

The Research on Characteristics and Transmission of Traditional Residential Architectural Ornamentation from a Semiotic Perspective :A Case Study of Tongyang Old Street in Chaohu of Anhui Province

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Abstract

This study aims to examine the characteristics and cultural significance of traditional residential architectural ornamentation in Tongyang Old Street, Chaohu, Anhui Province, from a semiotic perspective. The objective is to identify the aesthetic, functional, and symbolic roles of ornamental patterns and evaluate their influence on modern cultural preservation and innovation. A mixed-methods approach combining literature analysis, field investigations, and case studies was employed. Data collection focused on analyzing ornamental elements, materials, and color schemes, along with their cultural and historical connotations. The results indicate that the architectural ornamentation of Tongyang Old Street exhibits the following notable characteristics: First, material properties, with a primary use of local materials such as blue bricks and black tiles, reflecting a combination of traditional craftsmanship and ecological wisdom. Second, types of ornamentation, encompassing a rich variety of patterns such as intertwining branches and cloud motifs, which serve as carriers of visual aesthetics while embodying profound cultural meanings. Third, symbolic functionality, as many ornamental patterns are inspired by local flora and fauna, conveying the community's values and aspirations while reflecting philosophical beliefs in the continuity of life and harmony with nature. The ornamentation design achieves a balance between aesthetic appeal and cultural depth in both form and content. The conclusions suggest that these ornamental elements are significant cultural symbols with the potential for innovative applications in modern design, offering valuable insights for the formulation of cultural preservation policies and the integration of traditional aesthetics with contemporary practices.

Keywords: semiotics; traditional residential architecture; architectural ornamentation; cultural transmission; Tongyang Old Street

Introduction

In the context of rapid globalization, cultural transmission and preservation face unprecedented challenges. As a core component of cultural heritage, traditional residential architectural ornamentation not only embodies rich historical and cultural connotations but also vividly reflects the natural environment and social customs of specific regions. The diversity and cultural value exhibited by these forms of ornamentation make them an important subject that urgently requires in-depth research.

The traditional architectural style of the central Anhui region is characterized by distinct regional features, particularly in terms of materials, spatial layout, and ornamental techniques, reflecting the climatic and cultural characteristics of the Jianghuai area. The architecture in this region often utilizes blue bricks, grey tiles, and white walls, forming a typical Huizhou architectural style that not only adapts to the humid climate but also showcases the concept of harmonious coexistence between architecture and nature (Xu ,2015). In terms of ornamentation, the simple and natural motifs and carvings express not only local religious beliefs and natural landscapes but also convey strong cultural symbolism and social significance. As a well-preserved example of traditional architecture in central Anhui, Tongyang Old Street integrates the mortise-and-tenon structure of southern Anhui residential buildings with the beam-lifting structure of northern Anhui, making it an ideal case for studying the region's architectural art and cultural transmission.

Located in Chaohu City, Anhui Province, Tongyang Old Street, with its unique Huizhou architectural style and long historical background, showcases the rich connotations of local culture and architectural art ((Figure 1). Built in the late Yuan and early Ming dynasties, Tongyang Old Street was once a crucial hub for commerce and cultural exchange, attracting numerous merchants and scholars and fostering a strong sense of local identity and cultural pride. These historical sites not only provide the community with a rich cultural backdrop but also promote the continuation and prosperity of local culture. The architectural layout of Tongyang Old Street combines the spatial forms of northern courtyards and southern Jiangnan courtyards, fully reflecting the regional characteristics and cultural integration of central Anhui. Influenced by both natural ecology and cultural traditions, the region gradually developed a unique Huizhou architectural system. With the influx of immigrants and cultural exchanges, these architectural elements continuously permeated residents' daily lives and construction practices, significantly influencing local residential design and building choices.

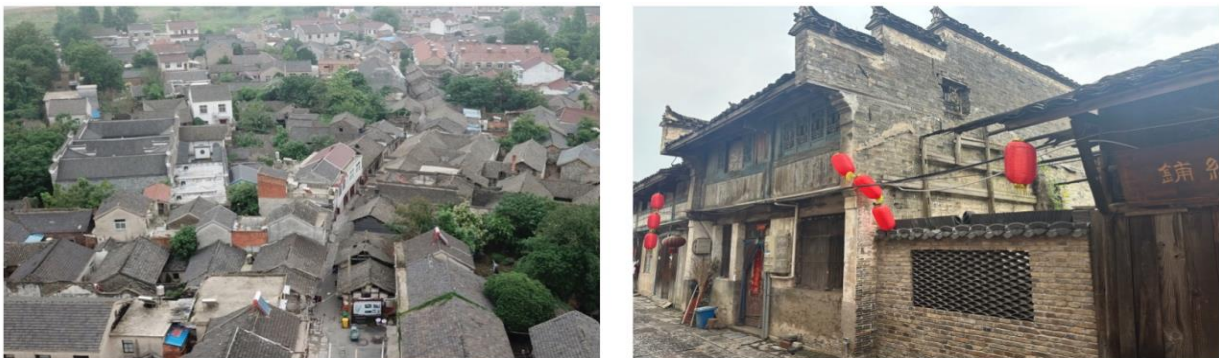


Figure 1: Tongyang Old Street architectural style map
Source: By the author (2023)

Semiotics, a discipline that studies signs and their meanings, has been widely applied in various fields, including architecture. The binary theory of signs, proposed by Swiss linguist Ferdinand de Saussure, which includes the "signifier" and the "signified," provides an important theoretical framework for understanding the symbols in architectural ornamentation(Huang & Chen, 2004). In the semiotic analysis of architectural ornamentation, the "signifier" represents the external form of the symbol, such as the shapes and techniques

of ornamental patterns, while the "signified" reflects the cultural meanings conveyed by the symbol, encompassing local legends, social systems, and religious cultures. In the architectural ornamentation of Tongyang Old Street, the "signifier" is embodied in the complex carving patterns and designs, while the "signified" reveals the cultural values, social meanings, and historical context carried by these symbols. Through the analysis of ornamental symbols, Tongyang Old Street not only reflects the aesthetic beauty of Huizhou architecture but also provides an important reference model for the subsequent development of architectural culture.

Despite the rich cultural and historical significance of traditional residential architectural ornamentation, there remain several challenges in its study and preservation. First, the existing research often lacks a systematic analysis of the symbolic meanings embedded in ornamentation, particularly from a semiotic perspective. This gap limits a comprehensive understanding of how such symbols reflect the cultural, social, and environmental contexts of their time. Second, while Tongyang Old Street serves as an exemplary case of Huizhou architectural heritage, studies focusing on its unique integration of northern and southern building styles remain scarce. The absence of detailed investigations into its ornamental patterns and their cultural connotations further underscores the need for focused research. Third, the rapid pace of modernization poses threats to the preservation of traditional architectural elements. Without effective strategies to balance cultural integrity with contemporary functionality, the symbolic and aesthetic values of such ornamentation risk being overshadowed or lost. Lastly, the potential for integrating traditional symbols into modern design practices remains underexplored. Innovative methods to reinterpret these elements in ways that resonate with modern aesthetics and consumer needs could offer solutions for cultural revitalization, yet this area demands more empirical and theoretical attention.

Research Objectives

To identify the key symbolic features of traditional residential ornamentation in Tongyang Old Street, to analyze how they visually and culturally reflected local history and social customs, and to explore strategies for their transmission and innovation in modern design.

Research Methodology

This study adopts an integrative methodology combining literature analysis, field investigation, and case study, underpinned by a semiotic conceptual framework. The objective is to comprehensively examine the characteristics and cultural connotations of traditional residential architectural ornamentation in Tongyang Old Street, with a focus on its preservation and innovative applications.

3.1 Data Collection

Data for this study were collected through three primary methods:

Literature Analysis: A comprehensive review of academic literature and archival records was conducted to establish the historical and theoretical context for this research. This method provided foundational insights into the evolution and significance of the architectural ornamentation in Tongyang Old Street.

Field Investigation: From September to October 2024, a systematic field investigation was undertaken to document and analyze the architectural features of Tongyang Old Street.

Fifteen representative buildings were selected for detailed examination, involving precise measurements of structural elements, high-resolution photography of decorative patterns, and observational notes to capture visual and spatial characteristics.

Questionnaire Survey: During the same period, structured questionnaires were distributed to 91 participants, encompassing local residents, cultural heritage professionals, and visitors to Tongyang Old Street. All 91 responses were valid, achieving a 100% response rate. The survey explored participants' perceptions of the aesthetic, functional, and cultural significance of the architectural ornamentation, offering valuable perspectives for analysis.

3.2 Data Analysis

The collected data were analyzed using both qualitative and quantitative approaches to provide a holistic understanding:

Qualitative Analysis: Semiotic analysis, grounded in Saussure's theory of "signifier" and "signified," was employed to interpret the cultural meanings embedded in the ornamentation. The "signifier" encompasses tangible elements such as patterns, materials, and colors, while the "signified" reflects the cultural narratives and values conveyed. This method illuminated the interplay between form and meaning, highlighting the historical and cultural significance of the designs.

Quantitative Analysis: Color data were extracted from ornamentation photographs using Photoshop and analyzed through the HSL (Hue, Saturation, Lightness) model. This approach quantified aesthetic patterns and their relationship to the region's cultural identity. Additionally, statistical analysis of questionnaire responses identified prevalent perceptions and preferences, enhancing the study's empirical foundation.

3.3 Integration of Findings

By synthesizing qualitative insights with quantitative data, this study offers a comprehensive understanding of the traditional architectural ornamentation in Tongyang Old Street. The integration bridges theoretical perspectives with empirical findings, facilitating practical recommendations for preserving and innovating traditional design elements in modern contexts. This holistic approach underscores the dynamic relationship between heritage preservation and contemporary design innovation.

Results and Findings

4.1 Morphological Characteristics of Traditional Residential Architectural Ornamentation

The traditional residential architectural ornamentation of Tongyang Old Street exhibits a deep connection with the regional culture and natural environment, preserving the traditional Huizhou architectural style while incorporating influences from local ecological conditions and social customs. As a representative of traditional residential architecture in the Chaohu region, the buildings of Tongyang Old Street reflect strong regional characteristics and cultural heritage through their selection of materials, use of color, and ornamental design.

4.1.1 Characteristics of Building Materials

The primary materials used in the architecture of Tongyang Old Street are blue bricks, whitewashed walls, and tiles. These materials rely on the abundant natural resources of the region and demonstrate the excellence of traditional craftsmanship. Blue bricks, valued for their moisture resistance and durability, are widely used in the exterior walls of residential buildings, particularly suitable for the humid climate of the region. These materials enhance

the durability of the structures while their coarse texture adds to the natural aesthetic of the architecture. Whitewashed walls contribute warmth to the buildings, creating a harmonious visual effect with the surrounding greenery. As a defining element of Huizhou architecture, the strong contrast between dark tiles and whitewashed walls further emphasizes the sense of layering and three-dimensionality in the buildings.






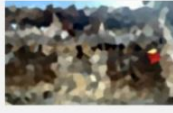
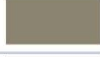






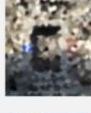



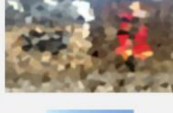


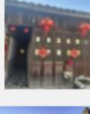
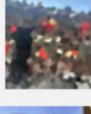



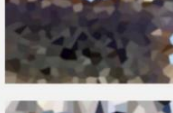










4.1.2 Characteristics of Color Application

The traditional residential architectural ornamentation of Tongyang Old Street predominantly features a palette of black, white, and grey, achieving a visually harmonious and unified effect while conveying rich cultural meanings. Black symbolizes stability and restraint, reflecting respect for traditional culture; white represents purity and brightness, expressing hope for the future; and grey, balancing black and white, conveys the depth and inclusivity of regional culture (Liu & Zhang, 2010). This color scheme not only satisfies the comfort needs of the residential environment but also reflects the residents' pursuit of quality living. Moreover, the use of color in Tongyang Old Street aligns closely with local folk traditions. During festive occasions, vibrant ornamental colors enrich the visual landscape, strengthening community cohesion and cultural identity.

To further analyze the color characteristics of the architecture, this study collected photographs of Tongyang Old Street and processed the images using Photoshop to extract the primary colors. Subsequently, the HSL color model was used for data analysis (Table 1). The results indicate that the walls of Tongyang Old Street are constructed primarily with blue bricks and red bricks, with blue bricks being more prevalent. The hue (H) is concentrated between GY (yellow-green), Y (yellow), YR (yellow-red), and R (red), with chroma (C) ranging between 1 and 3, presenting typical yellow-grey tones. This color system is closely related to the climatic conditions and ecological characteristics of the Jianghuai region.

Tongyang Old Street is located on the shores of Chaohu Lake, surrounded by extensive waterways. To mitigate the impact of flooding on the buildings, the local residential facades do not use the common whitewashed finish seen in southern Anhui but instead leave the bricks and stones exposed, creating a distinctive grey-yellow appearance. This grey-yellow tone not only meets the functional needs of the architecture but also enhances its aesthetic value, closely aligning the architectural style of Tongyang Old Street with the natural ecology and cultural background of the Chaohu Lake region.

Table 1: Analysis of Architectural Colors (Source: Created by the Author, 2023)

Name	Capture Images	Processed Image	Color Category	Color Samples	Color Parameters
Building 1			Main Color		1271 10B6.5/1
			Embellished color		1274 5PB8/1
Building 2			Main Color		0893 1.9Y5.5/1.2
			Embellished color		1066 10R2.5/1.2
Horse head wall			Main Color		1344 1.9GY8/1
			Embellished color		0421 0.6P6.5/1.8
Doors and door covers			Main Color		0956 6.9BG6/1
			Embellished color		0976 0.6GY6/1.2
Wooden door 1			Main Color		1065 10R2.5/1.8
			Embellished color		0992 3.1Y6.5/3.6
Wooden door 2			Main Color		0283 8.1R4.5/2.8
			Embellished color		1052 5.6RP3.5/1.8
Wooden window			Main Color		1041 2.5RP3.5/1
			Embellished color		1045 7.5BG4.5/1
Wall 1			Main Color		0731 1.3G7.5/1.2
			Embellished color		0544 3.9PB4/4.8
Wall 2			Main Color		0976 0.6GY6/1.2
			Embellished color		0053 6.9Y5/2.8

4.2 Types of Carved Symbols

The psychological schemas in human experience can be activated by the visual organization of ornamental patterns, allowing internal schemas to align with visual structures, thus facilitating aesthetic perception and enjoyment. These patterns transcend barriers of language, script, customs, regions, belief systems, thought models, and values, enabling interpretation and transformation (Ye, Li, & Liu, 2020). Carving art, as a significant form of architectural ornamentation in Tongyang Old Street, showcases the unique charm of traditional wood carving, brick carving, and stone carving. Through their exceptional craftsmanship, artisans created lifelike and expressive works that not only beautified architectural components such as doors, windows, and beams but also conveyed rich cultural information, reflecting the residents' lifestyle and aesthetic pursuits. The carved patterns often

draw inspiration from folklore or auspicious meanings, expressing aspirations and expectations for a happy life. Additionally, carving art is closely tied to seasons, festivals, and other social activities, becoming an integral part of community cultural life and enhancing residents' cultural identity.

Historically, the architectural ornamentation of Tongyang Old Street has integrated the regional symbolic characteristics of Huizhou architecture. Particularly during the Ming and Qing dynasties, the exchange and dissemination of craftsmanship elevated the Huizhou "Three Carvings" (wood, brick, and stone) to their zenith. These carving techniques were widely applied in residential and garden buildings, vividly depicting daily life scenes and expressing aspirations for a better future, reflecting the residents' love for life in Tongyang Old Street (Ma, Lin, & Jia, 2023).

4.2.1 Brackets

Brackets are a common structural element in the architecture of Tongyang Old Street, primarily composed of wood or stone, and are used to support the roof's weight. They are often presented in the form of wood carvings, decorated with intertwining branch patterns. These geometric motifs are inspired by natural forms such as curved leaves, ripples on water, and arcs traced by birds' wings, reflecting ancient reverence for and dependence on nature. Intertwining branch patterns are designed by refining the entwining characteristics of plants, innovatively integrated with the traditional architectural framework. Their continuous structure symbolizes "endless vitality," making them a common transitional ornament between auspicious motifs.

4.2.2 Beams

Beam carvings are primarily concentrated at the ends and central sections of the beams and feature a variety of patterns, including plants, water wave patterns, and depictions of objects. Object carvings may represent tangible objects or abstract decorative motifs. For example, cloud patterns commonly found in the central sections of beams are both aesthetically pleasing and symbolic of auspiciousness. The origins of cloud patterns can be traced back to early astronomical observations, evolving into auspicious symbols in architectural ornamentation. Their flowing curves and robust structure represent the vitality of life and the rhythmic beauty of design, symbolizing the residents' longing for freedom and a prosperous life. Honeysuckle patterns, often carved on the sides of beams, are inspired by the vine structure of honeysuckle plants. The intertwining lines convey expansiveness and vitality, symbolizing the residents' optimistic outlook and reverence for nature. These carvings embody continuity and vitality, emphasizing the harmony between the residents of Tongyang Old Street and their natural surroundings.

4.2.3 Door Ornamentation

Door ornamentation in Chinese culture represents a fusion of folk traditions and decorative art. Huizhou wood carving, renowned for its historical achievements, is particularly prominent in door panel design. For instance, the carving techniques used in the grille, ring-panel, and skirt panel of door panels emphasize both functionality and artistic style. The carved designs, typically located in the upper sections of the door panels, often employ openwork techniques, allowing light to pass through. This ensures proper lighting and ventilation while enhancing the visual experience of residents by integrating outdoor scenery with the interior environment.

4.2.4 Window Ornamentation

Window ornamentation holds a significant place in the architecture of Tongyang Old Street, featuring diverse window types such as straight-root windows, sliding windows, grid windows, and floral windows. Through ingenious designs, craftsmen ensured that window ornamentation combined practicality with artistic appeal. The window ornamentation in Tongyang Old Street continues the decorative traditions of Huizhou, often employing wooden strips to create square, diamond, or polygonal lattice and floral designs. Carving techniques typically combine openwork and bas-relief, featuring motifs such as key patterns, geometric designs, and depictions of flowers, birds, and animals. From a modern compositional perspective, the intricate geometric carvings of window decorations, paired with tightly fitted wind shields, naturally form a distinctive contrast of density and openness. This not only aligns with traditional Chinese aesthetic psychology but also exhibits the rhythmic and melodic beauty of the carvings.

4.3 Folk Cultural Perspectives of Symbolic Ornamentation

Chinese traditional patterns are predominantly inspired by natural flora and fauna, showcasing rich and diverse forms. These designs originate from the ancient people's emulation of nature's perceived divine powers, aiming to imbibe nature's virtues. They were specifically created as decorative arts to foster a sense of auspiciousness, expressing themes of survival, prosperity, and protection. These patterns reflect human aspirations to ward off evil and disasters while seeking good fortune, happiness, health, longevity, and prosperity. Such motifs encapsulate the enduring spiritual essence of the Chinese nation (Yuan J. & Xu X. N., 2010). The architectural ornamentation style of Tongyang Old Street exhibits a rich diversity, with ornamental motifs typically divided into two categories: planar and three-dimensional. Planar ornamentation is commonly found on walls, columns, and doors, using techniques such as painting or tile inlay to create striking visual effects. These decorations not only possess high aesthetic value but also carry profound cultural significance, often narrating local history and legends. Three-dimensional ornamentation, on the other hand, is primarily seen on roof ridges, doors, windows, and carved components, adding depth and spatial enhancement to the architecture, thus contributing to the three-dimensional beauty of the structures. Both forms of ornamentation complement each other, collectively shaping the unique architectural aesthetics of Tongyang Old Street.

Art originates from human social labor practices and is a product of societal life reflected in human consciousness (Cihai Editorial Committee, Cihai, 1979). Among three-dimensional ornamentation, carving techniques stand out, showcasing exceptional craftsmanship and a high degree of artistic value. Many carvings seamlessly incorporate natural elements, creating harmony with the architectural environment and vividly interpreting the local culture. Human figure carvings, as typical representatives of regional symbols, are often inspired by everyday life scenes and folklore, depicting the daily activities of the local residents. For example, carvings of farming scenes reflect the importance of farmers in ancient society, carvings related to divination culture express the residents' pursuit of good fortune and well-being, and the Taiji symbols in carvings represent the ancient Chinese philosophy of unity in opposition and harmony. Overall, the figure carvings in Tongyang Old Street are simple and vivid in style, skillfully crafted, and often presented in multi-figure scenes or in combination with animal and plant motifs, fully expressing the residents' worship and pursuit of ethical culture (Figure 2).



Figure 2: Relief Carvings of Figures on Door Canopies
Source:By the author(2024)




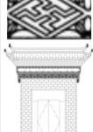



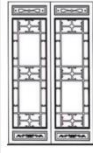




4.3.1 Plant Ornamentation Symbols

Plant motifs are widely used in decorative art, often symbolizing vitality and prosperity. Plum blossoms and bamboo are common plant patterns, with the former symbolizing resilience and purity and the latter representing humility and flexibility. These plant elements not only enhance the natural beauty of the architecture but also convey the residents' reverence for nature and their aspirations for a better life. As an important category of decorative art, plant motifs are ubiquitous in the residential architecture of Tongyang Old Street. They embody auspicious meanings and demonstrate the vitality and energy of nature. For instance, stone-carved floral patterns are often used in bas-relief works, with distinct layers and a strong sense of three-dimensionality. An example is the "Joy at the Tips of the Eyebrows" motif, where a magpie perches on a plum tree branch. The detailed carving brings the birds and blossoms to life, creating a flowing visual rhythm (Figure 3).

4.3.2 Animal Ornamentation Symbols

Animal patterns also carry auspicious connotations, with motifs such as dragons and phoenixes symbolizing the residents' aspirations for a good life. These ornamental elements enrich the visual appeal of the architecture while conveying deeper cultural meanings. For example, the "drum-shaped stone blocks" (抱鼓石) are adorned with realistic animal carvings that vividly depict animal forms. These blocks play a significant role in architectural aesthetics while also symbolizing blessings, good fortune, and protection against evil.

Table2: Architectural Ornamentation Patterns and Their Symbolic Meanings
(Source: Created by the Author, 2023)

Part name	Photo	Pattern	Pattern type	Symbolizes	Part name	Photo	Pattern	Pattern type	Symbolizes
Eaves-tile			Bat has the same pronunciation as "Benfu"	Good luck	Door cover			"卍" Font pattern	Propitious
Roof beam			Character story	Good health	Window			Geometric pattern	Have one's wishes fulfilled
Support arch			Curl pattern	Persevere in the struggle	Plinth			Cirrus moire	Prosperity and wealth

4.4 Methods for Transmitting Architectural Ornamentation

Traditional residential architectural ornamentation carries rich cultural connotations and historical memories. Its transmission involves not only preserving forms but also delving into the cultural semantics and spiritual expressions they embody. Within the framework of semiotics, the transmission of ornamentation should focus on symbol interpretation, cultural representation, and diversified expression to ensure the sustainable development and innovation of traditional culture. The following explores specific methods for transmitting the architectural ornamentation of Tongyang Old Street:

4.4.1 Symbol Interpretation and Reproduction of Cultural Connotations

The ornamental symbols in traditional residential architecture serve as direct representations of regional culture, historical events, and natural worship. The core of transmission lies in deeply interpreting the cultural semantics of these symbols. For example, cloud patterns on door lintels symbolize blessings and good fortune, while patterns of plum, orchid, bamboo, and chrysanthemum in window grilles reflect scholarly elegance and spiritual pursuits. In practice, these symbols and their semantic associations can be systematically organized through literature review and expert interviews to ensure the accurate transmission of their cultural meanings. Additionally, leveraging modern graphic technology to digitally store these symbols facilitates their application in various contexts (Wu, 2020).

4.4.2 Cross-Cultural Integration and Contemporary Expression

The transmission of traditional ornamentation requires retaining the core cultural semantics while incorporating contemporary design languages to better align with modern aesthetic and functional needs. For instance, geometric patterns from traditional window grilles can be simplified into modern decorative motifs or reinterpreted using new materials such as glass or metal. Semiotics emphasizes the polysemy of symbols, and their cultural vitality can be extended through cross-cultural reinterpretation, infusing new semantic connotations. Cultural creative products and fashion design can effectively introduce these ornamental symbols into everyday life, achieving a modernized expression of cultural

transmission (Wang, 2021).

4.4.3 Interactive Experiences and Educational Dissemination

Semiotics focuses on the dynamic generation of meaning, and interactive experiences can effectively enhance the recognition and dissemination of traditional culture. For example, augmented reality (AR) and virtual reality (VR) technologies can be employed in traditional residential heritage zones or museums to immerse audiences in architectural ornamentation scenes, allowing them to intuitively experience the cultural narratives behind these symbols. In education, specialized cultural courses can be developed to help young people understand the historical background and semantic meanings of traditional ornamentation symbols. Community activities can also be organized to invite residents to participate in creative designs and practical applications of these symbols, enhancing both the transmission of cultural semantics and the sense of community identity (Liu, 2020).

From a semiotic perspective, the transmission of traditional residential architectural ornamentation is not merely the preservation of forms but also the continuation and recreation of cultural semantics. Through symbol interpretation, cross-cultural expression, and interactive dissemination, this cultural treasure can be revitalized, ensuring its continued cultural value and innovative relevance in modern society. The traditional residential ornamentation of Tongyang Old Street represents a profound integration of material and spiritual culture. Its transmission methods provide important references for the sustainable development of local culture and lay a solid foundation for exploring paths to protect and innovate cultural heritage.

Conclusions and Discussions

5.1 Conclusions

The architectural ornamentation of Tongyang Old Street, as a representative regional cultural symbol in the Chaohu Lake area, vividly demonstrates its rich cultural imagery and profound historical legacy. These symbols, expressed through ornamental forms, not only highlight local characteristics but also deeply reflect the unique natural environment and social context of the region. Based on Saussure's semiotic theory, this study analyzed the dual cultural connotations of "signifier" and "signified" within the architectural ornamentation of Tongyang Old Street. It revealed how the use of grey-yellow tones, floral and animal patterns, and narrative motifs conveys the residents' aspirations for harmony with nature, a good life, and cultural identity (Yuan & Xu, 2010). The findings show that these ornamental symbols are not only aesthetic expressions but also vital representations of regional history, social values, and natural harmony.

The selection of materials in traditional residential architecture heavily depends on local natural resources. Materials such as blue bricks and black tiles not only meet the practical needs of the regional climate but also embody ecological wisdom and humanistic spirit. This architectural style uses a simple yet profound system of symbols to vividly showcase the organic integration of nature and culture, forming a visual expression of regional identity. In modern architectural design, the key to preserving this regional character lies in maintaining the continuity of cultural symbols while adapting to the functional requirements of modern architecture. Designers should balance functionality and aesthetics in architectural renewal and explore innovative expressions of symbols by integrating natural and social contexts, ensuring the dual development of cultural connotations and architectural forms (Lakoff & Johnson, 2015).

The rich architectural heritage of Tongyang Old Street makes its regional symbols a crucial tool for transmitting and promoting local culture. Through systematic analysis of architectural ornamental symbols, this study provides theoretical support and practical references for the transmission and innovation of symbols in modern architectural design. The research offers significant insights for innovative approaches to local architectural design and opens new perspectives for the continuous preservation and development of cultural heritage. The findings contribute to the dynamic transmission of regional culture, enhancing residents' cultural identity and community cohesion while providing a solid theoretical foundation and practical guidance for the long-term transmission of Chinese traditional culture in modern society.

5.2 Discussions

5.2.1 The Uniqueness of Regional Symbolic Cultural Connotations

The study found that the traditional ornamental symbols of Tongyang Old Street, such as intertwining branch patterns and cloud motifs, not only exhibit the aesthetic value of decorative art but also deeply embody the unique cultural spirit of local residents. These symbols express aspirations for auspiciousness, continuity of life, and harmony with nature through specific forms, aligning with the core principles of semiotics (Huang & Chen, 2004). Compared to previous studies that focused solely on the decorative function of symbols, this research expands the analytical dimensions of symbolic connotations, highlighting their role as carriers of local cultural memory.

5.2.2 Unity of Form and Function in Symbols

The study demonstrates that traditional ornamental symbols achieve a unique balance between aesthetic value and functionality. For instance, intertwining branch patterns not only enhance the visual appeal of building facades but also symbolize the cycles and continuity of life. This unity of form and function aligns with Lakoff and Johnson's (2015) core theory on the role of metaphor in conveying thought and emotion, further supporting the dual value of symbols as elements of visual ornamentation and mediums of cultural expression.

5.2.3 Potential and Challenges of Symbol Innovation

By exploring the application of digital technologies, this study demonstrates various possibilities for innovating traditional symbols in modern design. For example, techniques such as 3D modeling and virtual reality enable the contemporary expression of symbols in diverse design contexts. However, the study also identifies the risk of cultural meanings being diluted or lost during the modernization of symbols, posing greater demands on designers. Protecting the cultural essence of symbols is more critical than formal innovation, echoing Wang's (2021) principle of prioritizing cultural preservation.

5.2.4 Dual Promotion of Policy and Community Engagement

The study highlights the crucial role of government support and community participation in the preservation and transmission of traditional cultural symbols. Survey data show that organizing local cultural activities significantly enhances residents' recognition of traditional ornamental symbols, further increasing attention and participation in cultural heritage. This finding validates the importance of community involvement in fostering cultural awareness and promoting symbol transmission. As Tu and Li (2023) proposed, symbols are not merely combinations of form and meaning but also expressions of thought

and emotion, whose connotations can be strengthened through the power of metaphor. This aligns closely with the multi-stakeholder collaboration model, emphasizing the need for concerted efforts by governments, communities, and other stakeholders to achieve the sustainable transmission and innovation of cultural symbols.

Recommendations

1. Application of Regional Symbols

It is recommended to abstract traditional symbols such as intertwining branch patterns and cloud motifs by integrating their cultural background with modern design language. These symbols can be adapted into contemporary forms using materials like glass and metal, preserving their cultural connotations while meeting modern aesthetic demands. The application of symbols can be expanded to urban furniture, interior ornamentation, and cultural creative products, enhancing their practicality and visibility in daily life. This approach fosters a cultural atmosphere where "life is culture," promoting the continuous transmission of heritage.

2. Integration of Technology and Transmission

A regional symbol digitization database should be established to preserve these symbols with high fidelity using technologies such as 3D modeling and virtual reality (VR). This digital archive will serve as foundational material for future innovation and dissemination. Training programs and master artisan initiatives are recommended to cultivate a new generation of craftsmen skilled in both traditional techniques and modern tools, ensuring the integrated development of traditional craftsmanship and contemporary design.

3. Policy and Community Support

Local governments should enact regulations specifically aimed at protecting the ornamental symbols of Tongyang Old Street and allocate dedicated funding to support projects for symbol preservation and promotion. Community cultural activities and educational programs are advised to enhance residents' sense of identity and participation in traditional symbols, making them active contributors to cultural transmission. Utilizing new media technologies, digital platforms showcasing symbolic themes can be developed, and cultural tourism projects based on symbol culture can be designed to expand their social influence.

4. Future Research Directions

Future research could explore the adaptability and acceptance of Tongyang Old Street symbols in other cultural contexts, analyzing their potential as cross-cultural design elements. Further studies should investigate the role of symbols in enhancing local cultural confidence and community cohesion, offering new perspectives for symbol preservation. Building an open digital platform based on regional symbols is also recommended to facilitate collaboration between academia and the design industry, driving multidimensional development in symbol research and application.

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