EARLY THULUTH INSCRIPTIONS IN SELJUQ IRAN (11TH-12TH CENTURIES): VISUAL FORM, FUNCTION, AND AUTHORITY

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ABSTRACT

The emergence of Thuluth as a monumental script during the Seljuq period transformed the epigraphic culture of the eastern Islamic world, yet its earliest architectural manifestations remain understudied. Existing scholarship has focused on mature Thuluth and manuscript calligraphy, leaving its initial adaptation to architecture largely unexplored. This article examines early Thuluth inscriptions from the fifth and sixth centuries AH (eleventh-twelfth centuries CE), drawing on securely dated architectural and funerary inscriptions from central and northeastern Iran, supplemented by a later comparative example from Transoxiana. Through comparative analysis of letterforms, proportions, ligatures, and architectural context, the study demonstrates that monumental Thuluth developed unevenly through interactions among material constraints, workshop practices, and regional traditions while retaining elements of Kufic and Naskh. It argues that early Thuluth became an architectural medium in which script, ornament, sacred meaning, and visual authority converged, while political significance depended on specific contexts of patronage, placement, and inscriptional content.

Key Words: *Thuluth script, Islamic epigraphy, Seljuq architecture, Persianate world, monumental inscriptions*

Selçuklu İran'ındaki Erken Dönem Sülüs Kitabeleri (XI-XII. Yüzyıllar): Görsel Biçim, İşlev ve Otorite

ÖZET

Selçuklu Dönemi'nde Sülüs yazısının anıtsal bir hat türü olarak ortaya çıkışı, İslam dünyasının doğu kesimindeki epigrafik kültürü önemli ölçüde dönüştürmüş; ancak bu yazı türünün mimarideki en erken örnekleri yeterince incelenmemiştir. Mevcut araştırmalar ağırlıklı olarak Sülüs'ün olgunlaşmış biçimleri ve yazma eserlerdeki gelişimi üzerinde durmuş, mimariye uyarlanmasının ilk evresini büyük ölçüde göz ardı etmiştir. Bu çalışma, Orta ve Kuzeydoğu İran'daki güvenilir şekilde tarihlendirilen mimari ve mezar kitabelerine dayanarak, beşinci ve altıncı yüzyıl Hicrî (on birinci-on ikinci yüzyıl Milâdî) dönemine ait erken Sülüs kitabelerini incelemekte; bunlara Mâverâünnehir'den daha geç tarihli karşılaştırmalı bir örnek de eklemektedir. Harf biçimleri, oranlar, harf birleşimleri ve mimari bağlamın karşılaştırmalı analizi, anıtsal Sülüs'ün Kûfî ve Nesih yazılarından unsurları korurken, malzeme koşulları, atölye uygulamaları ve bölgesel geleneklerin etkileşimi sonucunda farklılaşarak geliştiğini göstermektedir. Çalışma, erken dönem Sülüs'ün yazı, bezeme, kutsal anlam ve görsel otoritenin kesiştiği mimari bir ifade aracına dönüştüğünü; siyasî anlamının ise patronaj, konumlandırma ve kitabe içeriğinin özgül bağlamlarına bağlı olduğunu ileri sürmektedir.

Anahtar Kelimeler: *Sülüs yazısı, İslam epigrafisi, Selçuklu mimarisi, Pers kültür coğrafyası, anıtsal kitabeler*

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Introduction

Calligraphy and epigraphy developed as closely interconnected arts within Islamic visual culture, each continually shaping the formal language of the other. Innovations first refined in manuscript calligraphy were frequently translated into monumental inscriptions, where they were adapted to the physical properties of stone, stucco, brick, wood, and glazed tile, as well as to the architectural spaces they occupied. Rather than constituting separate artistic traditions, manuscript and architectural writing evolved through an ongoing process of reciprocal exchange, in which the aesthetic principles of the written page informed monumental design while architectural practice, in turn, encouraged new formal and compositional solutions. The practice of *istinsākh*, the copying and transmission of exemplary calligraphic models, further strengthened this relationship by preserving established script traditions while facilitating their adaptation to new artistic and architectural contexts (Fazāʾelī, 1982: 130). Before the emergence of the canonical scripts, early Islamic calligraphy exhibited considerable regional and formal diversity. Sources report roughly 105 documented variants of Kufic script during the Umayyad period and 37 distinct styles in the Abbasid era (Munshī Qummī, 1987). By the fourth century AH, regional inflections of Kufic, Ismaʿili, Madani, Makki, Andalusi, Shami, Iraqi, and Abbasi (al-Tawḥīdī, 2001) were in active use, and by the end of the fifth century AH, scholars had catalogued approximately 42 cursive and ornamental Kufic types, many concentrated in the greater Khurasan region (al-Tawḥīdī, 2001: 12). This diversity provided the visual and structural foundation from which later cursive and monumental scripts evolved. Against this background of experimentation, calligraphers gradually sought scripts capable of combining legibility with increasingly sophisticated ornamental expression, particularly within monumental architectural settings.

It was within this evolving artistic environment that Thuluth emerged. Building upon the geometric discipline of Kufic while introducing greater curvature, rhythmic movement, and proportional flexibility, Thuluth offered new possibilities for monumental composition (Azizpour & Salehi Kakhki, 2014). Early sources refer to these developing forms by names such as *Thuluth al-Dawāʾir* (circular Thuluth) and *Thuluth bayn al-dāʾira wa al-turunj-namā* (Thuluth between the circle and the rosette) (ʿAṭṭār Haravī, 1987: 10-11). As one of the six canonical scripts (*aqlām al-sitta*), Thuluth gradually emerged alongside Kufic and, over time, became established as one of the principal scripts of Islamic monumental epigraphy. Its balanced proportions, dynamic curvature, and adaptability to architectural ornament enabled it to become the dominant script for the decorative programmes of mosques, madrasas, mausoleums, and other monumental buildings throughout the Islamic world (Safadi, 1979; Blair, 2006). Although the mature forms of Thuluth have received considerable scholarly attention, its earliest appearance in architectural epigraphy remains comparatively understudied. Existing scholarship has generally approached the script through the general history of calligraphy or through stylistic description, often treating its emergence as a gradual and largely linear replacement of Kufic. Such approaches have paid comparatively little attention to the formative phase during which Thuluth developed as an architectural script, shaped simultaneously by material conditions, regional workshop traditions, and the functional demands of monumental construction. Consequently, the relationship between formal innovation, architectural context, and the visual authority of early Thuluth inscriptions has yet to be examined systematically.

This article investigates that formative phase by focusing on the earliest surviving corpus of Thuluth inscriptions dating to the 5th and 6th centuries AH (11th-12th centuries CE) in central and northeastern Iran, supplemented by a later comparative example from Transoxiana. Rather than presenting Thuluth simply as the inevitable stylistic successor to

Kufic, the study argues that its earliest monumental forms emerged through the interaction of calligraphic practice, architectural setting, material constraint, and regional artistic tradition. In this process, the script became far more than a vehicle for written text: it evolved into an architectural element that simultaneously conveyed religious meaning, ornamental sophistication, and expressions of political legitimacy and visual authority. The corpus examined here comprises securely dated or securely attributable architectural and funerary inscriptions from central and northeastern Iran, with the later Tirmidhī inscription treated separately as a comparative example from Transoxiana. These monuments represent the most substantial body of securely dated material currently available for tracing the formative development of the script across the eastern Islamic world, and their geographical distribution permits comparison between regional workshop traditions, architectural typologies, and material practices.

To address these questions, the article pursues three interrelated objectives:

1. To analyse the morphological development of early Thuluth letterforms, examining the geometric, proportional, and volumetric characteristics of the script and the ways in which its forms responded to different architectural surfaces and construction materials.

2. To investigate the structural, aesthetic, and functional characteristics of the earliest surviving Thuluth inscriptions, identifying the extent to which they preserved, transformed, or departed from established Kufic and Naskh conventions.

3. To evaluate the role of regional context in the development of early Thuluth, exploring the relationships among geography, architectural typology, building materials, workshop practice, and epigraphic design across the corpus.

Taken together, these lines of inquiry position early Thuluth not as a derivative transitional script between Kufic and its later classical forms, but as an autonomous and experimental phase in the history of Islamic epigraphy. By integrating formal analysis with architectural context, regional comparison, and material evidence, the study demonstrates that the emergence of monumental Thuluth was shaped as much by architecture as by calligraphic tradition, and that script itself became an active instrument in the construction of sacred space, political legitimacy, and visual authority.

1. Thuluth in the History of Islamic Calligraphy

1.1. Script, Sanctity, and the Architectural Surface

The development of the Thuluth script represents a pivotal chapter in the evolution of Arabic calligraphy, particularly in its transition from manuscript culture to architectural ornamentation. Among the primary sources for the diffusion and formal evolution of Arabic script are illuminated manuscripts, architectural inscriptions, and gravestone epigraphy; these media not only preserved the textual tradition but also served as key vehicles for the artistic expansion of Arabic calligraphy more broadly. Modern scholarly engagement with the script has its own history: one of the earliest recorded European encounters with Arabic writing is a travel account by Bertrandon de la Brocquière, dated 895 AH (1489 CE), which documents the script's visual form from a perspective that was largely exoticizing and philological (Schimmel, 2006: 12-13). Sustained scholarly interest developed only from the late thirteenth century AH (nineteenth century CE) onward, in Europe and later in North America, initially concentrated on the so-called "Kufic" script, a label often misapplied broadly to early angular styles of Arabic writing regardless of their actual geographic or functional specificity (Blair, 2006; Déroche, 1999).

The sacred character of Arabic script, rooted in its role as the vehicle of Qurʾanic revelation, contributed significantly to its prominence within Islamic visual culture. In religious architecture, calligraphic inscriptions functioned as more than textual markers: script was simultaneously message and ornament, serving as a primary decorative element in mosques, tombs, and madrasas (Schimmel, 2006: 14-15). Within this context, Thuluth gained particular prominence for its elegant curvature, proportional balance, and visual dynamism, qualities that made it especially well suited to architectural inscription. During the Seljuq period (11th-13th centuries CE), religious monuments such as mihrabs, minbars, minarets, and mausoleums were extensively adorned with Qurʾanic inscriptions and invocations of the Prophet Muḥammad and the Rightly Guided Caliphs, frequently executed in monumental Thuluth. Unlike the more compact Naskh or the angular geometry of Kufic, Thuluth allowed for expressive spatial arrangement and ornamental flourish (Necipoğlu, 1995; Grabar, 1987). Bold, elongated Thuluth inscriptions often dominated the external façades of buildings, while interior spaces were adorned with inscriptions set against arabesque and geometric motifs, underscoring the symbiotic relationship between calligraphy and ornament in Islamic architectural aesthetics. Thuluth's verticality, fluid strokes, and generous ligatures made it particularly well adapted to monumental epigraphy. Its capacity to harmonize with architectural form, while simultaneously conveying theological meaning and aesthetic sophistication, positioned it as a central instrument in the visual identity of Islamic architecture. It functioned not merely as a means of transmitting religious text but as a defining feature of sacred space itself, transforming architectural surfaces into bearers of scriptural authority through visual rhythm and formal discipline (Safadi, 1979; Bloom, 2007). The historical trajectory of Thuluth thus illustrates a dual function: a highly refined calligraphic form in its own right, and a crucial medium for the sacralization and aesthetic articulation of architectural space.

1.2. The Formalization of Thuluth: From Ibn Muqla to Yāqūt al-Mustaʿṣimī

Most Islamic scripts lack a clearly defined point of origin or a single identifiable inventor. Rather than emerging suddenly, they developed gradually, often over centuries, through processes of repetition, experimentation, and adaptation, shaped by aesthetic preference, practical need, and socio-cultural transformation. Despite the absence of precise origins, historical sources, extant manuscripts, and comparative analysis of letterforms allow scholars to trace the lineage of many scripts with reasonable confidence; because most Islamic scripts derive from a limited number of primary models, structural analysis offers a productive pathway for reconstructing their historical trajectories (Fazāʾelī, 1982: 4). Among the pivotal figures in the standardization of Islamic calligraphy is the Abbasid vizier Ibn Muqla al-Shīrāzī (d. 328 AH / 940 CE), who is widely credited with formulating the geometric principles of Islamic calligraphy and is regarded as the originator of the "rounded scripts" (*al-khuṭūṭ al-mudawwara*). Prior to Ibn Muqla, handwritten texts displayed a wide array of curvilinear forms lacking consistent rules; in his *Fihrist al-ʿUlūm*, compiled around 377 AH (987 CE), Ibn al-Nadīm lists twelve types of scripts and twelve associated writing styles, though the scarcity of surviving manuscripts from that period makes it difficult to match these textual descriptions to identifiable letterforms with certainty (Schimmel, 2006: 18-19). Ibn Muqla's principal innovation lay in synthesizing straight and curved strokes within a coherent proportional system, introducing the rhomboid dot as a modular unit of letter construction. This work laid the foundation for what became known as the Six Pens (*al-aqlām al-sitta*), the six canonical scripts of Islamic calligraphy (Schimmel, 2006).

Among these, Thuluth stands out as one of the most prominent and enduring. Characterized by pronounced curvature, elongated forms, and dynamic visual balance, it came to occupy a central role in religious inscription, architectural ornamentation, and Qurʾanic

manuscript production throughout Islamic history (Blair, 2006: 237). While scholarly consensus on its precise origin remains elusive, most accounts trace its evolution from earlier scripts, Kufic, Jalīl, Dībāj, Ṭumār, Thuluthayn, and *Mukhtaṣar al-Ṭumār*, culminating in what is recognized today as classical Thuluth and its lighter variant, *Khafīf Thuluth* (Fazāʾelī, 1982: 227). The etymology of the term itself remains debated. One theory relates it to proportional terminology such as *niṣf* (half), *thuluthayn* (two-thirds), and *thuluth* (one-third), used historically to denote pen-width ratios; another holds that the name refers to the script occupying one-third of the written surface, in contrast to the larger-scale Ṭumār script (Fazāʾelī, 1982: 227). The formalization of Thuluth is conventionally attributed to three successive calligraphers. Ibn Muqla established its foundational structure in the tenth century CE, introducing it as an independent script. Ibn al-Bawwāb (d. 413 AH / 1022 CE) subsequently systematized its letterforms and compositional rules, giving the script internal consistency. In the thirteenth century, Yāqūt al-Mustaʿṣimī (d. 698 AH / 1299 CE) brought further visual sophistication to Thuluth through refinements in pen-cutting technique, most notably the *qaṭṭ muḥarraf* (oblique pen cut), which allowed for more fluid transitions and nuanced stroke modulation (Déroche, 1999). Among Yāqūt's prominent disciples, who transmitted and preserved his stylistic legacy through teaching and the production of exemplary works, were Yūsuf al-Mashhadī, Arghūn al-Kāmilī, Shaykh Aḥmad al-Suhrawardī, Naṣr Allāh al-Ṭabīb, Sayyid Ḥaydar Gandeh-Navīs, Mubārak Shāh Zarīn Qalam, and Aḥmad al-Rūmī (Safadi, 1979). However, it is important to distinguish this genealogy of master calligraphers, culminating in Yāqūt's late thirteenth-century refinements, from the development of monumental epigraphic practice. This genealogy primarily describes the canonical, manuscript-based tradition of Thuluth, whereas the architectural evidence examined here reveals a related but materially distinct trajectory. As Section 4 demonstrates, the earliest architectural examples in the present corpus predate Yāqūt by approximately two centuries but postdate Ibn al-Bawwāb, with the earliest dated example appearing within decades of his death. These inscriptions therefore belong to a formative stage in the monumental adaptation of Thuluth, when its architectural vocabulary remained comparatively less standardized and more experimental than the canonical forms associated with later masters.

2. Corpus, Sources, and Analytical Framework

The core corpus assembled for this study comprises eight inscriptional case-study groups, based on securely dated or securely attributable architectural and funerary material inscriptions in Thuluth script, produced between 461 AH (1068-69 CE) and 595 AH (1198-99 CE) across central Iran (Isfahan, Yazd, Ardestān, and Tūrān-Pusht) and northeastern Iran (Khurasan). A ninth inscription, from the Mausoleum of al-Ḥakīm al-Tirmidhī in Termez, present-day Uzbekistan, is discussed separately in Section 4.3 as a later, Timurid-period comparative example that falls outside the chronological limits of the core corpus and constitutes the study's sole comparative example from Transoxiana. Two criteria governed selection: first, that the inscription could be securely dated or attributed either through an accompanying foundation text, associated dated architectural evidence, or through established art-historical attribution in the published literature; and second, that the epigraphic material be sufficiently well preserved, or sufficiently well documented through prior photographic and graphic recording, to permit formal analysis of individual letterforms. Borderline cases are treated with particular caution. Most notably, the Nishapur fragments, identified by Blair as Naskh, are retained in the corpus because their formal characteristics reveal substantial overlap with early Thuluth; they are therefore treated as hybrid rather than as unequivocal examples of Thuluth. The resulting core corpus spans three architectural typologies, congregational mosques, a caravanserai, and funerary contexts, including tombstones, and three primary media

of execution: carved stucco, carved stone, and fired brick with gypsum. Formal analysis in this article draws on the technical vocabulary of classical Islamic calligraphy. Two terms recur throughout: *sath*, the dry, flat quality produced by the horizontal movement of the reed pen (*qalam*), typically visible at the beginning of elongated strokes; [1] and *dowr*, the moist, rounded motion produced wherever the pen follows a curved path.[2] Proportional analysis follows the *three-dāng* (three-dot) system, a classical method for regulating letter height and stroke width against the width of the pen nib. Compositional analysis further attends to the *kursī* (baseline), the horizontal guideline against which letters are aligned in book-style Thuluth, and to *tashʿīrāt*, the tapering terminal strokes that mark the ends of individual letterforms. Each case study is assessed against these criteria to determine (a) the degree to which it conforms to or departs from canonical, book-based Thuluth proportions; (b) the presence and character of hybridization with Kufic or Naskh; and (c) the likely relationship between the inscription's formal qualities and the material and architectural conditions of its production. Functional analysis considers the inscription's textual content, architectural placement, visibility, devotional or commemorative role, and relationship to the surrounding ornamental programme. These criteria provide the basis for distinguishing formal visual prominence from more specific expressions of religious, dynastic, or sectarian authority. The graphic reconstructions accompanying several case studies (Figs. 2, 4, 6, 7, 9, and 10) were produced by the author using digital vector-graphics software, tracing the calligraphic outline from high-resolution photographs of each inscription to isolate individual letterforms for formal analysis. Two limitations of the corpus should be noted at the outset. First, the survival of epigraphic material of this period is uneven: central Iran and the Yazd region are disproportionately represented relative to Transoxiana, reflecting patterns of preservation and prior documentation rather than the original geographic distribution of Thuluth epigraphy. Second, several inscriptions in the corpus are known only through post-medieval restoration or through architectural complexes with multiple building phases; where this affects the interpretation of a case study, it is flagged explicitly in the relevant section below.

Table 1 summarizes the chronological, geographic, material, and contextual parameters of the eight core case-study groups and identifies the later Tirmidhī inscription separately as a comparative example.

Table 1: Chronological, geographic, material, and contextual overview of the case-study corpus (Source: Compiled by the author from the case studies discussed in Section 4.)

Case-study group	Date	Location	Context	Material	Dating basis / status
Pāmenār Mosque	461 AH / 1068-69 CE	Zavāreh, Isfahan	Mihrab	Stucco	Indirect attribution; mihrab undated, associated with dated minaret/building phase
Nishapur fragments	465-486 AH / 1072-93 CE	Nishapur, Khurasan	Architectural fragments	Terracotta / earthenware	Secure art-historical/museum attribution; treated as Thuluth-Naskh hybrid
Ribat-i Sharaf	549 AH / 1154 CE	Khurasan	Caravanserai inscription	Brick and gypsum	Dated architectural context

[1] *Sath* refers to the dry, flat quality produced by the horizontal movement of the reed pen (*qalam*), typically observed at the beginning of elongated strokes or in the medial forms of letters such as short and long *fāʾ* (ف).
[2] *Dowr* denotes the moist, rounded motion of the reed pen, emerging wherever the pen follows a curved path — as at the head of *fāʾ* (ف) and *wāw* (و), in circular forms, or within the curvature of elongated letters (with the exception of elongated *bāʾ*, ب).

Ardestān Jāmiʿ Mosque	555 AH / 1160 CE	Ardestān, Isfahan	Southern *iwan* inscription	Stucco	Dated inscription
Sanduq-Sāz-Hā tombstone	512 AH / 1118 CE	Yazd	Funerary	Stone	Dated funerary inscription
Āstāk tombstone	545 AH / 1150 CE	Yazd	Funerary	Stone	Dated funerary inscription
Shahrzādah Sarbāz tombstone	595 AH / 1198-99 CE	Yazd	Funerary	Stone	Dated funerary inscription
Tūrān-Pusht tombstone	549 AH / 1154 CE	Tūrān-Pusht, Yazd Province	Funerary	Stone	Dated funerary inscription
Comparative example: al-Ḥakīm al-Tirmidhī	15th century CE	Termez, present-day Uzbekistan	Mausoleum inscription	Fired brick	Later Timurid comparandum; outside core corpus

Note: The al-Ḥakīm al-Tirmidhī inscription is included only as a later comparative example and does not form part of the eight-case core corpus.

3. The Introduction of Thuluth Script into Architectural Epigraphy

The earliest surviving examples of Thuluth in architectural epigraphy date to the 5th century AH (11th century CE), surviving primarily as stone-carved epitaphs and stucco inscriptions. These early examples represent a formative and comparatively less standardized phase in the monumental adaptation of the script: they adhere neither closely to the calligraphic principles established for manuscript writing, nor to the compositional discipline and structural rigor characteristic of mature monumental Thuluth. Close examination reveals considerable variation in technical execution and adherence to formal calligraphic principles, suggesting that the translation of Thuluth into architectural media involved workshop practices that did not necessarily conform to the conventions of specialist manuscript calligraphy. Because Kufic and other scripts among the *aqlām al-sitta* remained widely used throughout the 5th century AH, early examples of Thuluth epigraphy frequently show clear formal influence from Kufic and contemporary scripts. These transitional features mark the script's gradual adaptation to an increasingly public and monumental context. The phenomenon is documented in classical sources such as *Badāʾiʿ al-Khaṭṭ al-ʿArabī*, which illustrates and names multiple script varieties current during this period, including *Qalam al-Luʾluʾī*, *Qalam al-Ḥawāshī*, *Qalam al-Muqtarin*, and *Qalam al-ʿAqd* (Najī al-Muṣarraf, n.d.: 154-155). These varieties attest to the diversity of epigraphic practice and the sustained experimentation with form and proportion that characterized this formative period. This era may accordingly be characterized as a transitional phase in the development of monumental Thuluth, in which calligraphic principles associated with the manuscript tradition were progressively adapted to architectural materials, scales, and spatial contexts. The eight core case studies that follow examine this transition through inscriptions selected for their secure dating or attribution, geographic distribution, and range of architectural and funerary contexts. A ninth, later comparative example is discussed separately in Section 4.3.

4. Case Studies

4.1. The Mihrab Inscription of the Pāmenār Mosque, Zavāreh

The Pāmenār Mosque is located in the northeastern region of Isfahan province, Iran. Its minaret bears a Kufic inscription dating the mosque's construction to 461 AH (1068-1069 CE); the mosque also contains a stucco mihrab bearing an inscription in Thuluth script, among the

earliest documented uses of the script in an architectural context in central Iran (Blair, 1992) (Fig. 1). The mihrab's Thuluth inscription itself bears no independent date; its attribution to 461 AH rests on the dated Kufic inscription on the minaret and the mosque's single documented building phase, rather than on any dated text within the mihrab inscription itself.



Figure 1: Right: Mihrab of the Pāmenār Mosque, bearing the undated Thuluth inscription; Center: detail of the minaret's Kufic inscription band, the sole basis for the mosque's 461 AH construction date; Left: full view of the minaret. Both structures belong to the Great Seljuq period, Isfahan Province, Iran (Photographs by the author)

The Thuluth inscription on the mihrab has suffered significant damage, with most letters now eroded. The surviving legible portion preserves a Qurʾanic verse:

> *"Qul yā ʿibādī alladhīna asrafū ʿalā anfusihim lā taqnaṭū min raḥmat Allāh; inna Allāha yaghfiru al-dhunūba jamīʿan innahu huwa al-ghafūr al-raḥīm." ("Say, O My servants who have transgressed against themselves, do not despair of the mercy of God; indeed, God forgives all sins. Indeed, it is He who is the Forgiving, the Merciful.")*[3]

Despite the deterioration, further stylistic traces are discernible. The upper margin of the mihrab retains a few legible, partially restored letters that reveal decorative features uncommon in other contemporary Thuluth inscriptions. Notably, interlaced geometric ornamentation characteristic of Kufic is visible within the letterforms: the letters *alif* (ا) and *dāl* (د) at the beginning and end of the inscription margin are adorned with knot-like decoration, a feature not typically observed elsewhere in the corpus. The letterforms otherwise follow the principles of classical Thuluth, yet the spatial organization and compositional structure recall Kufic layout, indicating a transitional phase in which Kufic calligraphic tradition remained an active formal influence on early Thuluth epigraphy.

Given the mosque's geographical proximity to the Jāmiʿ Mosque of Ardestān, the stylistic contrast between the two sites is instructive. The Zavāreh mihrab inscription displays greater refinement: full letter circularity, balanced arrangement, and an absence of angular fragmentation, producing a harmonious, tranquil aesthetic that differentiates it from other central Iranian epigraphic examples of the same period (Salehi Kakhki & Azizpour, 2012).

[3] Qurʾan 39:53. Arabic text: على انفسهم لا تقنطوا من رحمة الله ان الله يغفر الذنوب جميعا انه هو الغفور الرحيم.

Indeed, current archaeological and art-historical scholarship identifies the Pāmenār mihrab as the only known example in central Iran to fully observe the classical rules of Thuluth, particularly regarding letter curvature, pen movement, and the three-dāng proportional system, while its stylistic execution otherwise diverges from other inscriptions in the broader Isfahan-Yazd region, suggesting a distinctive local interpretation of Thuluth in early Seljuq Iran (Fig. 2).

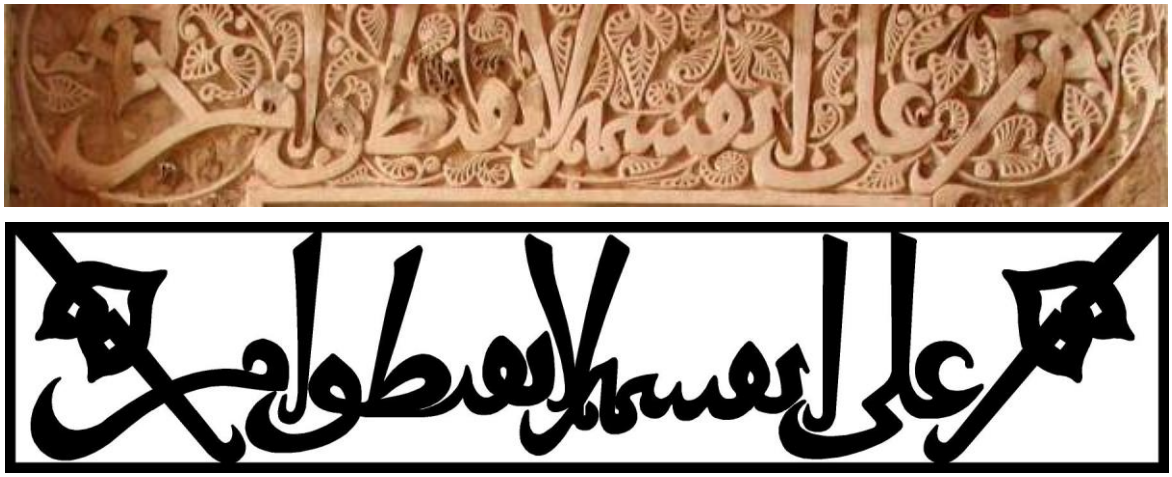


Figure 2: Design of the inscription on the upper panel of the mihrab, Pāmenār Mosque, Zavāreh; stucco work; attributed to 461 AH (1068-69 CE) on the basis of the mosque's dated building phase (Photograph and graphic reconstruction by the author).

4.2. Six Thuluth Inscriptions from a Mosque in Nishapur

Nishapur, in northeastern Iran (Khurasan), was one of the principal cities of the Seljuq realm and a major center of religious and intellectual life in the 5th-6th centuries AH. The fragments discussed below were recovered during the Metropolitan Museum's excavations at a mound locally known as Tepe Madrasa, where a mosque, refurbished in multiple phases into the late 11th century, yielded the remains of a monumental entrance bearing this inscription; the mound's name has occasionally led to the site's mischaracterization as a madrasah in subsequent literature (Wilkinson, 1986). The Metropolitan Museum of Art holds six terracotta inscription fragments (Metropolitan Museum of Art, accession nos. 39.40.58, .60-64) originally from a mosque in Nishapur, dated between 465 and 486 AH (1072-1093 CE). Executed in Thuluth script, the fragments preserve the partial inscriptions *rasā*,[4] *dālā*,[5] *ʿaṭ*,[6] *als*,[7] *rālam*,[8] and *yadah*[9] (Fig. 3). Although produced in the 5th century AH, these inscriptions exhibit a notable degree of compositional harmony and aesthetic balance that surpasses many contemporaneous, and even later, examples. The script, while still in a formative or transitional stage, demonstrates deliberate application of full-angled pen strokes (*qaṭṭ*) across the letterforms, suggesting a level of technical control and stylistic intent that distinguishes it from the more rudimentary examples elsewhere in the corpus. One of the fragments' most striking features is the absence of pronounced elongation in the *mabsūṭāt* (elongated horizontal strokes), a hallmark typically associated with mature Thuluth; this omission gives the script a restrained visual rhythm more reminiscent of manuscript than monumental epigraphy.

[4] رسا
[5] دالا
[6] عط
[7] الس
[8] رالم
[9] یده



Figure 3: Earthenware inscription from a mosque in Nishapur, 465-486 AH (1072-1093 CE); housed in the Metropolitan Museum of Art, Gallery of Islamic Art (Photographs by the author).

Closer analysis of the letter *sīn* (س) reveals a hybrid influence of Naskh and Thuluth: in classical Thuluth the initial portion of *sīn* is characteristically taller than the rest of the stroke, whereas in Naskh the height remains uniform. This ambiguity may indicate a transitional phase in which the two script traditions remained fluidly interwoven. The rhythmic repetition of vertical letters such as *alif* (ا) and *rāʾ* (ر) further contributes to a distinct sense of structural stability and visual cadence, producing an impression of monumentality and stillness (Fig. 4).

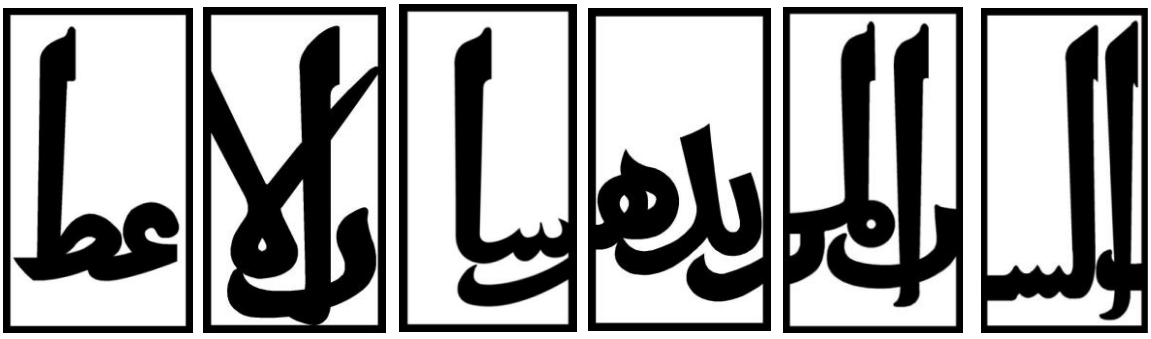


Figure 4: Digitally rendered version of the earthenware inscription from a mosque in Nishapur, 465-486 AH (1072-1093 CE); housed in the Metropolitan Museum of Art, Gallery of Islamic Art (graphic reconstruction by the author).

It is worth noting that Sheila S. Blair, in *The Monumental Inscriptions from Early Islamic Iran and Transoxiana*, categorizes the script of these Nishapur inscriptions as Naskh, likely on the basis of such formal features (Blair, 1992). While Blair's classification is defensible, the presence of Thuluth-like traits, particularly in proportion, angular cut, and certain ligatures, suggests genuine scriptural overlap rather than a straightforward case of either script. The divergence is clearest in letters such as *sīn* (س), which, unlike in canonical Thuluth, maintains a balanced vertical profile consistent with Naskh aesthetics. These fragments thus serve as valuable evidence of the evolving visual language of Islamic calligraphy in the Seljuq period, highlighting a regional interplay between Thuluth and Naskh in architectural ornamentation, and, methodologically, illustrating how classification of borderline cases can reasonably differ between specialists.

4.3. The Inscription of the Mausoleum of al-Ḥakīm al-Tirmidhī

A note on chronological scope. *The mausoleum discussed in this section is dedicated to a 9th-century saint, and the surviving Thuluth and Kufic inscriptions on the standing complex date principally from its Timurid-period reconstruction in the 15th century — outside this article's 5th-6th century AH focus. The site is retained here, with this caveat made explicit, because its inscriptions are conventionally compared in the scholarly literature with the Ribat-i Sharaf epigraphy on grounds of shared regional style, and because that comparison remains analytically useful for considering later formal tendencies in relation to the eastern Iranian material examined*

in this study. Readers should treat the formal observations below as evidence of a later manifestation of related calligraphic tendencies rather than as evidence of direct stylistic continuity or as part of the core 5th-6th-century AH corpus.

The mausoleum is dedicated to the ninth-century Sufi mystic and scholar Abū ʿAbd Allāh Muḥammad ibn ʿAlī ibn al-Ḥusayn, known as al-Ḥakīm al-Tirmidhī (d. 255 AH / 869 CE). Located near present-day Termez, Uzbekistan, the complex was established shortly after the saint's death with a raw-brick *khānqāh* (Sufi lodge) over his grave, and developed over subsequent centuries into a major religious and architectural ensemble, most significantly through a Timurid-period rebuilding in fired brick, at which point it was decorated with the Thuluth and Kufic inscriptions examined here (Khayitov, 2020; Bloom & Blair, 2009: 289-290). The composition and spatial placement of the surviving Thuluth inscription closely resemble those of the Ribat-i Sharaf caravanserai, providing a useful later point of comparison with the eastern Iranian material examined in this study. The textual content, *"al-Mulk li-Llāh, al-Mulk li-Llāh"* ("Sovereignty belongs to God"), is rhythmically repeated, reinforcing both spiritual and visual impact (Fig. 5). The calligraphy is characterized by fluid, rounded strokes and seamless curvature executed without angular fracture, features also observed in the eastern material considered in this study. A particularly distinctive feature is the exaggerated extension of the *sar-kesh* (diagonal ascender) of the letter *kāf* (ك), drawn with deliberate elongation along a shared horizontal axis; certain letters, especially *fāʾ* (ف), are additionally positioned on an elevated line parallel to the primary *kursī*, producing a rare dual-baseline visual effect that enhances the composition's layered rhythm. A key point of difference from the Ribat-i Sharaf inscription lies in the treatment of *lām* (ل) and *alif* (ا): the Tirmidhī example places less emphasis on elongation and verticality, and greater emphasis on circularity and modulation (*taqwīr* and *taṣfīr*), suggesting a distinct later adaptation of Thuluth principles within the broader eastern Iranian calligraphic environment. Naskh influence is also visible in ligatures such as *lām-mīm* (لم) and *lām-hāʾ* (له), which display the more compact, leveled quality typical of Naskh. Taken together, these features position the inscription as a later comparative manifestation of formal tendencies comparable to those observed in the eastern Iranian material discussed in Section 4.4. Its combination of Thuluth, Kufic, and Naskh features is therefore used here for comparative purposes and should not be taken as evidence of direct stylistic continuity between the Seljuq and Timurid periods.



Figure 5: Thuluth inscription from the Mausoleum of al-Ḥakīm al-Tirmidhī, Timurid-period reconstruction, 15th century CE, Termez, present-day Uzbekistan (Blair, 1992)

4.4. The Ribat-i Sharaf Inscription, Khurasan

Ribat-i Sharaf is a monumental caravanserai located approximately 45 kilometers southeast of Sarakhs in northeastern Iran. The extant inscription records that the structure was built in 549 AH (1154 CE) under Sultan Sanjar, a prominent Great Seljuq ruler; constructed of brick and gypsum, the complex stands as a significant architectural and artistic achievement of

the Seljuq period (Hillenbrand, 1994; Pope & Ackerman, 1938). Among its most notable features is a Thuluth epigraphic inscription that presents a markedly distinct stylistic approach compared with other Thuluth inscriptions of the same century within Iran, departing from canonical Thuluth in ways that suggest regional calligraphic adaptation (Fig. 6).

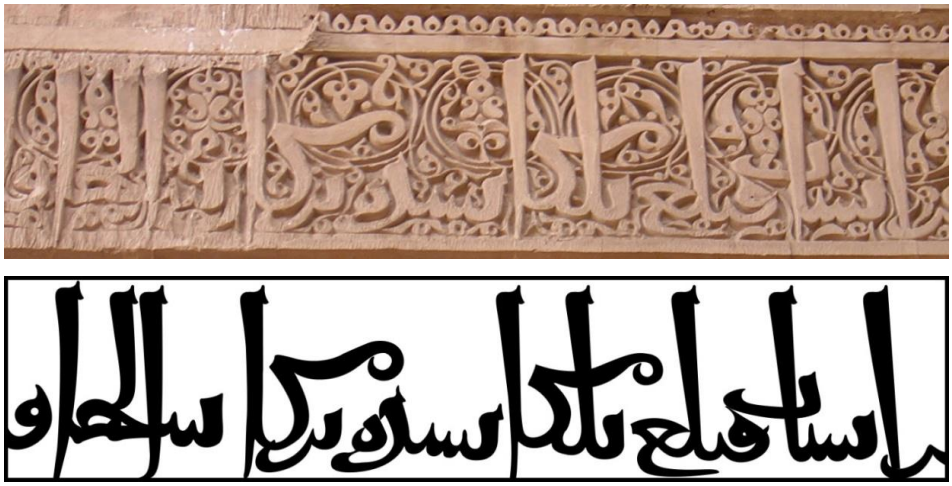


Figure 6: Design of the inscription on the iwan of Ribat-i Sharaf, Khurasan; executed in gypsum and brick; dated 549 AH (1154 CE) (Photograph and graphic reconstruction by the author).

Given the caravanserai's location in northeastern Iran, in proximity to the cultural and artistic centers of eastern Iranian lands and Central Asia, its stylistic features may be considered within a broader eastern Iranian context, while geographical proximity alone cannot establish direct regional influence. This includes a hybridization of Thuluth and Naskh, in which specific letterforms, such as *kāf* (ك), are richly adorned, and letters such as *alif* (ا) and *lām* (ل) are repeated rhythmically across the composition. These vertical strokes terminate in tapered forms that subtly descend toward the panel's lower margin, producing a fragmented spatial rhythm that divides the inscription field into dynamic visual segments. The inscription is further characterized by curvilinear, flowing strokes and a deliberate avoidance of angularity at joints and intersections, features that contribute to the distinctive fluidity of the Ribat-i Sharaf inscription and are consistent with the localized variation observed across the corpus. Taken together, these characteristics suggest localized differences in the adaptation of early monumental Thuluth, distinguishing the fluid treatment seen at Ribat-i Sharaf from several more rigid examples in the central Iranian corpus examined here.

4.5. The Jāmiʿ Mosque of Ardestān

The Jāmiʿ Mosque of Ardestān, in central Iran, is among the most remarkable surviving examples of Seljuq-period architecture. Initially constructed as an early kiosk-type mosque, it underwent significant transformation during the second half of the 6th century AH (12th century CE) into a four-*iwan* plan characteristic of Iranian congregational mosques, reflecting a broader Seljuq architectural shift from compact hypostyle prayer halls toward monumental, axial, courtyard-centered configurations (Honarfar, 1971: 210; Salehi Kakhki vd., 2013). The mosque contains several historically significant inscriptions: the earliest dated epigraph, located in the dome chamber, is inscribed 553 AH (1158 CE), while a further important inscription in the southern *iwan* is dated 555 AH (1160 CE) (Hāji Qāssemi, 2004: 32). The southern *iwan* inscription, preserved in relatively good condition, is rendered in stucco relief in Thuluth script, opening with the Āyat al-Kursī (Qurʾan 2:255) followed by a formal dedicatory passage:

> *Bism Allāh al-Raḥmān al-Raḥīm. Lā ilāha illā huwa al-ḥayy al-qayyūm. Lā ta'khudhuhu sinatun wa lā nawm…* (Mushtaqi, 2011: 45)

Stylistically, this inscription diverges considerably from other epigraphic works of the same period, as well as from later centuries: the script is deliberately rigid and angular, showing minimal reference to the canonical rules of manuscript-based Thuluth (Fig. 7), producing an overall effect of geometric discipline rather than ornamental fluidity (Azizpour & Salehi Kakhki, 2014). Although the mosque stands on Iran's central desert plateau, this visual austerity should not be read as environmentally determined; rather, the script's formal qualities are better understood through the interaction of material conditions, the compositional demands of a large architectural surface, and the aesthetic and technical practices of the regional workshops active during the Seljuq period. Stucco therefore constitutes one factor in the inscription's formal character rather than a determining constraint. Of particular note is the treatment of *tashʿīrāt*, the decorative terminal strokes, which transition abruptly from full-bodied curves into sharply tapering lines, producing a visual tension and structural regularity that enhances the inscription's spatial logic. The pronounced vertical elongation of certain letters, set against others aligned to the horizontal *kursī*, establishes a segmented visual rhythm that contributes to the inscription's hierarchy and to its architectural integration within the southern *iwan*. The inscription should accordingly be understood as the product of deliberate artistic and technical choices, shaped by the interaction of script, material, workshop practice, and spatial context, rather than as an expression of environmental determinism.

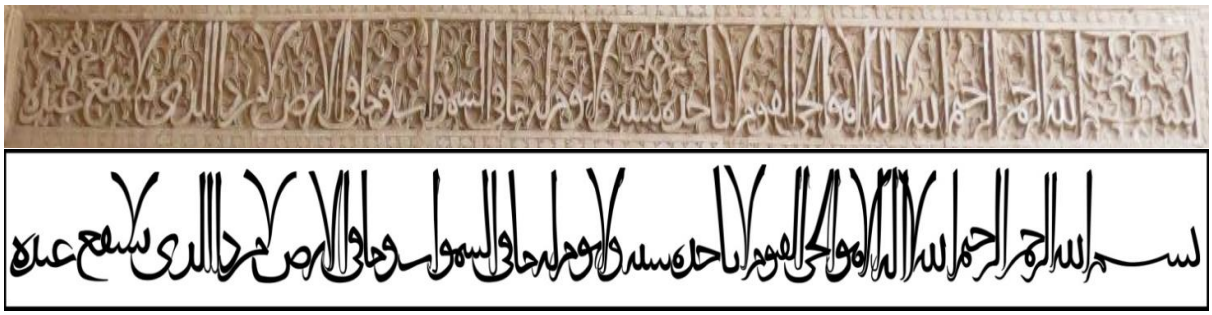


Figure 7: Thuluth inscription and its graphic reconstruction from the southern iwan of the Jāmiʿ Mosque of Ardestān; dated 555 AH (1160 CE) (Photograph and graphic reconstruction by the author).

4.6. The Tombstone of the Sanduq-Sāz-Hā Mosque, Yazd

This tombstone, dated 512 AH (1118 CE), originates from the Sanduq-Sāz-Hā Mosque in Yazd, central Iran (Fig. 8). The inscription names the artisan responsible for its execution, ʿAmal ʿUmar ibn ʿAlī ibn Saḥūd Aḥmad,[10] identifying the individual associated with the physical execution or design of the stone, although the inscription itself does not establish the nature or extent of his calligraphic training. The epigraphy comprises two distinct scripts: the outer border, carved in Kufic, features verses 21-22 of Sūrat al-Tawbah, while the upper frontal section bears the *shahāda* formula, *"Lā ilāha illā Allāh, Muḥammad Rasūl Allāh,"*[11] executed in Thuluth. Close analysis of the letterforms and spatial organization of the frontal inscription reveals a notable lack of adherence to established Thuluth calligraphic rules, particularly regarding proportion, rhythm, and compositional balance, suggesting limited adherence to professional Thuluth conventions rather than permitting a firm conclusion regarding the artisan's formal calligraphic training.

Comparative examination of other 6th-century AH (12th-century CE) tombstones from the central Iranian plateau reveals a recurring pattern: the *shahāda* in the frontal panel of tombstones is frequently repeated without strict reference to canonical Thuluth principles,

[10] عمل عمر بن علی بن سحود احمد
[11] لا اله الا الله محمد رسول الله

instead reflecting a popularized or imitative approach in which formulaic religious texts were rendered more for symbolic presence than calligraphic refinement. In terms of formal characteristics, the inscription displays visual affinities with Qurʾanic script traditions, particularly in the treatment of the word "Muḥammad" and the ligature between *mīm* (م) and *ḥāʾ* (ح), which closely resemble styles found in *muṣḥaf* (Qurʾanic manuscript) calligraphy; conversely, the ligature between *alif* (ا) and *lām* (ل) shows more disciplined execution, conforming to book-style Thuluth rules. The overall composition nonetheless lacks the technical control and stylistic cohesion typically associated with architectural or monumental Thuluth. This tombstone thus occupies a transitional or hybrid space between formal calligraphy and vernacular inscription practice, illustrating a broader phenomenon of calligraphic imitation in funerary contexts, in which religious content and symbolic legibility often outweighed formal scriptural precision.



Figure 8: Tombstone from the Sanduq-Sāz-Hā Mosque; stone carving; Yazd, dated 512 AH (1118 CE) (Photograph by the author).

4.7. The Tombstone of Aḥmad ibn Muḥammad Āstāk

The tombstone of Aḥmad ibn Muḥammad Āstāk, dated 545 AH (1150 CE) and now housed in the Metropolitan Museum of Art, is composed of a double-band inscription: the outer border is carved in decorative Kufic, while the inner band presents a refined example of Thuluth that closely aligns with book-style calligraphic principles, clearly visible in the accompanying reconstruction (Fig. 9). The letters are individually rendered, with words often appearing disconnected at the beginning and end of phrases. A notable feature is the uniform proportionality between elongated (*madd*) letters and shorter, isolated forms, maintained at a consistent height ratio of 1:1; the pen-cut (*qaṭṭ*) follows the three-dāng model, with carefully proportioned strokes and *tashʿīrāt* (tapered flourishes) limited to the terminal ends of letters. Unlike traditional *kursī*-based inscription systems, which structure letters along a horizontal guideline, this tombstone does not strictly follow such a framework; instead, its visual harmony derives from the rhythmic repetition of vertical strokes, particularly *alif* (ا) and *lām* (ل), producing a visually pleasing cadence across the panel. Within the broader context of 5th-6th century AH (11th-12th century CE) funerary epigraphy, this inscription represents an advanced and distinguished example of monumental Thuluth. The precise execution of book-style calligraphic norms, despite the inherent challenges of stone carving, strongly suggests that the artisan responsible was a trained Thuluth calligrapher; the delicate balance between technical accuracy and visual grace indicates a high level of artistic mastery, and the tombstone may be

considered more complete and stylistically advanced than many other contemporary examples in the corpus.

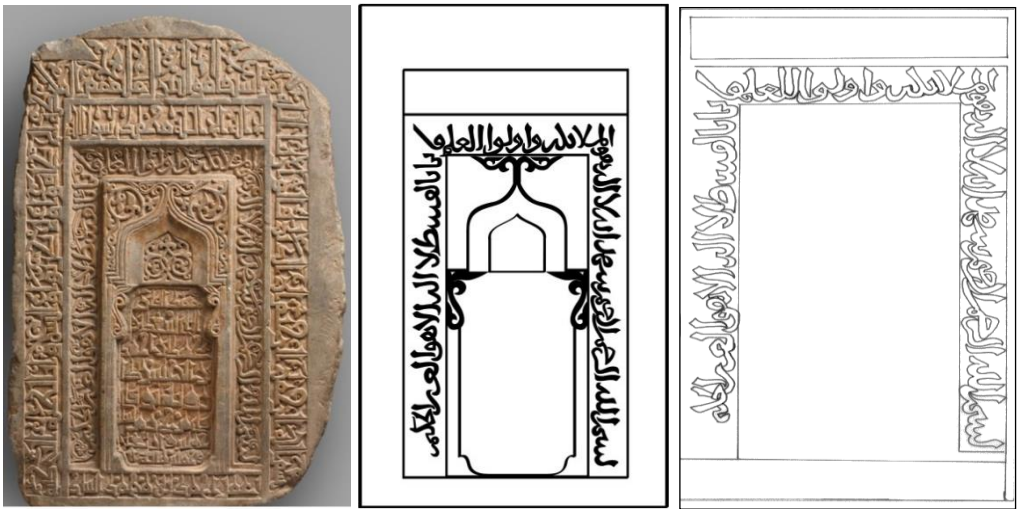


Figure 9: Tombstone of Aḥmad ibn Muḥammad Āstāk with Thuluth inscription and graphic reconstruction of its calligraphic composition; Yazd, dated 545 AH (1150 CE) (Photograph and graphic reconstruction by the author).

4.8. The Tombstone of Shahrzādah Sarbāz

The tombstone of Shahrzādah Sarbāz, dated 595 AH (1198-99 CE), postdates the Āstāk tombstone by roughly half a century, situating both within the broader corpus of 12th-century Iranian funerary inscriptions. Its script is a hybrid of Thuluth and Naskh, reflecting a transitional or non-canonical approach to monumental calligraphy of the period (Fig. 10). Graphic analysis reveals substantial deviation from established calligraphic norms, particularly by comparison with the more disciplined Āstāk tombstone: proportional relationships and compositional organization are applied inconsistently, with some segments of the inscription clear and legible while others are visually congested or nearly indecipherable, suggesting inconsistency in both execution and design strategy. Notably, the inscription shows no evidence of a *kursī*-based structure and lacks the rhythmic repetition of vertical letters that typically anchors visual harmony in Thuluth. The only repeated form is the word *"lā"* (لا), which appears uniformly throughout the composition without contributing to broader compositional coherence. Letter heights vary considerably, and the connections between letters lack precision; although the script uses the full three-*dāng* pen cut, *tashʿīrāt* appear only sporadically at the ends of some letters, further indicating the absence of a unified stylistic framework. Taken together, this inscription may be characterized as a locally inflected, non-canonical form of monumental calligraphy whose execution diverges substantially from the proportional and compositional conventions of professional Thuluth practice. Rather than permitting a firm attribution to an untrained or non-specialist artisan, these formal irregularities point more cautiously to differences in workshop practice, technical expertise, or the priorities governing funerary inscription. Despite its irregularities, the tombstone offers valuable insight into the diversity of calligraphic practice in provincial Iran during the Seljuq period, where epigraphy could reflect local workshop capacity, functional priorities, or symbolic concerns rather than strict adherence to canonical calligraphic conventions.

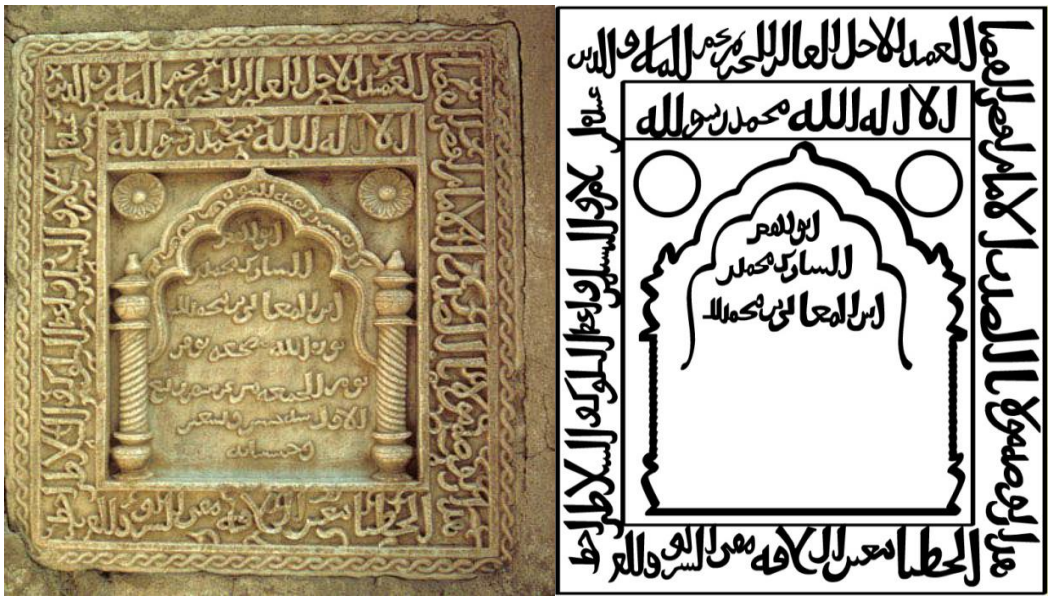


Figure 10: Structural composition and graphic reconstruction of the tombstone inscription of Shahrzādah Sarbāz; stone carving; Yazd, dated 595 AH (1198-99 CE) (Photograph and graphic reconstruction by the author).

4.9. The Tombstone Inscription from the Tūrān-Pusht Mosque

Housed in the Freer Gallery of Art, Washington, D.C., this inscribed tombstone dates to 549 AH (1154 CE) and is attributed to the commission of al-Junayd ibn ʿAmmār ibn al-ʿAlāʾ, then-governor of Tūrān-Pusht, a village in the Dehshir rural district of Taft County, Yazd Province, central Iran (Fig. 11). The inscription records the restoration of a mosque associated with Mashhadī ʿAlī ibn Mūsā al-Riḍā, indicating the site's Shiʿi devotional significance during the Seljuq period. The stone bears a total of ten inscriptions, most consisting of Qurʾanic verses, together with invocations of the Prophet and the Shiʿi Imams placed along its margins. One of the central texts reads:

> *Bism Allāh al-Raḥmān al-Raḥīm. Allāhumma ṣalli ʿalā Muḥammad al-Muṣṭafā, wa ʿAlī al-Murtaḍā, wa Fāṭima al-Zahrāʾ, wa al-Ḥasan al-Naqī, wa al-Ḥusayn al-Taqī, wa ʿAlī ibn al-Ḥusayn Zayn al-ʿĀbidīn, wa Muḥammad ibn ʿAlī al-Bāqir, wa Jaʿfar ibn Muḥammad al-Ṣādiq* (Qūchānī, 2002: 36).

The tombstone's outer margin features a notable example of Thuluth that, while grounded in the formal rules of Thuluth calligraphy, exhibits visual influence from Naskh, particularly in its linear spacing and the sequencing of words: at first glance, the arrangement of text blocks follows the horizontal alignment and spacing typical of Naskh manuscript writing. Closer examination, however, reveals that the rhythmic repetition of vertical letters, the uniform modulation of letter heights, and the placement of characters within circular or curved compositional zones conform closely to the rules of Thuluth book-style calligraphy. These features demonstrate a deliberate hybridization, a stylistic negotiation between the clarity of Naskh and the monumental grace of Thuluth, adapted for an epigraphic and, notably, explicitly Shiʿi devotional context. This tombstone therefore exemplifies an important moment in the evolution of Islamic funerary epigraphy, in which multiple script traditions were blended to fulfill both aesthetic and religious functions while reflecting regional workshop practice and the Shiʿi cultural milieu of the period.



Figure 11: Tombstone from the Tūrān-Pusht Mosque; stone carving; Yazd, dated 549 AH (1154 CE) (Photograph and graphic reconstruction by the author).

5. Discussion

The eight core case studies examined above resist a single linear narrative of Thuluth's emergence and instead reveal a set of recurring, cross-cutting patterns, while the later Tirmidhī comparandum provides evidence for the subsequent regional persistence of selected features.

A spectrum of craftsmanship, not a single trajectory. The corpus spans a continuous spectrum from comparatively irregular and non-canonical execution (the Sanduq-Sāz-Hā tombstone; the Shahrzādah Sarbāz tombstone) to inscriptions of considerable technical sophistication and closer adherence to established calligraphic principles (the Āstāk tombstone; the Pāmenār mihrab). Rather than a steady chronological improvement, quality appears to have depended at least partly on differences in workshop practice and access to calligraphic expertise: the Āstāk tombstone (545 AH) is markedly more disciplined than the Shahrzādah Sarbāz tombstone, produced roughly half a century later (595 AH) in the same city. The comparison therefore demonstrates that technical and compositional refinement did not progress uniformly over time. This suggests that the "transitional" character often attributed to this period reflects uneven workshop capacity alongside the still-developing conventions of monumental Thuluth, rather than a straightforward chronological evolution toward standardization. **Regional stylistic variation.** The core corpus suggests differences between several central Iranian examples and the northeastern material represented most clearly by Ribat-i Sharaf**.** The latter displays curvilinear, flowing strokes and a deliberate avoidance of angularity, while several central Iranian examples, most strikingly the Ardestān southern *iwan* inscription, favor a rigid, angular treatment that departs markedly from canonical Thuluth curvature. Given the limited number and uneven geographic distribution of surviving examples, these differences should not be taken as evidence of fixed regional schools. They nevertheless suggest that local materials, workshop practices, and established visual traditions contributed to the heterogeneous development of monumental Thuluth. The later Tirmidhī comparandum cannot establish this pattern for the Seljuq period, but may indicate the subsequent persistence of selected curvilinear tendencies in the eastern Islamic lands. **Persistent hybridization with Kufic and Naskh.** Across much of the core corpus, early Thuluth displays varying degrees of formal hybridity. Kufic influence is most visible in compositional layout and ornamental

treatment (Pāmenār; Ribat-i Sharaf), while Naskh influence is most visible in letter proportion and horizontal spacing (the Nishapur fragments; the Tūrān-Pusht tombstone). This pervasive hybridity supports the article's central claim that early monumental Thuluth should not be understood as a discrete script arriving fully formed, but as an emergent visual grammar developed within the broader repertoire of the *aqlām al-sitta* and through particularly visible interactions with Kufic and Naskh. Rather than representing a straightforward replacement of one script by another, these inscriptions reveal a process of selective adaptation in which established formal conventions were recombined and adjusted to the requirements of monumental epigraphy. **Script and ornament: an integrated visual field.** At Pāmenār, and more markedly at Ribat-i Sharaf, the Thuluth inscription is not set against a neutral ground but is visually interleaved with dense vegetal ornament. At Ribat-i Sharaf in particular, floral medallions are placed directly between the vertical strokes of the letters, occupying the same compositional register as the script rather than framing it from a separate visual plane. This integration suggests that the emergence of monumental Thuluth involved not only the formal development of letterforms but also a shifting relationship between writing, ornament, and architectural surface, in which script and vegetal decoration were composed as a single visual field. It is worth noting that the graphic reconstructions used elsewhere in this article for formal letterform analysis (Figs. 2, 6) necessarily isolate the script from this ornamental context; the interaction between the two remains visible only in the original photographic documentation, and a fuller analysis of their compositional integration lies beyond the scope of the present study. **Material and architectural determinism, qualified.** Several case studies initially invite an environmental or material explanation for stylistic variation, for instance, attributing the rigidity of the Ardestān inscription to the constraints of stucco carving on a large *iwan* surface. The evidence, however, does not support strong material determinism: the Pāmenār mihrab, executed in the same medium (stucco) and within the broader central Iranian context, displays a markedly more curvilinear treatment. Stylistic choice, workshop practice, access to calligraphic expertise**,** and patronage therefore appear to have exercised at least as much influence as material constraint. Material and architectural conditions should thus be understood not as determining form in isolation, but as factors operating in conjunction with local workshop traditions, calligraphic knowledge, and the functional and visual demands of individual monuments. **Visual authority, patronage, and political legitimacy**. The evidence suggests that the authority conveyed through monumental Thuluth operated on more than one level. At the visual level, scale, architectural placement, ornamental integration, and the distinctive formal presence of the script could give inscriptions prominence within the architectural field, constituting what may be termed "visual authority." In particular cases, this visual prominence intersected with more explicit expressions of religious, dynastic, or sectarian legitimacy: religious orthodoxy through the Qurʾanic mihrab text at Zavāreh, dynastic patronage through Sultan Sanjar's inscription at Ribat-i Sharaf, and sectarian identity through the explicitly Shiʿi invocations at Tūrān-Pusht. These examples do not imply that every early Thuluth inscription carried a direct political message. Rather, they demonstrate that the authority of monumental script was contingent upon textual content, architectural placement, patronage, and devotional context. Thuluth could therefore function simultaneously as scripture, ornament, and a spatial medium and, in specific contexts, as a visual instrument through which religious and political legitimacy was articulated.

Conclusion

This article has demonstrated that the emergence of monumental Thuluth in the 5th and 6th centuries AH (11th-12th centuries CE) was not a linear stylistic succession from Kufic but a heterogeneous process shaped by calligraphic convention, architectural context, material conditions, and workshop practice. Drawing on eight core inscriptional case studies from

central and northeastern Iran, supplemented by a later Transoxianan comparandum, the study has addressed its three objectives. Morphologically, early Thuluth displays considerable variation in curvature, proportion, ligature, and spatial organization rather than a consistently applied canonical system. Structurally, aesthetically, and functionally, early Thuluth retained relationships with Kufic and Naskh while developing forms increasingly adapted to monumental, devotional, commemorative, and funerary settings. Regionally, the corpus suggests localized differences in execution and composition, although the evidence remains insufficient to define fixed regional schools; the later Tirmidhī example serves only as a comparandum for the later manifestation of related formal tendencies. The corpus further shows that neither chronology nor material alone explains stylistic variation. Inscriptions displaying markedly different degrees of proportional and compositional discipline coexisted within the same period and, in some cases, the same city, while comparable materials produced different formal solutions. The "transitional" character of early monumental Thuluth is therefore better understood as formal plurality rather than a uniform progression toward canonical standardization. At Pāmenār and, more clearly, Ribat-i Sharaf, the integration of script with vegetal ornament further demonstrates that this development involved not only changing letterforms but also a reconfiguration of the relationship between writing, decoration, and architectural space. The evidence also clarifies the relationship between monumental script and authority. Visual authority, established through scale, placement, and ornamental integration, should be distinguished from explicit political or religious legitimacy. At Pāmenār, Ribat-i Sharaf, and Tūrān-Pusht, textual content, patronage, and architectural context demonstrate distinct ways in which inscription could articulate religious, dynastic, or sectarian authority without implying that every early Thuluth inscription carried a political message. Thuluth thus operated simultaneously as a textual, ornamental, and spatial medium and, in specific contexts, as a means through which authority could be made visually manifest. These findings suggest that the formative history of monumental Thuluth is best understood through the interaction of letterform, workshop practice, material, patronage, ornament, and architectural function rather than through stylistic genealogy alone. Further comparison with securely dated Ghaznavid, Ghurid, and 7th-century AH material may clarify how these heterogeneous practices related to the increasingly standardized forms of monumental Thuluth found in later Islamic architecture.

Information Note

This article has been prepared in accordance with research and publication ethics. This study does not require ethical committee approval.

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