao Tower; Figure 6 is the night view of Jin Mao Tower.

Figure 5. Jin Mao building design drawings

Figure 6. Jin Mao mansion night view
3.2 Application in landscape environment

The application of artistic design symbol in environmental landscape design is also often seen, especially in central parks in cities. With the increasing pursuit of Chinese style and classic style by more and more landscape stylists, Beijing Fragrant Hill Hotel has become the representative work of design master Ieoh Ming Pei for his unique style. The building shows the designer's distinctive design style and concept; its main environmental layout features are reflected by the application of the traditional Chinese quadrangle courtyard, which embodies both the subtlety of garden on the Yangtze Delta and the grandness of northern garden. (Zhang, 2016) At the same time, it is more in line with the requirements of modern tourism design. Its design scheme also shows many flexible and comprehensive changes of the traditional design methods. The main colors and materials of the building came from the original residences in regions south of the Yangtze River of China. Absent the luxury of modern urban restaurants, the whole design of Fragrant Hill Hotel adopts the style of freshness, primitiveness and elegance, which appeals to people even more in that they can feel peaceful and comfortable even in the noisy urban atmosphere.

3.3 Application in indoor environment

The interior design of environmental design pays more attention to the application of artistic design symbols. For example, the design of the atrium of Guangzhou White Swan Hotel is a good design case that uses the art symbol of “water of the hometown”. (Lin, 2017) It distils the southern classic elements, such as green hills, green water, courtyard and pavilion, to create an environment of intense artistic atmosphere with the scenery depicted and the emotions expressed in perfect harmony. The green hill, green water and pavilion are the epitome of artistic design visual symbols, and combined with the key words "water of the hometown", they present a beautiful picture of purity, freshness and harmony, making visitors extremely infatuated. There is another distinct "ocean restaurant" in Beijing, in which Shandong sea grass is selected for bedding, fishermen's hats are transformed for lamps, and kelp is used for the decoration on the wall. This kind of sea-themed commercial building uses a large number of symbols related to the sea to create a vast, spacious and refreshing atmosphere of the sea. (Liu, 2017) In the increasingly crowded modern urban environment, this design is particularly peaceful, broad, sincere and pleasant.

4. MODEL AND FRAMEWORK OF THE APPLICATION AND DEVELOPMENT OF ARTISTIC DESIGN SYMBOL IN ENVIRONMENTAL DESIGN

4.1 Case-based reasoning model

In the process of solving a lot of problems in real life, there may exist connections among a variety of factors in the same system or there may exist none of such connections; it is very difficult by common searching methods to find out cases in the case base whose attributes are the same and whose descriptive attributes are close or whose factors are very different but the attribute is in certain proportion, but reasoning and calculation may help find out new arithmetic searching cases. (Yu, 2009) There are many similar symbols in the artistic design symbol base, and the analysis and comparison of them can help determine the attributes of them and finalize the design scheme for designers to obtain satisfactory works.

4.2 MODEL CALCULATION DESCRIPTION

First, the description of the case: suppose there is a case in the case base CD, then: CD = \{C_1, C_2, C_3, ... C_B\}. Suppose there are G attributes in a case, where the first K attributes are quantitative ones and the following G-K attributes are qualitative ones, the weight allocation of G attributes is the vector \(Q(Q_1, Q_2, Q_3, ... Q_n)\), where,

\[ Q_1 + Q_2 + Q_3 + \ldots Q_n = 1. \tag{1} \]

Second, the similarity operation of the corresponding attributes among the cases: Suppose \(t_{0i}(1 \leq i \leq G)\) is the i attribute of the new problem \(C_0\), and \(t_{li}\) is the i attribute of the first case in the case base, suppose the P attribute of K quantitative attributes is the group of same attribute. (Mao, 2014) There are two types of operations of similarity: one is the similarity operation of the attribute in the non-p, and the fuzziness of the eigenvalue can be used to select the method randomly; there are three kinds of detailed processes.
1) Text class: match directly to determine whether the similarity is 1 or 0 according to the degree of matching.

2) Data class: suppose the specific value is \( W \), and search the cases in the case base whose attribute value \( Z \) is between \( W \times 0.5\% \sim W \times 150\% \); then the meaning of the similarity is:

\[
\begin{cases} 
0 & \text{when } Z < W \times 50\% \text{ or } Z > W \times 150\% \\
1 & \text{when } Z = W \\
0.5W & \text{when } 0.5W \leq Z < W \\
0.5W & \text{when } W < Z \leq 1.5W 
\end{cases}
\]

3) Descriptive numerical value class: locate a value within the range of 0-1 for each numerical value to be described, the similarity between them is \( 1\sim[ W-W1 ] \); another is the similarity operation of the numerical value attribute in \( P \): Suppose \( R_{il} \) is the corresponding ratio of the first attribute in case base \( C_0 \) and case base \( C_i \), \( \alpha \varepsilon \rho \) is the mean value of all the corresponding ratios, \( \delta_{il} \) is the ratio of similitude of the first attribute in case base \( C_0 \) and case base \( C_i \), the intercepted value \( H \) in the definition is 0.2. vector quantity:

\[
R_i = \left( \frac{R_{il}}{\alpha \varepsilon \rho}, \frac{R_{i2}}{\delta_{i1}}, \frac{R_{i3}}{\delta_{i2}}, \ldots, \frac{R_{in}}{\delta_{il}} \right) 
\]

Then

\[
\alpha \varepsilon \rho = \frac{\sum_{i=1}^{p} R_{il}}{p} 
\]

\[
\delta_{il} = 0 
\]

\[
\delta_{il} = 1 - \frac{|R_{il} - \alpha \varepsilon \rho|}{\alpha \varepsilon \rho} 
\]

\[
\frac{|R_{il} - \alpha \varepsilon \rho|}{\alpha \varepsilon \rho} > 0.2 \\
\frac{|R_{il} - \alpha \varepsilon \rho|}{\alpha \varepsilon \rho} < 0.2 
\]

Finally, the similarity \( \delta_i \) between the two cases: according to the above calculation, the overall similarity is calculated as follows: \( \delta_i = \sum_{i=1}^{p} (Q_i \times \delta_{il}) \). According to the calculation results, the best similar cases can be found, and the specific cases can be further adjusted and used again. Therefore, the application of such a model in environmental design can better help designers to determine the art symbols to be used and integrate them into their design works, so as to achieve the desired effect.

5. CONCLUSIONS

The semantic information of artistic design symbols, such as the functional semantics, technical semantics, context semantics or other symbolic semantics, is implemented through logic and reasoning cognition; aesthetic information is certain feelings, emotions, temperament and interest conveyed by symbols, which appears as intuition and insight through people's reception. On the other hand, environmental design is an integral whole, and the symbolic method is only an effective way to create the artistic atmosphere and express design ideas. The in-depth exploration of artistic design symbols helps better understand its basic position, main characteristics and the ways of transferring the design work's information. Therefore, artistic design symbols not only provide numerous materials to environmental design, stimulate design inspirations, and impart a practical and effective design method, but also indicate that modern environmental design should be good at thinking and conduct further researches on relevant symbols, so as to really integrate them into modern design, continuously push the development and improvement of environmental design, and give better guidance for our design.
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