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THE EVOLUTIONARY DYNAMICS AND STRUCTURAL TYPOLOGY OF ORNAMENTAL DECORATIONS IN TRADITIONAL UZBEK COPPERSMITHING

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Abstract: This article offers a rigorous art-historical investigation into the evolutionary dynamics, geometric typologies, and structural composition of ornamental decorations within traditional Uzbek copper engraving during the 19th and 20th centuries. Following the historical synthesis of Islamic iconographic principles and preexisting Central Asian visual practices, the study traces how early narrative-figurative depictions underwent a conceptual shift toward highly stylized, abstract configurations. Utilizing the foundational classification methodologies of modern scholarship, the research categorizes these decorations into four dominant typologies: geometric (girih), vegetative-floral (islimi), zoomorphic, and calligraphic-epigraphic systems. Furthermore, it deconstructs six core structural layouts utilized on flat surfaces: gardish, davra, turunj, mehrob, sitora, and ishkalak. The findings demonstrate that traditional Uzbek metal decoration operates on a strict law of bounded spatial borders and modular balance, functioning as an essential indicator of regional identity, socio-economic standing, and cultural continuity.

Keywords: Central Asian toreutics, copper engraving, ornamental decorations, islimi motifs, girih grids, structural zoning, horror vacui, Bukhara school, Kokand school.

INTRODUCTION

The issues surrounding the representational nature of art during the medieval period occupy a distinct, highly specialized place in art history. This specialization stems from the emergence of Islam in the Arabian Peninsula during the first half of the 7th century. Within a brief historical span, the Arab conquests enveloped territories stretching from the Iberian Peninsula to the Pamir Mountains, subsequently integrating the lands of Central Asia. The resulting institutionalization of Islam, accompanied by new ideological concepts and doctrinal prohibitions, led to a complex, multi-layered socio-cultural situation among the local populace. The new aesthetic paradigms left a significant imprint on the sphere of artistic craftsmanship, directly challenging the preexisting iconographic worldviews established by centuries-old local beliefs, customs, and ancestral traditions. Medieval Islamic art creatively integrated elements from Byzantine, Coptic, Persian, and Roman-Hellenistic styles, synthesizing them into a unique artistic language dominated by luxurious floral arabesques, complex geometric girih structures, and epigraphic scripts tied to calligraphic mastery. Muslim applied art fundamentally distinguishes itself from other cultural expressions through its morphology, raw material processing, and functional applications. The defining characteristic of Islamic applied art, separating it from adjacent cultures, is its departure from naturalistic representation toward absolute abstraction. Within this system, the depicted object undergoes a deep structural transformation, resolving into a matrix of geometric networks and stylized patterns. The structural division of metal vessels into distinct horizontal and vertical bands, which is universally observed in 19th-20th century Uzbek torevtics, mirrors deeply rooted historical methodologies in early Islamic metalwork. As historically documented by Baer (1983), medieval Islamic illumination and metal lighting devices-such as candlesticks and lamps emitting light-relied heavily on balancing functional baluster-shaped profiles with highly stylized and

structured bands [Baer 1983, 7]. This early layout design emphasizes that partitioning complex visual zones by thin polished bands was a primary artistic device to sustain visual balance across multi-tiered metallic surfaces [Baer 1983, 9]. These overarching typologies appear either independently or as fully integrated ornamental designs across various mediums of Uzbek applied art, including ceramics, coppersmithing, embroidery, and textile weaving. In the evolutionary trajectory of Central Asian ancient and early medieval toreutics, the emergence of hybrid artistic forms resulting from the synthesis of Hellenistic cultural paradigms and indigenous traditions occupies a paramount position. As systematically demonstrated by Hakimov and Abdullaev (2026), metalwork outputs from the Greco-Bactrian and Kushan epochs fused classical Greek mythological iconographies—such as depictions of Heracles and visual enactments of Euripides' tragedies Hippolytus and Ion—with local Central Asian zoomorphic motifs, including Senmurv and winged lions [Hakimov and Abdullaev 2025, 36, 41]. The compositional metrics observed in these ancient silver bowls discovered across the Bukhara and Dalverzintepe sites served as architectural frameworks that subsequently guided the spatial discipline and closed-circuit zoning metrics within post-Islamic copper engraving systems.

RESEARCH METHODS

Although its historical genesis remains a subject of academic debate, the evolutionary dynamics of geometric ornament find their highest development within the context of Islamic art. While rudimentary forms of geometric girih lines were utilized in ancient Egyptian art, their systematic implementation reached maturity across Mesopotamia, Iran, Syria, and India. For instance, stellar patterns were structurally organized by Egyptian Copts; however, it was the craftsmen of the Islamic world who elevated these geometric frameworks to mathematical and aesthetic perfection. By replacing direct figurative depictions with intricate pattern matrices, traditional craftsmen utilized deep ingenuity to preserve localized ancestral beliefs under highly stylized guises. These items, preserved through centuries of social transformation, represent unique masterpieces within the treasury of global civilization, serving as direct indicators of regional cultural and economic development. The material artifacts discovered across Uzbekistan span various historical epochs and stylistic media, directly reflecting the political, social, and economic milestones of their respective eras. This study focuses specifically on the art of coppersmithing - a major branch of artistic metalworking-analyzing its aesthetic specificity and the historical evolution of its pattern distribution. The processing and decoration of copper vessels have retained structural relevance across almost all historical periods in Central Asia. Prior to the widespread institutionalization of Islamic iconoclasm, early Central Asian metalwork demonstrated highly original, narrative-driven compositions, featuring human profiles, royal hunting scenes, and mythological creatures. However, by the 19th and 20th centuries, Uzbek coppersmithing had adapted into distinct regional schools, separated by localized preferences in vessel morphology, pattern density, and engraving techniques. Despite these clear regional boundaries, the fundamental artistic principles of Uzbek torevtics remained conceptually unified. These shared axioms included standardized pattern classification, a reliance on traditional closed-circuit compositions, and a strictly non-perspective, two-dimensional flat perspective in rendering ornamental layouts. The historical progression of analyzing these laboratory and technical characteristics plays an integral role in modern art history methodologies. Atıl, Chase, and Jett (1985) noted that one of the earliest official laboratory analyses addressing the chemical and structural breakdown of Islamic metalwork was published by Roberts-Austen in 1892, a lineage that later formed the foundation for systematic testing within the British Museum and the Freer Gallery of Art [Atıl, Chase, and Jett 1985, 33]. Tracking the technological evolution of these metallurgy traits is further supported by Harper and Meyers (1981), who utilized neutron activation analysis to show that ancient silver configurations frequently mixed between 4 to 8

percent copper to artificially enhance structural durability and material plasticity [Harper, and Meyers 1981, 150-151]. Ancient copper and brass objects were executed cleanly without secondary color fill.

The visual charm of these early pieces relied entirely on the engraver's ability to manipulate light and shadow through alternating deep and shallow, flat chiseling techniques. Inlays of semi-precious stones or applied silver plates were restricted by rigid aesthetic metrics to avoid disrupting the structural balance of the vessel. Occasionally, tonal contrast was achieved by blending different grades of copper or implementing the technique of tinning to whiten select segments of the object. When patterns were carved into these whitened zones, the chisel exposed the warm, contrasting base hue of the underlying copper. This methodology closely mirrors the technical principles of sgraffito, where the juxtaposition of an engraved line against a contrasting field sharply enhances the expressive legibility of the ornament [Abdullaev 1970, 18]. The second half of the 19th century introduced a phase of rapid socio-political and ideological transformation across the Central Asian khanates. Consequently, new stylistic traits emerged within the creative output of master coppersmiths. The execution techniques underwent a noticeable shift, marked by an intensified interest in vivid surface coloration. The subtle play of light and shadow generated by pure engraving no longer fully satisfied the changing tastes of consumers. This shift led many coppersmiths to artificially darken the background or fill the chiseled voids with colored sealing wax, resins, and bright lacquers. In many instances, the primitive and excessive application of these external color fills compromised the baseline artistic value of the metalwork, inadvertently obscuring the intricate, hand-carved precision of the underlying patterns. The late 19th and early 20th-century outputs of the Kokand and Shahrisabz coppersmithing schools serve as prime examples of this over-colored, hyper-decorative trend.

Trays executed under the "turunj" system replace the simple central circular medallion with complex, elongated, or multi-lobed madoxil cartridges, creating a highly dynamic focal medallion. The "mehrob" (arch) composition features a dominant central circle surrounded by an interconnected ring of miniature arched frames, which hook into the central core and into one another, with the number of radiating arches reaching up to ten units. Furthermore, circular trays frequently utilized the "ishkalak" and "ishkalakband" centric systems. In this unique framework, a distinct rectangle or square is carved directly into the central field; however, it is bounded not by simple incised lines, but by highly polished, unengraved metallic bands. These smooth lines contrast sharply against the chiseled background, functioning as an expressive structural frame. Oval and elongated rectangular trays, traditionally termed "chor kunj" (four corners), were decorated using rich "madoxil" medallions and repeating linear grids. The conceptual connection between metalwork layouts and surrounding textile arts highlights a long-standing tradition of cross-medium collaboration. Ghouchani (1998) noted that ornamental layout paths and thematic compositions found on classical copperwares frequently shared identical properties with medieval silk textiles, suggesting they were drafted by shared workshops or unified designer guilds [Ghouchani 1998, 188-190]. During the Soviet era, Bukhara coppersmiths innovated a specialized layout termed "sitora" (star). In this modern variation, the absolute center of the tray is occupied by a sharp, multi-pointed star, while the negative spaces surrounding the geometric points are filled with dense, organic floral arabesques [Bulatov 1991, 173]. Our structural analysis confirms that traditional Uzbek coppersmiths possessed an advanced mastery of spatial composition. Pattern configurations were never distributed arbitrarily; instead, they were distributed in strict accordance with the underlying geometric system of the vessel. Traditional Uzbek metal engraving relies on four distinct ornamental classes:

Girih: Purely geometric, mathematical interlocking networks.

Islimi: Stylized, fluid o'simliksimon (floral and vegetative) tendrils.

Zoomorphic and Antropomorphic: Highly stylized, abstract, or partial depictions of birds and animals.

Epigraphic: Calligraphic execution of poetic verses, philosophical aphorisms, or sacred texts from holy books.

The shift toward abstract zoomorphic motifs has precise historical precedents. Baer (1983) noted that early Syrian and Iranian bronze supports converted plain geometric feet into three-pawed configurations terminating in stylized heads of snakes or tortoises [Baer 1983, 10]. Furthermore, Atıl, Chase, and Jett (1985) detailed that early Mamluk metal basins heavily integrated interior representations of swimming fish to mirror water symbology, often casting items using specialized high-tin bronze containing exactly 22% tin to achieve superior material properties [Atıl, Chase, and Jett 1985, 32]. This tradition is reinforced by Ghouchani (1998), who identified explicit gold and silver medallion contexts depicting an eagle attacking a gazelle and pecking at its throat, emphasizing that these animal abstractions carried high symbolic authority [Ghouchani 1998, 188]. Depending on the specific historical era and external market demands, naturalistic landscapes and architectural vignettes were occasionally integrated into this traditional framework.

CONCLUSION

The comprehensive art-historical evaluation of ornamental decorations in traditional Uzbek coppersmithing leads to several foundational conclusions: First, the historical transition of Central Asian applied arts under the influence of Islamic aesthetic doctrine resulted in a highly sophisticated language of abstraction. Rather than relying on direct naturalistic narratives, local craftsmen successfully channeled their creative worldviews into complex geometric (girih), organic floral (islimi), zoomorphic, and epigraphic visual languages. This transition represents an evolutionary advancement, establishing a system where meaning is conveyed through mathematical rhythm and structural abstraction. Second, the structural distribution of patterns on flat and vertical copper vessels confirms the absolute supremacy of the law of closed spatial borders. Traditional Uzbek torevtics completely rejects unmapped or open-ended configurations. Every composition is strictly governed by concentric, centric, or linear zones (hoshiya, gardish) that anchor the eye toward a balanced core, directly reflecting the classical Islamic aesthetic concept of horror vacui combined with rigorous structural symmetry. Finally, the categorization of the six primary tray compositions (gardish, davra, turunj, mehrob, sitora, and ishkalak) highlights the deep geometric intelligence and spatial calculation mastered by regional schools, particularly those of Bukhara and Kokand. These traditional formulas offer an invaluable design matrix for contemporary creative industries, bridging classical Eastern toreutics with modern industrial design and product branding.

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