ภาษาการตกแต่งของเครื่องเคลือบเฟิ่นไฉ่เพื่อการส่งออกในศตวรรษที่ 18 และการประยุกต์ใช้ในการออกแบบผลิตภัณฑ์เครื่องเคลือบเชิงวัฒนธรรมสร้างสรรค์

The Decorative Language of 18th-Century Famille Rose Export Porcelain and Its Application in Ceramic Cultural Creative Product Design

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บทคัดย่อ

งานวิจัยนี้ใช้เครื่องเคลือบเฟิ่นไฉ่เพื่อการส่งออกในศตวรรษที่ 18 เป็นวัตถุในการวิจัย โดยมุ่งศึกษาการประยุกต์ใช้ภาษาการตกแต่งในการออกแบบผลิตภัณฑ์เครื่องเคลือบเชิงวัฒนธรรมสร้างสรรค์ วัตถุประสงค์ของงานวิจัย คือ การระบุลักษณะเฉพาะด้านสีและโครงสร้างการตกแต่งของเครื่องเคลือบเฟิ่นไฉ่เพื่อการส่งออก และพัฒนากรอบแนวคิดเชิงระบบที่สามารถนำไปใช้ในการออกแบบร่วมสมัย งานวิจัยนี้ใช้ระเบียบวิธีแบบผสมผสาน โดยรวมการวิเคราะห์สีเชิงดิจิทัล ทฤษฎีโมดูลาร์ และกระบวนการวิเคราะห์ลำดับชั้น (AHP) เพื่อดำเนินการวิเคราะห์เชิงปริมาณและเชิงโครงสร้างจากตัวอย่าง จำนวน 30 ชิ้น ซึ่งเก็บรวบรวมจากพิพิธภัณฑ์จิ่งเต๋อเจิ้นและพิพิธภัณฑ์กว่างโจว พร้อมทั้งใช้แบบสอบถามผู้เชี่ยวชาญเพื่อประเมินความสำคัญขององค์ประกอบด้านการออกแบบ

ผลการวิจัยพบว่า ระบบสีของเครื่องเคลือบเฟิ่นไฉ่เพื่อการส่งออกมีลักษณะเด่น ได้แก่ สีขาวเป็นพื้นฐาน สีชมพูเป็นสีหลัก สีเขียวเป็นสีเสริม และสีทองใช้เพื่อเน้นองค์ประกอบตกแต่ง โครงสร้างการตกแต่งแสดงให้เห็นถึงตรรกะเชิงโมดูลาร์ที่ชัดเจน ขณะที่ผลการวิเคราะห์ด้วยวิธี AHP ชี้ให้เห็นว่า “หัวข้อทางวัฒนธรรม” เป็นปัจจัยที่มีความสำคัญสูงสุด สะท้อนบทบาทของการแสดงออกทางวัฒนธรรมในการตัดสินใจออกแบบ บนพื้นฐานของผลการศึกษา งานวิจัยนี้เสนอแนวทางเชิงกลยุทธ์ในการผสานภาษาการตกแต่งแบบดั้งเดิมเข้ากับสุนทรียศาสตร์ร่วมสมัย เพื่อสนับสนุนนวัตกรรมทางวัฒนธรรมและการออกแบบเครื่องเคลือบอย่างยั่งยืน

คำสำคัญ: การออกแบบผลิตภัณฑ์วัฒนธรรมสร้างสรรค์, เครื่องเคลือบเฟิ่นไฉ่เพื่อการส่งออก, ภาษาการตกแต่ง

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Abstract

This study investigates the decorative language of 18th-century Famille Rose export porcelain and its application in ceramic cultural and creative product design. The research reveals the chromatic, structural, and semantic characteristics of Famille Rose decoration and develops a systematic framework for modern design. A mixed-method approach combining digital color analysis, Modular Theory, and the Analytic Hierarchy Process (AHP) was applied to thirty samples from the Jingdezhen and Guangzhou museums, with expert questionnaires used to determine the relative importance of design factors.

The results show that the Famille Rose color system features white as the base, pink as the dominant tone, green as the complement, and gold as the accent. Its decorative structure demonstrates a clear modular logic, while the AHP analysis identifies “Cultural Theme” as the most influential factor, emphasizing the central role of cultural expression in design. Based on these findings, the study proposes design strategies that integrate traditional decorative vocabulary with contemporary aesthetics, providing a practical and applicable framework for cultural innovation and sustainable ceramic design.

Keywords: Cultural and Creative Product Design, Famille Rose Export Porcelain, Decorative Language

Introduction

Famille Rose emerged in the late 1720s in Jingdezhen, China, as an overglaze enamel technique that soon became the dominant form of enamel porcelain production and gained widespread popularity in European markets (Cai, 2013). The term “Famille Rose” was introduced by the French scholar Albert Jacquemart in his 1862 work *Histoire de la porcelaine* to describe Chinese enamel porcelains exported to Europe (Shih & Peng, 2012). The name identifies pink enamel as a defining feature of the eighteenth-century Chinese overglaze color palette (Bellemare, 2022). Meanwhile, records from the British East India Company indicate that novelty in decoration often influenced sales more strongly than vessel form (Tang, 2018). These findings suggest that the popularity of Famille Rose export porcelain in Europe was primarily driven by a distinctive “decorative language” formed through its colors, patterns, and decorative techniques.

Transforming the artistic value of intangible cultural heritage into design resources not only inspires creative innovation but also supports the preservation and revitalization of traditional craftsmanship (Yu, 2024). The decorative art of Famille Rose export porcelain provides a historical model of cross-cultural artistic integration. Its synthesis of Chinese and Western aesthetics and its mature decorative language offer important insights for contemporary ceramic design (Jing et al., 2025). However, maintaining cultural integrity while achieving innovation and sustainable development remains a major challenge for many traditional arts in the process of modernization. Therefore, revealing the aesthetic and cultural characteristics of the eighteenth-century Famille Rose decorative language and exploring its transformation within contemporary design contexts can provide methodological guidance for the modern expression of traditional crafts and help designers seek a balance between globalization and local identity.

In studies of Famille Rose porcelain, existing research has primarily relied on experiential and qualitative approaches to examine its artistic characteristics. For instance, Wu (2019) emphasized the pictorial quality of Famille Rose decoration and its soft, refined chromatic features, while Zou & Zhang (2024) identified a color system characterized as “soft, gentle, rich, and elegant.” Although these studies have enriched the understanding of Famille Rose decorative language, they largely lack objective and systematic analytical tools, which limits their applicability in design-oriented research.

Research on traditional crafts and design has shown a clear tendency to adopt quantitative and systematic approaches in order to overcome the limitations of subjective description. Liang (2019) noted that the use of digital image acquisition and color databases has transformed the study of color in traditional art from perceptual evaluation to quantitative analysis. Similarly, Zhang & Lai (2016) introduced German art historian Ledderose’s (2001) Modular Theory into the analysis of export porcelain patterns, demonstrating that decorative structures can be systematically interpreted through

hierarchical modeling. In the field of product design, Gu & Lee (2025) applied Norman's (2004) Emotional Design framework to explain the roles of aesthetic appeal, usability, and emotional response in design evaluation, while Wang et al. (2025) adopted the Analytic Hierarchy Process (AHP) to illustrate its scientific rigor and applicability in complex design decisions.

Although previous studies have provided valuable references for both the analysis of traditional art and design methodologies, there remains a lack of a systematic and integrated framework capable of translating the decorative language of historical ceramics into structured design analysis, design decision-making criteria, and implementable design strategies. In response to this methodological gap, this study analyzes the decorative language of eighteenth-century Famille Rose export porcelain and explores its transformation and application within contemporary ceramic cultural and creative product design.

Research Questions

1. How can the decorative language of 18th-century Famille Rose export porcelain be systematically analyzed using structured and quantifiable methods?

2. How can the results of decorative language analysis be translated into a design-oriented decision-making framework for ceramic cultural and creative products?

3. How can design practice be employed to examine the applicability of this methodological framework in contemporary ceramic design?

The Objectives of the Study

1. To analyze the color and pattern of Famille Rose export porcelain and reveal the characteristics and applications of its decorative language.

2. To explore the transformation strategies of Famille Rose decorative language in contemporary ceramic cultural and creative product design, and to establish a systematic analytical framework that integrates aesthetic experience and design decision-making.

3. To demonstrate the contemporary expression of the decorative language through a design proposal, highlighting its dual value in modern life and cultural heritage transmission.

Conceptual Framework

This study follows a logical structure of "decorative language analysis – methodological construction – design application." It employs digital color analysis and Modular Theory to interpret the decorative features of Famille Rose export porcelain, integrates emotional design

theory and the Analytic Hierarchy Process (AHP) to establish a design analysis framework, and verifies its applicability through product design practice. (Figure.1)

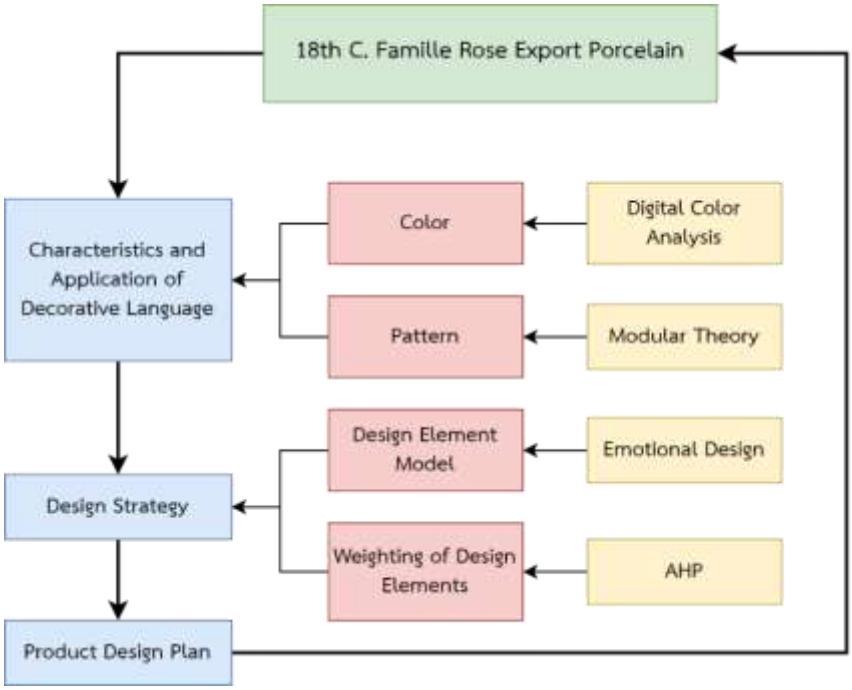


Figure 1: Conceptual Framework of The Study

Methodology

1. Research Objects and Participants

The study focuses on 18th-century Famille Rose export porcelains from the Jingdezhen Ceramic Museum and the Guangzhou Museum, which represent the production and export centers of this craft. Their collections provide a comprehensive view of mainstream decorative styles. An additional sample set from an overseas museum was included to enrich the study scope.

Following the requirements of AHP, five evaluators were invited: one export porcelain scholar, one Famille Rose artist, two cultural product designers, and one cultural enthusiast. Their diverse backgrounds enhanced the reliability and applicability of the evaluation results.

2. Research Instruments

2.1 Digital Color Analysis Tool

The Multicolor Engine (https://labs.tineye.com/color/) was used to calculate color proportions in the sample images and to generate color maps and proportional palettes, providing an objective representation of chromatic distribution and hierarchy. (Figure. 2)

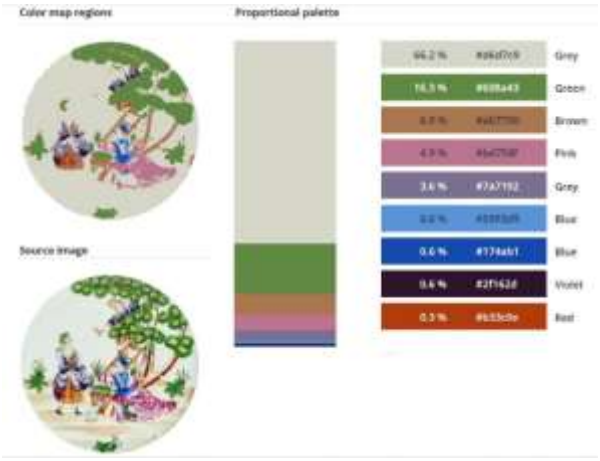


Figure 2: Multicolor Engine's Working Interface

2.2 Questionnaire Design for AHP Evaluation

The AHP evaluation model was developed based on Emotional Design Theory (Norman, 2004) It consists of 3 levels: the goal level (A), the criteria level (B1–B3), and the sub-criteria level (C1–C11). The criteria include cultural theme, functional design, and visual design, corresponding to the reflective, behavioral, and visceral levels in Emotional Design. The 11 sub-criteria further address aspects such as color, pattern, form, usability, and cultural expression (Figure 3). The model was converted into an AHP questionnaire using software, and pairwise comparisons were conducted through single-choice items using the 1–9 Saaty scale. (Saaty, 1990)

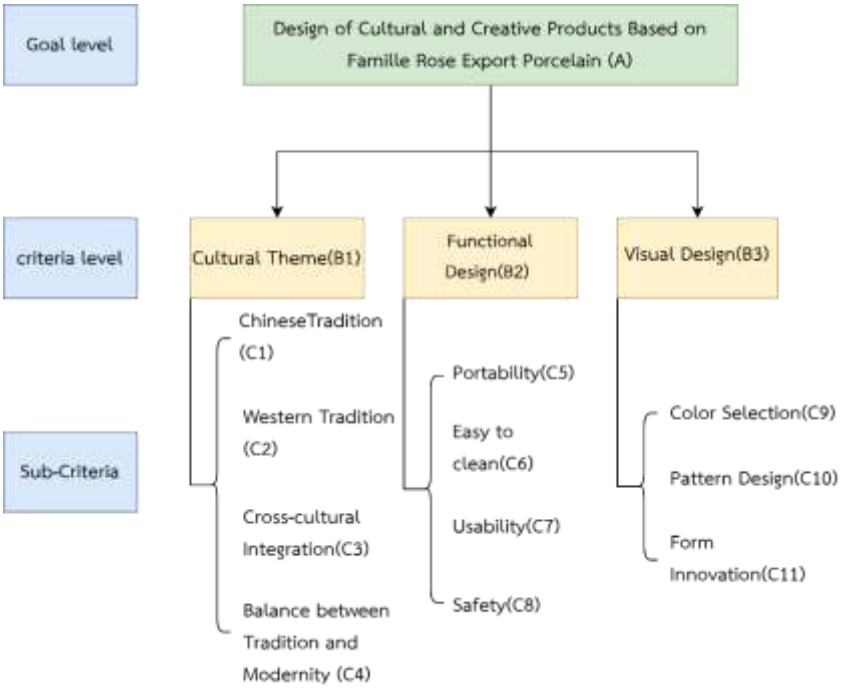


Figure 3: AHP Evaluation Model

Note: The Combination of Letters and Numbers is Used to Number The Relevant Text.

3. Data Collection

For image sample collection, considering that the relatively flat decorative surfaces of plates help reduce lighting interference caused by complex curvatures, thirty Famille Rose export porcelain plates were selected across nine decorative motifs, including armorials, flowers, birds-and-flowers, flowers-and-butterflies, animals, landscapes, Western figures, Chinese figures, and ships. Selection criteria focused on motif diversity, completeness of decorative composition, and good color preservation. All samples were photographed in museum exhibition environments under artificial lighting conditions. As exhibition lighting is designed for display rather than analytical purposes, lighting conditions may exert some influence on color appearance. To control technical variables, all images were captured using the same mobile device (iPhone) with identical camera settings; after photography, image resolution and dimensions were standardized to improve comparability among samples.

For the questionnaire, an AHP pairwise comparison survey was conducted with five experts on site. The researcher explained the questionnaire structure and rating criteria, providing an example to minimize consistency errors. This face-to-face approach ensured shared understanding and improved data reliability.

4. Data Analysis

Color analysis was conducted using Multicolor Engine to examine color distribution and proportional relationships within the images. The analysis was based on the final image files obtained through photography and focused on visual color appearance rather than the physical color values of pigments. During data processing, extracted colors were categorized by color families, and average values were used to identify overall chromatic tendencies, with emphasis on dominant tones, complementary colors, and their compositional relationships. Given that Famille Rose enamels lack standardized pigment formulations and that variations in production and firing conditions can significantly influence chromatic outcomes, standard color calibration charts were not applied. Accordingly, the analysis adopts a color-family-based approach to support design-oriented interpretation and comparison.

For pattern analysis, the study adopted Ledderose's (2001) Modular Theory, which posits that the formal structure of Chinese art is based on interchangeable and repeatable components (modules) that gradually combine to form complex visual systems—known as modular structures. A set of samples sharing the same motif was used as a case study to identify the hierarchical relationships in patterns from simplicity to complexity.

In the AHP data processing, the pairwise comparison results from expert questionnaires were entered into analytical software to calculate the weights of design factors and test their

consistency. By synthesizing the results across three criteria and eleven sub-criteria, the study determined the relative importance of each factor in the overall design.

Results

1. Decorative Language

1.1 Color Characteristics

Statistical analysis of the color proportions of thirty samples reveals a distinct hierarchical structure and a clear visual logic in the color system. (Figure. 4)

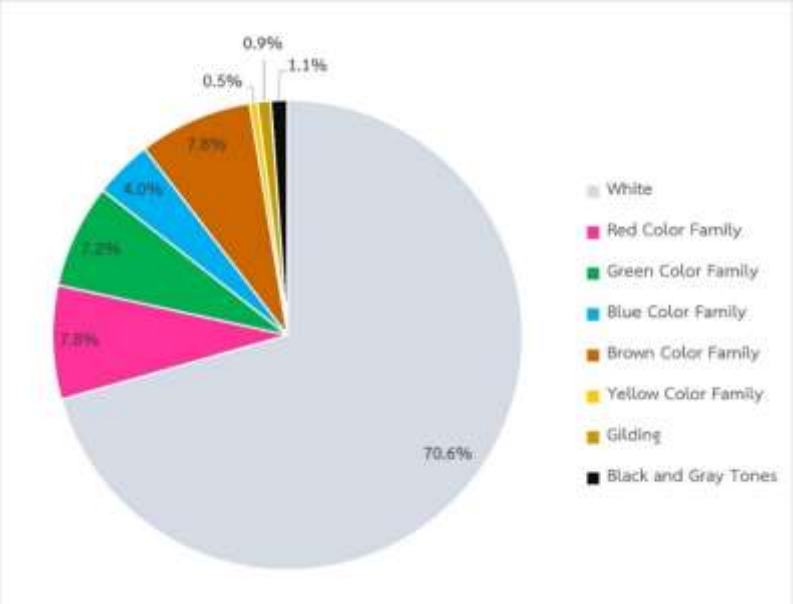


Figure 4: Color Proportions of 18th-century Famille Rose Export Porcelain

The white glaze, covering 70.6% of the surface, provides a background for the presentation of various colors. The highly saturated red family (7.8%) serves as the visual focal point, frequently applied to flowers, garments, and facial features, while the green family (7.2%) supports the floral motifs, creating a warm–cool contrast with red that enhances visual balance and rhythm. The brown family (7.8%) and blue family (4.0%) represent the inherent colors of objects in certain motifs such as sailing vessels and landscapes. Black and gray are used for outlines, reinforcing structural stability. Although gold is difficult to detect due to oxidation and its limited surface area, more than half of the pieces employ gilding, creating material contrast and a sense of luxury.

Overall, the color system follows the logic of “white as base, pink dominant, green complementary, and gold accenting.”

1.2 Pattern Characteristics

The decorative system of Famille Rose export porcelain is constructed through the hierarchical combination of basic visual elements, forming complete decorative compositions through modular organization. An analysis of the relationship between modules and pattern structures reveals that this compositional logic not only enhances organizational efficiency but also provides the decorative system with structural coherence and adaptability (Table 1). Moreover, the number of modules employed should not be regarded as a fixed artistic variable; rather, it represents a design outcome shaped by expressive requirements, technical complexity, and market - related considerations.

Table 1 Correspondence Between Modular System and Pattern System

Modular System	Pattern System	Definition and Function
Mass	All patterns	Reflects overall decorative style.
Series	Composition of related units	Formed by the repetition of connected motifs across vessel sets.
Unit	Pictorial Pattern	Main motif composed of multiple modules expressing narrative or symbolic meanings.
Main Module/ Auxiliary Modules	Main Module	It possesses a complete form and an independent symbolic meaning.
	Border-Corner Pattern	Auxiliary patterns applied to edges and corners to enhance spatial depth and support the main motif.
	Frame Panels	Auxiliary Pattern, Used to frame and divide visual space, highlighting the central pattern.
Element	Basic Visual Element	Foundational form such as lines and dots without symbolic meaning.

A representative example can be observed in a Famille Rose tea set dating to the Qianlong period (1735–1795), which exhibits a typical modular structure. In this case, the cockerel and peony function as main modules, symbolizing auspiciousness and prosperity, respectively. Combined with several auxiliary modules, these elements form a unified decorative unit that visually conveys the composite motif of “Prosperity and Auspiciousness.” This unit is repeatedly applied across different vessels within the tea set, generating a series characterized by both repetition and variation. During this process, the number, posture, and placement of the cockerel are adjusted according to vessel form, while the arrangement of peony motifs varies in response

to compositional proportion. Such controlled variation produces subtle differentiation within an overall thematic unity, demonstrating a dynamic balance between standardization and flexibility. This “module–unit–series” organizational structure reflects the highly systematized and programmatic nature of the decorative system of Famille Rose export porcelain (Figure 5).



Figure 5: Modular Composition of a Famille Rose Tea Set Illustrating The Relationship Between Main Modules, Auxiliary Modules, Decorative Units, and Series.
(Source: https://www.christies.com/en/lot/lot-5480929)

2. AHP Analysis

Table 2 presents the pairwise comparison results at the criteria level. These results indicate that, in the experts’ overall assessment, cultural expression remains the central element in the contemporary interpretation of Famille Rose porcelain. Visual design plays a key role in aesthetic translation, whereas functional design serves a supporting role within the system.

Table 2 Pairwise Comparison Matrix and Weights of Criteria Level (B1–B3)

A	B1	B2	B3	Weight (W)
B1	1	5	3	0.637
B2	1/5	1	1/3	0.104
B3	1/3	3	1	0.259

Further calculation of the global weights of the sub-criteria (Table 3) shows that within the cultural dimension, Cross-cultural Integration (C3) and Traditional–Modern Balance (C4) hold the highest importance. This reflects the experts’ consensus that cross-cultural characteristics define

the essence of Famille Rose porcelain, while contemporary user needs must also be addressed. In the visual dimension, Color Selection (C9) ranks significantly higher than Pattern Design and Form Innovation, confirming that color functions as the central expressive medium of Famille Rose decorative language. Within the functional dimension, Usability (C7) and Safety (C8) have nearly equal weights, indicating that both user experience and material safety are valued in developing cultural and creative products based on Famille Rose craftsmanship.

Table 3 Global Weights of Sub-Criteria (C1–C11)

Rank	Criteria	Sub-Criteria	Local W	Criteria W	Global W
1	B1	C3	0.567	0.637	0.361
2	B1	C4	0.265	0.637	0.169
3	B3	C9	0.637	0.259	0.165
4	B1	C1	0.107	0.637	0.068
5	B3	C10	0.259	0.259	0.067
6	B2	C7	0.429	0.104	0.045
7	B2	C8	0.336	0.104	0.035
8	B1	C2	0.061	0.637	0.039
9	B3	C11	0.104	0.259	0.027
10	B2	C6	0.168	0.104	0.017
11	B2	C5	0.067	0.104	0.007

All pairwise comparison matrices satisfied the consistency requirement (CR < 0.10), indicating a high level of logical coherence and reliability. The model structure was therefore validated, and the results were used as the basis for deriving the design strategies.

3 Design Strategies Based on AHP Results

Based on the AHP results, the design strategies are organized into three criteria: cultural theme, visual design, and functional design. They form a coherent framework linking cultural expression, aesthetic form, and user experience in contemporary ceramic design. (Table 4)

Table 4 Design Strategies Based on AHP Results

Criteria	Orientation	Core Strategies
B1 Cultural Theme	Value and Cultural Continuity	Inherit traditional motifs and narrative structures; Adapt historical East–West decorative fusion for modern interpretation.

Table 4 Design Strategies Based on AHP Results (Continued)

Criteria	Orientation	Core Strategies
B3 Visual Design	Visual Structure and Aesthetic Balance	Preserve the traditional color system; Apply Modular Theory to establish decorative order; Ensure harmony between decoration and vessel form.
B2 Functional Design	Craftsmanship and Usability	Restrict decorative areas to non-contact surfaces to ensure safety; Select vessel forms suitable for daily life and cross-cultural contexts, integrating into contemporary use.

4. Design Proposal

4.1 Design of Vessel Forms

During the Sino - European cultural exchange of the eighteenth century, tea was not only a major trade commodity but also a catalyst for the cross-cultural transmission of material culture (Zhang & Xu, 2022). Therefore, this study selects teaware as the design medium, representing both the functional and cultural dimensions of vessel form. The form reference for this design was a hexagonal Famille Rose export porcelain vase from the collection of the Guangzhou Museum. Its multiple broad and flat surfaces allow for continuous pictorial compositions and the effective expression of cultural themes (Figure 6). Based on these features, a series of vessel forms was designed. (Figures 7)



Figure 6: Hexagonal Famille Rose Export Porcelain Vase

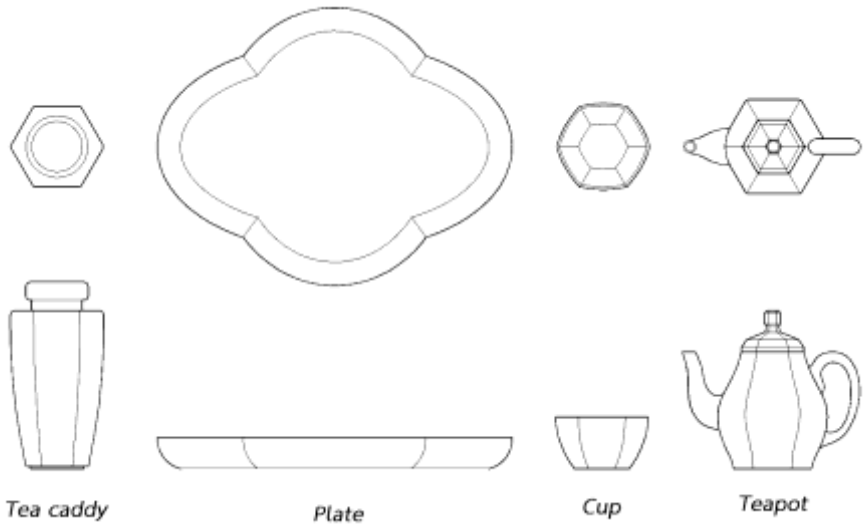


Figure 7: Vessel Forms of the Teaware Set

4.2 Decorative Design and Visual Composition

The survey revealed that floral motifs are the most common decorative theme in Famille Rose export porcelain. Flowers, celebrated for their natural beauty, transcend cultural boundaries, while the use of pink and green tones reflects the core color characteristics of the Famille Rose palette. This design selects four floral motifs—peony, lotus, chrysanthemum, and plum blossom—symbolizing prosperity, purity, longevity, and resilience, respectively. Together they form the composite theme Peace and Harmony through the Four Seasons. Each motif is applied to a different vessel type, and the seasonal succession of blossoms symbolizes the passage of time, creating a visual system that unites temporal rhythm and cultural imagery.

4.3 Decorative Expression and Cultural Meaning

The teapot serves as the centerpiece of the set, featuring the peony—known in Chinese culture as the “king of flowers”—as its primary motif. To enrich the composition, the design borrows spatial principles from traditional Chinese painting, arranging auxiliary modules such as rocks, grasses, and butterflies around the main flower to form a complete unit that occupies the central surface of the vessel. The spout, handle, and lid, being smaller structural areas, are decorated with border patterns, while geometric background motifs enhance visual unity and rhythmic balance. To prevent monotony, the upper and lower sections are colored separately in coordination with the flower and leaf tones, emphasizing the red–green contrast typical of Famille Rose art.

To reflect the fusion of Chinese and Western styles, Rococo-style scrolls and frame motifs are introduced as border-corner patterns and frame panels, mainly distributed around joints and narrow spaces. The use of gilt outlines not only echoes the cross-cultural features of Famille Rose export porcelain but also enhances its visual opulence. The other vessels follow

the same design logic, forming a coherent visual narrative that connects theme and form throughout the set. (Table 5)

Table 5 Teaware Main Facade Decoration and Combination

Teapot	
Cup	
Tea caddy	
Plate	
Full Teaware	

Discussion

1. Integration and Innovation of Methodology

This study integrates digital color analysis, Ledderose's Modular Theory, and the Analytic Hierarchy Process (AHP) to construct an interdisciplinary research approach. This methodology not only provides a visualized and operable analytical framework for the study of traditional decorative arts, but also addresses the limitations of previous research that relied heavily on experiential judgment and qualitative description. By translating decorative language into a structured model and introducing quantitative evaluation mechanisms, the study achieves a methodological shift from descriptive analysis to decision-oriented analysis, thereby establishing an effective connection between traditional ceramic decoration research and contemporary design practice.

2. Verification and Significance of Design Practice

The "Peace and Harmony Through the Four Seasons" teaware set serves as a design practice case to verify the proposed research method and analytical results. The design establishes a clear and consistent correspondence among color, pattern, and vessel form, and integrates design elements based on the evaluation results generated through AHP. In doing so, the decorative language of Famille Rose export porcelain is reinterpreted within a contemporary living context. Rather than simply reproducing historical styles, this design practice demonstrates the operability and applicability of the proposed analytical framework in actual design decision-making, confirming its effectiveness as a tool for cultural and creative product design.

3. Theoretical Implications and Academic Contribution

This study reveals the potential of traditional decorative arts to generate cross-cultural visual forms through modular structures and the redesign of vessel forms, indicating that traditional art should not be regarded as a static heritage but as a design resource that can be reactivated within contemporary contexts. From a methodological perspective, the analytical framework adopted in this study is more suitable for design-oriented comparative research, with an emphasis on the structural relationships of decorative language and the logic of design decision-making, rather than on the precise reconstruction of material techniques or physical color values. Based on this positioning, the conclusions of this study should be understood as an exploratory interpretation

of how traditional decorative language can be translated into contemporary design contexts, rather than as a comprehensive definition of the technical system of Famille Rose porcelain.

Conclusion

Based on the analysis presented in this study, it can be concluded that:

1. In research on decorative language oriented toward design practice, reliance on perceptual and subjective description alone is insufficient to provide effective design guidance. In contrast, analytical approaches that are quantifiable, visualized, and operable are more conducive to translating research outcomes into design decision-making.

2. When traditional decorative language is introduced into contemporary living contexts, vessel form serves as a critical medium linking decorative expression, functional requirements, and lifestyle. The selection of appropriate forms therefore directly influences the modes of transmission and the practical vitality of traditional art forms.

3. By incorporating the Analytic Hierarchy Process (AHP) into design decision - making, this study establishes a collaborative mechanism involving experts from different fields. Such an approach reduces the limitations of designer-centered intuition and experience, enabling more comprehensive and rational decision-making in complex cultural design contexts.

Suggestions

1. Practical Implications for Design

Future cultural and creative product design can extend this study's methodology to other traditional crafts, such as lacquerware and brocade. Applying this approach to different materials and media can help establish a comparative framework for traditional decorative arts and provide theoretical and practical guidance for innovative design.

2. Cultural and Educational Dissemination

The results of this study can also be applied to heritage education and museum interpretation through digital and visualized approaches. Techniques such as color data visualization, modular pattern mapping, and digital analysis of motif–theme relationships can enhance public understanding of Famille Rose porcelain and create more engaging and accessible cultural experiences.

3. Methodological Refinement through Design Evaluation

Future research may further refine the proposed methodological framework by incorporating systematic evaluation from both domain experts and end users during the design process. By introducing iterative feedback mechanisms, design strategies derived from decorative language

analysis can be continuously tested and adjusted in practice. Such an approach would allow the analytical framework to evolve through real-world application, enhancing its adaptability, reliability, and relevance for ceramic cultural and creative product design.

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