



## RESEARCH ARTICLE

## Application of Traditional Cultural Elements in the Design of New Chinese-Style Furniture

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ARTICLE INFO	ABSTRACT
Received: May 22, 2024	<p>Traditional cultural elements are gradually being valued in the field of design, and the current consumer market is also advocating for highlighting local folk cultural characteristics in furniture design. The patterns and Chinese character symbols in traditional cultural elements have been passed down for thousands of years, and their beautiful shapes and artistic features reflect China's unique ethnic cultural connotations. This study analyzes the application of patterns and Chinese characters in furniture design based on the characteristics and innovative ideas of new Chinese style furniture. On the basis of the aesthetic characteristics of traditional cultural elements, the application methods of pattern and Chinese character elements are explored. Exploring the traditional cultural elements of new Chinese furniture is conducive to summarizing the aesthetic needs of modern people for interior decoration. New Chinese style furniture provides a carrier for the inheritance of traditional cultural elements, and traditional cultural elements also increase the cultural connotation and artistic value of furniture design.</p>
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### INTRODUCTION

Since the beginning of the 21st century, traditional Chinese furniture has had few innovative designs and has always continued to be marketed in traditional styles. Furniture is constantly evolving with the diversification and scale of design, as well as changes in people's lifestyles, work attitudes, leisure and entertainment. If China wants to develop contemporary furniture design that belongs to local culture, it needs to promote brand new creative design of furniture. New Chinese style furniture (NCSF) is a distinctive type of diversified development in China's furniture industry, which is the result of the integration of traditional Chinese cultural elements with modern furniture (Weihua 2011). In the current furniture market, consumer aesthetic needs are changing with the trend of the times, and the design of Chinese furniture should also present diverse morphological characteristics (Appiah-Kubi et al. 2021). In NCSF design, there is not only a neglect of ethnic cultural connotations, but also an inability to abandon the limitations of traditional furniture design (Zou et al. 2022). Traditional patterns in new Chinese furniture materialize cultural ideas and represent people's aspirations for a beautiful life. Chinese character elements are the core carrier of traditional Chinese culture. The study of the application methods of Chinese characters and pattern elements in furniture design can position a new direction for NCSF design. The exploration of the design methods and aesthetic characteristics of traditional cultural elements in NCSF aims to add ethnic cultural

characteristics and a sense of the times to the current furniture design. It is hoped that the research results of this study can provide theoretical support for NCSF to move towards the direction of aesthetics, comfort, practicality, and functional diversity in modern development.

## **1. DESIGN FEATURES AND INNOVATIVE IDEAS OF NCSF**

### **1.1 Characteristics of NCSF design**

NCSF refers to furniture designed in modern China by actively combining manual and machine methods with the application of new technologies, processes, and materials. NCSF not only emphasizes the integration of contemporary aesthetics and industrial technology, but also retains and inherits the design methods and forms of traditional furniture. The unique design and process of NCSF require continuous innovation in current design concepts, adapting to the market while guiding consumer aesthetic concepts.

Firstly, the design of NCSF must have practical features. The function of furniture is first and foremost to meet the living needs of consumers. NCSF not only needs to have the functionality of modern furniture, but also injects new connotations into furniture decoration. The important manifestation of NCSF in modern aesthetics lies in its streamlined design, which simplifies the production process and provides assurance for the industrialization and scale of furniture. NCSF will adjust the appearance and size based on consumer experience in its design, and will also eliminate some impractical and redundant structural designs in traditional furniture in its functional design(Xu and Zhang 2012).

Secondly, NCSF's design features rich colors. Compared to the characteristic of traditional furniture with a single color scheme, NCSF incorporates modern furniture decoration aesthetics and adds a lot of color schemes in its design. In color design, NCSF breaks through traditional color superstitions and taboos. Colorful NCSF can be freely matched, making furniture decoration styles diverse. For example, the rich luxury style formed by combining dark and high-purity colors, the elegant and fresh style formed by combining light and medium to weak purity colors, and the stable, quiet, and elegant home furnishings style formed by combining the same or similar color schemes with different purity and brightness colors.

Finally, the design of NCSF has a strong humanistic characteristic. The humanistic characteristics of NCSF are reflected in its inheritance of traditional cultural atmosphere and humanized design. The decorative environment of NCSF is still in the state of life in China, thus inheriting the traditional design's emphasis on indoor cultural environment(Wu 2019). Through industrial technology, NCSF values human aesthetic needs and often applies modern shrinkage and drying techniques in styling design. At the same time, it combines the principles of ergonomics and fully considers the relationship between human body structure and its stretchability, making furniture design more humanized.

### **1.2 Innovative ideas for NCSF design**

Innovative design concepts. The design innovation of NCSF needs to be carried out under the comprehensive consideration of consumers and the environment, so the update of design concepts is the foundation of design innovation. Firstly, NCSF's design philosophy emphasizes originality, incorporating elements of traditional culture into the design of modern furniture, while also reflecting both the modernity and traditional connotations of the furniture. Therefore, seeking traditional elements in traditional design is not contradictory to the original concept of design(Zou 2012). Secondly, the design concept of NCSF also emphasizes the application of ergonomics, taking into account the aesthetic psychology and emotional needs of consumers in the design process. Thirdly, from the perspective of product environmental concept, the natural environment and

decorative environment of NCSF production need to follow the principle of sustainable development. Product design should convey spiritual culture through visual language.

**Innovative furniture functions.** NCSF's innovation in functionality mainly relies on refining product performance and expanding product usage. Performance refinement refers to adopting different designs for furniture with different purposes and environments, such as adding insulation materials to tables in kitchen environments. The expansion of functions is to add other functions to the original functions of the product, such as adding foldable functions to the design of office desks.

**Innovation in furniture materials.** The majority of traditional furniture materials come from trees. Some wood is not suitable for modern furniture design due to its high price. Therefore, the design of NCSF must expand the range of materials, such as using commonly used plastic materials in current furniture to break the traditional straight panel shape of furniture, which can not only reflect the curved shape of furniture design, but also reduce furniture production costs. In addition to the application of new materials, NCSF's material innovation can also focus on the fusion of different materials, such as integrating metal and wood materials, using metal materials in furniture frame design and wood materials in countertop design. The integration and use of materials in design can leverage their inherent characteristics, while frame design can leverage the sturdy and sturdy characteristics of metals, and countertop design can add flexibility to furniture design(Xiong et al. 2017).

**Innovative design and structure.** NCSF's styling design is a combination of traditional styling and modern aesthetics. Without changing the functionality of furniture, the style, size, and material of the components are designed and modified to give furniture new form features. At the same time, traditional Chinese furniture can also be simplified by removing unnecessary decorations and accessories, while retaining the elegant and beautiful features of traditional aesthetic design. This is also compatible with modern people's living habits and aesthetic concepts. For example, the mortise and tenon structure commonly used in traditional furniture is inefficient in modern production. Therefore, using mechanized equipment and processing technology to replicate the mortise and tenon style in traditional furniture can preserve the visual experience of traditional furniture design, while also creating a modern and technological aesthetic in furniture design.

**Market demand innovation.** Based on the characteristics of existing furniture products in the market and the level of consumer demand, innovate and design furniture products that meet consumer needs and have distinct personality characteristics, making them stand out in market competition. NCSF has the charm of traditional furniture and a quiet and peaceful connotation, reflecting the charm of users' self-cultivation. As a result, it is highly regarded and sought after by many intellectuals and cultural enthusiasts. Meanwhile, NCSF is a product of the fusion of Chinese furniture and modern design concepts, combining classical elegance with fashion and modernity, which can be noticed and accepted by most consumers. When applying traditional patterns to the design of NCSF, the first consideration should be the guiding role of the market, which should meet the needs of consumers. Meanwhile, it should also consider creating benefits for the enterprise, which can be mass-produced and mass-produced. Therefore, it is necessary to conduct market research, position the consumer group and price of new products(Wu and Yezhova 2023). In addition, the combination of traditional patterns and new Chinese styles is the development of China's traditional culture and art in the field of modern design, and it is the inheritance and promotion of traditional culture and art. Therefore, in the product design stage, not only should the market value of the product be considered, but also as a carrier of cultural dissemination, product design should have its own cultural value and connotation.

## **2. THE APPLICATION OF TRADITIONAL CULTURAL ELEMENTS IN NCSF DESIGN**

### **2.1 Pattern elements**

#### **2.1.1 The application principles of pattern elements**

Pattern presents the aesthetic art of Chinese ethnic decoration through concrete painted patterns, carving, inlay, and other forms, which is one of the manifestations of traditional Chinese cultural art. Pattern is the formalization of ancient Chinese people's blessings for auspiciousness and beauty. By using patterns to decorate homes, it symbolizes disaster relief, good fortune, and a happy family. Patterns have undergone a long development in the history of ancient China. In the earliest pottery left over from the Neolithic period, there were already depictions of labor activities such as hunting and fishing, as well as animal and plant images. At this time, most of the patterns were simplified and abstract behavioral activities or images, while in the later Shang and Zhou dynasties, patterns with mythological animals as objects appeared, reflecting the characteristics of primitive religious beliefs and mysterious colors in the patterns. During the Spring and Autumn period and the Warring States period, traditional patterns presented concrete deity images, but the subjects depicted in the patterns also returned to real-life scenes from aspects such as worship and religion. The biggest characteristic of pattern development during the Qin and Han dynasties was the enrichment of images. Animal images gradually include common fish, sheep, birds, and animals, while plant patterns with auspicious meanings (such as lotus) also gradually appear (Xu 2021). In the subsequent historical development, with the popularization of Confucianism, Buddhism, and Taoism, as well as the flourishing feudal system during the Tang and Song dynasties, traditional patterns not only depicted rich content but also expanded their application fields.

The application of traditional patterns in NCSF design should first follow the principles of nationalization, diversification, and simplicity. The principle of nationalization indicates that the application of pattern elements in NCSF must inherit the traditional aesthetic concepts and philosophical thinking contained in the patterns (Jiyong 2022). The principle of diversity indicates that in the design of NCSF, the application of rich pattern elements requires an understanding of the symbolism possessed by the patterns, while showcasing the different stylistic characteristics and cultural connotations of the patterns in the design. The principle of simplicity indicates that the design of NCSF needs to effectively simplify and extract some patterns from traditional furniture, in order to meet the current industrial design process requirements. The design of NCSF prioritizes the functional and structural use of furniture while emphasizing artistic features such as craftsmanship, material beauty, and form beauty. Decorative patterns should only be developed with this premise in mind. The application of pattern elements in NCSF requires the assistance of current mechanical technology and processing techniques. For example, laser carving and precision carving techniques use laser beams and CNC machines to control the carving of patterns, which not only speeds up the processing time of patterns, but also expands the materials for carving furniture (Gao and Yezhova 2023).

#### **2.1.2 Application methods of pattern elements**

Direct application. In the design and creation process of NCSF, directly applying pattern elements to the creative design to achieve design effects is a direct application of traditional patterns (Sun and Ab Aziz 2023). Direct application can fully present the traditional features of NCSF. However, the direct application requires a deep understanding and mastery of the shape, composition, organizational rules, and cultural connotations of traditional elements, and must be based on relevant aesthetic principles to achieve the design aesthetic effect of NCSF. For example, in Chinese patterns, the structure of individual patterns can be designed using a direct application method. Because complete and independent patterns are generally not strongly related to the surrounding content, and the form of individual patterns is simple, in line with modern minimalist design

principles. In NCSF design, individual patterns are generally arranged in a symmetrical and balanced manner (Liu et al. 2018). The rigorous, square, stable and orderly composition of individual patterns conforms to traditional Chinese aesthetic concepts and is a typical artistic expression in Chinese traditional design.

Summarize and refine. Traditional pattern elements have some complex and cumbersome designs, and the method of summarizing and refining them is to simplify the complex patterns, preserve their original shape and meaning, and delete some content. For example, separating the patterns presented in combination in Chinese patterns, separating patterns with two or more elements, and retaining the main subject of the pattern's depiction. When facing the situation of multi subject combination patterns, the combination patterns can be separated, and each separated pattern can be arranged symmetrically and evenly as a separate pattern. The common combination patterns in China are generally mountain and water landscape patterns, or auspicious patterns of phoenix and peony flowers. Each element in these combination patterns carries the auspicious meaning of the original pattern, so separating them into individual elements will not affect the aesthetic value in the design.

Continuous arrangement. Continuous arrangement is a common pattern design method in traditional furniture design, which refers to the continuous replication of simple and generalized pattern elements to create a complex pattern with scattered, geometric, wavy, and combined features. Due to the highly generalized composition patterns in continuous arrangement, the design does not present complex and cumbersome features, but instead presents a regular aesthetic experience. For example, in traditional furniture, the use of simple elements such as cloud patterns and geometric patterns extensively employs a continuous arrangement to form the overall flat design of the furniture. In a continuous arrangement, the pattern possesses a smooth and dynamic beauty, with a pure and clear sense of rhythm and dynamics amidst the vigorous fluctuations and square twists of the pattern. This design approach embodies an important concept in modern aesthetic theory - repetition.

Deconstructive transformation. Deconstructive transformation is the process of breaking down traditional patterns or their combinations, and then combining them into one using new combinations or incorporating modern elements to recombine. At the same time, it can also transform traditional patterns with relatively stable connotations into more vivid symbols that meet the needs of contemporary consumers and users, making the patterns characteristic of the times. The 3D presentation of pattern patterns also belongs to one of the ways of deconstruction and transformation. Traditional furniture places great emphasis on the use and expression of context, not only showcasing the psychological characteristics of artistic aesthetics, but also demonstrating its powerful connotation. Therefore, in NCSF design, the connotation of Chinese culture is highly representative and profound through traditional patterns. For example, in ancient China, door rings were not only used as decorative designs for doors, but also as functional designs for clasp doors in the mouth of animal heads. The ancient door ring is shown in Figure 1.



**Figure 1: The Design of door rings in ancient China**

Overall, in the design of NCSF, the composition of traditional patterns should demonstrate their formal beauty characteristics according to aesthetic principles. The general law of design is the combination of change and unity, the fusion of symmetry and balance, and the assistance of repetition and intersection. Through idealization and exaggeration, addition and omission, strengthening and weakening, and other techniques, the design is constructed.

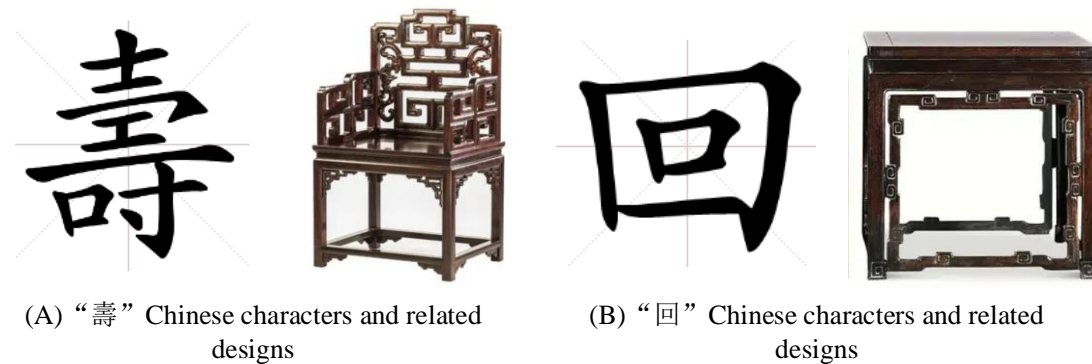
## **2.2 Chinese character elements**

The ancient Chinese people's understanding of the structure and aesthetic concepts of Chinese characters influenced the art of calligraphy and painting, and subsequently infused the aesthetic characteristics of rigorous and dignified Chinese character calligraphy and beautiful structure into interior decoration and furniture design. Especially after the Ming Dynasty, the line design of traditional furniture began to significantly adopt the art of Chinese calligraphy. From the perspective of NCSF, the current rich Chinese character shapes and cultural connotations can bring new inspiration to design. Chinese character elements in NCSF's form design represent the visual and psychological feelings conveyed by furniture form to users. Only precise emotional imagery positioning can make furniture meet consumer psychological expectations.

The application of Chinese character elements in NCSF design mainly adopts the "shape syntax" proposed by American architecture professor Stanny (Stiny 1980). Shape syntax is widely used in the fields of architectural and product design. This method mainly involves generating new shapes based on inference rules, or transforming known geometric shapes into various shapes by establishing rules. Taking Chinese character elements as an example, each stroke of complex text is composed of basic shapes. By setting rules for the variation of strokes, simple Chinese characters can be transformed into combinations of complex strokes. The application of shape syntax in furniture design can create different styling schemes for furniture according to certain rules. "Shape syntax" mainly consists of four elements: shape elements, labels, shape rules, and initial shape. This method generates new shapes for use in design by performing operations such as symmetry, rotation, mirroring, and translation using basic shape elements (Xue and Chen 2024).

To use "shape syntax" for designing Chinese characters, it is first necessary to extract the basic shape of Chinese character symbol elements. The shape can be obtained by disassembling, simplifying, and deforming Chinese character elements. In the process of shape extraction, what needs to be preserved is a collection of partial strokes of Chinese characters, so it is necessary to boldly make changes to the shape. Secondly, after extracting the basic shape of Chinese characters, shape variation rules are adopted on top of the basic shape to form two-dimensional elements, which can be used for

design. There are numerous Chinese characters, and the rules required in the design process are completely different. Therefore, by combining rules, a continuous stream of image resources can be provided for NCSF design. After obtaining the 2D elements of Chinese characters through deformation rules, the design elements of the 2D form can be transformed into 3D forms. Furniture itself has the characteristics of 3D design, so in the process of introducing Chinese character elements, the elements can be processed into functional designs of furniture through 3D processing. Starting from the lines and shapes of Chinese character elements, it is possible to make two-dimensional shape changes to the key positions of NCSF's structural aesthetics and functional appliances. Through the overall adjustment of 3D shapes, the overall application of Chinese characters in furniture can be reflected. Chinese characters themselves have symmetry, and some furniture in NCSF also have symmetry properties as a whole. Therefore, the front and top views of furniture can be designed using simplified and deformed shapes of Chinese characters (Xue and Zhao 2016). The furniture design case of Chinese character elements is shown in Figure 2.



**Figure 2 Design Cases of Chinese character elements**

### 3. THE AESTHETIC CHARACTERISTICS OF TRADITIONAL CULTURAL ELEMENTS IN NCSF

Firstly, traditional cultural elements have the characteristic of combining abstraction and concreteness in the design of NCSF. Traditional patterns and pictographic Chinese characters are abstracted from natural inspiration, so traditional cultural elements are closely related to people's production and life. Throughout nature, animals and plants have been the ones that come into contact with people the most. In nature, animals and plants are the most commonly encountered organisms, and their forms are easily recognizable. People often use them to express their emotions, ideals, and hopes. Common animal and plant forms are processed or transformed to create abstract patterns that can convey people's expectations (Dong et al. 2013).

Secondly, traditional cultural elements have rich formal aesthetic experiences in NCSF's design. In NCSF, traditional cultural elements are composed of organic combinations of points, lines, and surfaces, as well as combinations of different colors. The design is carried out in different materials, processes, and technical conditions, presenting a variety of patterns and Chinese character elements. Balance and symmetry are the most common basic forms of composition in traditional patterns. Symmetry includes not only the symmetry of the same pattern, but also the similarity symmetry formed by similar patterns. Judging symmetry based on the position of the pattern, the visual effect of balancing the complexity and simplicity of different parts in the pattern refers to the balance of the pattern. The evenly distributed pattern makes the overall complexity and simplicity of the pattern reasonable, resulting in better visual effects. Balance and symmetry can present a rigorous, neat, and highly stylized decorative effect, which has a sense of stability and is in line with the daily psychological habits of consumers (Ye et al. 2022).



In addition, traditional cultural elements have the characteristics of complexity and regularity in the design of NCSF. There are many differences between traditional patterns and Chinese character symbols and modern design patterns, among which the most obvious is the complex and orderly characteristics of traditional patterns. However, traditional patterns in Chinese design aesthetics follow specific rules for variation, rather than just repeating the elements. The patterns in traditional patterns are adjusted and arranged to change the sensitivity of colors and form a large whole, but with subtle differences within each individual. The repetition of certain elements in traditional patterns can create an orderly and unified design, providing a unique visual experience(Wan et al. 2018). The common regularity aesthetic feeling of traditional cultural elements in furniture design is manifested by the juxtaposition of similar or identical morphological elements, creating a consistent or trendy feeling. Seeking consistency and commonality in differences is the manifestation of regularity in design. Complexity is reflected in the color and shape contrast of design elements. In visual relationships, there are contrasts in form such as height, size, width, and width, as well as contrasts in color such as intensity and warmth.

Finally, traditional cultural elements have rich natural meanings and life concepts in NCSF's design. Among the many traditional patterns in China, some depict phenomena and things in nature, such as mountains, water, lightning, clouds, etc., reflecting the reverence and respect of the Chinese working people for natural things. People apply the principle of "harmony between man and nature" to traditional Chinese patterns. Nature provides an environment for humanity, in which people survive through their own labor, thus giving rise to gratitude and respect for nature. These emotions are also reflected in the creation and drawing of pattern patterns. Therefore, the rich meaning of nature is also a very important aesthetic feature in traditional Chinese patterns, which reflects the consistent understanding and recognition of nature and beauty among the ancient Chinese working people, and the universality of their recognition of natural beauty. With the development of traditional pattern patterns, this expression of natural beauty has always existed and developed. The respect and reverence of nature by the working people have always existed.

#### **4. CONCLUSION**

In the long history of Chinese civilization, rich traditional culture and artistic works have been formed, and Chinese furniture enjoys a pivotal position in the world due to its unique ethnic characteristics. However, with the strong impact of increasingly globalized economic development on traditional culture and the furniture market, the design style of Chinese traditional furniture gradually combines with the living habits of modern people, giving rise to NCSF. However, the theoretical and practical research on NCSF design is still in its early stages and needs to be continuously supplemented and improved. Therefore, this study analyzed the application of traditional cultural elements in NCSF design based on pattern patterns and Chinese character symbol elements. On this basis, the aesthetic characteristics and different forms of expression of traditional patterns were analyzed and summarized. This study lays the foundation for the extraction of traditional patterns and provides new insights and understanding for the design of NCSF. As an excellent combination of market demand and design concepts, NCSF's theoretical research and practice need to be continuously supplemented. Therefore, in its development process, designers are required to closely connect with the trend of the times, conduct deeper research, and provide fresh and reliable materials for NCSF design from traditional Chinese culture.

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