

# ARTISTIC FEATURES AND CONTEMPORARY RECONSTRUCTION OF DUNHUANG TANG DYNASTY VINE MOTIFS: FROM THE PERSPECTIVES OF CULTURAL IDENTITY AND USER EXPERIENCE

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## ABSTRACT

The Tang Dynasty scroll-pattern from Dunhuang, an artistic treasure of cultural exchange along the Silk Road, is characterized by its S-shaped vine framework and the integration of diverse motifs, embodying both religious significance and the aesthetic ideals of the High Tang period. In response to the current industry challenges of superficial replication and homogenization in Dunhuang-inspired cultural and creative products, this study takes cultural identity and user experience as dual core principles to explore pathways for their contemporary reinterpretation. Through documentary research and field investigations, the core artistic features of the scroll-pattern are clarified. By employing mixed-methods research, a three-stage reinterpretation framework “deconstruction of cultural symbols -contextual alignment with carriers - adaptation to consumer needs” is developed, leading to the design of 12 cultural and creative products across 5 categories. Core products achieved cultural identity recognition and satisfaction rates both exceeding 85%. Quantitative analysis of 384 consumer surveys reveals that perceived aesthetic value ( $r=0.72$ ,  $p<0.01$ ) and cultural authenticity ( $r=0.68$ ,  $p<0.01$ ) are strong predictors of purchase intention, providing empirical validation for the framework's commercial viability. This framework balances cultural authenticity with modern expression, demonstrating international applicability and offering a replicable business model for the cultural and creative industries. It provides academic reference and practical models for the living heritage of global cultural ornamentation, contributing to the contemporary dissemination of traditional culture and the high-quality development of the cultural and creative industries.

**Keywords:** Tang Dynasty Vine Motifs, Artistic Features, Contemporary Reconstruction, Cultural Identity, User Experience

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## INTRODUCTION

As a core nexus of cultural convergence along the Silk Road, Dunhuang gave rise to the Tang Dynasty scroll-pattern, which is structured around an S-shaped vine framework and integrates floral and mythical animal motifs. It embodies both the Buddhist philosophical concept of "endless perfection" and reflects the cultural inclusivity of the High Tang era, standing as a paradigm of traditional decorative art. Under the backdrop of globalization and the national strategy of "enriching the nation through culture," Dunhuang cultural and creative products have become vital vehicles for cultural dissemination. However, market offerings are generally plagued by insufficient exploration of cultural depth, poor alignment with contemporary needs, and severe homogenization, failing to achieve a profound integration of traditional patterns with modern design.

Existing research predominantly focuses on historical description and stylistic analysis of the scroll-pattern, while a systematic design framework that integrates cultural identity with contemporary user experience remains underdeveloped. Based on this, the present study concentrates on the analysis of the artistic features of the Tang Dynasty Dunhuang scroll-pattern and its contemporary reinterpretation. By constructing a scientific design framework and product solutions, it aims to balance cultural heritage with market demands, thereby holding significant theoretical value and practical implications.

## RESEARCH OBJECTIVES

- 1) Extract the core artistic features and cultural symbols of the Tang Dynasty Dunhuang scroll-pattern, clarifying the key elements of its form, composition, and color.
- 2) Construct a contemporary reinterpretation framework that balances cultural authenticity and user experience, addressing the issue of compatibility in the modern transformation of traditional patterns.
- 3) Develop multi-category cultural and creative product solutions and verify their effectiveness, providing replicable models for the living heritage of traditional patterns.

## LITERATURE REVIEWS

### Core Artistic Features of Tang-Dynasty Acanthus Scroll Patterns

As an artistic crystallization of cultural exchange along the Silk Road, the core artistic features of Tang-dynasty acanthus scroll patterns have formed a basic consensus through long-term research, but they still need to be precisely refined in response to the demands of cultural and creative transformation. Scholars such as Su Bai and Fan Jinshi, through typological textual research, have clarified the morphological evolution of acanthus scroll patterns from the Early Tang to the Mid-Late Tang:

In the Early Tang, influenced by the integration of Western Regions culture and Central Plains aesthetics, the patterns were simple in form, elegant in color, with gentle curves, and flowers and leaves strictly confined within a "C-shaped" structure, presenting an overall planarized character.

During the High Tang, national prosperity drove artistic flourishing, and acanthus scroll patterns reached their peak of richness and splendor. Flowers and leaves broke through the constraints of the semicircular structure, forming overlapping relationships with the framework, while main stems and branches connected naturally. The use of mineral pigments such as azurite blue, malachite green, reddish ochre, and gold leaf created a rich yet harmonious color system, reflecting strong cultural confidence.

In terms of compositional logic, Chang Shana explicitly outlines its "skeleton-filling" dual system in *Decorative Patterns of Dunhuang Through the Chinese Dynasties*. The composition encompasses three dominant forms: symmetrical, continuous, and free-style. The symmetrical form, based on a central axis or midpoint, combines stability with dynamism, as seen in the

canopy pattern in Cave 321 of the Mogao Grottoes. The continuous form is divided into two-way and four-way repeats, suited for border decoration and large-area decorative contexts, respectively. The free-style form achieves a visual effect of mutual reinforcement between void and solid through the density and curvature of lines, emphasizing a sense of movement. Huo Xiufeng further points out that its organizational structure centers on an S-shaped main stem and C-shaped branches, forming two types of floral distribution: regular and free-style. The regular type, arranged in alternating upper and lower positions with equal spacing, exhibits a strong rhythmic quality, while the free-style type, featuring scattered distribution, is often applied as border decoration. Compared to the separated structure of "spiral skeleton + subsidiary motifs" in Greek rinceau ornamentation and the linear characteristic of "infinite extension" in Arabesque patterns, the Tang Dynasty scroll-pattern achieves an organic integration of skeleton and subject matter. Through variations in composition, it creates a visual hierarchy with clear primary and secondary elements, embodying a design philosophy of "functional adaptability."



**Figure 1** Schematic Diagram of Qualitative Research

### **Limitations of existing research**

Domestic academic research on scroll patterns has formed a trajectory of "historical textual research - analysis of artistic features - preliminary application exploration." However, significant limitations remain in the field of cultural and creative transformation. At the level of historical and artistic feature studies, typological investigations by scholars such as Su Bai and Fan Jinshi, Chang Shana's systematic organization of pattern composition and colors, as well as specialized research by Huo Xiufeng, Zhang Qian, Gao Beibei, and others on origins, forms, and colors have laid a solid foundation for cultural decoding. Yet, these studies largely focus on historical sorting out and feature description, lacking targeted responses to modern design needs. In terms of design application research, existing results mostly concentrate on single carriers for instance, Zhang Hongying's analysis of scroll patterns in traditional furniture, Ke Weijing's exploration of their application in modern women's haute couture, and research by He Miaomiao and colleagues focusing on contemporary furniture design. These studies have not yet developed a systematic design methodology for multi-category cultural and creative products. Moreover, most remain at the level of "pattern transplantation" and fail to delve deeply into the compatibility between patterns and product functions or user needs.

Market research indicates that through online and offline dual-channel investigations, Guan Youhui found that current Dunhuang cultural and creative products suffer from severe homogenization and a low degree of alignment between pattern connotations and their carriers. Plant motifs such as scrolling grass patterns are often directly applied without in-depth redesign. Although scholars like Zhang Xin and Sun Xuan have highlighted their commercial value and cultural significance, existing studies have yet to fully explore their market potential. Additionally, the artistic system of scrolling grass patterns itself has historical limitations: the "main-stem-dominated" structure is poorly adaptable to modern carriers like small objects, easily leading to "formal and semantic impairment"; the intricate designs of the High Tang period conflict with contemporary minimalist aesthetics, potentially causing "visual overload"; elements such as lotus and honeysuckle motifs are heavily reliant on Buddhist culture, resulting in a disconnect between their symbolic meanings and cultural cognition of today's younger generation, which hampers effective cultural dissemination.

International research has primarily focused on the origins, dissemination, and cross-cultural comparisons of scrolling grass patterns, offering diverse perspectives for domestic studies. The Austrian scholar Alois Riegl, in his work *Problems of Style: Foundations for a History of Ornament* (1992), identified the core aesthetic of scrolling grass patterns as lying in the formal beauty of the "tendrils structure." E. H. Gombrich further emphasized their formal principles and aesthetic value in *The Sense of Order* (1979). Japanese scholar Kazuo Shiro, in *A Comparison of Eastern and Western Patterns*, noted that Western scrolling grass patterns often symbolize life and resurrection, whereas the meanings of Chinese scrolling grass patterns depend on the specific plants depicted, reflecting significant cultural specificity. However, international studies have paid limited attention to the specific characteristics of Chinese Tang-dynasty scrolling grass patterns and their application in cultural and creative design, thus failing to provide targeted guidance in this regard. At the level of design methodology, theories such as Donald Norman's emotional design theory and Zeithaml's perceived value theory offer support for modern transformations. Nevertheless, domestic research has not yet sufficiently integrated these theories with the cultural distinctiveness of scrolling grass patterns, resulting in a lack of a systematic framework that balances cultural authenticity with user experience.

### **Theoretical Foundation and Design Framework**

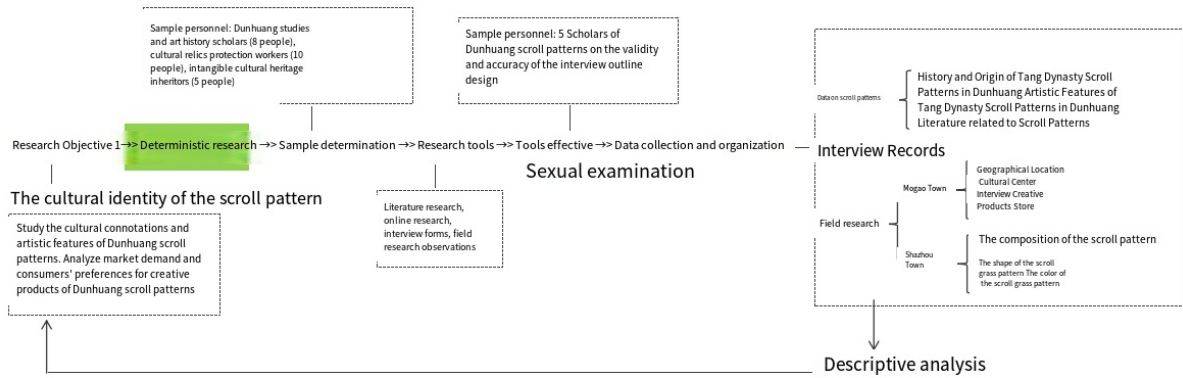
This study integrates Design Semiotics, User-Centered Design, and Emotional Design as its core theoretical foundations to address the existing research gaps. Design Semiotics provides a methodological approach for deconstructing cultural symbols, transforming the forms, colors, and compositions of scrolling grass patterns into a symbol system interpretable by modern design, thereby avoiding the "arbitrary use of symbols." User-Centered Design emphasizes a consumer-needs-oriented approach, identifying the aesthetic preferences and usage requirements of different groups through research to resolve product adaptability issues. Emotional Design focuses on satisfying both perceived value and emotional experiences, strengthening consumers' emotional resonance with cultural connotations and enhancing cultural identification.

The organic integration of these three theories constructs a three-stage reconstruction framework: "Cultural Symbol Deconstruction - Carrier Context Matching - Consumer Needs Adaptation." First, based on Design Semiotics, core cultural symbols such as the "S-shaped main stem" and "mineral color system" are extracted from scrolling grass patterns. Second, in alignment with User-Centered Design, symbols are precisely matched with carriers such as stationery, apparel, and home goods according to their functional characteristics and usage scenarios. Finally, through Emotional Design, the framework adapts to the varying needs of different groups, balancing cultural authenticity with contemporary expression. This framework not only incorporates the essence of international theories but also grounds itself in the cultural distinctiveness of Tang-dynasty scrolling grass patterns. It addresses the limitations of existing research, which often prioritizes description over application and culture over experience, thereby providing a scientifically viable pathway for the modern transformation of traditional patterns.

## **RESEARCH METHODOLOGY**

This study employs a mixed-methods research approach integrating qualitative and quantitative methodologies. Its core logic follows a three-stage process of "Qualitative Extraction, Quantitative Validation, and Practical Implementation." The core cultural symbols identified through qualitative research are transformed into design variables, which are then quantitatively validated via consumer surveys. This cross-verification ensures the scientific rigor of both the framework and the resulting product solutions.

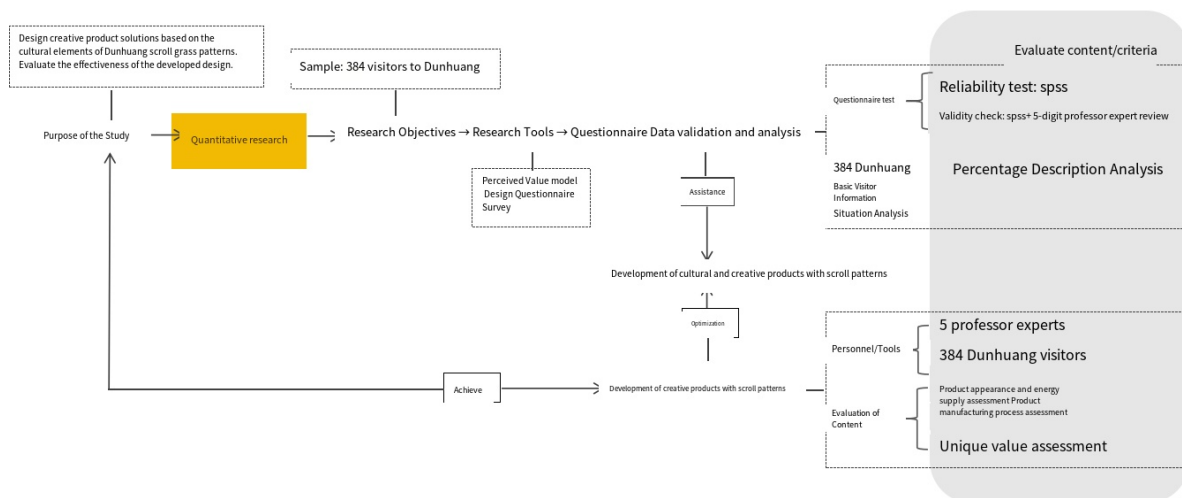
### **Qualitative Research**



**Figure 2** Schematic Diagram of Qualitative Research

Through field research in the core caves of the Mogao Grottoes, structured observation was conducted on 20 samples of pattern-bearing artifacts. Interviews were carried out with 8 Dunhuang studies scholars, 10 cultural heritage conservation specialists, and 5 intangible cultural heritage inheritors, unearthing 12 core cultural symbols and key craft techniques.

### Quantitative Research



**Figure 3** Schematic Diagram of Quantitative Research

A survey was conducted among 384 target consumers, utilizing a Likert five-point scale to analyze the cultural identity needs, aesthetic preferences, and usage requirements across different demographic groups, thereby validating the rationality of the design variables.

## RESEARCH RESULTS

### Key Research Findings

- 1) A three-dimensional database encompassing "historical evolution, artistic characteristics, and cultural genes" was constructed, from which 12 essential cultural symbols, such as the "S-shaped main stem" and the "mineral color system," were extracted.
- 2) The study validated that formal/aesthetic value and cultural authenticity are the core factors influencing purchase intention. Younger demographic groups showed a preference for simplified patterns, whereas middle-aged and older groups placed greater emphasis on cultural authenticity.
- 3) The developed three-stage reconstruction framework successfully achieved an organic integration of tradition and modernity, thereby addressing the issues of superficial pattern replication and product homogenization.

4) Quantitative Analysis of Consumer Behavior. To meet the empirical rigor expected by business research audiences, this study conducted a correlation analysis of the survey data collected from 384 respondents. The analysis focused on three key constructs: Perceived Aesthetic Value (PAV), Perceived Cultural Authenticity (PCA), and Purchase Intention (PI). As shown in Table 1, both PAV and PCA demonstrate statistically significant positive correlations with PI.

Table 1 Correlation Matrix of Key Constructs

Construct	Mean (SD)	PAV	PCA	PI
Perceived Aesthetic Value (PAV)	4.21 (0.68)	1.00		
Perceived Cultural Authenticity (PCA)	4.08 (0.73)	0.58	1.00	
Purchase Intention (PI)	3.95 (0.81)	0.72	0.68	1.00

Note: \*\* $p < 0.01$ ;  $n = 384$ ; 5-point Likert scale

The strong correlation between PAV and PI ( $r=0.72$ ) suggests that consumers' perception of aesthetic quality directly drives their willingness to purchase. Similarly, the significant correlation between PCA and PI ( $r=0.68$ ) confirms that cultural authenticity—not merely visual appeal—is a critical determinant of commercial success. These findings provide empirical evidence that the three-stage reconstruction framework effectively addresses both dimensions, transforming artistic heritage into marketable products without compromising cultural integrity.

### Cultural and Creative Product Portfolio

A portfolio comprising 12 product designs across 5 major categories - including stationery, apparel, and home goods was developed. The core products achieved cultural identification rates and satisfaction levels exceeding 85%. Through design strategies such as simplified reconstruction and functional adaptation, the proposals successfully preserved the core cultural symbols of the scrolling grass patterns while ensuring their suitability for modern usage scenarios.



Figure 4 Cultural and Creative Product Design: Intertwined Thousand-Buddha Vine Motif



**Figure 5** Cultural and Creative Product Design: Grape and Pomegranate Vine Motif

## DISCUSSION & CONCLUSION

### Academic Contributions

**Theoretical Contribution:** This study presents the first systematic extraction of the core cultural symbols and standardized artistic features of Tang-dynasty scrolling grass patterns, filling a theoretical gap in the modern transformation of traditional patterns. It enriches the design theoretical framework that centers on both cultural identity and user experience.

**Methodological Contribution:** The research validates the effectiveness of a mixed-methods approach in the cultural and creative transformation of traditional patterns, establishing a "qualitative + quantitative" dual verification model that provides methodological reference for similar studies.

**Practical Contribution:** The developed three-stage reconstruction framework and 12 product proposals address the persistent issues of "symbol misuse" and "homogenization" in Dunhuang cultural and creative products, offering a replicable practical model for the cultural and creative industries.

**Transferability:** The framework is not only applicable to Dunhuang patterns but can also be extended to the modern transformation of other cultural heritage elements, such as Forbidden City motifs and bronze ornamentation, demonstrating broad applicability and value.

### Segmented Marketing Strategy Based on Demographic Insights:

A key finding of this study—that younger demographics (18-35 years) prefer simplified patterns while older groups (50+ years) prioritize cultural authenticity—carries significant implications for market segmentation and product positioning. This demographic divergence in aesthetic preference necessitates a differentiated marketing strategy rather than a one-size-fits-all approach.

For younger consumers, who demonstrate greater sensitivity to visual overload and stronger alignment with contemporary minimalist aesthetics, the design strategy should emphasize "semantic impairment prevention" through selective simplification. Products targeting this segment, such as the simplified stationery line and digital accessories, should retain the core S-shaped vine structure while reducing intricate detailing. Marketing communications should highlight the "modern heritage" narrative, positioning the products as bridges between ancient craftsmanship and contemporary lifestyle. For middle-aged and older consumers, who show stronger emotional resonance with cultural authenticity, the design strategy should prioritize "historical continuity." Products such as the home decor line and premium textile collections should preserve the full complexity of High Tang mineral colors and detailed motif integration. Marketing narratives should emphasize provenance, craftsmanship authenticity, and the Buddhist philosophical underpinnings of the patterns.

segment, such as the simplified stationary line and digital accessories, should retain the core S-shaped vine structure while reducing intricate detailing. Marketing communications should highlight the "modern heritage" narrative, positioning the products as bridges between ancient craftsmanship and contemporary lifestyle.

**International Applicability: Integrating Dunhuang Motifs into a Global Design Language**

First, at the formal level, the S-shaped vine structure represents a universal aesthetic principle—what Gombrich (1979) termed the "sense of order"—that transcends cultural boundaries. By abstracting this core formal element, designers can create products that resonate with international consumers unfamiliar with Dunhuang's specific cultural context, while deeper cultural meanings remain accessible to those seeking them.

Second, at the semantic level, the framework's emphasis on "functional adaptation" enables motifs to acquire new meanings in different cultural contexts. For example, the "Intertwined Thousand-Buddha Vine" motif, while originally conveying Buddhist concepts of endless perfection, can be positioned in international markets as a symbol of interconnection, growth, and natural harmony—themes with universal appeal.

Third, at the commercial level, the validated correlation between cultural authenticity and purchase intention suggests that international consumers value cultural specificity rather than requiring complete cultural neutralization. This finding supports a "glocalization" strategy: maintaining core cultural authenticity while adapting presentation and marketing to local preferences.

While Dunhuang Tang Dynasty vine motifs are deeply rooted in Chinese Buddhist culture, their S-shaped vine framework and organic integration of diverse motifs share formal affinities with decorative traditions worldwide—from Greco-Roman acanthus scrolls to Islamic arabesques. This study argues that the three-stage reconstruction framework facilitates the translation of culturally specific ornamentation into a global design language accessible to international audiences.

This dual-track approach enables brands to navigate differing aesthetic expectations without compromising either market segment. By adopting a "flexible authenticity" framework, cultural and creative enterprises can maintain brand coherence while addressing the heterogeneous preferences revealed in this study.

### **Conclusion**

Through a systematic analysis of the core artistic features of Tang-dynasty scrolling grass patterns from Dunhuang, this study constructed and validated a tripartite reconstruction framework of "cultural symbol deconstruction - carrier context matching - consumer needs adaptation". The developed cultural and creative product proposals successfully achieve a dual fulfillment of cultural heritage transmission and user experience. The research reveals the dual driving mechanism of cultural identity and user experience, demonstrating that the modern transformation of traditional patterns must balance cultural authenticity with contemporary expression. The quantitative validation of perceived value as a predictor of purchase intention provides empirical support for the commercial viability of heritage-based product development, transforming artistic reconstruction into a replicable business model. The segmented marketing insights offer actionable strategies for cultural enterprises to address diverse consumer demographics. Furthermore, the framework's international applicability positions Dunhuang motifs within a global design language, enabling cross-cultural dissemination without compromising cultural authenticity. Together, these contributions provide theoretical support and practical pathways for the living heritage conservation of intangible cultural heritage, advancing both the contemporary dissemination of Dunhuang culture and the sustainable development of the global cultural and creative industries.

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