

Research on the Characterization and Redesign of the Artistic Characteristics of Tang Dynasty Baoxiang Flower Patterns

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Abstract: Baoxiang flower pattern is a kind of auspicious pattern with unique national characteristics and a wide range of applications. This paper analyzes the artistic characteristics of the Tang Dynasty Baoxiang flower pattern, and analyzes and interprets the traditional Baoxiang flower pattern from three factors: color, structure and shape. The core texture of the pattern is extracted by digital means, and redesigned through shape grammar, so as to design a pattern scheme that meets the modern context. In this way, the popularity of the ancient traditional auspicious patterns is improved, so that they can play a better role in dissemination and inheritance in the modern context.

Keywords: Treasure Pattern; Pattern Design; Shape Grammar.

1. Introduction

As a pattern with unique national traditional characteristics, the Baoxiang flower pattern signifies auspiciousness and beauty; the Baoxiang refers to the solemn image of Buddha. The elegance and splendor of the Baoxiang flower is also loved by the ancient Chinese people, and its magnificent and atmospheric aesthetic image and the aesthetic evolution in different times have high aesthetic value and decorative effect. Baoxiang flower pattern modeling unique national characteristics, complex and gorgeous, for the new era of art design provides a variety of innovative ideas and materials. Nowadays, the re-innovation of traditional patterns has become a design hotspot, and researchers use various methods and theories to carry out innovative design based on various kinds of characteristic traditional patterns. Liu Lingling et al. take the traditional patterns of Jinxiu Yao clothing as a carrier, use the shape grammar to make evolutionary reasoning, and apply the new pattern patterns formed in the women's bags of culture and creativity. Zhang Suyu et al. analyzed and reasoned the pattern of Bada Halo and proposed parametric deconstruction based on feature objects, so as to realize the regeneration design of the pattern. Luo Xiangdong et al. based on the Tujia brocade pattern, deduced the design factors on the basis of shape grammar deduction, and combined with perceptual engineering to apply the design scheme with higher satisfaction in product design. The combination of excellent traditional culture and modern design products is the trend of the times, and how to inject the connotation of the times into traditional culture is a subject of great concern for contemporary designers. In this paper, by studying the cultural connotation of Baoxianghua pattern, extracting the design factors according to its unique aesthetic characteristics, and deducing the shape grammar, we innovate a new pattern that meets the modern aesthetic context on the basis of including the cultural connotation of Baoxianghua pattern..

2. Artistic Characterization of Poinsettia

(1) Origins and development

The word "treasure phase" originated in Buddhism, Buddhism is often "treasure phase solemn" four words reflect the solemnity and majesty of the Buddha's face. Baoxiang flower, also known as "Baolian flower" and "Baohua", is a product of nature, religion and art, and the formation and development of its pattern is closely related to Buddhism, which is a high degree of fusion of Buddhist art and aesthetic art. Lotus represents the purity and sanctity in Buddhism, and peony symbolizes the nobility and dignity, and the symbolism contained in the Baoxiang flower pattern is compatible with the cultural symbolism pursued by Buddhism, which reflects the values of Buddhism, and also reflects the popularity and popularization of the Buddhist culture in the Shengtang period from the side. Since the Wei and Jin dynasties, as the theme of decorating the four walls of the grottoes, it is the lotus pattern that symbolizes the holiness. With the strong national strength and open and integrated thinking of the Tang Dynasty, the Baoxiang flower pattern evolved from the initial appearance of the religion to become one of the decorative patterns with localization.

(2) Historical development

Beginning in the Wei, Jin, and North/South Dynasties, the Baoxiang flower pattern became popular with the prevalence of Buddhism, and the perfect variant of the multi-layered heart and petals of the flower was generalized from the natural image. The Northern Dynasty was a period of rapid development of Buddhist art, and also an important period for the development of Dunhuang cave art. At this time already appeared lotus pattern and other patterns combined with each other, interpretation of the complex treasure phase flower pattern. Sheng Tang period of rapid economic development, unprecedented cultural exchanges between East and West, Baoxiang pattern evolved into a rounded full shape, reflecting the enlightened atmosphere of the Tang Dynasty social characteristics of the times. The changes of the Baoxiang pattern are carried out with the changes of the times. The

Flower Scripture to nine products and nine lives listed Baoxiang flower as one of the “six products and four lives flower”. Song Dynasty Baoxiang flower pattern changed from the Tang Dynasty's elegant and gorgeous, petal shape tends to be uniform and simple, color tends to be elegant, in line with the aesthetic characteristics of the Song Dynasty. Influenced by the Mongols, the Yuan Dynasty Baoxiang pattern became rough and bold, the petal shape tends to be flat, strong colors, reflecting the diversified characteristics of the Yuan Dynasty. The Baoxiang pattern of the Ming Dynasty, influenced by Confucianism, tends to have rounded petals and light colors, reflecting the stability and harmony of the Ming Dynasty. The Qing Dynasty was influenced by the Manchu, the shape of the petals tends to be slender and prosperous, and the colors are diverse, reflecting the prosperity and colorfulness of the Qing Dynasty.

(3) Pattern primitive

As one of the most important representatives of China's traditional patterns, the Baoxiang Flower pattern is unique in its beauty and shape, and is a product of the fusion of the times. In the beginning, the Baoxiang flower flowed into China with Buddhism during the Wei, Jin, and North and South Dynasties. During the early Tang Dynasty, a variety of cultural exchanges and fusion, so that it is no longer a separate foreign pattern, to the Sheng Tang Dynasty has developed into a part of the culture of the Central Plains. Baoxiang flower pattern complex shape, layers of diverse, graceful and rounded shape highlights the meaning of its symbol of good fortune and prosperity. The Baoxiang flower is not a real flower, but is based on a variety of plants such as lotus, lonicera and pomegranate. Its fusion of shapes also has a variety of symbolic meanings, such as the pomegranate pattern to symbolize many children and good fortune, the Lonicera pattern to symbolize longevity, and the peony pattern to symbolize auspiciousness and wealth, which all reflect the ancient people's expectations and aspirations for a better life. The three basic shapes that constitute the Tang Dynasty Baoxiang flower pattern are: the hooked petals, the cloud curved petals and the side curled petals. The pair of hooked petals consists of two inwardly curling hooks in a strip, the overall shape of which is mostly peach-shaped and oval-shaped, with the tail usually hooked inwardly. In the Tang Dynasty, “Ruyi” began to have the symbolism of “turning back is Ruyi”, so the pair of hooked petals is also known as “Ruyi pair of hooked petals”. The role of the hooked petal is mostly to connect the flower center and petals, so that the overall pattern of the Baoxiang flower pattern shows a natural radial shape. According to historical records, during the Kaiyuan period of the Tang Dynasty, the political and economic development was rapid, and the society was stable and prosperous, which led to the social trend of enjoying flowers. Among the many bouquets of flowers, peonies were favored because of their large, full, well-proportioned and smooth shapes, thus showing the popularity of peonies. The Baoxiang pattern is also greatly influenced by the peony pattern, with the cloud-curved petals borrowing the head shape of peony petals, which are arranged in a radial pattern in the Baoxiang flower, and the edges of the cloud-curved petals are curved in a graceful and smooth manner. Side scroll petal is changed from Lonicera, this petal can generally be divided into side scroll petal and positive scroll petal, Lonicera with the different times, the composition is also different. Some geometric shapes as a skeleton, the middle configuration Lonicera pattern; there are also in the Lonicera

organization between birds and animals.

3. Extraction of Design Factors for the Tang Dynasty Baoxiang pattern

(1) Extracting graphic primitives

The composition of decorative arts cannot be separated from the basic elements of points, lines and surfaces, and the elements contained in the works can be harmonized as a whole through reasonable composition. The extraction of elements is aimed at subtraction or refinement, removing local details and capturing the main features of the pattern. The Tang Dynasty Baoxiang Flower Pattern combines external decorative pattern elements on the basis of natural botanical patterns, and through the compositional combination method commonly used in the art of design, it forms a traditional pattern with local characteristics. Analyzing the compositional forms of the samples, from which various laws of plane composition such as symmetry, proportion, and harmony can be seen. Through the combination of motion and static echoing each other, the basic compositional elements of the Baoxiang pattern are perfectly integrated and unified in one, see Figure 1.

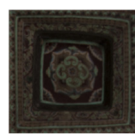
Cave 112 of Mogao Caves	Graphic primitive extraction			
				

Fig 1. Extracting Primitive Elements of Treasure Blossom Shapes

(2) Bone extraction

The skeleton is the basic framework of the pattern and plays an extremely important role in the perception of the pattern. The richness of the layers and the variety of ways of expression are the outstanding features of the Baoxianghua pattern. By analyzing the Baoxiang flower pattern samples, it can be found that its structure is mostly harmonious and symmetrical, and at the same time, it has the beauty of stability and balance. The traditional Baoxiang pattern is not centered on a specific pattern, and the base structure adopts various layered designs, mostly formed by stacking the inner, middle and outer rings. In addition to the “cross-shaped” and “meter-shaped”, most of the pattern is spread out in all directions, showing a circular radial diffusion pattern. Most of the overall pattern for the square, square, skeleton structure is mostly even axis symmetry or center symmetry. The Tang Dynasty Baoxiang pattern pattern continuously integrates the cultural characteristics of the era, while combining a variety of flower elements, although gorgeous and complex, the combination of varied, but its central structure is rigorous and symmetrical, in line with the law of change of the beauty of the form. Skeletons play an important role in standardizing the structure of the pattern design, and provide an accurate basis and reference for the arrangement and layout of other elements of the pattern. The skeleton of Baoxiang pattern is characterized by symmetry and regularity, and most of the pattern elements are arranged repeatedly on the basis of the skeleton, and the analysis of the pattern and skeleton of Baoxiang pattern is shown in Fig.2. It can be seen from the

drawing that Baoxiang pattern is based on the symmetry and circular radiation. The basic shapes are arranged in a specific order so that the patterns are integrated with each other.

Legend	Bone drawing	Bone type
		cruciform
		radiological
		the shape of Mi

Fig 2. Treasure pattern skeleton extraction

(3) Forming new texture schemes based on shape grammars

Shape Grammar is a method used to derive the evolution of shapes, which is highly standardized and operable, and is

widely used in the field of pattern design and industrial design. It enables pattern elements to derive new elements or pattern forms according to specific rules of evolution. The advantage of using the deduction rules of shape grammar is that the initial pattern is simplified and abstracted while retaining its original characteristics. At the same time, it meets the modern aesthetic demand and can be used for product reinvention design. The generative rule is shown in Fig. 3, which takes the illustration as the initial prototype for shape grammar derivation, and generates a new pattern by rotating, mirroring, translating, adding and deleting and other basic evolutionary rules. Applying the rules of shape grammar derivation, using the basic elements of the graphic as the basis, removing redundant local modifications, and deducing changes to create a new pattern is called the basic pattern unit evolution design, see Fig. 4. Implementing the shape grammar on this basis results in a more complex regular pattern, see Fig. 5.

The basic elemental pattern is rotated, mirrored, added and deleted, translated and scaled one or more times as required to form the base unit graphic through the generative rules shown in the shape grammar. As shown in FIG. 5, illustration 1 undergoes one R5 scaling, one R6 addition and deletion, two R1 rotations, and one R6 addition and deletion to form a new graphic; illustration 2 undergoes two R5 scaling, four R1 rotations, and one R6 addition and deletion to form a new graphic. On this basis, a pattern primitive is selected as the initial pattern to be deduced, and a new derived pattern is finally obtained after four rotations, one addition, one rotation, one mirroring, and one local addition and deletion.

rules	R1	R2	R3	R4
example				
diagram	revolve	center rotation	horizontal mirroring	vertical mirroring
rules	R5	R6	R7	
example				
diagram	resizing	add and delete	panning	

Fig 3. Generative rules

Icon 1		R5 →		R6 →		R1 →		R1 →
		R6 →						
Icon 2		R5 →		R5 →		R1 →		R1 →
		R1 →		R6 →				

Fig 4. Basic pattern unit evolution

	R1 →		R2 →		R6 →		R1 →	
	R3 →		R6 →					

Fig 5. The evolution process of pattern design

4. Derivative Design of the Persimmon Flower Pattern

Adding modernization factors to the characteristic traditional patterns and giving them a new contemporary connotation. Based on the rules of deduction and combined with the skeletal characteristics of the Baoxiang pattern. Rationalize and reconstruct on the basis of innovation, so as to get a new pattern more in line with the characteristics of the times. as one of the representatives of excellent traditional Chinese patterns, the Baoxianghua pattern, with its unique artistic style and cultural expression, as well as its varied flexibility, provides a variety of sources of inspiration for contemporary pattern derivation design. Based on extracting the core texture of the pattern, using shape grammar deduction and combining it with the new concepts of modern design, a new pattern of the pattern is designed to meet the contemporary context and aesthetic needs. As shown in Figs. 7a and 7b, its main pattern elements, such as the pair of hooked petals and the cloud-curved petals, symbolize auspiciousness and good fortune, and the aggregation of multiple elements is a manifestation of wealth and good fortune.

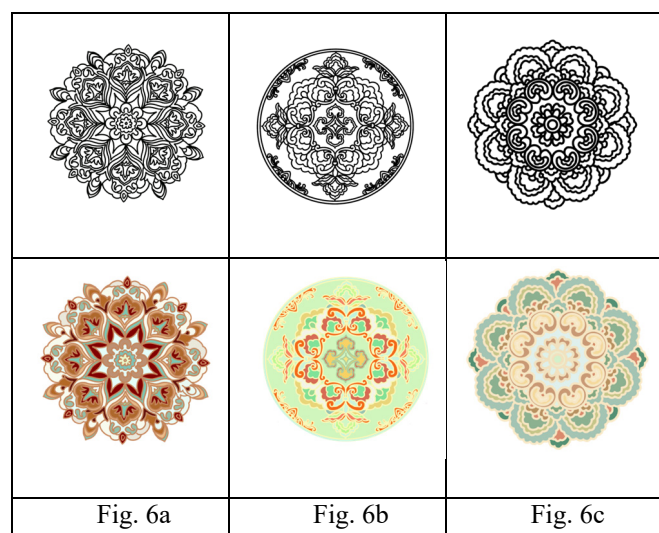


Fig 6. Pattern Innovation Effect Picture

5. Conclusion

This paper takes the Tang Dynasty Baoxiang flower pattern

as an example, extracts the pattern design factors, and makes evolutionary innovations on the basis of shape grammar deduction, so as to obtain the derivative pattern. Through the analysis of different forms of cultural genes in the pattern, so as to find the traditional background and culture it contains. Traditional pattern redesign based on shape grammar not only retains the core texture of the Baoxiang flower pattern and its representation, but also makes the pattern on the basis of innovation and modernization of the visual image, in line with the contemporary aesthetic characteristics, is conducive to the inheritance and development of traditional patterns. However, there are many kinds of traditional patterns, so how to disassemble and analyze them accurately and comprehensively is still a problem that needs to be solved in the subsequent research.

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