Design of Tea Set with Fishing Light Conception based on Grafting and Fusion

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Abstract
In order to solve the problem of lack of innovation and serious homogenization in current tea set design, this paper draws lessons from the concept of grafting in botany and proposes a tea set design method based on the theory of grafting and fusion. From user analysis to evaluation, from explicit design factor and implicit design factor to carry out the grafting and fusion of tea set design strategy practice. Finally, the design of tea set under the artistic conception of fishing light is taken as a case demonstration to prove the feasibility of grafting and fusion in the design of tea set, and to provide new ideas for the design and development of new products.

Keywords
Tea set design; Guilin fishing light artistic conception; Grafting and fusion; Modelling implication

Introduction

Chinese tea culture is an important part of Chinese traditional culture, and it is a combination of Confucianism, Taoism and Buddhism (Miao, Guan & Chen, 2011). As a kind of culture, tea has been deeply rooted in the blood of Chinese civilization, constantly nourishing the body and spirit of the Chinese people (Liu & Song, 2020). As an important carrier of Chinese tea culture, tea sets have a long history of development. At first, Chinese tea sets only paid attention to practicality but ignored the ornamental value. However, after the development of tea sets, they gradually varied in variety and became sophisticated in manufacture. The Tang and Song Dynasties were the peak of the development of tea culture in China, when tea sets were fresh and elegant in style and elaborately made. Tea sets in the Qing Dynasty used various materials to show colorful characteristics (Ren, Wu & Zhu, 2020). At present, tea sets are seriously homogenized in the market, ignoring their in-

trinsic value and cultural connotation. Sang Zhen et al. (2019) innovatively applied the theory of grafting in botany to the design of wooden furniture to solve the problem of backward innovation methods in the furniture market, so as to improve the added value of furniture products and make furniture products with cultural flavor. Applying the theory of grafting in botany to the innovative design of products can greatly improve the innovation of products and endow them with cultural connotation. This study applies the concept of grafting in botany to the design of modern tea sets, endows them with cultural value and spiritual connotation while designing the shapes of tea sets, and provides a new method for the design and innovation of modern tea sets.

Design Pattern of Tea Set based on Grafting and Fusion

The term "grafting" belongs to the category of botany. It was first recorded in the Book of Fan Sheng Zhi (Jiang, 1989), which refers to the grafting of a branch or bud of a plant to the root or stem of another plant so that it can receive new nutrients and grow into a complete plant (Jin, Gao, Wu, 2021). Applying the concept of grafting to product innovation design means that the design factors of grafting are extracted and fused into the target product to make it have the characteristics of grafting. The design mode of grafting and fusion tea set includes user analysis, grafting selection and research, design factor extraction, design factor fusion and design evaluation (see Figure 1 for the specific process). According to the design requirements, this paper conducts research on its target users or user groups, and analyzes the research results to understand the needs of users and the problems of existing tea sets on the market; Selecting suitable grafts based on the results of user research; Analyze and study grafts, and extract design factors from both dominant and recessive aspects; The extracted design factors are organically integrated with the tea set from the aspects of form, color and material; Finally, the semantic difference method is used to evaluate the design, quantify the feasibility of the final design scheme, obtain the advantages and disadvantages of the design scheme, and determine the optimization direction of the design (Sang et al., 2019).

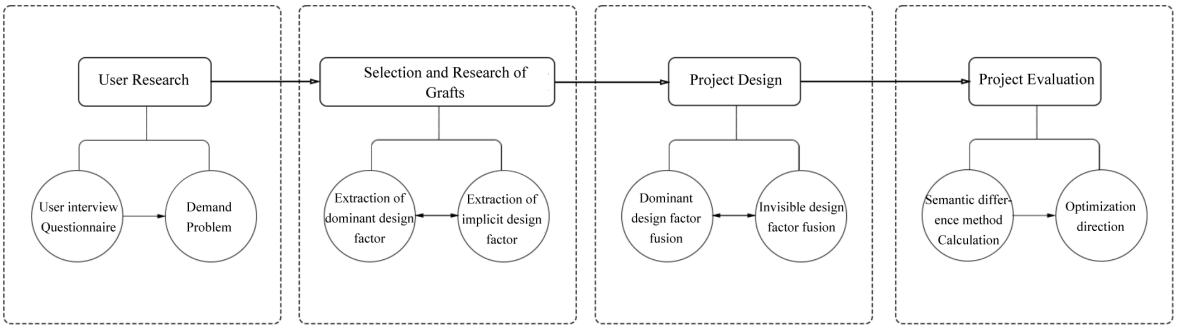


Figure 1. Grafting and fusion process

Grafting and Fusion in Tea Set Design

Grafting and fusion is to analyze, extract and fuse the characteristic genes of grafts in the design of tea sets. There are two aspects of tea set design based on grafting and fusion: dominant design factors and recessive design factors. Design factors include color, pattern, form and semantics. Form, color and pattern are dominant factors, which are visual representation factors and can be directly displayed through the target carrier. Semantics is a recessive factor, an internal deep factor hidden behind the intuitive vision, which plays an important role in controlling the visual results (Liu & Luo, 2017).

Grafting and Fusion of Dominant Design Factors

The grafting and fusion of dominant design factors is the process of extracting and merging design factors based on visual effects, which mainly focuses on appearance innovation. Whether it is animals or plants, or traditional culture, there are rich forms, colors and patterns. Dominant design factors are ubiquitous. They have an important reference to the design of tea sets, and determine the shape, color and material of the final design, and affect people's intuitive experience. In the grafting process of dominant factors, it is necessary to analyze the characteristic genes of the selected graft body first, start with the shape, color and pattern through objective experience, abstract, simplify and deform the characteristic genes, and finally get a design that can be fused factor.

Grafting and Fusion of Recessive Design Factors

The grafting and fusion of implicit design factors is based on the process of extraction and fusion of design factors at the sensory level, which mainly focuses on enhancing the cultural connotation of products. Connotation is a typical feature of Chinese traditional culture. Good products are often rich in content, can convey emotions, and thus resonate with consumers. But it is not to abandon the appearance form and blindly pursue the connotation semantics, but to blend the form and the connotation to the greatest extent (Hu, 2009). The form of the product can indirectly express its inner meaning. When the explicit design factor is grafted, the hidden connotation will gradually penetrate. The tea set itself is the carrier of tea culture. The organic integration of tea culture with other excellent cultures will bring different emotional experiences to users. In the study of the selected grafts, we should pay attention to the extraction of semantics, analyze the cultural connotation of grafts, and grafting with dominant design factors to show the semantic connotation without damaging the practical function of products, so as to achieve the organic integration of rationality and sensibility, function and connotation.

Design Practice

User Research

The purpose of this paper is to design a tea set for consumers who love tea culture and contain the culture of Guilin Fire Light Festival. Through the questionnaire and interviews, it is found that most tea culture lovers think that the current tea sets are seriously homogeneous and lack of characteristics, and they want a unique, practical tea set with rich regional cultural characteristics and texture.

Grafting Body Research

Yangshuo Fishing Fire is one of the regional characteristic cultures of Guilin. After thousands of years of evolution and accumulation, Yangshuo's fishing fire culture on the Li River has formed a unique humanities landscape. The Yangshuo Fishing Fire Festival is a concentrated expression of the fishing light culture. It was originally a traditional fishing activity. At night, the fishermen along the Li River began to row on bamboo rafts, light up fishing lights and torches, and bring the cormorants needed for fishing. Fishing on the river. On the surface of the river, flashing fishing fires, dancing fireflies, and singing fishermen together create a charming fishing fire mood. The Guilin Fishing Fire Festival was listed as the "Eight Scenery of Yangshuo" in the Song Dynasty, and has become a traditional activity in Yangshuo in modern times. With the successful holding of Yangshuo Fishing Fire Festival for many years, the local tourism image has been improved, and people have gained an understanding of the Festival through social media, TV, news and periodicals, forming a good reputation around the world (Wei, 2013).

Fishing Fire is the most unique feature of the Fishing Fire Festival (Figure 2) (Lu, 2020), so this study will analyze its characteristic genes and grafting, and integrate them into modern tea set design, to show people the beautiful scenery and excellent traditional culture of Guilin, and design a modern tea set rich in Guilin regional cultural characteristics.



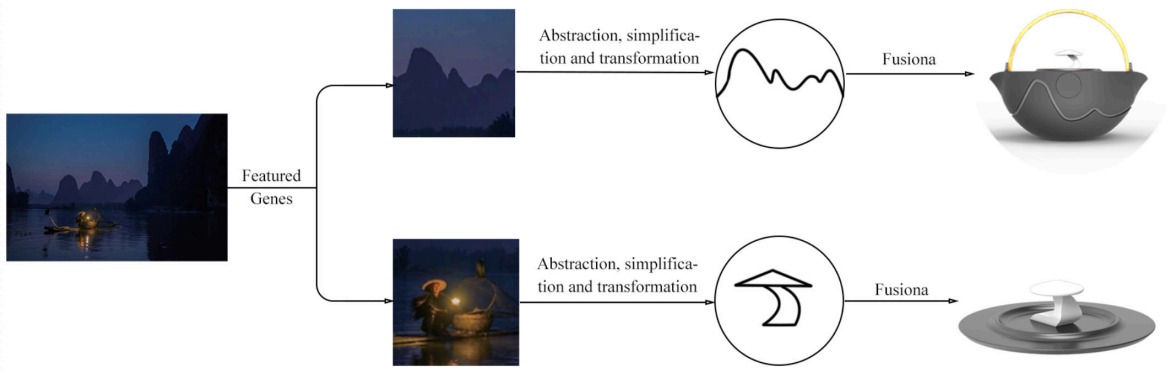
Figure 2. The artistic conception of fishing light in Guilin

Tea Set Design under the Fishing Light Artistic Conception in Guilin

Traditional arts and crafts with regional characteristics can reflect the local history, traditional culture and national characteristics. The design of such products needs to take into account the consumer's taste and aesthetic judgment, which is one of the key factors in determining the success of the design and also determines the acceptability of the product.

The design of tea sets based on the artistic conception of fishing and fire in Guilin should comprehensively consider the dominant and recessive factors. Fishing fire in Guilin brings people a sense of leisure and tranquility. This semantics needs to be combined with explicit design factors to be perfectly reflected. In the artistic conception of fishing fire in Guilin, mountains, lakes, fishermen, and fishing boats are dominant design factors. After analysis, it is found that the mountains and fishermen under the Guilin karst landform are characteristic genes, so their are selected as the main dominant design factors to abstract, simplify and deform the mountains of Guilin, so as to integrate the mountains into the pot body and cup body. It is displayed through the concave pattern, and different materials are used in the concave to highlight the performance effect. The fisherman is integrated into the design of teapot lid, and it is abstracted, simplified and deformed. The fisherman's cap is designed as the handle of teapot lid (Table 1).

Table 1. Grafting and fusion of fishing fire tea set



In order to show the sense of leisure and tranquility of the fishing fire, the color of the teapot and the teacup is black, which not only brings a sense of elegance and calmness, but also makes the tea set look high-class and elegant. In addition, in order to reflect the brightness of the fishing fire in the dark, the handle of the pot lid adopts a bright color that can form a strong contrast with black. An anti-scalding design is also added to the teapot to improve the safety. Figure 3 shows the rendering of the tea set after grafting and fusion.



Figure 3. Rendering

The production of the material model is made of black pottery. Black pottery can not only better reflect the artistic conception of fishing fire, but also has the preservation property, which is very suitable for raising tea. In addition, the heat conductivity of black pottery is also relatively low, and it is not easy to be hot when used. The mock-up is shown in Figure 4.



Figure 4. Material Model

The tea set takes the Fishing Fire Festival as the cultural connotation, extracts the Guilin landscape and the fisherman in the festival culture as the main design element, depicts the fishing fire artistic conception with the shape of the landscape and the black pottery material. The fishing fire tea set integrates the festival culture and the tea culture organically, not only carrying forward the Chinese traditional culture, but also protecting the unique fishing fire culture of Guilin.

Design Evaluation

In order to realize the objective evaluation of the final design scheme, we selected 40 tea culture lovers and established the SD scale (Table 2) by using the semantic difference method, so as to evaluate the tea set from the four aspects of recognition, culture, ease of use and reliability. The SD method is the semantic difference method, which can quantify the user's perceptual image of a product (Yamada, 2017; Wang, 2014). The semantic difference method is suitable for decomposing tacit knowledge such as experience and skills that are not suitable for expression, so as to obtain the user's cognitive experience of the modeling features and their inner meanings (Zheng, 2020). According to all aspects of tea set evaluation, a pair of antonyms are selected to be placed at both ends

of the SD scale. The subjects evaluate each index according to their subjective feelings and give the corresponding score.

Table 2. SD scale

Recognizability	Not easy to identify	-2 -1 0 1 2	Easy to identify
Culturality	Superficial	-2 -1 0 1 2	Connotative
Usability	Not easy to use	-2 -1 0 1 2	Easy to use
Reliability	Thin	-2 -1 0 1 2	Heavy

To facilitate data processing, the following evaluation model is constructed:

$$F = \frac{1}{40}\sum sign(X_i - X),\ i \in (1,\ 2,\ 3...40)$$

X takes the middle value of the score interval 0, Xi represents the score of each subject for the same aspect, sign is defined as:

$$sign(X_i - X) = \begin{cases} 1, X_i > 0 \\ 0, X_i = 0 \\ -1, X_i < 0 \end{cases}$$

The value range of F is [-1, 1]. When F>, it means that users are satisfied with the evaluation index of Yuhuo tea set; When F=0, it means that the user satisfaction in this evaluation index is average; When F<0, it indicates low user satisfaction in this evaluation index (Sang, Duan, Yang & Wei, 2019). The evaluation results were obtained by scoring 40 subjects (Table 3).

Table 3. Evaluation results of fishing fire tea set

F_1 (Recognizability)	F_2 (Usability)	F_3 (Culturality)	F_4 (Reliability)
0.825	0.325	0.775	0.600

It can be seen from the evaluation results that fishing fire tea sets can basically meet the needs of most users. The values of recognizability and culturality are relatively high, which are 0.825 and 0.775 respectively, indicating that users can intuitively feel the artistic conception of Guilin fishing fire, and the tea set is recognized by users in terms of cultural connotation. The reliability is 0.600, indicating that the black pottery material makes users feel that the tea set is thick and not easy to damage. However, the rating of ease of use is low, only 0.325, which indicates that the morphological design of fishing fire tea sets does not make it convenient for users to use, which also needs to

be optimized.

Conclusion

In this paper, the concept of grafting in botany is applied to the design of tea sets, and on this basis, the grafting and fusion of dominant design factors and recessive design factors are proposed. Through practice, the Guilin Fishing Fire Festival is selected as the grafting body, and the fishing fire tea set is designed. Finally, the evaluation of tea set design shows that the theory of grafting and fusion is feasible in the design of tea set. Applying the theory of grafting and fusion to tea set design can not only avoid the homogeneity of tea set design, increase its characteristics and cultural connotation, but also provide new ideas for the innovative design of tea set.

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