

**THE ART OF GLAZED TILEWORK IN TIMURID ARCHITECTURAL MONUMENTS: STYLISTIC SPECIFICITY AND CONSERVATION STATUS****Saburova Yangiljon Ikrom qizi****1st year master's student of the National Institute of Art and Design named after Kamoliddin Behzod****Project and material for the restoration of the decoration of architectural monuments**[Yagona.2024@mail.ru](mailto:Yagona.2024@mail.ru)

**Abstract:** The Timurid period (14th–15th centuries) is widely recognized as a golden era in the history of Islamic art and architecture, particularly in Central Asia. Among its most remarkable artistic achievements is the sophisticated development of glazed tilework, known locally as *koshinpazlik*. This study explores the stylistic uniqueness, technological evolution, and symbolic meaning of Timurid tile decoration, while also assessing its current conservation status. The research analyzes major techniques such as *banna'i*, tile mosaic (*kashi-kari*), and *haft-rangi*, focusing on their artistic and structural functions. Furthermore, the study evaluates environmental degradation, material decay, and restoration practices that have influenced the preservation of these monuments. By combining historical analysis with conservation science, the article proposes sustainable approaches for preserving Timurid tile heritage in the modern era.

**Keywords:** Timurid architecture, glazed tilework, *koshinpazlik*, mosaic tiles, conservation, Central Asia, Samarkand, cultural heritage

**Introduction**

The rise of the Timurid Empire under Amir Timur (Tamerlane) in the late 14th century marked a transformative period in the cultural and architectural history of Central Asia. Samarkand, the imperial capital, became a center of artistic innovation, attracting master craftsmen from across Persia, Anatolia, India, and the Arab world. This cultural convergence resulted in the emergence of a unique architectural style distinguished by monumental scale, geometric precision, and vibrant decorative surfaces.

One of the defining features of Timurid architecture is the extensive use of glazed tilework. Unlike earlier periods where decoration played a secondary role, Timurid buildings were almost entirely covered with ceramic ornamentation. These tiles were not merely aesthetic

elements; they functioned as protective layers against environmental damage and conveyed symbolic meanings related to spirituality, power, and cosmology .

The significance of glazed tilework lies in its ability to integrate art, science, and craftsmanship. The intricate geometric patterns reflect advanced mathematical knowledge, while the epigraphic inscriptions communicate religious and philosophical ideas. The dominant blue color palette symbolizes the heavens, reinforcing the spiritual dimension of Islamic architecture.

Despite their durability, Timurid monuments today face numerous conservation challenges. Environmental factors, material deterioration, and inappropriate restoration methods have significantly affected the integrity of these structures. Therefore, understanding both the stylistic characteristics and preservation issues of tilework is essential for safeguarding this cultural heritage.

This study aims to analyze the artistic and technical features of Timurid tilework while evaluating its current conservation status. The research also proposes modern restoration strategies based on scientific and historical approaches.

### **Materials and Methods**

This research adopts a multidisciplinary methodology combining historical, architectural, and conservation-based approaches.

The primary method is qualitative analysis of architectural monuments, focusing on key Timurid sites such as Samarkand (Registan ensemble, Shah-i-Zinda complex), Shakhrisabz (Ak-Saray Palace), and Herat. These sites were selected due to their high concentration of original tilework and historical significance.

Comparative analysis is used to examine different tile techniques, including banna'i, tile mosaic, and haft-rangi. This allows for identifying stylistic differences and technological evolution within the Timurid period.

In addition, conservation data is analyzed to assess the current condition of tile decorations. Environmental factors such as temperature fluctuations, humidity, and salt crystallization are considered as major variables affecting material degradation .

The study also reviews past restoration practices, particularly those conducted during the Soviet period, to evaluate their effectiveness and long-term impact. Modern conservation techniques, including chemical stabilization and material compatibility, are examined to propose sustainable preservation strategies.

### **Main Part**

The Timurid era witnessed a remarkable advancement in ceramic technologies, leading to the development of several distinct tile-making techniques.

The banna'i technique represents one of the earliest forms of decorative masonry. It involves the use of glazed and unglazed bricks arranged to create geometric patterns and inscriptions. This technique was particularly effective for large architectural surfaces such as minarets and façades, providing both structural stability and visual rhythm .

The tile mosaic technique (kashi-kari) is considered the most sophisticated and labor-intensive method. Artisans produced large monochrome tiles, which were then cut into small pieces and assembled into intricate patterns. This technique allowed for high precision and detailed ornamentation, especially in floral and geometric motifs. The resulting surfaces appear seamless and highly refined.

The haft-rangi technique, also known as the seven-color method, emerged as a response to the increasing scale of construction projects. It enabled artisans to paint multiple colors on a single tile, separated by special compounds to prevent color mixing. Although less precise than mosaic work, it allowed for faster production and introduced a more painterly aesthetic.

The decorative system of Timurid architecture is characterized by a harmonious integration of geometry, calligraphy, and color.

Geometric patterns (girih) form the structural basis of tile decoration. These patterns, often based on complex star and polygon arrangements, reflect the mathematical sophistication of the period. They symbolize the infinite nature of the universe and divine order.

Epigraphic elements play a crucial role in conveying religious and ideological messages. Scripts such as Kufic and Thuluth are used to display Quranic verses, blessings, and names of rulers. These inscriptions serve both decorative and communicative purposes.

The dominant use of blue and turquoise colors is another distinctive feature. Known as the "Timurid blue," these colors represent the sky and spiritual transcendence. The contrast between bright tiles and earthy building materials enhances the visual impact of monuments.

The Shah-i-Zinda necropolis in Samarkand is one of the most outstanding examples of Timurid tilework. This complex contains a series of mausoleums built over different periods, showcasing a variety of decorative techniques.

The tilework in Shah-i-Zinda demonstrates exceptional craftsmanship, particularly in mosaic compositions and epigraphic designs. Each mausoleum features unique patterns, yet all share a coherent stylistic language.

The site illustrates the transition from earlier decorative methods to more advanced techniques, highlighting the evolution of Timurid artistic expression.

Despite their artistic brilliance, Timurid tiles are highly vulnerable to environmental and human-induced damage.

One of the primary issues is thermal stress caused by extreme temperature variations. During winter, moisture trapped within the ceramic structure freezes and expands, leading to surface cracking and flaking.

Another significant problem is salt crystallization. Groundwater carries soluble salts into the structure, which crystallize beneath the tile surface. This process creates internal pressure, causing tiles to detach from the wall .

Additionally, air pollution and biological growth contribute to the gradual deterioration of decorative surfaces.

### **Analysis of Past Restoration Practices**

Restoration efforts during the Soviet period played a crucial role in preserving many monuments, but they also introduced certain problems.

The widespread use of cement-based materials instead of traditional lime mortars has negatively affected the structural integrity of buildings. Cement traps moisture, accelerating internal decay.

In some cases, excessive reconstruction led to the loss of historical authenticity. Recreated patterns were sometimes based on assumptions rather than accurate historical data, resulting in a distorted representation of original designs .

Contemporary conservation practices emphasize minimal intervention and scientific accuracy.

One effective method is desalination, which involves removing harmful salts from building materials. This helps prevent further structural damage.

Another approach is in-situ conservation, where original tiles are stabilized using advanced materials such as nano-resins. This reduces the need for replacement and preserves historical authenticity.

Matching new materials with original ones is also crucial. Researchers are working to replicate traditional glaze compositions to ensure compatibility and durability.

Digital technologies, including 3D scanning and chemical analysis, are increasingly used to document and preserve architectural heritage.

### **Conclusion**

The glazed tilework of the Timurid period represents a unique synthesis of art, science, and cultural identity. Its stylistic richness and technical sophistication continue to inspire scholars and architects worldwide.

However, the preservation of this heritage faces significant challenges due to environmental factors, material degradation, and past restoration errors. Addressing these issues requires a balanced approach that combines traditional knowledge with modern scientific methods.

Future conservation efforts should prioritize authenticity, sustainability, and interdisciplinary collaboration. By doing so, it is possible to protect the legacy of Timurid architecture and ensure its transmission to future generations.

The blue domes and intricate tilework of Samarkand and other Timurid cities are not merely historical monuments; they are living symbols of cultural continuity and artistic excellence.

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