# The Application of Aquatic Horsetail Embroidery Motifs in Modern Furniture Design

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Abstract
A brief description of the artistic characteristics of Chinese ethnic minorities Shui horsetail embroidery from the production process and pattern characteristics; through the analysis of the aesthetic characteristics and connotations of the patterns of Shui horsetail embroidery, the promotion of its role in enhancing the aesthetic value and cultural connotations of modern furniture design is clarified; the patterns are extracted, reconstructed and innovatively designed for application in modern furniture design, and the modern techniques in different forms are used to revitalise the culture of horsetail embroidery and make its horsetail embroidery The aim is to achieve an organic integration of the intangible cultural heritage with modern society. The aim is to protect and revitalise the intangible cultural heritage and to enhance the cultural value of horsetail embroidery.

Keywords
Horsetail embroidery; Embroidery motifs; Fusion innovation; Furniture design

## Introduction

Horsetail embroidery is one of the most important intangible cultural heritages of the Chinese people. It is a special embroidery technique that has been handed down from generation to generation by the women of the Shui ethnic group, using horsetail thread as an important material. The horsetail embroidery is a unique embossing technique with a strong ethnic character and is known as a living fossil in the field of embroidery, and is a practical way to study the folklore, customs and culture of the Shui ethnic group. Horsetail embroidery is mainly used in the embroidery of child carriers, embroidered shoes and waistbands. Horsetail embroidery is also used in Chengdu and other embroidery techniques, but only in Guizhou can it be shown in the same way as other embroidery techniques that use horsetail silk as a raw material. Although the inclusion of horsetail embroidery

in the first national list of intangible cultural heritage has brought better protection and opportunities for this ancient and original embroidery art, due to social changes, there has been a serious loss of the art of horsetail embroidery. The only three people who have systematically passed on this art are Song Shui Xian, Wei Taohua and Wei Yingli. The quality of modern horsetail embroidery has not kept up with the changes of the times, and its aesthetic appearance is not well received by young people. This paper analyses the aesthetic characteristics and connotations of the Sui horsetail embroidery, and uses modern design methods to integrate it into modern furniture design, which has positive implications for the heritage and development of ethnic culture.

## Characteristic of Aquatic Horsetail Embroidery

### Features

Despite its long history, it still has a long history of traditional embroidery techniques, such as needlework and stitching, and the lines of the embroidery are smooth and vivid, the colors bright and cheerful, and the shapes lifelike. The horsetail embroidery is developed in the Sandu Sui Autonomous County of Guizhou, where the landscape is beautiful and the folklore is rich and simple. Horsetail embroidery is a unique embroidery product that is distinguished from other embroideries by its use of horsetail and silk thread as the key raw material. The finished product is not only finely carved, with a distinctive three-dimensional appearance in relief, but also has an abstract, general and exaggerated totem pattern, and is durable, and was once regarded by the Shui people as a symbol of status and identity. Horsetail embroidery is mainly used in the production of child carriers, and to a lesser extent in shoes, hats, and women's clothing. Horsetail embroidery is a living embroidery fossil, not only as a physical form of aquatic culture, but also as an important genetic heritage of aquatic culture.

### Production Process

Step 1: Cloth shell making. The paste is applied to the cloth and then dried. During the process, the cloth is constantly squeezed to keep it flat. This is the most basic step in the production process.
Step 2: The horsetail thread is the heart of the horsetail embroidery process. Two or three horsetail threads are twisted and wrapped together with a fine white silk thread to make a horsetail thread. The embroiderer must be skilled and imaginative to draw the design onto the fabric shell.
Step 3: Fixing the horsetail thread to form the outline of the design. Although there are many steps to making a horsetail embroidery, the embroidery only begins when the horsetail thread is fixed.
Step 4: Fill the heart with embroidery thread to fill in the gaps in the middle of the horsetail embroidery, as if you were coloring a blank manuscript. There is a wide variety of embroidery techniques, and different regions of the world have different skills in the same technique, from the rough to the

fine.The embroidery techniques include picking, embroidering, and patching, and the stitches include horsetail embroidery, flat embroidery, cross-stitch, seed stitching, and random stitching.

### Pattern Features

In terms of subject matter, aquatic horsetail embroidery patterns are divided into four main categories: plants, animals, people, and geometric, textual and natural patterns. The main types of motifs are plants, flowers, trees, fruits and vegetables, etc.; animal motifs are related to the religious beliefs and folk culture of the tribe, such as dragons, phoenixes, butterflies, fish, etc.; geometric, script and nature motifs are also often found in the embroideries of the tribe, such as cloud, thunder, sun and moon motifs, etc. Geometric patterns, characters and natural motifs are also often found in aquatic embroideries, such as cloud, thunder, sun and moon patterns.

## Cultural Connotations of the Motif

Horsetail embroidery has a long history and its origins are not known, but are mostly explained by folklore. Horsetail embroidery is mainly used on baby carriers and clothing, and in addition to its decorative significance, the toughness of horsetail thread provides a durable object that meets the everyday needs of the aquatic people. The horsetail embroidery patterns are diverse and complex, and the motifs are all based on the nature-fearing sentiments of the aquatic people, with the main patterns being natural landscapes, insects, fish, birds and animals, and aquatic characters. The themes, symbolic features and cultural connotations of aquatic horsetail embroidery patterns are summarised and analyzed as shown in Table 1.

### The Symbols and Connotations of the Motifs

*Table 1. Selected patterns of horsetail embroidery and their corresponding cultural connotations*

| Pattern categories | Pattern name | Pattern symbols | Cultural Connotations |
|---|---|---|---|
| Plants | Gourd pattern |  | A life that lives and breathes |
| | Curly grass pattern |  | Artistic decoration |

| Pattern categories | Pattern name | Pattern symbols | Cultural Connotations |
|---|---|---|---|
| Plants | Pumpkin pattern |  | Rituals for our ancestors |
| | Pomegranate pattern |  | The fruitfulness of children and grandchildren, reproduction and family prosperity |
| | Tree pattern |  | A symbol of vigor and reproductive capacity |
| Animal print | Fish pattern |  | Missing my hometown<br>Fertility cult |
| | Phoenix pattern |  | Peace and prosperity, good fortune and longevity, harmony between husband and wife |
| | Dragon pattern |  | Rights, status |
| | Thread |  | Reproducing life |
| | Butterfly pattern |  | A protector of children and a blessing for future generations |
| | Bat print |  | The bat is also said to bring good fortune as it protects the child and cures evil with evil. |
| | Cloud pattern |  | The aspirations of the aquatic people for a better life and for good fortune and prosperity<br>Pursuit |
| Geometric pattern | Sunburst |  | It was believed that embroidering sunbursts on clothing would allow communication with the gods and favour.<br>The strap is embroidered with a sunburst, symbolising the beautiful prayers of the women of the tribe for the protection of their children. |
| | Thunder pattern |  | Awe of nature<br>Good food harvest |

## Morphological Innovations in Motifs

The variety of themes in the Shui horsetail embroidery is rich in cultural connotations and contains the beliefs of the Shui people and their vision of the future. The layout of horsetail embroidery patterns is mostly symmetrical with a meter grid, left and right symmetry, and a central point radiating in all directions. This thesis takes as its theme the selection of bat and butterfly patterns. The bat and butterfly motifs are animal motifs that are loved by the people of the Shui ethnic group for their vivid shapes and the blessing of peace. The bat and butterfly patterns still retain their original ethnic flavor in their shape, and the lines of the bones are so complicated and rude that the early aquatic people only went through simple designs, while the later aquatic people only inherited them without innovation and development, and they do not match the aesthetics of modern society, such as the need to use them in modern products. The purpose of the work is not to develop.

(1) Selecting a Pattern with the Theme of Blessing for Innovative Design (Innovative Design of the Bat Pattern)

The bat motif is shown in Figure 1 below, and it can be seen that the bat motif is most similar in appearance to the natural chrysanthemum-headed bat, meaning that the horsetail embroidered bat motif is an abstract depiction of the chrysanthemum-headed bat. Combining the horsetail embroidered bat motif with the natural chrysanthemum-headed bat, we can see that the horsetail embroidered bat motif has a distinctive nose-leaf shape, like a plant branch, and that the extraction of the bat motif will retain these characteristics for the design, identifying the core of the motif and reflecting the distinctive and recognizable part of the bat motif. The bat pattern is first dismantled, split and simplified according to the animal skeleton, and then combined to form the core textural elements that eventually form the core texture scheme of the bat pattern, the dismantling process is shown in Figure 1.

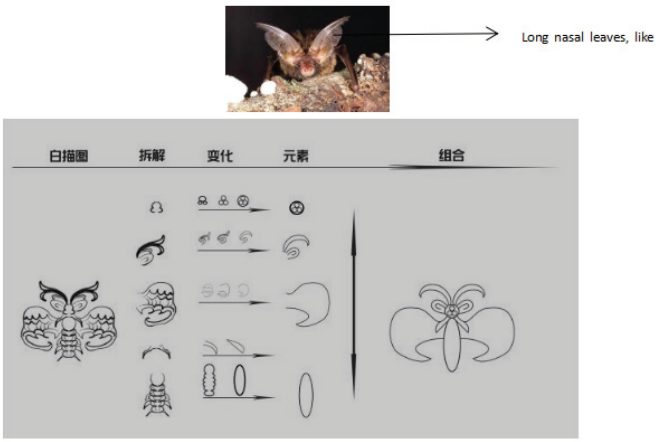



*Figure 1. The bat pattern extraction process*

(2) Selection of a Peace-themed Motif (Innovative Design of a Butterfly Motif)

The butterfly pattern maintains the same consistent and original ethnic flavor as the bat pattern, with the same intricate lines and rich curvilinear variations in shape. The butterfly pattern in horsetail embroidery is figurative and bears a strong resemblance to the natural phoenix-tailed butterfly, with a rich and brilliant choice of colors and a delicate and small size, just like the natural phoenix-tailed butterfly. Based on the neutral analysis of the horsetail embroidery butterfly pattern and the morphology of the phoenix-tailed butterfly, the design of the horsetail embroidery butterfly pattern in this thesis is differentiated by geometric differentiation of the shape, dismantling the butterfly according to its physiological and morphological characteristics, and corresponding minimal geometric patterns according to the shape, such as triangles, quadrilaterals, circles, etc. The geometric patterns are dismantled to initially form the basic elemental units of the butterfly pattern, which are then rounded and The core texture of the butterfly pattern is formed by the combination of the core elements of the pattern, which are then rounded off to incorporate the details of the original pattern.

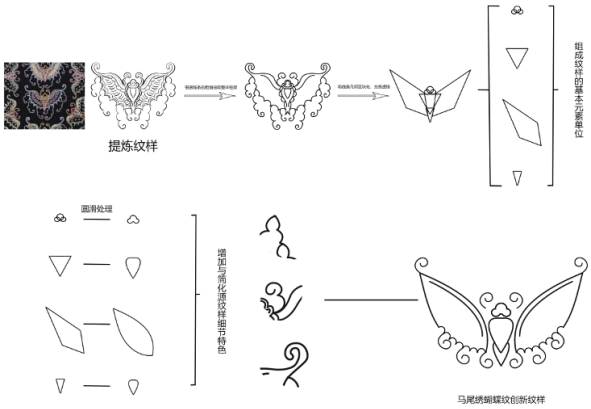



*Figure 2. Butterfly pattern extraction process*

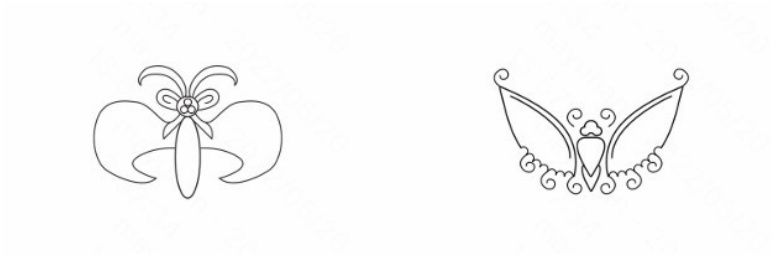


*Figure 3. Bat and butterfly core texture scheme*

## Evolution of the basic texture scheme

The two core texture elements of the basic pattern (Fig. 3), the bat and butterfly elements, are used as the base graphics, which are then rotated, mirrored, panned, etc. to form new regular and artistic graphics. The process of generating the basic pattern is illustrated below.

The bat motif in horsetail embroidery is usually placed in the center of the horsetail embroidery or at the edge of the horsetail embroidery in the form of a more appropriate motif, and in the old bat motifs, the aquatic people also liked to rotate the bat motifs in an array on the embroidery piece. Option 1 is a five-axis rotating array of bat motifs, with the intersection of the motifs erased. The bat motifs are influenced by Chinese characters and have an auspicious, blissful meaning. The second option is to make a mirror image of the pattern in the horizontal direction, then make a symmetrical copy and reduce it to equal proportions, creating a visual sense of space in the final effect. Option 3: The core texture of the butterfly pattern is copied horizontally and symmetrically, then mirrored vertically. The negative shape formed by the butterfly wings is similar to that of the common money pattern. Scheme 4: The butterfly pattern is rotated in five axial directions, the intersection is erased, and the textural elements are scaled inwards, as in Scheme 4.

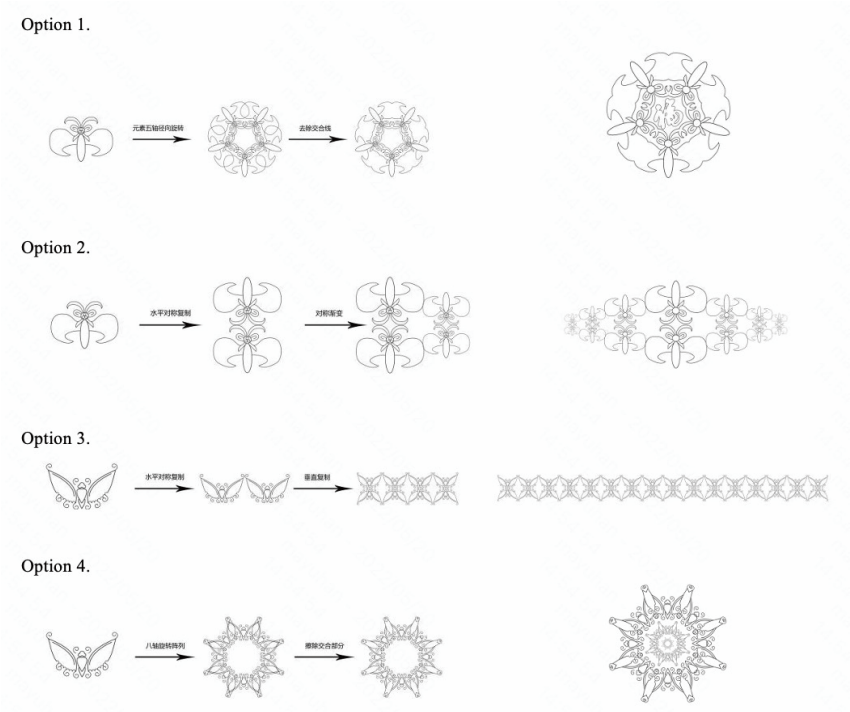



*Figure 4. Pattern reorganization scheme*

# Modern Furniture Design with Aquatic Horsetail Embroidery Motifs

The application of the pattern elements resulted in four sets of designs

## Effect of Pattern Application

Design 1:




Design 2:



Design 3



Design 4



## Concluding

The design is based on the Horsetail embroidery culture of the aquatic community, exploring the cultural connotations of Horsetail embroidery, gaining an in-depth understanding of the stories behind the culture, and creating a new set of innovative Horsetail embroidery patterns based on Horsetail embroidery patterns, which are applied to the self-designed furniture design, and are of some significance in guiding the practical activities of combining minority culture and furniture design. The innovative pattern and the furniture design are realised by computer software algorithms, which also provide design experience and ideas for the development of the combination of minority culture furniture design and modern technology. Horsetail embroidery is a living fossil in the field of hand embroidery, and is not only a physical form of the culture of the aquatic people, but also an important genetic heritage of the aquatic culture. The application of the horsetail embroidery in modern furniture design not only inherits the culture of the aquatic people, but also enhances the cultural connotation of the furniture, and provides a feasible way for the aquatic culture to adapt and meet the diversified needs of contemporary society.

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