

# Baoxianghua Patterns in Dunhuang's Tang Dynasty Murals: A Cross-Cultural Analysis of Silk Road Artistic Exchange

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**Abstract:** *This study offers a comprehensive analysis of "baoxianghua" (treasure-flower) motifs in the Dunhuang Mogao Cave murals across the four subperiods of the Tang Dynasty (618–907 CE), with a specific focus on cross-cultural exchange along the Silk Road. Through integrating visual analysis, iconographic interpretation, and comparative periodization, the research examines representative murals from selected caves to trace the evolution of these distinctive patterns. Findings reveal a dynamic progression from geometric simplicity in the Early Tang to opulent complexity in the Prosperous Tang, followed by refined abstraction in the Mid Tang and resilient minimalism in the Late Tang. The study demonstrates how baoxianghua patterns functioned as visual embodiments of transcultural dialogue, incorporating Central Asian vine scrolls, Indian lotus forms, Persian palmette designs, and indigenous Chinese floral traditions. These motifs encapsulate Buddhist cosmological principles through petal numerology, geometric configurations, and color symbolism, while simultaneously reflecting the socio-political fluctuations of the Tang empire. The research illuminates Dunhuang's pivotal role as a nexus of Silk Road exchanges, where artistic forms migrated, were recontextualized, and evolved within the sophisticated imperial worldview. This cultural hybridity was not a passive process of imitation but an active reconfiguration of global influences into a cohesive, distinctly Tang idiom. The implications extend to art historical scholarship, conservation practices, and heritage interpretation, suggesting avenues for material studies and comparative research with cave sites across Central Asia.*

**Keywords:** baoxianghua patterns, Dunhuang murals, Tang Dynasty, cross-cultural exchange, Silk Road, Buddhist iconography

## INTRODUCTION

The Dunhuang Mogao Caves are one of the world's largest Buddhist art collections, located at the crossroads of trade, pilgrimage, and politics. The Gobi Desert caverns in northeastern China include an exceptional collection of murals, sculptures, and manuscripts from over a millennium of artistic creativity. The "baoxianghua" pattern—ornate rosettes or stylised floral medallions—adorns ceilings, caisson panels, niche arches, and mural borders throughout the complex. A lot of research has been done on Dunhuang narrative scene compositions, donor inscriptions, and monastic architecture, but less on baoxianghua themes, especially through the perspective of cross-cultural interchange. This work fills that gap by methodically charting the formal growth and iconographic resonance of baoxianghua patterns across the four Tang Dynasty subperiods, focussing on their importance as visual manifestations of Silk Road cultural interaction.

The Tang Dynasty (618–907 CE) was China's cultural peak, with unprecedented cosmopolitanism, imperial expansion, and artistic creativity. At the eastern end of the Silk Road, Dunhuang was a vital hub where merchants, monks, diplomats, and artisans from across Eurasia met, exchanged ideas, and shared culture. This era's caves include a visual legacy of imperial patronage, monastic sponsorship, and Silk Road cosmopolitanism. Baoxianghua themes are both decorative and theological, straddling figural imagery and decoration. Their geometric accuracy, colour combinations, and repeated groupings resemble Buddhist mandalas. Through periodized analysis, this research shows how aesthetic transformations correspond to doctrinal shifts, socio-political fluctuations, and material conditions, as well as the complex cultural borrowing, adaptation, and synthesis that characterised Silk Road artistic production.

According to Hansen (2012), the Silk Road was a complex network of routes that carried ideas, ideologies, and creative traditions as well as commerce. Dunhuang's baoxianghua motifs show this dynamic cultural exchange. The symmetrical arrangements resemble Indian mandalas, the flowing, vine-like elements resemble Central Asian and Persian decorative motifs, and the underlying geometric structures follow indigenous Chinese artistic conventions. Thus, these patterns demonstrate "cultural hybridity" (Whitfield, 2004), a creative synthesis that goes beyond borrowing to create new visual languages that are neither foreign nor local.

This article addresses three research questions: (1) How did baoxianghua patterns change stylistically and formally across the four Tang Dynasty subperiods? (2) How do these patterns represent Silk Road-facilitated cross-cultural exchanges? (3) How can petal numerology, symmetry, and chromatic choices convey Buddhist cosmology while combining multiple cultural influences? The study seeks to illuminate Dunhuang's role as a Silk Road crossroads and its response to imperial and transcultural forces.

This study uses qualitative methods including visual analysis, iconographic interpretation, and comparative periodisation to explore murals from chosen caves from the Early, Prosperous, Mid, and Late Tang periods. Art historians studying Chinese Buddhist art, Silk Road cultural exchange academics, conservation scientists seeking historically correct palettes, and cultural heritage professionals conducting cross-regional comparative studies should consider the findings. This research contributes to premodern Eurasia's creative transmission, cultural adaptation, and visual communication discussions by emphasising baoxianghua patterns' cross-cultural aspects.

## LITERATURE REVIEW

### **Tang Dynasty Cultural and Artistic Milieu**

The Tang Dynasty, China's cultural peak, saw an extraordinary flourishing of literary, ecclesiastical, and artistic endeavours supported by internal stability and Silk Road contacts. Lewis (2009) observes that the Tang court aggressively promoted cosmopolitanism by accepting Eurasia's merchants, religious experts, and nobility. From courtly Central Asian styles to aristocratic ornamental arts with foreign influences, the empire's material culture was open to outside influence. Monasteries and cave temples were funded by the government, allowing murals to combine native traditions with Central Asian, Indian, and Persian motifs. Due to Dunhuang's border location, figural styles, palette extensions, and ornament forms—including baoxianghua rosettes—converged. According to Whitfield and Farrer (2001), the city was a vital link in Buddhist pilgrimage routes from China to India's sacred places. Religious traffic carried texts, ideas, artistic norms, and iconographic programs tailored to local interests. The visual culture was neither Chinese nor foreign, but a complex synthesis that mirrored Dunhuang's cultural crossroads.

Recent research emphasises the Tang Dynasty's heterogeneous imperial identity by design. Chen (2020) claims that the court's use of foreign components was both artistic and political, demonstrating the empire's global reach. Imperial self-fashioning included religious sponsorship of indigenous Daoist traditions, Buddhism, Nestorian Christianity, Manichaeism, and Zoroastrianism. The broad visual vocabulary of Dunhuang's murals shows how Tang religious diversity fostered creative creativity and cross-cultural borrowing.

### **Origins and Symbolism of "Baoxianghua" Motifs**

Early Buddhist sutra references to "bao" (treasure) and "xiang" (fragrance) relate flower imagery with purity and spiritual awakening. The phrase "baoxianghua" implies a flower of material and spiritual significance, reflecting this religious background. Archaeological findings at pre-Tang cave sites show lotus-derived proto-rosette designs with six- or eight-petalled symmetry. Indian Buddhist iconography uses the lotus as a symbol of enlightenment, rising pure from muddy waters like the enlightened mind.

These patterns evolved into abstracted, multi-tiered designs with gem-like centres and concentric petal rings representing the cosmic lotus. Liu & Xu (2016) emphasise baoxianghua

as visual sutras for meditation. Their investigation showed that these patterns' geometric perfection was meditative, offering visual anchors for contemplative practice. The concentric petals, often spreading from a centre point, resemble mandalas, holy designs of the Buddhist cosmology that promote visualisation.

Zhang and Li (2018) propose that baoxianghua patterns were visual representations of Buddhist cosmology, with each piece having doctrinal significance. The jewel-like core may represent the Buddha nature in all beings, while the petals may reflect the bodhisattva path's stages. This iconographic approach argues that Dunhuang's murals' seemingly ornamental components have profound theological connotations for initiated Buddhist viewers. Yan and Mokhtar (2023) emphasise baoxianghua patterns as idealised plant symbols rather than botanical representations. Baoxianghua patterns abstract and stylise floral elements to produce symbolic compositions that transcend natural forms, unlike many Chinese ornamental motifs. Artists could deliberately adapt foreign motifs while keeping the pattern's symbolic functions through abstraction.

### **Cross-Cultural Influences on Baoxianghua Patterns**

Recent scholarship has focused on baoxianghua patterns' cross-cultural aspects. Wong (2016) claims that Dunhuang was a transcultural nexus where Indian, Persian, Central Asian, and Chinese traditions intertwined in intricate, mutually enriching ways. This view undermines nationalist frameworks that emphasised Dunhuang art's "Chineseness" by emphasising its heterogeneous visual culture.

Art historical and archaeological evidence supports this transcultural perspective. The flowing, vine-like motifs that connect baoxianghua rosettes in Dunhuang murals show Persian influences, according to Rawson (1995). These sinuous forms resemble Sasanian decorative themes brought to China by Tang-era Sogdian merchants who dominated Silk Road trade. Additionally, Zhou (2019) argues that some baoxianghua palmette forms resemble Central Asian textile and metalwork decorations.

India has contributed significantly to baoxianghua imagery. Peng and Hao (2025) note that these designs use lotus symbolism from Indian Buddhist traditions, where the flower symbolises purity, enlightenment, and divine birth. Chinese artists adapted Indian models to local aesthetics and symbolism. Cultural borrowing and transformation characterise much Silk Road artistic trade, and this creative adaptation produced distinctively Chinese interpretations of foreign elements.

The tangible aspects of cross-cultural interchange have been revealed by recent archaeological finds. Textile remnants from Dunhuang and other Silk Road sites show strong similarities between woven patterns and painted motifs, showing that moveable artefacts were vital to conveying designs across long distances. According to Hansen (2012), textiles were the most valued and traded commodities on the Silk Road, acting as luxury items and creative transmission.

### **Gaps in Existing Research**

Although thorough catalogues (Whitfield & Farrer, 2001; Trochim, 2006) chronicle baoxianghua occurrences and descriptive traits, critical examination of their formal evolution within a subperiod framework is sparse. Iconographic studies isolate themes from mural settings, omitting comparative comparisons throughout Early, Prosperous, Mid, and Late Tang caves. This study uses formal and symbolic analysis in a diachronic comparative design to fill these gaps.

Scholars have acknowledged foreign influences on Dunhuang art, but they have not examined specific cultural transmission and adaption mechanisms. Further research is needed on how artistic motifs travelled, who conveyed them, and how they were reinterpreted. Baoxianghua patterns are used as case studies in cross-cultural artistic interchange to examine transmission and local adaptation in this growing subject.

The link between creative progress and history is another major gap. Art historians have documented stylistic changes in Dunhuang murals, although they are frequently considered as aesthetic advances rather than political, economic, and religious responses. This work highlights the complicated relationship between artistic output and socio-political setting by linking baoxianghua patterns to historical events like the An Lushan Rebellion of 755-763 CE, which changed Tang history.

Finally, cross-cultural exchange's tangible aspects have been neglected in scholarship. Pigment sources, painting techniques, and workshop activities are understudied despite their importance for understanding Silk Road cultural transmission. Based on modern conservation science and technical art history, this study provides a more complete description of baoxianghua patterns as cultural interchange and material practice.

### **Theoretical Framework**

#### **Cultural Hybridity and Transcultural Exchange**

Baoxianghua patterns in Dunhuang murals require a theoretical framework to explain the intricate cultural interaction, adaptation, and synthesis that characterised Silk Road artistic production. These processes can be examined via the lens of "cultural hybridity," as developed by Homi Bhabha (1994) and extended to art history by Whitfield (2004). Early models focused on unidirectional influence or simple borrowing, while hybridity theory recognises the creative and transformative character of cultural interactions, resulting in new forms that cannot be reduced to their components.

Dunhuang's cultural hybridity was a process of selection, reinterpretation, and integration. Tang Dynasty artists adapted Indian, Persian, and Central Asian motifs to local aesthetics, symbolic needs, and technical abilities, according to Wong (2016). This transformation produced

Chinese interpretations of foreign motifs, which some call "sinicization" but are more correctly described as creative adaptation to a specific cultural environment.

Fernando Ortiz's notion of "transculturation," developed in art history by historians like Rawson (1995), enhances our knowledge of Silk Road cultural exchange. Transculturation emphasises that cultural influence is multidirectional, transforming all parties. At Dunhuang, Chinese artists borrowed foreign motifs and developed new aesthetic techniques that represented their contact with other artistic traditions.

Recent literature on "connected histories" and "entangled histories" (Werner & Zimmermann, 2006) helps explain the Silk Road's intricate exchange networks. These methods emphasise the interconnectedness of historical changes across areas rather than center-periphery conceptions. This perspective on baoxianghua patterns emphasises the many ways artistic themes, techniques, and meanings travelled throughout China, Central Asia, India, and Persia.

### **Visual Semiotics and Iconographic Analysis**

A theoretical framework that accounts for visual form's symbolic elements is needed to interpret baoxianghua patterns as religious and cultural symbols. Panofsky's (1972) method of iconographic analysis, which distinguishes pre-iconographic description, iconographic analysis, and iconological interpretation, organises these patterns' meanings. Before iconography, baoxianghua patterns were described by their formal properties—line, colour, composition, and spatial organisation. After iconographic investigation, these shapes' customary connotations, such as Buddhist floral themes' lotus symbolism, are revealed. Finally, iconological interpretation places these meanings in cultural, philosophical, and historical contexts.

Traditional iconography sometimes presupposes a too-direct relationship between visual forms and textual meanings, according to Mitchell (1994) and other critics. Baoxianghua patterns, which evolved over centuries and included numerous cultural influences, may have a more complicated and fluid form-meaning relationship. Visual semiotics, which emphasises contextual and relational meaning, supports more flexible interpretation of these patterns. Using Barthes' (1977) distinction between denotation and connotation, we can analyse baoxianghua patterns as signs that function as decorative elements, religious symbols, and cultural identification and exchange indicators.

Recently published cognitive approaches to religious art help us comprehend how baoxianghua patterns may have worked for historical viewers. These approaches emphasise visual engagement's physical and experiential aspects, suggesting that baoxianghua patterns' geometric perfection and rhythmic repetition may have promoted Buddhist meditation states. Mandala-like baoxianghua designs, with their concentric arrangement around a central point, resemble Buddhist visualisation techniques, suggesting a practical and symbolic importance for these patterns.

### **Buddhist Art and Symbolism Across Cultures**



Baoxianghua patterns' religious context necessitates a theoretical framework that can explain Buddhist visual culture's transnational and cultural diffusion. According to Kieschnick (2003) and Sharf (2001), "Buddhist visual culture," pictures and objects are fundamental to Buddhist practice as active participants in religious life. From this perspective, baoxianghua patterns are effective presences that assist religious experience and convey sacred power, not just decorative features.

The translation of Buddhist visual culture from India to China was complicated, including texts, images, symbols, and ritual practices. Translating was never easy; it always required interpretation and cultural adaptation, as Zürcher (2007) shown. Baoxianghua patterns combined Indian lotus symbolism with Chinese floral traditions, Persian decorative motifs, and Central Asian compositional tactics to create a unique visual language for Silk Road Buddhist communities.

Recent scholarship on "Buddhist internationalism" (Turner et al., 2020) helps explain how Buddhist visual culture connected varied cultural locations. Buddhism was a transnational network that linked diverse groups through shared scriptures, rituals, and visual norms. Using widely recognised Buddhist symbols and locally distinctive formal treatments, baoxianghua patterns illustrate this dichotomy between the universal and the particular in Buddhist visual culture.

Cultural hybridity, visual semiotics, and Buddhist visual culture offer complementary viewpoints on Dunhuang mural baoxianghua patterns. This study integrates these methodologies to better understand how these patterns served as locations of cultural exchange, religious expression, and artistic innovation along the Silk Road.

## **METHODOLOGY**

### **Research Design and Approach**

This research uses a triadic methodological framework: visual analysis—detailing line, colour, composition, and brushwork; iconographic interpretation—unpacking symbolic signifiers within Buddhist doctrinal frameworks; and comparative periodization—mapping stylistic shifts against historical timelines and sociopolitical contexts. Art historical inquiry is qualitative. This integrated approach allows baoxianghua patterns to be examined as aesthetic objects and cultural artefacts in specific historical and religious settings.

The study uses a case study design to examine the Dunhuang Mogao Caves, a key Silk Road cultural exchange site. Case studies are ideal for studying complicated phenomena in their real-world situations, especially when the boundaries between phenomenon and context are unclear, according to Yin (2018). Baoxianghua patterns developed alongside Tang Dynasty China's cultural, religious, and political dynamics and exchanges with neighbouring civilisations.

In a diachronic method, baoxianghua trends are examined in the four Tang Dynasty subperiods: Early Tang (618-704 CE), Prosperous Tang (705-780 CE), Mid Tang (781-848 CE), and Late Tang (849-907 CE). This chronological framework, introduced by Dunhuang experts like Whitfield (2001) and extended by later researchers, permits artistic achievements to be linked to historical events and cultural trends. The study can discover form, technique, and symbolic continuities and variations by evaluating patterns from each subperiod. Baoxianghua patterns are compared to comparable motifs in other Silk Road cultures. This comparative component is crucial to understanding artistic transmission, adaptation, and invention. The study highlights the Tang period's intricate cultural exchange networks by comparing Dunhuang's baoxianghua patterns to decorative motifs from India, Central Asia, and Persia.

### **Selection Criteria for Murals**

This study examines 282 Tang Dynasty caverns at the Mogao complex, out of 492 extant. The following criteria were used to identify 25 caves from this corpus: (1) Preservation quality—caves with well-preserved murals that allow for detailed visual analysis; (2) Baoxianghua motifs—confirmed through catalogues and site visits; (3) Chronological distribution—representing all four Tang subperiods; (4) Functional diversity—including prayer halls, meditation chambers, and funerary spaces; and (5) Accessibility for research.

Twenty murals with significant baoxianghua motifs from these twenty-five caves were analysed, five from each subperiod. This sampling technique covers everything while allowing for in-depth examination. The selection comprises baoxianghua patterns on ceiling caissons, door lintels, niche surrounds, and mural backgrounds to account for spatial context-related form and function changes.

The selection procedure was driven by current scholarship, particularly the Dunhuang Research Academy and international research team catalogues. These sites detail cave contents, including inscription, stylistic, and technical dating. The paper acknowledges dating disputes and relies periodisation on current scholarly opinion.

### **Analytical Framework**

This study uses formal analysis, iconographic interpretation, and contextual exploration. Formal analysis investigates baoxianghua patterns' geometric structure, colour palette, line quality, and compositional organisation. This technique uses art historical methodologies created by Wölfflin (1950) and modified to Chinese art by Wu Hung (2010) and others. Key formal elements analyzed: 1. Geometric configuration (petal count, concentric layers, symmetry type); 2. Colour scheme (pigment range, application technique, symbolic associations); 3. Line quality (contour line thickness, fluidity, expressiveness); 4. Spatial organisation (repetition, rhythm, hierarchy).

This formal foundation is used to study baoxianghua patterns' symbolic implications through iconographic interpretation. This method uses Panofsky's (1972) framework to identify Buddhist visual culture's customary symbols and their doctrinal importance. The examination



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examines global Buddhist symbols like the lotus and Chinese religious and philosophical interpretations. Buddhist sutras, commentaries, and Tang Dynasty literature explain these symbolic elements.

Researching baoxianghua patterns in their historical, cultural, and religious contexts. This theory links artistic developments to imperial sponsorship patterns, religious policy alterations, and Silk Road trade geopolitics. Workshop practises, pigment supplies, and technical knowledge transmission are all considered. This technique shows the dynamic relationship between art and society in Tang Dynasty China by comparing stylistic changes to historical events.

**Data Collection and Analysis Procedures**

Official research permits allowed several visits to the Dunhuang Research Academy to collect data. High-resolution digital photography of selected murals was done under controlled lighting to ensure correct colour reproduction. These photos were accompanied by thorough field comments on spatial context, preservation, and surrounding imagery. The study used Dunhuang Research Academy archival pictures when direct photography was prohibited.

Catalogues, conservation reports, technical investigations, and scholarly analyses of Dunhuang murals provided secondary data. These documents supplied context, comparison instances, and specialised studies (such pigment identification) that could not be done firsthand. Historical writings like Tang Dynasty official histories, Buddhist scriptures, and travellers' reports helped explain baoxianghua patterns' cultural and religious significance.

Multiple steps were engaged in analysis. Initial visual documentation of each mural was catalogued with cave number, precise location within the cave, estimated date, and preservation quality. Next, digital tools were used to trace compositional structures, quantify proportions, and analyse colour connections. Iconographic interpretation based on Buddhist textual sources and Silk Road site visuals was then added to this formal investigation.

Comparing baoxianghua designs across the four Tang subperiods revealed continuity and change. These diachronic comparisons were connected with historical events and cultural changes to investigate causal links. Finally, cross-cultural comparisons with Silk Road ornamental motifs emphasised artistic transmission, adaptation, and invention.

The study was conscious of interpretive limits like the fragmented historical record, cross-cultural interpretation, and contemporary scholarly framework biases throughout the analysis. The research seeks nuanced, culturally grounded interpretations of baoxianghua patterns as Silk Road cultural exchange by understanding these limits and taking a reflective method.

## Chronological Evolution of Baoxianghua Patterns

### Early Tang (618-704 CE)

Baoxianghua patterns, with geometric precision, restricted colour palettes, and symbolic directness, emerged in Dunhuang murals during the Early Tang Dynasty (Fig 1). While representing the dynasty's first century's imperial confidence and Buddhist devotion, these early forms set the stage for later times.

Four-petaled rosettes enclosed by simple circular bands dominate early Tang baoxianghua designs. This formal minimalism represents era aesthetics and practicality. Artistic output at Dunhuang began with tradition and added new aspects when the Tang Dynasty gained power after the Sui collapse. According to Liu and Xu (2016), the four-petaled shape may refer to the Four Noble Truths, which emphasise suffering, its cause, cessation, and liberation.



*Figure 1. Ceiling caisson rosette, Mogao Caves (Dunhuang), Early Tang Dynasty (618–704 CE). Photo: International Dunhuang Project, Collection ID 244ED072685B42B88E961F6CFF23C104.*

Early Tang baoxianghua patterns use iron red, azurite blue, and natural white for symbolic and material reasons. Many Early Tang works feature red, which Chinese culture associates with auspiciousness and vigour, potentially symbolising the new dynasty's hope and energy. Zhou (2019) suggests that these patterns' red predominance reflects the era's emphasis on auspicious beginnings and dynastic rejuvenation. Since the broad trade networks that would subsequently bring exotic colourants to Dunhuang were still forming, the limited pigment variety reflects practical limits.

Early Tang baoxianghua motifs are linear bands or basic grids with rigorous symmetry and rhythmic repetition. Cosmological equilibrium and balanced spiritual practice are emphasised in this system. Ceiling borders, niche surrounds, and panel dividers are where the patterns occur. Their move from decorative to symbolic motifs is reflected in their spatial placement.

Early patterns show cross-cultural influences, though less so than later ones. Basic rosette form resembles Sasanian decorative motifs that entered China via Central Asia. Rawson (1995) shows that Persian fabrics and metalwork with similar geometric flowers moved along the Silk Road, offering Dunhuang artisans models. But these foreign elements were already being adapted to Chinese aesthetics and Buddhist symbols, resulting in unique local interpretations. Early Tang *baoxianghua* patterns favour crisp outlines and flat colour fields with limited modelling or dimensional effects. This approach emphasises the themes' symbolic rather than naturalistic nature, emphasising their conceptual rather than representational role. The precise, controlled brushwork implies experienced artisans following traditions rather than experimentation.

Cave 220, from 642 CE, has Early Tang *baoxianghua* motifs. Four-petaled rosettes in red and blue are grid-arranged on the ceiling caissons to generate visual rhythm and cosmic order. The petals have pointy tips instead of rounder ones, giving these early patterns a geometric look. Caves 205 and 209 show similar workshop procedures, suggesting consistency.

### **Prosperous Tang (705-780 CE)**

*Baoxianghua* patterns changed dramatically during the Prosperous Tang period, when the dynasty was at its political and economic peak. Imperial wealth and monastic endowments produced extravagant motifs with formal complexity, chromatic richness, and symbolic elaboration. *Baoxianghua* development peaked during this time, representing the empire's material riches and cosmopolitan culture.

Eight-petaled rosettes with gold leaf, overlapping petal rings, and dramatic chromatic contrasts are typical of prosperous Tang *baoxianghua* patterns. The change from four to eight petals may symbolise the Eightfold Path or the eight auspicious symbols (*ashtamangala*) of Indian Buddhism. These number symbols represent the expanding influence of esoteric Buddhist traditions, which emphasised visual aids for meditation and ritual.

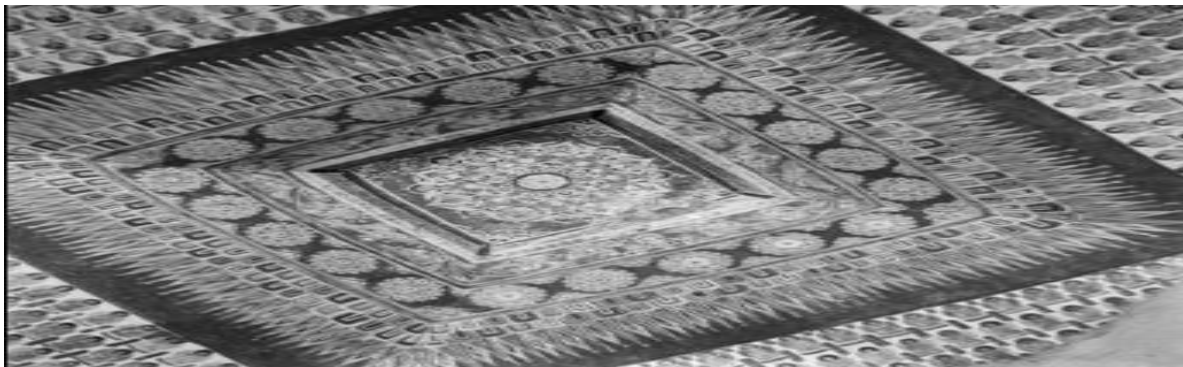
Emerald green, purple haematite, and gold are added to the palette due to Silk Road trade and the period's richness. According to Wong (2016), these brilliant hues symbolised imperial splendour and spiritual transcendence, producing visual landscapes that wowed worldly guests and inspired religious devotion. Gold leaf, especially for pattern centres, symbolises prosperity and spiritual illumination.

The Prosperous Tang painters used drip-line brushwork and dimensional modelling to create more realistic and dynamic results. These improvements resemble Persian floral arabesques, suggesting Central Asian influence. The flowing, curved texture of petal edges contrasts with the geometric approach of the Early Tang, giving abstract designs organic life. This period's *baoxianghua* patterns are complicated, interconnecting, and cover bigger regions. They create continuous fields that make ceilings, walls, and nooks visually immersive. This expansive approach reflects increased artistic production resources and the growing emphasis on

constructing comprehensive sacred environments that immerse worshippers in symbolic images.

The Prosperous Tang saw the most Persian, Sogdian, and Indian influences in baoxianghua designs. Zhang Ying (2018) shows that Central Asian vine scrolls gave baoxianghua patterns a sense of organic growth and spiritual vigour by adding structural dynamism. Persian-inspired stylised palmette forms broadened the iconographic repertory and reinforced Tang ideas of riches and cosmopolitan grace.




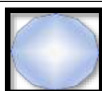










Cave 217, from 730 CE, shows Prosperous Tang baoxianghua designs. The ceiling has intricate eight-petaled rosettes (Fig2) with concentric rings of petals in beautiful blues, greens, and golds on a red background. The patterns' flowing vine-like parts connect rosettes, providing a cosmically connected visual environment. Caves 45 and 103 show that these opulent methods were popular during the dynasty's golden age.



*Figure 2. Mogao Cave 217 ceiling caisson, High Tang dynasty (ca. 713–765 CE). Photo: IDP Collection A98F00D5A7854C98AEF603FF8A95DF5D.*

The baoxianghua motif's fundamental formal components—consisting of petal counts, concentric lamination, central iconographic devices, and common decorative accents—are summarised in the subsequent table (Table 1). In order to compare the manifestation and evolution of these components across the Tang subperiods, this schema will function as the analytical baseline.

**Table 1. Structural Components of the “Baoxianghua” Pattern**

Pattern No.	Digital Drawing	Geometric Diagram	Shape	Caves	Buddhist Theory	Baoxianghua Patterns Experts
1			Square	Cave 211 (Early Tang Dynasty), Mo Gao caves	Complicated Full	Jwang (2010): Symmetrically Tian (2014): Distributed Li (2019): symmetrical Zhou (2022): form a whole
2			Dodecagon	Cave 340 (Early Tang Dynasty), Mo Gao caves	A large flower	Jtian (2010): A peach shaped Twang (2012): Three-dimensionality Eqiang (2016): Mostly green is the main colour
3			Hexagon	Cave 45 (Prosperous Tang Dynasty), Mo Gao caves	Complete	Jwang (2011): Regular hexagon Tzhang (2015): Plump Tian (2018): Lacey Liu (2023): fully
4			Octagon	Cave 103 (Prosperous Tang Dynasty), Mo Gao caves	Clear hierarchical structure	Jzhang (2010): A peach shaped shape Twei (2012): Full Eliu (2016): Rounded Tang (2023): soft
5			Round	Cave 154 (Mid-Tang Dynasty), Mo Gao caves	Simple	Jhan (2008): Simple Zhan (2009): Conceptual Zhang (2019): Symmetrical
6			Pentagon	Cave 154 (Mid-Tang Dynasty), Mo Gao caves	Simple	Wyang (2013): Circular Tzhang (2018): Continuous Zhou (2017): Continuous
7			Dodecagon	Cave 9 (Last Tang Dynasty), Mo Gao caves	Auspicious	Jzhang (2009): Auspicious Qian (2012): Simple Gao (2019): calm

### Mid Tang (781-848 CE)

After the An Lushan Rebellion and imperial fall, baoxianghua patterns changed significantly in the Mid Tang dynasty. Post-rebellion limitations led to refined minimalism with restrained compositions, muted colour palettes, and a focus on technical perfection over material opulence. After the mid-eighth century traumas, Tang civilisation underwent socio-political and economic transformations that affected its style progression.

Six-petaled designs with softened outlines, muted colours, and controlled shading are typical of Mid Tang baoxianghua patterns. The change to six petals may symbolise the Six Perfections (pāramitās) of Mahayana Buddhism: generosity, ethics, patience, energy, meditation, and wisdom. In an era of internal instability and declining imperial power, the hexagon's symbolism of harmony, adaptability, and stability resonated, according to Pan (2013) and Wu (2017). The



colour palette becomes more muted, favouring harmonies over contrasts. Red and gold were used more sparingly than in the Prosperous Tang Dynasty. Wang (2015) says this chromatic moderation reflected the socio-economic realities of the time: military attacks and fiscal pressures required a less extravagant public image. The aesthetic emphasises elegance over excess.

Mid Tang painters advanced line quality and spatial organisation techniques. Liu Zhi and Xu Cui (2016) observe that even simple designs were accomplished with precision in line quality, symmetry, and composition. The elaborate layering techniques continued on a lesser scale, keeping baoxianghua patterns' spiritual and aesthetic associations. Mid Tang baoxianghua patterns are more ordered and rhythmic than Prosperous Tang ones. Visual clarity helps contemplation because motifs are clearly defined rather than flowing into each other. This style reflects practical constraints—fewer resources for grandiose productions—and artistic preferences for refinement and restraint over grandeur.

Cross-cultural influences are present but adapted to Chinese aesthetics. The foreign features that were joyfully accepted during the Prosperous Tang are now more fully incorporated into a harmonious and balanced visual language. Assimilation shows the Tang empire's evolving connection with its neighbors—less broad and cosmopolitan but nonetheless culturally exchanged.

Mid Tang baoxianghua motifs are shown in Cave 85, from 820 CE. Six-petaled rosettes in muted blues, greens, and reds are grid-arranged on the ceiling. The petals' softer shapes and gentle colouring make them more lifelike than earlier instances while keeping symbolic clarity. Similar procedures in Caves 159 and 231 imply consistent workshop practices despite the empire's political problems.

### **Late Tang (849-907 CE)**

In the Late Tang period, imperial decline and political fragmentation accelerated, Tang Dynasty baoxianghua patterns reached their final evolution. Reduced resources led to reduced motif scales, repetitive patterns, and monochrome ochre-red colours. Despite these material limits, the patterns maintained their symbolic functions, showing extraordinary tenacity. Late Tang baoxianghua designs include simpler forms, standardised compositions, and limited colour changes. Iron-based browns and reds replaced gold, requiring fewer costly materials. The increasingly strict formalism of Late Tang painting represents a broader cultural state in which tradition became an empty shell, retained in appearance but lacking the creative spirit that had powered it, according to Liu (2020).

Many colours are limited to ochre, red, and brown with occasional blue accents. Since painters had limited resources and formulaic models, this restriction reflects material scarcity and workshop standardisation. Hansen (2012) views this chromatic dullness as a visual expression of a civilisation facing material shortage and existential uncertainty. Late Tang baoxianghua patterns are repetitive, grid-like, and maximise coverage while minimising creative innovation.



Thinner and more frequent motifs create dense fields with visual impact despite simplified execution. This method conserves resources while keeping patterns' symbolic function.

Geometric organisation persists despite these limits, demonstrating a devotion to harmony and cosmic order. Tang artisans adhered to balance and continuity frameworks even during dynasty decline, according to Rawson (1995) and Whitfield (2001). Thus, the baoxianghua patterns depict an empire in decline, keeping outward forms while losing meaning. Cross-cultural influences decreased when the Tang empire drew inward and Silk Road trade decreased. Early Tang art was cosmopolitan, but later Chinese methods are more traditional, yet the patterns' core forms and structures show cultural interactions. As the Tang dynasty lost authority over western provinces that had fostered cultural interchange with Central and South Asia, geopolitics changed.

Late Tang baoxianghua designs are shown in Cave 196, from 890 CE. Small, repeated red-brown rosettes are grid-arranged on the ceiling. The execution is good but lacks the inspiration of earlier periods, suggesting workshop production following patterns rather than original innovation. Caves 98 and 108 show that these simpler methods were widely used in the dynasty's last decades.

Baoxianghua patterns' chronological growth spanning the four Tang subperiods shows aesthetic and technical developments as well as the complicated relationship between creative output and historical factors. These patterns show the dynasty's fortunes from the confident simplicity of the Early Tang to the luxurious complexity of the Prosperous Tang, the polished restraint of the Mid Tang, and the sturdy minimalism of the Late Tang. These patterns were able to adapt to new situations while retaining their primary symbolic significance as carriers of Buddhist symbolism and symbols of cosmic order.

## **Cross-Cultural Influences on Baoxianghua Patterns**

### **Indian and Central Asian Elements**

Dunhuang's Tang Dynasty murals' baoxianghua patterns show how Indian and Central Asian creative traditions influenced Chinese Buddhist visual culture. The lotus motif, a symbol of purity and enlightenment in Indian Buddhist imagery, is the most essential inspiration. The lotus (padma) in Indian culture symbolises the Buddha's transcendence of worldly defilements, emerging clean from murky waters like the enlightened mind. Baoxianghua patterns were based on this symbolic link when Buddhism moved north into Central Asia and east into China. The formal treatment of the lotus in Dunhuang murals shows a complicated adaption process, not simply imitation. Chinese artists stylised the Indian lotus into geometric forms that matched local aesthetics, according to Wong (2016). In the Early Tang dynasty, baoxianghua patterns showcased symmetrical, four-petaled motifs that were unrecognisable as lotus flowers but nonetheless symbolised purity and spiritual awakening.

Also important are Central Asian influences, especially from Tarim Basin Buddhist countries. At Kizil and Kucha, proto-baoxianghua patterns precede Dunhuang's Tang examples, suggesting transmission channels. Similar to Dunhuang, these Central Asian rosettes have radial symmetry and concentric petal configurations, but with regional colour and line quality differences. The Tarim Basin oasis cities were significant in the transfer of Buddhist art from India to China, modifying and altering motifs as they went through multiple cultural contexts, according to Hansen (2012).

The mandala structure that underpins many baoxianghua patterns is another Indian influence. Mandalas aid meditation and visualisation in Tantric Buddhism. The structure of ornate baoxianghua designs, especially those from the Prosperous Tang period, is concentric, radially symmetrical, and often features a central deity surrounded by attendant figures or symbols. Esoteric Buddhist practices are increasing in Tang China, therefore this structural similarity is unlikely to be coincidence. Kieschnick (2003) claims that Chinese Buddhist sacred space visual organisation typically borrowed from Indian models and adapted them to local architectural and artistic standards.

#### **Persian and Sogdian Contributions**

Persian and Sogdian influences on baoxianghua patterns show Tang China's substantial commercial and diplomatic ties to Iran. Sasanian Persia (224-651 CE) created sophisticated decorative traditions with stylised floral motifs, geometric patterns, and rhythmic repetition, which resemble Tang Dynasty baoxianghua designs. Sogdian merchants who controlled Silk Road trade transmitted these creative traditions to Central Asian and Chinese art after the Islamic conquest of Persia.

The flowing, vine-like motifs that connect rosettes in Prosperous Tang baoxianghua patterns are the most obvious Persian influence. These sinuous forms resemble Sasanian textile, cutlery and architectural motifs. Rawson (1995) shows that the "pearl roundel" pattern—circle medallions joined by flowing lines—was widely spread throughout the Silk Road and appears in several Dunhuang murals. These Persian designs were combined with indigenous elements by Chinese painters to achieve mature baoxianghua patterns' flowing quality.

Sogdian merchants who settled in key Chinese cities during the Tang period helped spread Persian art to China. The famous Anjia tomb in Xi'an (dated 579 CE) shows Persian-influenced ornamental themes before the Tang Dynasty. These Sogdian populations introduced Central and West Asian aesthetics to Chinese consumers and artists, according to Marshak (2002). Some baoxianghua motifs have palmette forms that resemble Persian and Sogdian art. Sasanian textiles and metalwork feature these symmetrical, fan-like vegetable motifs. In Dunhuang murals, especially during the Prosperous Tang period, exotic, imported motifs are valued for their beauty and grandeur. The palmette expanded the iconographic repertoire and supported Tang ideals of affluence, cosmopolitan elegance, and spiritual universality, according to Zhou (2019).

Many Prosperous Tang baoxianghua motifs use brilliant blues and reds, influenced by Persian colour and application techniques. This colour combination was associated with monarchy and divine protection in Persian fabrics and ceramics. During this time of extensive Silk Road trading, the Tang adopted these colour schemes for aesthetic reasons and to honour Persian luxury items.

### **Indigenous Chinese Traditions**

Foreign influences shaped baoxianghua patterns, but indigenous Chinese artistic traditions, particularly cosmological symbolism and decorative arts, also played a role. This local basis offered the mental framework for interpreting and integrating foreign materials, resulting in uniquely Chinese manifestations of foreign motifs. Traditional Chinese flower symbolism influenced baoxianghua patterns. Chinese culture associated native flowers like the peony, chrysanthemum, and plum bloom with riches, honour, longevity, and regeneration. These indigenous flower emblems enriched the imported lotus motif's Buddhist links with Chinese literary and artistic meanings, according to Chen (2020).

Baoxianghua designs were also influenced by Chinese cosmology geometry. Traditional Chinese thinking emphasised cosmic order through numerical symbolism and geometric harmony. Many baoxianghua designs use even-numbered petals (four, six, or eight) to symbolise the four directions, six cosmic energies, or eight Yijing trigrams. Foreign elements were understandable in Chinese culture thanks to these numerical linkages. Indigenous Chinese artistic conventions influence line, colour, and composition techniques. Many baoxianghua patterns use Chinese painting techniques, especially decorative arts and architectural embellishment, to emphasise clean contours and controlled brushwork. Tang artists often used Chinese brushwork to include foreign elements, creating a hybrid visual synthesis.

Baoxianghua motifs in cave temples resemble Chinese architecture and rituals. Chinese Buddhist caves have various niches, narrative sequences, and decorative components, unlike Indian cave temples, which usually have a central stupa or cult symbol. According to Chinese hierarchy and symbolic orientation, baoxianghua patterns were placed on ceilings (representing heaven) or as framing elements for more important iconographic aspects.

### **Synthesis and Hybridization Processes**

Baoxianghua patterns demonstrate "cultural hybridity"—creative synthesis that goes beyond borrowing to create new visual languages that are neither alien nor local. Chinese artists carefully adapted foreign motifs to local aesthetic tastes, symbolic needs, and technological capabilities.

This cultural hybridisation had many intricate mechanisms. Textiles, metalwork, and manuscripts carried by traders and pilgrims along the Silk Road brought foreign motifs to Dunhuang. Numerous baoxianghua-patterned imported textiles have been found in Dunhuang, including the Library Cave (Cave 17) sealed circa 1000 CE. These portable artefacts allowed local artists to study and alter models, enabling design transmission over long

distances. Cultural transmission also relied on human mobility. Indian and Central Asian Buddhist monks brought religious scriptures, artistic practices, and iconography to China. Chinese pilgrims visited India and learnt about Buddhist sacred sites and decorating. These travellers translated foreign traditions for local audiences and helped integrate varied art forms. Dunhuang workshops helped blend disparate inspirations into cohesive creative programs. As Whitfield (2001) shows, cave murals were created by teams of painters following standards while adding new motifs. Pattern books and model drawings passed on successful designs to new artists, ensuring continuity and creativity. This workshop method gradually integrated foreign themes into indigenous artistic vocabularies, creating more complex syntheses.

Prosperous Tang *baoxianghua* designs, which integrate varied cultural components the greatest, show the hybridity. These patterns incorporate Indian lotus symbolism, Persian arabesques, Central Asian rosettes, and Chinese ornamental arts' balance. The outcome was a coherent visual language that served Tang Dynasty Buddhist religious and aesthetic purposes. Chinese interpretations of foreign motifs sometimes influenced Central Asian and international art along the Silk Road. Chinese-influenced Buddhist art at Bezeklik and Turfan resembles Dunhuang's *baoxianghua* patterns, implying intricate networks of reciprocal influence rather than simple unidirectional transmission.

*Baoxianghua* patterns' cross-cultural aspects illustrate the Tang Dynasty's intricate artistic exchange on the Silk Road. As active participants in many traditions, Chinese artists selected, transformed, and integrated components to create a unique visual language that reflected Buddhist cosmology and Tang imperial ideology. This creative synthesis shows the dynamic nature of cultural interchange in premodern Eurasia, challenging simplistic notions of impact and dissemination to better comprehend transcultural artistic innovation.

## **Iconographic Analysis**

### **Symbolic Meanings and Religious Connotations**

The rich spiritual landscape of Tang Dynasty Buddhism is reflected in Dunhuang mural *baoxianghua* patterns. These patterns depicted Buddhist cosmology, doctrine, and meditation. Their symbolic meanings ranged from religious connections to spiritual evocations. *Baoxianghua* patterns' lotus symbolism is deeply religious. In Asian Buddhist traditions, the lotus symbolises spiritual purity and enlightenment, emerging unstained from murky waters like the enlightened mind. According to Wong (2016), the lotus's ability to flourish in dirty waters symbolises the soul's ability to overcome earthly pain and impurities to achieve enlightenment. Dunhuang's *baoxianghua* patterns abstract and develop this underlying symbolism through geometric stylisation, evoking the lotus's spiritual connections without replicating its natural appearance.

The mandala-like form of many *baoxianghua* designs enhances their religious significance. Mandalas, which are concentric circles surrounding a centre point that represents ultimate reality or the main deity, promote meditation and visualisation in Tantric Buddhism. Radial

symmetry and circular organisation of baoxianghua designs resemble mandalas, which may aid contemplation. According to Sharf (2001), geometric patterns are active technologies that frame religious experience and draw the viewer inward towards spiritual realisation. Pure Land theme enhances baoxianghua patterns' religious overtones. During the Tang Dynasty, Chinese Buddhism envisioned the Western Pure Land of Amitabha Buddha as a paradise with jewelled trees, lotus ponds, and gorgeous pavilions. The intricate, jewel-like nature of many baoxianghua designs, especially those from the Prosperous Tang period, invokes paradisiacal imagery and creates visual settings that symbolise the Pure Land. Pure Land practitioners, who were popular throughout the Tang era, would have found this association particularly profound. Beyond these generic religious links, baoxianghua iconography has more particular doctrinal implications. The central jewel-like core in many patterns may symbolise the Buddha nature (tathāgatagarbha) in all beings, a concept that was prominent in Tang Chinese Mahayana scriptures. The surrounding petals may represent the stages or perfections of the bodhisattva path, producing a visual representation of spiritual growth. Scholarly monastics and lay devotees conversant with Buddhist books and teachings would have recognised these doctrinal connections.

### **Geometric Configurations and Sacred Symmetry**

Baoxianghua patterns represent sacred symmetry and cosmic order through their geometric groupings. These designs' precise geometric structures—radial symmetry, concentric layers, and balanced proportions—embody Tang Dynasty religious philosophy and spirituality. Radial symmetry, with elements organised evenly around a centre point, symbolises cosmic equilibrium and spiritual balance. Traditional Buddhist cosmology centres on Mount Meru, therefore this symmetrical layout reflects that. DeMarrais et al. (2004) note that such symmetrical designs are ontological as well as aesthetic, representing fundamental views about reality and the right order of human society according to cosmic principles.

The precise integration of numerical symbolism shows how baoxianghua geometric configurations relate to sacred symmetry. Baoxianghua designs have four, six, or eight petals, which have theological significance. Four-petaled designs in Early Tang examples may represent the Four Noble Truths or the four directions of space, producing a cosmic diagram. During the Mid Tang period, six-petaled patterns may represent the Six Perfections (pāramitās) of Mahayana practice: generosity, ethics, patience, energy, meditation, and wisdom. Eight-petaled patterns, prevalent during the Prosperous Tang, may have referenced the Eightfold Path or Indian Buddhist ashtamangala.

The concentric layering of many baoxianghua motifs enhances their cosmological importance. These layers can reflect distinct worlds of life or spiritual progress, from ordinary reality at the periphery to ultimate reality at the centre. Buddhist spiritual growth is an interior journey from phenomenal existence to enlightenment, depicted by this spatial hierarchy. The viewer's eye naturally moves from the periphery to the centre, simulating the contemplative process of zeroing in on reality.



Baoxianghua patterns' geometric perfection recalls the Tang Dynasty's emphasis on cosmic order and harmony as evidence of good government. According to Guo Lianfu (1998), the patterns' harmonic balance and layered richness symbolised the empire's harmonious structure, with the emperor at the centre, radiating stability and enlightenment. This political aspect of sacred geometry highlights the tight association between religious symbols and imperial ideology throughout the Tang period, when Buddhist ideas were used to legitimise imperial authority.

### **Color Symbolism and Spiritual Significance**

Baoxianghua patterns' colour enhances their aesthetic appeal and conveys deeper symbolic connotations that represent the Tang Dynasty's political, spiritual, and cultural changes. Colour encodes complex emotional and ideological meanings that reflect historical changes as a semiotic system.

Red dominates baoxianghua motifs in the Early Tang dynasty, reflecting the emphasis on auspicious beginnings and dynastic rejuvenation. Red, a Chinese colour of energy, power, and good fortune, symbolised the Tang Dynasty's optimism and hope for the future. Red, frequently in bold, unmistakable tones, symbolised the imperial court and the cosmic forces thought to lead and protect the state. The Tang empire began its control during a period of relative stability and geographical growth, and crimson symbolised its bright energy and auspiciousness.

The Prosperous Tang Dynasty introduced gold, azure, and jade green to the colour palette. Gold, symbolising wealth and spiritual illumination, often symbolised imperial authority and Buddhist transcendence. Gold leaf on baoxianghua designs' key parts provided visual focal points that conveyed nobility and otherworldly splendour. Azure and jade green, colours associated with Daoist harmony with nature, underlined the period's emphasis on cosmic balance and the incorporation of many spiritual traditions into empire culture.

By the Late Tang dynasty, baoxianghua designs had muted, repetitious tones, reflecting political and spiritual collapse. Darker, more monotonous colours replaced the colourful ones. This chromatic shift appears to show the Tang Dynasty's political and creative downfall. The vivid colours of imperial grandeur and Buddhist transcendence were replaced by a more sombre and monotonous colour pattern as the empire struggled with internal strife, economic issues, and external threats.

Beyond these period-specific associations, some colour combinations have Tang Dynasty-wide symbolic implications. The contrast of complimentary colors—especially red and green or blue and orange—evoked spiritual force and transformation. Baoxianghua patterns' transition of colours from darker tones in the periphery to lighter hues at the centre may symbolise the Buddhist path of spiritual development from ignorance to enlightenment. Material associations enhanced the symbolic meaning of colour in baoxianghua designs. Pigments made from valuable minerals like lapis lazuli (blue) or cinnabar (red) have spiritual significance due to



their worth and rarity. These expensive materials were used in religious contexts as devotional offerings and merit-making, turning artistic production into a spiritual exercise.

### **Petal Numerology and Buddhist Cosmology**

Baoxianghua petals represent Buddhist numerical symbolism and indigenous Chinese cosmology. This petal numerology reveals the religious meanings behind these ornamental designs. Early Tang instances' four-petaled patterns provide essential cosmological orientations. Buddhist traditions frequently associate four with the Four Noble Truths—suffering, its origin, its end, and the route to its cessation—the Buddha's earliest and most important teaching. Four provides cosmic diagram spatial orientation by matching the cardinal directions. According to Liu and Xu (2016), these four-petaled designs are common in the earliest Tang caves, suggesting they established key doctrinal and cosmological frameworks for further advancements.

During the Mid Tang period, six-petaled patterns were popular and referred to the Six Perfections (pāramitās) of Mahayana practice: generosity, ethics, patience, energy, meditation, and wisdom. These virtues form the Mahayana Buddhist bodhisattva path of loving action. The Mid Tang saw the rise of Mahayana books and practices at Dunhuang and the introduction of six-petaled motifs, suggesting a link between iconography and doctrine. Six petals form a hexagonal symmetry that symbolises balance and harmony, which are especially important during political rehabilitation.

Eight-petaled patterns, prevalent during the Prosperous Tang, have several meanings. The Eightfold Path—right perception, right intention, right speech, right action, right livelihood, right effort, right mindfulness, and right concentration—is the Buddha's prescription for ending suffering. Indian Buddhist iconography often depicts eight-petaled lotuses as the eight fortunate symbols (ashtamangala) or the eight great bodhisattvas who attend the Buddha. The Prosperous Tang's eight-petaled baoxianghua patterns showed its intimate relationship with Indian Buddhist traditions and imperial confidence, as eight symbolised fullness and perfection in Chinese mathematics.

The most intricate baoxianghua designs, especially from the Prosperous Tang period, had twelve, sixteen, twenty-four, or more petals. These layering patterns reflect more complex cosmic models and may reference esoteric Buddhist practices that gained influence during this period. Tantric Buddhism arrived in China during the Tang Dynasty and used intricate mandalas with many concentric circles of deities or symbols signifying different worlds or spiritual phases. Advanced baoxianghua patterns may have been influenced by these esoteric visualisation activities.

Buddhist number symbolism and indigenous Chinese cosmology enhance petal numerology in baoxianghua designs. Traditional Chinese philosophy linked cosmic phenomena to numbers like four (seasons), five (elements), and eight (trigrams). Buddhist use of these numerically

important patterns is a clever fusion of Indian and Chinese cosmological systems, yielding visual shapes that may be "read" in various ways.

This rich symbolism makes baoxianghua patterns accessible to varied audiences while maintaining their doctrine. Normal worshippers would enjoy their beauty and favourable connotations, but knowledgeable monastics could identify Buddhist literature and activities. Despite political and theological shifts, these designs remained popular throughout the Tang Dynasty due to their practical adaptability.

### **Baoxianghua as Cultural Nexus**

#### **Dunhuang as Transcultural Meeting Point**

Dunhuang's strategic location at the eastern terminus of the Silk Road made it a vital hub where many cultures collided and changed. The city connected China to the west via the northern and southern Silk Roads, facilitating the movement of people, products, and ideas across Eurasia. Due to its location, Dunhuang was a hub of cultural production and trade, blending Asian creative traditions into new hybrids.

Tang-era sources describe the city's transcultural hub. To defend its western border and regulate Silk Road trade, the Tang court erected a military garrison at Dunhuang. Administrative entities governed economic and diplomatic operations with this military presence. According to Hansen (2012), Tang records indicate Central Asian, Persian, and Byzantine delegations passing via Dunhuang on their way to Chang'an, the imperial capital. Artists, craftspeople, and religious experts brought their cultures to diplomatic missions.

Archaeology supports Dunhuang's transculturality. Over 40,000 Chinese, Tibetan, Sanskrit, Sogdian, Uighur, and Khotanese writings were found in Cave 17, sealed circa 1000 CE and unearthed in 1900. This multilingual repository shows Dunhuang's role as a centre of textual transmission and translation, where Buddhist scriptures and other works are shared across languages. The textiles, ceramics, metalwork, and paintings found Dunhuang show a cosmopolitan material culture that incorporated aspects from across Eurasia.

The Mogao Caves are a testament to Dunhuang's transcultural importance. The caverns were supported by local politicians, merchants, military officers, and religious institutions, according to Whitfield (2004). A cosmopolitan aristocracy funded Buddhist institutions, as Central Asian donor inscriptions show. The caves' creative programs reflect this wide patronage by using icons and styles from many cultures.

Baoxianghua patterns, which combine Indian, Central Asian, Persian, and Chinese elements, demonstrate Dunhuang's transcultural role. These patterns combine numerous inspirations into unified visual systems for religious and aesthetic goals. Throughout the Tang Dynasty, artists changed motifs to reflect political, religious, and artistic changes at Dunhuang.

### **Artistic Transmission along the Silk Road**

The Silk Road transmitted creative motifs, techniques, and meanings through intricate mechanisms that defy diffusion and influence models. Artistic ideas moved through many channels, changed, and were reinterpreted in different cultural situations. Baoxianghua patterns at Dunhuang show how artistic transmission along the Silk Road took several forms. Portable models that could travel long distances were vital to artistic transmission. Decorative designs were spread through textiles. Zhao (2018) shows that silk textiles with baoxianghua-like floral medallions have been found throughout Central Asia and Europe. Luxury products, revered for their craftsmanship and material quality, spread visual motifs across cultures and inspired local variations. Local painters used imported fabrics to analyse and apply two-dimensional patterns into mural paintings at Dunhuang cave temples.

Manuscripts and illustrated books also spread art. Buddhist scriptures commonly illustrated iconographic conventions and decorative elements. Through pilgrimage routes, these illustrated texts connected Asian artistic traditions, producing shared visual vocabulary while allowing regional differences. Many illustrated manuscripts with floral medallions and lotus motifs resembling baoxianghua patterns were found in Dunhuang's Library Cave.

Human mobility was another important artistic medium. Buddhist monks explored the Silk Road, founding monasteries, translating literature, and commissioning art. Religious professionals often brought artists or explained creative conventions they had seen abroad, transferring visual expertise. Similarly, merchants, diplomats, and artisans brought artistic ideas and techniques between cultural centres. According to Liu (2020), Tang historical documents identify Central Asian artists in the imperial court, suggesting direct personal transmission to China of foreign creative traditions.

Dunhuang workshops helped blend disparate inspirations into cohesive creative programs. Cave murals were created by teams of artists following conventions while adding new aspects. Archaeological evidence implies pattern books and model drawings preserved successful designs and passed them on to future artists. This workshop method gradually integrated foreign themes into indigenous artistic vocabularies, creating more complex syntheses. Artistic motifs, technological expertise, and materials were transmitted. Dunhuang murals featured lapis lazuli blue and malachite green, imported from faraway places, providing material links that mirrored stylistic exchanges. The Silk Road also spread painting styles and tools, allowing painters to achieve results unattainable with local resources. This material aspect of creative transmission emphasises the practical underpinnings of cultural interchange, which relied on trade and communication networks.

### **Adaptation and Localization of Foreign Motifs**

Adapting foreign motifs to local surroundings required more than copying. Dunhuang artists transformed external materials into local visual traditions based on local demands, tastes, and limits. Localisation made borrowed motifs significant in their new cultural context while keeping their roots. The most obvious part of this process is formal adaptation. When imported into Chinese art, foreign motifs changed stylistically. Chinese artists abstracted and

geometricised Indian lotus forms, moving away from naturalistic portrayal towards stylised, symmetrical designs. Indian models' organic fluidity was formalised into *baoxianghua* designs' rigid patterns to mirror Chinese aesthetic values for order, balance, and geometric clarity.

Foreign themes took on new significance in Chinese contexts. Lotus designs retained their Buddhist roots but added Chinese literary and philosophical meanings. Chen (2020) notes that the lotus became connected with Buddhist purity, Confucian morality, and Daoist natural harmony in China. The symbolic enrichment made foreign themes more significant to Chinese viewers, easing their assimilation into local visual culture.

Technical adaptation involved transferring motifs between media and scales. Textile and manuscript patterns were modified for mural painting, necessitating scale, colour, and spatial organisation changes. In cave temples, curved walls and ceilings changed viewing circumstances, therefore flat theme designs were adapted. Since Dunhuang painters used foreign materials to solve complex visual challenges, these technical adaptations show their practical inventiveness.

Contextual integration made modified motifs work in new architectural and ceremonial settings. According to Chinese spatial hierarchy and symbolic orientation, *baoxianghua* patterns were placed on ceilings (representing heaven) or as framing elements for more important iconographic aspects in cave temples. These elements were placed differently in Chinese Buddhism than in Indian or Central Asian contexts, reflecting its architectural traditions and ritual activities.

The adaptation process changed with shifting situations. Early Tang adaptations of foreign motifs are more direct and recognisable, implying recent transfer and purposeful copying. By the Prosperous Tang dynasty, these foreign elements had been fully merged into a Tang visual language, making "Chinese" and "foreign" components harder to identify. Foreign influences gradually formed part of indigenous artistic traditions, showing the dynamic nature of cultural adaptation.

### **Cultural Diplomacy through Artistic Exchange**

Art along the Silk Road helped the Tang empire and its neighbours negotiate politics beyond its aesthetic and religious aspects. The Tang court used artistic patronage and exchange to display imperial power, create diplomatic ties, and integrate foreign elites into Chinese politics. By combining different cultures, *baoxianghua* patterns can be seen as visual representations of this diplomatic tactic.

Imperial financing of Dunhuang Buddhist institutions represented the Tang court's objective of legitimising its multicultural empire through religious sponsorship. Tang emperors portrayed themselves as universal rulers by establishing cave temples with Asian art. According to Kieschnick (2003), this religious sponsorship showed foreigners the emperor's function as a Buddhist dharma monarch and strengthened imperial legitimacy among Chinese subjects. The Tang Dynasty's symbolic use of Central Asian and Persian decorative motifs in imperial

Chinese art showed its capacity to adapt foreign culture. Tang artists showed cultural confidence and imperial dignity by adopting alien motifs to Chinese aesthetics. Baoxianghua patterns depicted the Tang Dynasty's self-image as the cultural centre of a huge interconnected universe, capable of assimilating many influences while keeping its identity.

Diplomatic gifts helped Silk Road artists spread their work. The Chinese court gave foreign monarchs silk, metals, and artworks as diplomatic gifts, according to Tang historical documents. These exchanges developed political links and artistic influence since given goods gave models for local artists to study and modify. These diplomatic gifts elevated the artistic trends they represented, encouraging their adoption and adaption in new situations. Commercial networks related to diplomatic contacts also promoted art. Merchants travelling over the Silk Road were protected by Tang government trade agreements with neighbouring states. Luxury products, especially decorative arts with cross-cultural visual motifs, were transported by these trade linkages. The growing market for Buddhist devotional artefacts encouraged stylistic interaction and creativity in artistic output that included aspects from around the Buddhist world.

Tang China's overseas communities expanded cultural diplomacy through artistic interchange. The Tang imperial capitals Chang'an and Luoyang had large Central Asian, Persian, and Indian populations, according to historical records. Foreign residents preserved their cultural traditions while living in China, allowing artistic exchange. Some foreign artists worked directly for Chinese clients, notably the imperial court, introducing new techniques and motifs that affected Chinese art.

Artistic interchange was especially diplomatic during the Prosperous Tang period, when the empire was at its largest and most engaged. Prosperous Tang baoxianghua patterns represent imperial confidence and outward orientation with their opulence and cosmopolitanism. As the Tang Dynasty's political fortunes waned, baoxianghua patterns grew more inward-looking and conventionalised, demonstrating a link between diplomatic involvement and artistic creativity. Creative interaction created important relationships across varied Silk Road societies. Baoxianghua patterns depicted cultural peace and mutual enrichment by combining aspects from many traditions, providing an artistic counterpoint to Tang China's political and trade ties to its neighbours. This visual diplomacy helped the Tang Dynasty flourish, fostering artistic creativity that would shape Chinese visual culture for centuries.

## **Socio-Political Context**

### **Imperial Patronage and Buddhist Institutions**

Baoxianghua patterns in Dunhuang must be understood in the context of Tang Dynasty China's socio-political backdrop, particularly the complex connection between imperial power and Buddhist institutions. Imperial support shaped Buddhist art output during the Tang period, and religious institutions played major political roles. Baoxianghua patterns change during the four Tang subperiods, reflecting this dynamic interaction.



Li Yuan started the Tang Dynasty in 618 CE, a governmental order that lasted nearly three centuries. The Tang government supported Buddhist institutions as spiritual sources while occasionally limiting their economic and political authority from the start. Imperial patronage and Dunhuang Buddhist art were shaped by this tension.

Early Tang emperors, like as Taizong (r. 626-649) and Gaozong (r. 649-683), promoted Buddhist institutions to consolidate imperial authority. According to Chen (2020), these emperors posed as chakravartin kings—universal monarchs who safeguarded Buddhism and its institutions. Temple construction, sutra translation, and creative commissions were generously supported to express political self-fashioning. The Early Tang period's modest, ordered baoxianghua patterns indicate imperial confidence but restraint, establishing basic shapes that would later be refined.

Imperial Buddhist patronage increased under Empress Wu Zetian (r. 690-705), who briefly overthrew the Tang Dynasty to found the Zhou Dynasty. Wu Zetian, the first and only female Chinese ruler, promoted herself as an incarnation of Maitreya and generously supported Buddhist organisations. Her patronage fostered creative creativity and exotic aspects that showed imperial reach and cosmopolitan elegance. This time of increased patronage created the groundwork for the Prosperous Tang's lavish baoxianghua patterns.

In the Prosperous Tang dynasty, especially under Emperor Xuanzong (r. 712-756), imperial authority and cultural confidence peaked. The court funded vast temple buildings, hundreds of monks and nuns, and extensive cultural programs, demonstrating unprecedented imperial patronage of Buddhist institutions. Baoxianghua patterns from this period show imperial munificence with gold leaf, rich pigments, and sophisticated motifs that show material affluence and creative sophistication. These international patterns—incorporating motifs from across Asia—visually portrayed the Tang empire's self-image as the civilised world's cultural centre.

The An Lushan Rebellion (755-763) changed Tang history and imperial-Buddhist relations. The uprising weakened imperial authority and drained state finances, reducing Buddhist art sponsorship. Conservative Confucian leaders also blamed Buddhism for the empire's problems, claiming that foreign religions had eroded traditional values and devoured public funds. The Mid Tang baoxianghua patterns, which were technically sophisticated but less lavish than their Prosperous Tang counterparts, represent these changing attitudes.

The Late Tang period saw imperial power decline and government antipathy towards Buddhism rise, culminating in Emperor Wuzong's Huichang Persecution (841-845). This methodical repression of Buddhism destroyed thousands of temples, laicised hundreds of thousands of monks and nuns, and confiscated monastery estates and wealth. Dunhuang, on the empire's western frontier, was somewhat spared the persecution, but the loss in imperial support for Buddhism affected creative development. Material limits and rigid religious policy influenced this period's simple, repeating baoxianghua motifs.



Buddhist institutions in Dunhuang had complex connections with imperial power during these political changes. These frontier organisations acknowledged imperial sovereignty but acted autonomously, especially when central control eroded in later Tang eras. Local military commanders, civil authorities, and wealthy merchants increasingly supported Buddhist art production instead of imperial benefactors. Baoxianghua designs evolved to embrace more local components and provide more localised tasks while preserving their symbolic framework due to this patronage shift.

### **Merchant Communities and Trade Networks**

Dunhuang's baoxianghua designs thrived due to Tang China's trading links to Central Asia, India, and Persia. Merchant communities funded Buddhist organisations and helped spread artistic motifs, techniques, and materials along the Silk Road. The economic aspects of cross-cultural interchange underpinned baoxianghua patterns' creative synthesis.

Dunhuang prospered throughout the Tang Dynasty due to its Silk Road location. Traders from the west entered China and exchanged exotic commodities for Chinese goods before continuing their journeys. Local merchants profited from this commercial flow and donated some of their revenues to religion. Chinese and international merchants donated to Buddhist institutions in the Mogao Caves, revealing a cosmopolitan commercial class.

Sogdian merchants from Samarkand, Uzbekistan, dominated Silk Road trade throughout the Tang period. Central Asian traders settled in key Chinese towns and dominated the luxury goods trade between China and the west. Marshak (2002) shows that Sogdian merchants kept their culture while working in China, fostering creative exchange. Their trade brought Persian and Central Asian decorative motifs to China, particularly flowery medallions that influenced baoxianghua patterns.

These merchant networks affected Dunhuang's artistic development through luxury goods trading. Local artists studied and adapted decorative textiles, metals, and ceramics from elsewhere. Silk fabrics with roundel designs were popular as high-status items and transmitted visual motifs across cultures. Textile roundels and baoxianghua patterns are comparable, suggesting mural painters adapted two-dimensional textile designs onto cave temples. In addition to models, commerce networks provided art materials. Lapis lazuli blue and malachite green, utilised in Dunhuang murals, were imported from Afghanistan and Central Asia. These imported materials affected baoxianghua pattern colour selections, with the most expensive pigments reserved for high-status commissions. The bright blues and greens of Prosperous Tang baoxianghua patterns symbolise both aesthetic choices and material connections to distant resource locations.

Economic cross-cultural interchange organised artistic production. Master painters taught apprentices technical skills through practical demonstration at Dunhuang, perhaps reflecting Silk Road craft organisation. Some evidence implies that Dunhuang had foreign artists or artisans as permanent residents or project-based professionals. These people would have

imported technical abilities and artistic norms from home, making Dunhuang's visual culture hybrid.

Material quality and symbolism of baoxianghua patterns were directly affected by commercial prosperity. Due to commercial exchange's affluence, these patterns were more intricate and used more expensive materials throughout the Prosperous Tang. Baoxianghua design was more limited during trade interruption or economic contraction, such as the An Lushan Rebellion. This link between economic conditions and artistic output emphasises cultural exchange's material underpinnings.

These trades were facilitated by culturally hybrid merchant societies that kept parts of their identities while conforming to Chinese practices. Sogdian merchants in Tang China used their own language and practiced Zoroastrianism or Manichaeism while assimilating into Chinese society and sometimes adopting Buddhism. Merchants commissioned works that incorporated aspects from many traditions to reflect their composite cultural identities, creating creative synthesis. The artworks, especially baoxianghua patterns, depicted the multifaceted, multicultural Silk Road commerce.

### **Religious Pilgrimage and Cultural Diffusion**

The Silk Road also spread culture through religious pilgrimage, which created sacred locations that allowed people, books, and art to travel across Asia. Buddhist pilgrims from India, Central Asia, and China created religious routes that matched commerce networks. The Dunhuang baoxianghua designs were influenced by these pilgrimage circuits' artistic motifs and techniques.

Chinese Buddhist pilgrims to India for authentic scriptures and sacred locations were crucial to cultural transmission. After travelling through South and Central Asia, famous pilgrims like Xuanzang (602-664) and Yijing (635-713) brought manuscripts, relics, and detailed reports of foreign Buddhist practices to China. Their travelogues, widely read by educated Chinese Buddhists, described Indian and Central Asian religious art that may have inspired Chinese art. These works helped spread awareness of foreign creative norms and their religious importance, but they rarely included baoxianghua patterns.

Indian and Central Asian monks visiting China also spread art. Tang historical sources describe several foreign religious specialists who settled in China, translating scriptures, teaching meditation, and advising on iconography. These people provided personal knowledge of their native regions' artistic traditions, which may have influenced Chinese Buddhist visual culture. Foreign monks at prominent Buddhist centres like Dunhuang taught and demonstrated art.

Dunhuang was a major Buddhist pilgrimage site. The city was the final major Buddhist centre before the difficult desert passage, and its spectacular cave temples held sacred treasures. Pilgrims who visited Dunhuang may have learnt about its baoxianghua patterns and spread them elsewhere. The bidirectional flow of pilgrims fostered artistic interchange and innovation. The religious reasons of pilgrimage shaped artistic transmission. Merchants travelled for profit, but pilgrims travelled to experience religious sites, scriptures, and images. They concentrated

on and were informed by doctrinal understanding when creating religious art, which transmitted both formal and symbolic meanings. Pilgrims would explain or imitate artistic themes they had experienced on their voyages, including religious meaning and suitable use, to complete cultural transfer.

Pilgrimage increased demand for portable religious souvenirs and devotional products. Pilgrims' small paintings, sculptures, and ceremonial instruments typically included baoxianghua-inspired floral themes. On pilgrimage routes, these portable artefacts carried visual motifs over large distances and inspired local variations. Votive paintings and ritual objects found in the Library Cave at Dunhuang show the role of movable religious goods in artistic transmission.

Pilgrimage routes built cultural exchange infrastructure. These routes hosted travellers and housed Buddhist monasteries for textual transmission, artistic production, and religious education. These institutions had libraries, workshops, and scriptoria where manuscripts were copied and illustrated, forming text and picture networks. The linkages between distant religious centres allowed the quick transfer of creative and theological advances, advancing Buddhist visual culture across Asia.

### **Political Shifts and Artistic Responses**

Artists adapted their work to shifting imperial policies, frontier dynamics, and local power structures as baoxianghua patterns changed during the four Tang subperiods. As artists and patrons dealt with governmental authority through visual expression, these artistic reactions were active interactions with changing social realities. Following the Sui's fall, the new dynasty consolidated and expanded the empire in the Early Tang period (618-704 CE). Due to their geometric precision and balanced composition, Early Tang baoxianghua designs reflect this political setting. The use of red—a colour associated with imperial authority and auspicious beginnings—links these designs to the political objective of dynastic establishment. Lewis (2009) contends that Early Tang art reflected confidence in the new governmental order while keeping continuity with past traditions, as seen in baoxianghua patterns' measured innovation. Prosperous Tang (705-780 CE) was the empire's peak of political power and diplomatic participation. Emperor Xuanzong expanded Tang dominance in East and Central Asia by creating tributary relationships and engaged in Silk Road diplomacy. The lavish, multicultural Prosperous Tang baoxianghua patterns represent this imperial confidence and cosmopolitan outlook. Persian vine scrolls, Indian lotus forms, and Central Asian colour schemes showed the empire's self-image as the cultural centre of a vast interconnected world. The gold leaf and expensive imported paints in these patterns showed imperial wealth and authority.

The An Lushan Rebellion (755-763) weakened imperial authority and began a protracted period of political decentralisation in Tang history. During the Mid Tang dynasty (781-848 CE), the central government's relationship with border regions like Dunhuang changed. As central authority declined, local elites acquired autonomy and replaced imperial patrons as Buddhist institution backers. Due to this political transition, Mid Tang baoxianghua patterns are more

limited and localised than their Prosperous Tang predecessors, despite their technical complexity.

Late Tang (849-907 CE) witnessed imperial decline and frontier autonomy increase. By the late ninth century, Dunhuang was ruled by local military commanders who held nominal allegiance to the Tang dynasty but exercised significant independence. During this political instability, the Huichang Persecution of Buddhism (841-845) devastated Buddhist institutions across the empire. This period's simple, repeating baoxianghua designs depict these difficult conditions and local Buddhist groups' endurance. Artists produced these classic designs despite government antagonism and resource shortages, sustaining cultural continuity.

Baoxianghua patterns captured the interaction between religious institutions and political power during these political changes. These tendencies reflected imperial ideology and cosmopolitanism during imperial patronage. While preserving their religious responsibilities, they expressed local concerns and regional identities as imperial control declined. Baoxianghua patterns managed to adapt to diverse political contexts and serve different social functions while retaining their symbolic structure.

Politics expanded beyond formal qualities to spatial location and contextual interactions in baoxianghua patterns. In cave temples with heavy imperial influence, these patterns often framed imperial pictures or inscriptions of imperial gifts. As local elites replaced imperial patrons, baoxianghua patterns produced donor images of regional politicians, military leaders, and wealthy merchants. Artistic elements were relocated to suit new social functions as patronage patterns and political authority changed.

BAoxianghua patterns' durability over political turmoil shows they represent cultural continuity and religious identity. Although imperial power and political boundaries changed, these patterns retained their essential forms and symbolic linkages, offering visual anchors for Buddhist communities in difficult times. Religious art can adapt to political and social changes.

## **Material Culture and Technical Innovations**

### **Pigment Sources and Trade Routes**

Baoxianghua patterns reveal Dunhuang's Silk Road commercial and technical exchange networks. The pigments used to make these brilliant drawings were precious commodities that travelled along trade routes, tying holy art to commercial commerce. These documents show the practical roots of cross-cultural creative synthesis and the economic infrastructure that enabled religious expression.

The bright blues, greens, and golds of Prosperous Tang baoxianghua patterns were commonly imported from abroad. Ultramarine, the purest blue pigment, came from lapis lazuli mines in Afghanistan, particularly Badakhshan. This semi-precious stone travelled east along the Silk Road through several commercial centres before reaching Dunhuang. High-quality ultramarine

in Dunhuang murals shows the city's inclusion into long-distance trade networks and access to Central Asian luxury goods, according to Zhou (2019).

Baoxianghua designs' green colours, especially malachite and atacamite, linked Dunhuang to distant resource locations. The Altai Mountains and Tian Shan range were major suppliers of malachite in Central Asia and China. These minerals produced copper-based green pigments that needed extensive processing, suggesting specialised production centres provided artists with these pigments. Trade in these minerals connected mining districts, processing centres, and creative production places like Dunhuang.

Red pigments, which dominate baoxianghua patterns in all Tang subperiods, came from local and various sources. Many Chinese provinces, including Sichuan, mined cinnabar, a beautiful vermilion hue. Chinese artists had reliable access to high-quality red pigments from this domestic source, explaining the popularity of red in Tang Dynasty art. Iron oxide reds, which provide earthy tones, were even more readily available and prominent in Late Tang baoxianghua designs, when economic limitations may have limited availability to more expensive pigments.

The Prosperous Tang period's most lavish baoxianghua patterns used gold, the height of opulence. Gold leaf on painted surfaces provided focal points that conveyed worldly prestige and spiritual brilliance. The gold used at Dunhuang likely came from Central Asian and Altai mines. Dunhuang murals with gold leaf show riches and gilding skills that may have been passed down along the same trade channels as the raw material.

The availability and cost of imported materials influenced baoxianghua pattern art. Artistic intricacy and material richness increased with active trade and economic prosperity, like as the Prosperous Tang, when painters possessed more exotic paints. After trade disruption or economic contraction, like the An Lushan Rebellion, palette selections were limited and local materials were used more. This relationship between economic conditions and material choices highlights creative production's practical restrictions.

Dunhuang pigments' geographical origins and technological preparation and use have been uncovered by recent scientific studies. Microscopic and spectroscopic investigation show advanced pigment characteristics, binding medium, and application strategies. The resources and technical information travelled along trade routes, forming networks of shared expertise across political and cultural barriers. Transmission of practical knowledge is a vital but frequently underestimated aspect of Silk Road cross-cultural contact.

### **Artistic Techniques and Knowledge Transfer**

Baoxianghua patterns show profound artistic knowledge that, like the materials, travelled across Dunhuang-to-other artistic production centres. Techniques of preparing surfaces, applying colours, creating distinctive effects, and maintaining finished works were vital to

cross-cultural artistic interaction, frequently taught by human instruction rather than textual record.

Dunhuang's surface preparation methods show Asian expertise. Before painting cave walls, multi-layered plaster grounds blended local earth with organic binding elements in a manner comparable to Central Asian and Indian cave temples. This basic preparation technique ensured mural durability and visual effects. Experienced craftsmen likely spread this technological knowledge along pilgrimage and commercial routes.

Baoxianghua line drawing styles reflect numerous inspirations synthesised into local approaches. Prosperous Tang samples' fluid, rhythmic outlines evoke Central Asian and Indian linear forms while retaining Chinese calligraphy. This confluence of linear techniques gave mature baoxianghua patterns their flowing quality, where exact line weight and curve produce visual rhythm and spatial depth. These procedures required substantial training, suggesting workshop practices where skills were shown and overseen.

Techniques for applying colour reflect technical expertise from multiple cultures. In Prosperous and Mid Tang baoxianghua designs, pigments are strategically layered to create subtle colour gradations, demonstrating complexity in knowing how materials interact and how optical effects can be achieved. Some of these techniques resemble Central Asian wall murals, suggesting transmission through nomadic artists or imported pieces. Adapting these approaches to local materials and aesthetics shows the creative side of technical knowledge transfer.

Special effects techniques like gold leaf and raised gesso details demonstrate technical knowledge transmission. Chinese artists adopted and adapted foreign equipment, materials, and procedural knowledge for these specialised methods. These techniques were either brought to Dunhuang by specialists or taught and refined in local workshops to meet local demands.

This technological expertise was shared in many ways. Itinerant painters and artisans may have travelled the Silk Road, bringing their abilities to new places and occasionally setting up permanent workshops to train local apprentices. Historical sources mention Tang-era foreign artists working in China, implying direct technical knowledge transfer. Chinese artists may have travelled to other Buddhist art centres to learn foreign techniques before applying them locally.

Technical expertise was preserved and transmitted through Dunhuang workshops. Archaeological evidence reveals master artists supervised teams of specialists who prepared surfaces, designed murals, drew outlines, applied colours, and finished details. This division of labour ensured talent transfer and creative consistency. Pattern books and model drawings retained successful ideas and procedures, generating institutional memory that permitted continuity and creativity across careers.

Baoxianghua patterns' technical progress during the Tang Dynasty shows knowledge acquisition and adaptability. Early Tang works demonstrate simple geometric organisation and colour application. Tech-savvy and lavish Tang patterns incorporate complicated effects that



needed specialised knowledge and significant resources. Tech-savvy Mid Tang examples adapt to material constraints, showing inventive problem-solving. Late Tang techniques are standardised, implying workshop codification during a period of limited innovation.

### **Workshop Practices and Artisan Mobility**

Dunhuang's baoxianghua workshop systems changed with sponsorship, material conditions, and artistic influences. These workshops were hubs of knowledge sharing, technical innovation, and cultural synthesis, integrating multiple artistic traditions into unified visual programs. Understanding these workshop techniques illuminates artistic production's social organisation and cross-cultural networks.

Dunhuang's archaeology shows a hierarchical workshop setup where master artists oversaw mural specialists. Early sketches on cave walls show preparation for overarching compositions before precise execution. Separate hands prepare surfaces, design, outline drawings, apply colour, and finish details, according to tool marks and technical evaluations. This specialised production technology made complex visual programmes easy to create while keeping stylistic consistency across enormous surfaces.

Workshop organisation in Dunhuang likely resembled Tang Chinese craft production norms, combining government-sponsored workshops (guān) with private ateliers (jiāng) and monastery centres. During the Early and Prosperous Tang, Dunhuang workshops may have been supervised by the state and followed imperial artistic standards. As central control declined, local patronage presumably increased, with workshops adapting to regional tastes and needs.

In these workshops, apprentice artists learnt through observation, imitation, and guided practice. Tang-era records indicate formal apprenticeships lasting several years in which apprentices learnt more advanced methods from masters. As new artists responded to changing circumstances, this educational method maintained creative traditions while allowing for progressive innovation.

Pattern books and model drawings helped workshops reuse proven designs and procedures. Sketch books and practice drawings from Dunhuang show how motifs were documented and disseminated. These visual guides helped workshops effectively produce large-scale decorative projects with consistent quality and iconographic correctness. These pattern books helped artists transfer designs between production centres because they carried them along. Workshops created technical exchange networks across political and cultural boundaries through artisan mobility. Artists travelled between major artistic centres for commissions or imperial summons, according to historical sources. These travelling professionals changed local customs and occasionally started workshops that merged imported methods with indigenous traditions. Artistic syntheses in baoxianghua patterns reflect these intricate technical and stylistic exchanges.

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Foreign craftsmen at Dunhuang possibly introduced new techniques and motifs. Tang records describe Central Asian, Indian, and Persian artists in China, implying personal transmission of foreign creative traditions. Despite sparse documentation for Dunhuang, stylistic study of murals suggests acquaintance with foreign techniques that would have been difficult to learn without direct instruction. These foreign specialists in local workshops would have enabled practical cross-cultural artistic exchange.

Dunhuang workshops changed over the Tang Dynasty as conditions changed. Early Tang workshops laid the groundwork for later manufacturing and creative conventions. The most sophisticated and wealthy baoxianghua patterns were made in prosperous Tang workshops during the height of material abundance and imperial backing. Mid Tang workshops adapted to tighter conditions while preserving technological expertise, showing creative endurance. Late Tang workshops standardised production, producing efficient ways for conventional design with limited resources.

### **Conservation Challenges and Insights**

Challenges in conserving baoxianghua patterns at Dunhuang have spurred creative cultural heritage preservation methods and revealed historical materials and procedures. These conservation efforts preserve key cultural artefacts and reveal the material aspects of Silk Road cross-cultural artistic interchange.

Environmental factors threaten baoxianghua patterns most immediately. The Mogao Caves are amid dry desert with significant temperature changes, wind-blown sand, and occasional water intrusion. Mural surfaces have cracked, flaked, and lost pigment due to these natural circumstances. Foreign expeditions removed much of the caves' contents in the early 20th century. Conservation efforts must address current environmental issues and prior interventions.

Technical investigation of baoxianghua patterns revealed complicated material compositions that pose conservation issues. Humidity fluctuations can cause binding media to fail and pigments to separate from wall surfaces in many of these designs. Chemical degradation changes the look of lead-based whites and copper-based greens. Microscopic, spectroscopic, and experimental modelling of deterioration processes are needed to understand these material weaknesses.

Conservation methods for baoxianghua patterns have changed with philosophical and technical advances. Early interventions, especially in the mid-20th century, prioritised aesthetic restoration over historical accuracy. Modern methods emphasise minimal intervention, preventive conservation, and extensive documentation to preserve mural material and historical information. Conservation philosophy has evolved to emphasise artefacts' historical integrity, reflecting global cultural heritage preservation trends.

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Established in 1944, the Dunhuang Academy is the site's chief conservator and has devised novel methods for preserving baoxianghua patterns and other mural components. These include environmental monitoring systems that track temperature, humidity, and visitor impacts; entrance airlocks and visiting limits; and mural documentation initiatives that provide high-resolution digital records for research and preservation. The Academy practices integrated conservation to meet current preservation demands and long-term sustainability.

International collaboration has improved Dunhuang conservation by offering various skills to challenging preservation issues. The Dunhuang Academy has collaborated with the Getty Conservation Institute, Tokyo National Research Institute for Cultural Properties, and European conservation organisations since the 1980s. Collaborations have enabled knowledge sharing, technical training, and the creation of Dunhuang-specific conservation protocols. The resulting restoration methods reflect the artworks' cross-cultural nature by combining multiple traditions.

Conservation research has illuminated Silk Road cross-cultural exchange's tangible aspects. Technical investigations of pigments, binding media, and application processes have confirmed stylistic analysis's historical links by revealing material and knowledge transmission paths. Specific pigment processing procedures shared by Dunhuang and Central Asian sites demonstrate technical interaction beyond visual similarities. These material links shed light on Asian creative transmission networks.

Digital technology enable baoxianghua pattern conservation and investigation. In fragile murals, high-resolution photography, 3D scanning, and virtual reality modelling provide extensive documentation and study without physical intervention. Digital methods aid conservation planning and allow scholars to analyse objects that would otherwise be too fragile. Digital reconstruction can show how baoxianghua patterns looked when first constructed, before millennia of environmental exposure.

The conservation issues of baoxianghua patterns illustrate the dichotomy between preservation and access in all cultural resource management. Local communities, national authorities, international scholars, religious practitioners, and worldwide visitors value these artworks, even if their priorities may differ. Managing these claims and preserving the paintings involves constant negotiation and modification. Our conservation methods are technological and social compromises that reflect modern cultural heritage ideals.

## **Contemporary Relevance**

### **Heritage Preservation and Global Significance**

Dunhuang's Tang Dynasty murals' baoxianghua patterns are important cultural artefacts and emblems of worldwide artistic exchange. Conservators, historians, and cultural organisations worldwide have increasingly focused on these patterns as evidence of Silk Road cross-cultural interchange in recent decades.

Dunhuang's cultural value was recognised internationally when the Mogao Caves were named UNESCO World Heritage in 1987. This categorisation recognised the site's cultural significance as evidence of East-West interaction and its cross-cultural art treasures. With their synthesis of numerous cultural influences, the baoxianghua patterns represent this trade and Dunhuang's significance as a Silk Road hub. China now prioritises their preservation as a worldwide responsibility, representing universal principles of cultural diversity and human ingenuity.

New conservation methods at Dunhuang combine scientific rigour with cultural sensitivity. Using innovative approaches, the Dunhuang Academy and international partners like the Getty Conservation Institute have documented, analysed, and preserved the site's murals, including baoxianghua patterns. High-resolution digital imagery, environmental monitoring systems, and non-invasive analytical methods are used while maintaining the artworks' cultural and religious value. This integrated heritage protection model recognises material and intangible cultural significance.

International interest in Dunhuang's baoxianghua patterns reflects contemporary concerns with cultural connection and shared heritage. These patterns demonstrate beneficial cross-cultural interchange that enhanced local traditions in an era of globalisation and reactive nationalism. According to Whitfield (2004), the Silk Road was an early example of globalisation that promoted cultural diversity through interchange rather than dominance. The baoxianghua patterns' creative synthesis of multiple influences are visual evidence of this historical model of cultural exchange, which may inform global interactions.

Baoxianghua patterns can now be preserved and shared globally thanks to digital technologies. The 2010 Digital Dunhuang project records the caves and their contents using high-resolution photography, 3D scanning, and virtual reality modelling. These digital resources allow scholars worldwide to analyse baoxianghua patterns in unprecedented depth without damaging the fragile originals. Virtual exhibitions and online teaching tools democratise access to this cultural property and promote preservation goals by making these patterns available to global audiences who cannot visit the remote site.

Beyond their historical and artistic importance, baoxianghua patterns may contribute to international dialogue. These patterns show how diverse traditions can be combined to create something unique and honour multiple sources. This historical example of creative synthesis shows how to appreciate difference and find common ground in cross-cultural collaboration. Cultural diplomacy programs increasingly use Dunhuang and the Silk Road as historical examples for international exchange programs, indicating their continued relevance as emblems of beneficial cultural connection.

### **Modern Interpretations and Artistic Inspiration**

Contemporary art draws inspiration from baoxianghua patterns' visual appeal and intellectual profundity. Modern artists, designers, and craftspeople have reinterpreted these historical patterns in new ways while honouring their cultural roots. Modern interpretations allow baoxianghua patterns to go on as living traditions rather than museum artefacts.

Chinese painters are particularly interested in reinterpreting baoxianghua patterns as cultural expressions. Modern artists like Ye Qianyu and Wu Guanzhong have combined traditional and modern styles in their paintings. These reinterpretations emphasise baoxianghua patterns' abstract, geometric features, evoking modernist formal concerns while retaining Chinese cultural traditions. The artworks show how creative recontextualization may give historical motifs new significance while keeping formal and symbolic components.

Contemporary baoxianghua patterns are used in architecture and interior design. Abstracted versions of these patterns have been used in modern Chinese architecture by Wang Shu and Ma Yansong to reference cultural heritage while adding aesthetic appeal. In modern places, interior designers have used baoxianghua motifs to honour history while addressing pragmatic needs. Architectural and design applications show baoxianghua patterns' adaptation to different contexts and materials, showing their continued significance as visual lexicon for spatial organisation and ornamentation.

Contemporary baoxianghua pattern reinterpretations thrive in fashion and textile design. Guo Pei and Laurence Xu have used these patterns in haute couture collections to combine traditional craftsmanship and modern design. These fashion interpretations highlight baoxianghua patterns' opulent, cosmopolitan meanings and relate them to global fashion while stressing their Chinese cultural roots. The costumes show how historical motifs may be reinvented for modern bodies and societal circumstances, giving new meanings.

Digital media offers extraordinary creative baoxianghua pattern involvement. Digital artists and designers have used historical motifs to inspire algorithmic experiments, generative designs, and interactive experiences that bring ancient forms into modern technologies. Digital interpretations of baoxianghua patterns emphasise its mathematical and geometric qualities, investigating their variety, alteration, and responsiveness. The digital artworks show how old visual languages can be transformed into modern technology environments, gaining new dimensions while retaining cultural roots.

Baoxianghua motifs have been interpreted in intriguing ways by cross-cultural artists. Chinese and international artists have explored how these historical elements might foster intercultural communication and creative interaction. Similar to the historical processes that created baoxianghua patterns, these collaborations typically produce hybrid works that blend aspects from many cultural traditions. The resulting artworks show that these patterns can still allow cross-cultural artistic communication, highlighting their importance to global creative practice. Modern baoxianghua participation has also come from education. Chinese and international art schools and cultural institutes teach classic techniques and encourage innovative



reinterpretation. These educational approaches mix respect for historical practices with openness to innovation, fostering meaningful interaction with cultural heritage without dogmatic traditionalism or disconnected novelty. The student works show many ways to reinterpret baoxianghua patterns, demonstrating its relevance to current art education and practice.

### **Digital Documentation and Accessibility**

Digital technologies have revolutionised baoxianghua pattern documentation, study, and sharing, enabling preservation, research, and public interaction. These digital approaches enhance conservation efforts and democratise cultural heritage previously accessible exclusively to specialists or remote site visits. Digital documenting of baoxianghua patterns is a major cultural heritage development that affects how these ancient artworks are viewed and experienced today.

Digital Dunhuang documents cultural heritage comprehensively. This 2010 Dunhuang Academy-international partnership uses high-resolution photography, 3D scanning, and virtual reality modelling to build detailed digital recordings of the Mogao Caves and its contents. Digital archives of baoxianghua patterns from numerous caves and time periods enable comparison examination that would be logistically difficult with physical originals. This digital resource gives conservation planners and scholars unparalleled visual information while limiting physical effect on fragile murals.

Baoxianghua patterns have been revealed via advanced imaging. Multispectral imaging can reveal hidden sketches, pigment mixtures, and historical changes. Microscopy shows brushwork, pigment application, and surface texture, revealing historical processes and materials. These technological methods reveal how baoxianghua patterns were generated and evolved over time, increasing historical and material understanding.

Digital reconstruction can show how baoxianghua patterns looked freshly generated before generations of environmental exposure. Conservation scientists can use pigment residues and historical data to generate computer models of original colours, gilding effects, and surface properties that have deteriorated. These reconstructions show experts and the general public the visual impact of these patterns in their original setting. Reconstructions raise questions about past viewing experiences and artistic intentions, though they are hypothetical.

Online databases and digital collections make baoxianghua patterns available worldwide. The Dunhuang Academy, British Museum, and Bibliothèque nationale de France have digitised their Dunhuang collections and made them available online for researchers and the public to explore. These digital resources often include high-resolution photographs, contextual information, and interactive elements for study and comparison. The democratisation of access changes how cultural heritage is shared and examined, allowing more diverse and inclusive involvement with historical information.

Virtual and augmented reality allow spatial baoxianghua experiences. Users can tour cave temples electronically and see how baoxianghua patterns interact with other cave components. Immersive techniques assist people grasp how these patterns worked within entire visual programs by providing contextual understanding that individual visuals cannot. Although they cannot replace visiting the physical site, these virtual methods are more accessible to worldwide audiences and do not harm the original artworks.

Digital documentation can teach students and the public baoxianghua patterns through interactive learning resources. These materials usually include high-quality photographs, explanatory writing, historical context, and interactive components to study pattern structures or colour connections. Educational apps make specialised knowledge accessible, enabling diverse audiences understand historical patterns. These digital materials promote cultural heritage and cross-cultural artistic interchange by reaching non-academic audiences.

Through computer analysis of massive image datasets, digital humanities has revealed baoxianghua patterns. Pattern recognition, network analysis, and spatial mapping help scholars find links, trends, and anomalies that standard art historical methods may miss. These computational methods add fresh views and raise new questions to conventional studies. The research shows how digital approaches can improve historical visual culture comprehension by uncovering patterns and linkages that guide cross-cultural artistic interchange interpretations.

### **Cultural Diplomacy and International Collaboration**

Contemporary cultural diplomacy uses Baoxianghua patterns and Silk Road culture as symbols of historical connectivity to improve international relations. In programs to promote international understanding and collaboration, government agencies, cultural institutions, and NGOs increasingly use these historical examples of cross-cultural exchange. Understanding the soft power of common historical narratives and creative traditions, diplomats use cultural heritage.

The 2013 Belt and Road Initiative by China expressly acknowledges the Silk Road as a model for Eurasia's economic and cultural linkages. This strategy emphasises cultural heritage sites like Dunhuang, which have baoxianghua patterns and evidence of historical interaction. These patterns often appear in Belt and Road-organized international exhibitions, scholarly conferences, and cultural festivals as evidence of China's productive historical connections with its neighbours. This diplomatic use of cultural heritage shows how historical artefacts can have new meaning in geopolitics.

International museum cooperation on Silk Road heritage has enabled shared guardianship of baoxianghua designs. These collaborative projects emphasise cultural interchange and shared legacy, treating baoxianghua patterns and associated artworks as shared cultural resources rather than national treasures. These shows show how cultural heritage can promote worldwide understanding and collaboration.

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Technical and philosophical heritage preservation discussions between Chinese and international conservation organisations have been fruitful. Dunhuang Academy collaborations with the Getty Conservation Institute, Tokyo National Research Institute for Cultural Properties, and European conservation organisations have created novel mural preservation methods, including baoxianghua patterns. These partnerships usually involve knowledge sharing, technical training, and the creation of conservation procedures that incorporate varied traditions and methods. The conservation methods include cultural perspectives on historical value and preservation ethics.

International networks of experts and students studying baoxianghua patterns and cultural heritage have grown from Dunhuang studies exchanges. The Dunhuang Academy's International Training Course brings together international students to study the site's art and conservation issues. International academic conferences and research projects allow researchers from different backgrounds to analyse these historical documents. Educational exchanges about cultural heritage develop mutual understanding and cross-national personal and institutional relationships.

Digital humanities projects have enabled transnational baoxianghua pattern research and sharing. Using international resources and knowledge, the International Dunhuang Project digitises and makes Dunhuang materials from institutions worldwide available. Digital collaborations remove geographical and institutional constraints to offer comprehensive resources for global scholars and the public. These digital archives and research platforms show how cultural assets can promote international cooperation in virtual and physical settings.

Community engagement programs have expanded baoxianghua patterns' diplomatic potential beyond formal institutions to include direct people-to-people connections. Cultural tourism, artisan trade, and community art projects exploring Silk Road traditions bring people from diverse countries together. These grassroots cultural diplomacy methods encourage mutual understanding via direct interaction with shared cultural history, making them more personal and durable than official initiatives. The intercultural interactions show how baoxianghua patterns can help modern cultures communicate and cooperate.

The diplomatic use of baoxianghua patterns and related cultural heritage creates ownership, interpretation, and representation issues. Different stakeholders may argue over the meaning and value of these historical resources in contemporary international relations. These disputes illustrate cultural diplomacy's conflicts between nationalist claims and universalist values, historical accuracy and strategic message. To resolve these problems, cultural legacy must be considered from multiple viewpoints, taking into account its capacity to unite and its historical and cultural settings.

## **CONCLUSION**

Baoxianghua patterns in Dunhuang Mogao Cave murals from the four Tang Dynasty subperiods show a dynamic visual heritage that represents Silk Road cross-cultural exchange. By analysing their formal evolution, symbolic meanings, and material dimensions, this research has shown how these seemingly decorative motifs expressed sophisticated Buddhist cosmology while reflecting Tang Dynasty China's changing political, economic, and cultural landscapes.

Baoxianghua patterns show the dynasty's evolution from geometric clarity in the Early Tang to opulent complexity in the Prosperous Tang, refined restraint in the Mid Tang, and resilient minimalism in the Late Tang. Historical factors including imperial patronage, religious policy, and trade links influenced these artistic changes. The relationship between artistic advancements and historical events shows that visual culture is embedded in social and political settings, undermining formalist descriptions of creative progress.

Baoxianghua patterns' cross-cultural aspects show Dunhuang's Silk Road role. Indian lotus symbolism, Persian decorative patterns, Central Asian colour schemes, and indigenous Chinese compositional principles created hybrid visuals. Cultural hybridity was a deliberate reconfiguration of varied aspects to meet local needs, preferences, and limits. The patterns show "transculturation"—a creative cultural interaction that alters all participants rather than just transmitting elements from one tradition to another.

Baoxianghua patterns depict Buddhist cosmology and theology through iconography. Patterns used geometric configurations, colour symbolism, and petal numerology to simplify religious themes. Many baoxianghua designs' concentric circle-like structure resembled Buddhist meditation practices, suggesting a practical and symbolic role. This religious dimension connected Dunhuang to Asian Buddhist visual culture while allowed local interpretations of shared iconographic traditions.

Practical cross-cultural interchange is shown by baoxianghua patterns' material and technological aspects. These patterns incorporated lapis lazuli from Afghanistan, malachite from Central Asia, and cinnabar from China to represent Silk Road trade networks. The technical knowledge needed to produce and utilise these materials spread through human networks, generating common competence across political and cultural barriers. These material ties demonstrate Dunhuang's economic framework for artistic and religious expression.

Beyond their historical and aesthetic importance, baoxianghua patterns may contribute to heritage preservation, artistic inspiration, and cultural diplomacy. These patterns are currently utilised in conservation science, modern artistic reinterpretation, digital humanities study, and international relations as emblems of historical interconnectivity. These contemporary deployments show that cultural heritage may still address present issues while keeping ties to the past.

This study affects art history, religion studies, conservation science, and cultural heritage management. It shows art historians how formal analysis and contextual study can show how

artistic trends relate to historical processes. It shows religious studies scholars how Buddhist practice and doctrine are visualised. Understanding historical materials and procedures is crucial for conservation scientists when formulating preservation solutions. It advises cultural heritage experts on interpreting and presenting difficult cross-cultural artefacts to broad audiences.

Research may expand this analysis in numerous ways. Comparative investigations with other Silk Road sites could reveal regional design patterns and cultural relevance. Material-scientific analyses using modern technology may identify pigment sources, binding medium, and application methods. Digital humanities tools could enable large-scale pattern analysis across various sites and time periods, uncovering links not possible with traditional methodologies. Contemporary Dunhuang populations could be studied ethnographically to determine if these historical patterns still resonate.

Finally, Dunhuang's Tang Dynasty murals' *baoxianghua* designs demonstrate cross-cultural exchange's creative potential. Their journey over nearly three centuries shows how artistic traditions may adapt to new conditions, embracing numerous inspirations while retaining symbolic functions. These patterns depict the intricate cultural exchanges of the Silk Road and offer historical instances of beneficial engagement across divides that may be relevant to contemporary efforts to navigate an increasingly interconnected yet divided globe.

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