Redesigning Traditional Objects from the Perspective of Integration and Innovation--Taking the Vertical Screen as an Example

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Abstract. This study aims to explore how to innovate and optimize the screen in the modern social environment. By analyzing the changes in the usage scenarios and needs of traditional vertical screens in the past and modern times, as well as the unsuitability of the materials and craftsmanship in the modern environment, it clarifies how modern concepts influence the design of screens. Taking the screen as an example, the design outputs an innovative screen solution that combines traditional elements with modern materials and craftsmanship to give it a new aesthetic value in modern times, providing a good paradigm for the design and application of traditional objects in the present era and promoting new vitality of traditional objects.

Keywords: screen art, installation art, traditional equipment, innovative design, art and technology.

1 Introduction

Chinese traditional screen has been an important element in home space since ancient times, and in modern society due to many reasons such as changes in lifestyle and challenges in material craftsmanship, traditional screens have gradually declined in modern use. However, it is undeniable that traditional objects still have high aesthetic value. How not to forget? How to modernize the traditional screen - through the application of modern materials and technology, innovative design based on maintaining traditional aesthetics, through in-depth research and practical exploration, we expect to provide useful theoretical support and practical reference for the modernization of the traditional screen design, and provide examples for the modernization of other traditional objects to adapt.

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2 Design Background Analysis

With the development of society and changes in lifestyle, the use of screen scenes and functions, as well as the needs of users have also changed, which has shifted from traditional privacy protection and space partition to modern decoration and beautification, space planning.

Things are a huge system around us. It shuttles through human society and silently launches the transformation of the world with a low attitude of seemingly being dominated. Screen is a special object, though often neglected, belonging to the category of "Furniture" which is not obvious in the cognition, and is often regarded as a sub-species of "Architecture" with the same attribute.[1] It belongs to the category of "furniture", which is not obvious in perception, and is often regarded as a sub-species of the same attribute "architecture". It not only has practical functions, but also has high artistic value and symbolic meaning. In ancient Chinese society, it was mainly used to partition space, protect privacy and beautify decoration. In temples or palaces, it enhanced the sense of mystery and majesty; in private houses or academies, it emphasized the sense of spatial hierarchy and order. (Figure 1).

Fig. 1. The space made up of vertical screens shown in the Kanshu Tu

In modern life, the space separating function of the screen is gradually replaced by other furniture and partition walls. The form is more flexible and diversified, and the design focuses on innovation and practicality. Material and process innovation to make it in the light control and other aspects of better performance, the use of screen scenes have been transformed into decorative landscaping, space planning.

This paper takes vertical screen as an example, the material of traditional Chinese screen is mainly wood, silk, rice paper, etc., and in terms of craftsmanship, it adopts carving, hollowing, painting and other techniques, although it has high artistic value and historical significance, but in the modern environment, part of the material and craftsmanship may not be able to adapt to the needs of modern life, and is in urgent need of improvement.

In addition, as an important piece of furniture in the traditional society of family and country, the design and function of the screen largely reflect the power relations at that

time. In ancient China, “the distribution system was standardized by hierarchical ritual norms”,[2] and the screen was mostly used in scenes related to the family, clan, government and other power institutions to show the hierarchy. Ming Wen Zhenheng mentioned in “Changshi Zhi - several couches” that “the system of the screen is the most ancient.” [3]However, modern screen design use is no longer influenced by power.

3 Ideas for Remodeling and Compounding Modern Needs

Modern society provides many conditions for the innovative development of vertical screens. First of all, the development of materials and technology provides new material and process options for screens, making them have better performance and aesthetics. Secondly, the modern design concept focuses on humanization, personalization and environmental protection, which provides a broad space for the innovative design of the screen. In addition, the development of modern market economy provides more business opportunities and market demand for traditional Chinese screens, which makes them have stronger development power.

“Enforce the ancient way to defend today's have.” [4]Inherit and carry forward the essence of traditional culture while paying attention to the real needs and changes, to realize the organic combination of tradition and modernity. In the process of modernizing the traditional vertical screen, we need to find the best path to balance between change and innovation, and light regulation is an important aspect that deserves attention. Traditional screen light design is often relatively single, so you can start from the following aspects:

Select modern materials with different light transmission properties, such as glass, acrylic, polycarbonate, etc. These materials not only have good light transmission, but also can adjust the degree of light transmission and scattering effect according to the needs (Figure 2).

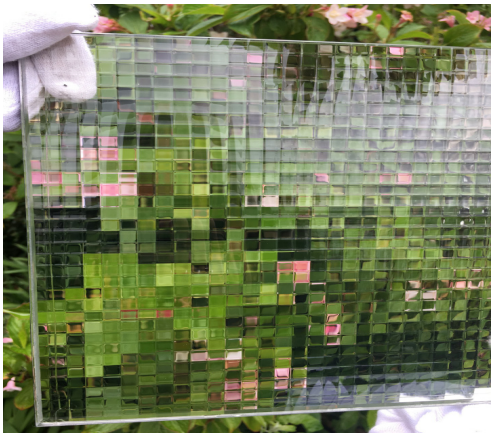

Fig. 2. Different orientations of the glass surface cause the image to be deflected as it passes through.

Improve and upgrade the traditional skeletonization technology by using modern technology, such as laser cutting, CNC engraving and other technologies, to realize finer and more diversified light-transmitting pattern designs. Combine with modern indoor light environment design concepts, innovate the light regulation function of the screen. For example, by adjusting the angle of the screen, the degree of opening and closing, etc., to realize the regulation and guidance of light. Focus on the artistic fusion of light and screen patterns to create a visual effect of light and shape interlacing and aesthetics, creating a unique art of light and shadow (Figure 3), and enhancing the overall interactivity.

Fig. 3. Blurred translucent materials can connect and separate internal and external spaces.

We can make the traditional vertical screen innovative and breakthrough in terms of light and interaction, creating a more interesting and suitable space for modern people.

4 Changes and Optimization of Light Transmission

How to ensure the light transmittance of vertical screens and thus meet the needs of both practical value and ornamental value, you can use hollowing, carving and other techniques and light-transmitting materials to balance spatial separation and light transmittance, create colorful light and shadow effects, and make the screen become an element of interior decoration.

Light is not only a sensory media, but also can play a role in modifying the space without changing it, making a connection between unrelated contexts, distinguishing different areas, or bringing colors.[5] Light is the determining factor in the embodiment of form and in the perception of formal meaning. Based on the premise of basic functionality, the aim of form is to create a decorative art effect with deep aesthetic meaning. [6]The improvement of modern light transmittance integrates the tradition in order to create a screen design with both modern characteristics and traditional flavor. Modern screens need to meet the basic requirements of light transmission while taking into account the diversified needs of use.

In order to meet the demand, modern light-permeable materials will be used in screen design. Glass, acrylic, metal mesh and other materials have better light transmittance and durability, and can provide better light regulation on the basis of maintaining the original function of the screen. Secondly, the process of glass and other materials is becoming more and more mature, giving birth to many new textures, which can achieve some fuzzy but translucent effects. (Figure 4).

Fig. 4. Special effects that can be rendered with modern and sophisticated glass processes

Modern screen in the choice of materials, not only to meet the demand for light transmission, but also to overcome some of the shortcomings of traditional materials. Choose moisture-resistant, corrosion-resistant and wear-resistant materials to improve the service life of the screen; choose environmentally friendly materials to reduce the burden of the screen on the environment, and should pay attention to sustainability and functionality in order to realize the harmonious symbiosis between human beings and the environment.

In addition, through scientific selection and matching, to meet the functional and aesthetic needs of different scenes.

5 Practical Conversion

5.1 Light Transmission Test

In order to verify the light transmittance effect of the screen, experiments were conducted on the performance of different materials under the same light source in order to select the materials. In addition, the experiment also considered the density of the openwork holes, as well as the color elements of its own light source, to explore its impact on the overall light transmission performance. (Figure 5).

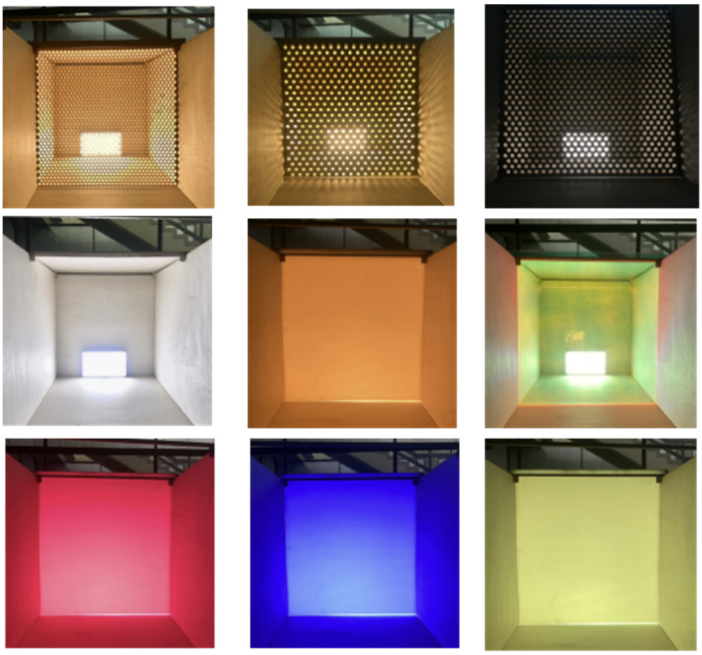

Fig. 5. Experimental shot diagrams on material pore density, material, and light color

On this basis, an attempt is made to connect the element of shadow with the attribute of light transmission, and the shadow, as the information stripped from the rest of the object's attributes, will be continued to be broken up with the help of the hole effect, which makes the amount of information even more reduced and ensures enough privacy in the inner and outer space. (Figure 6).

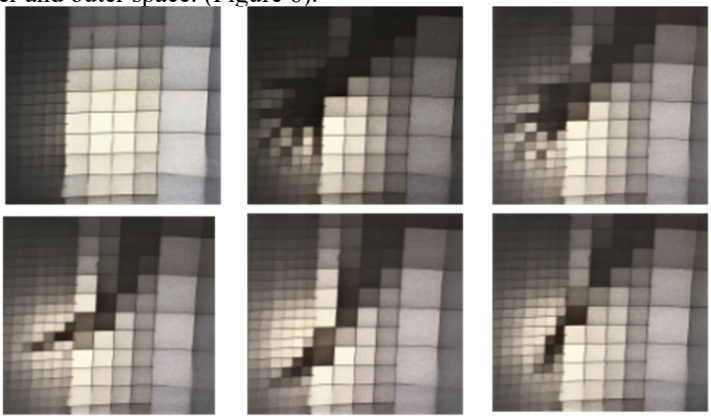

Fig. 6. Experiments on shadow blurring and hole effects

Incidentally, it presents interactivity (Figure 7) - the entire screen can present a changing effect of light and shadow interest in real time as a person passes through.

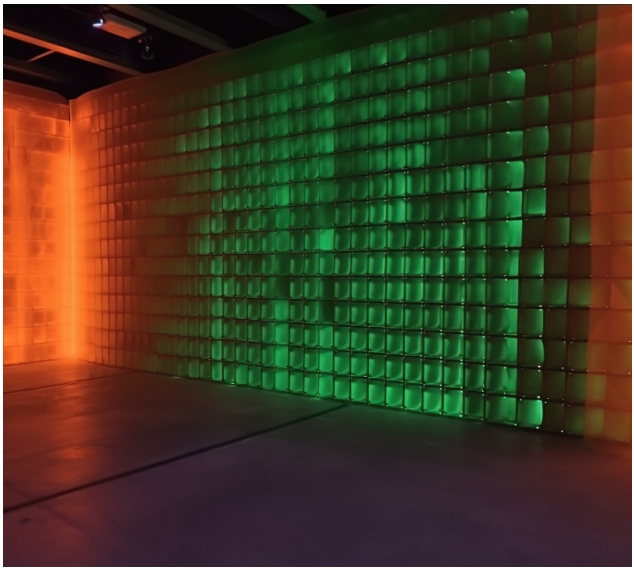

Fig. 7. Design Effect Presentation

5.2 Design Concept and Effect Analysis

This design practice aims to explore the mingling and collision between traditional and modern elements, with a view to discovering the new value of screen art in the context of modern life, so that traditional culture can be given a new vitality in modern society. Using projection technology and light, as well as technology, touch designer produced sound visualization effect,[7] the user becomes part of the screen device performance, through the sound size presents the real-time transformation of the pattern, so that the screen produces a stronger interactivity (Figure 8).

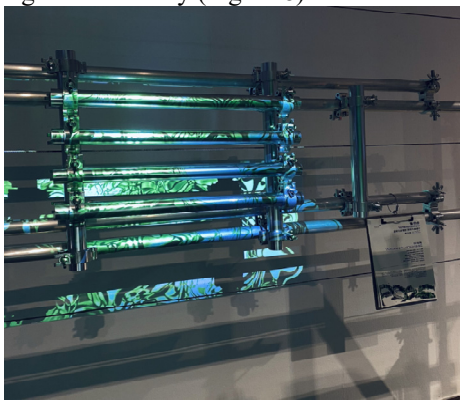

Fig. 8. touch designer real-time interactive effect

In this design scheme, the materials are chosen as the main components of the screen, such as aluminum steel pipe frame, acrylic, synthetic wood panels and other modern materials. The steel pipe frame serves as the supporting structure, which has sufficient strength and stability, and also presents a simple and modern sense. Multi-layer acrylic panels, on the other hand, are used as the surface material of the screen, producing light transmittance and variability, as well as good sound insulation. In terms of craftsmanship, unlike the ancient mortise and tenon construction method, modern metal connectors are used to connect the steel pipe frame to the panels to realize the stable structure of the screen. (Figure 9).

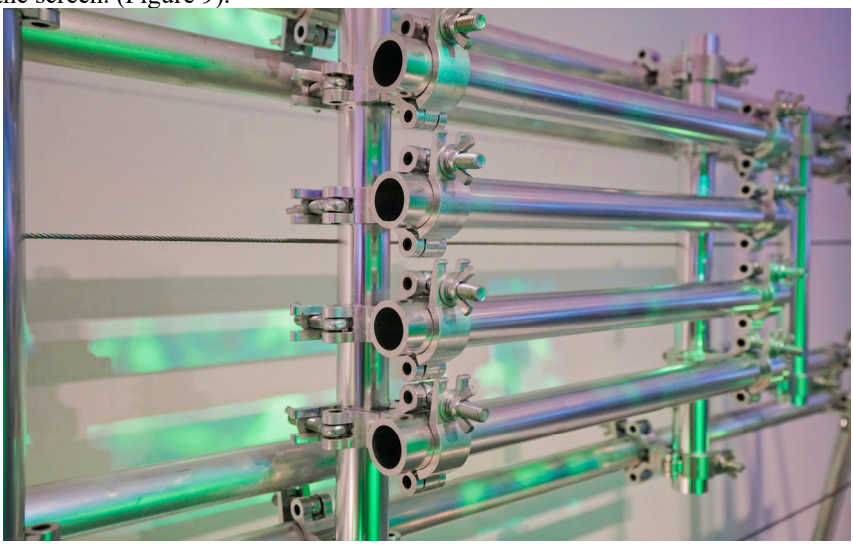

Fig. 9. Detail of assembly connection

This design solution adopts quick release steel pipe frame, with buckle stage plug-in, making the overall presentation of modular design, the screen can be divided into a number of independent units, to facilitate the user according to their own needs and preferences free combination, to meet the different width and length of the shelter needs. The screen design scheme is suitable for modern exhibition space and public need to interact with the place environment, can create a combination of more personalized screen. (Figure 10).

Fig. 10. Effectiveness of the program on the ground

5.3 Subsequent Improvements

(1) Intelligent upgrade

Join the intelligent control system to realize the remote control of the screen, such as adjusting the surface transparency, or built-in control lighting. This will provide users with a more convenient and intelligent use experience.

(2) Multi-functional integration

Incorporate more practical functions into the design, such as embedded bookshelves, shelves, etc., to make the screen more functional and meet the needs of modern families in a variety of use scenarios.

(3) Humanistic attributes

Adding traditional furniture that appears in combination with the screen creates the mood space created by the ancients in the past, which makes the overall space have more humanistic connections.

In summary, this screen redesign based on modern materials not only retains the aesthetic elements of the traditional screen, but also integrates modern design concepts, which is not only a display of technical means, but also a way of realizing artistic intentions. [8]The screen is revitalized in the modern use environment, with higher aesthetic value and more interactive interest.

6 Conclusions

This study reveals the challenges and opportunities faced by screens in the modern social environment by analyzing the historical evolution, material craftsmanship and modern concepts of screens. We propose a screen design that combines traditional elements with modern materials and craftsmanship, aiming to achieve a balance between

functionality and aesthetics, and to have a higher aesthetic value. We hope to find a more subtle blend between tradition and modernity, and hope that classic traditional objects, such as screens, can be revitalized and applied in contemporary design.

Note* The screen program in this article has been implemented and presented in June 2023 at the China Academy of Art's "Brain Garden" graduation series.

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