

THE GEOMETRIC KUFIC INSCRIPTIONS ON THE LATE MAMLUK ARCHITECTURE AND ARTIFACTS: A NEW PERSPECTIVE THROUGH SOME ARTIFACTS

BY

Walīd Aḥmad Ṣalāḥ al-Dīn

Lecturer at Tourist Guidance Department, Faculty of Art-Ain Shams University, Egypt

ABSTRACT

[AR] الخط الكوفي الهندسي على العمارة والتحف الفنية من العصر المملوكي الجركسي. منظور جديد من خلال بعض التحف الفنية. لقد أظهر الفنانون المسلمون براعتهم في إنتاج العديد من التحف الفنية بأشكالها وزخارفها العديدة والمميزة التي لازال الكثير منها بحاجة ماسة للدراسة والفحص. وقد أطنب فنانون العصر المملوكي في زخرفة تحفهم الفنية بالعديد من الزخارف المختلفة ومن أبرز هذه الزخارف هو الخط الكوفي الهندسي الذي لعب دوراً حيوياً وبارزاً في الفن المملوكي. ظهر الخط الكوفي الهندسي على العديد من المباني الأثرية التي ترجع إلى العصر المملوكي، ومن الملاحظ ندرة وجوده على الفنون والتحف التي ترجع إلى تلك الحقبة من الزمن، لذا فقد عمد الباحث إلى دراسة وتحليل ونشر بعض الأمثلة من التحف الفنية والتي توجد في بعض العمائر المملوكية وتحمل في ثناياها زخرفة الخط الكوفي الهندسي المربع. ولقد أظهرت الدراسة ان هناك العديد من الاختلافات والتنوع في الطرز المختلفة للخط؛ كذلك المضمون الذي تشتمل عليه النصوص الكتابية حيث أظهرت الكتابات تنوعاً واختلافاً في المضمون والطرز الفنية أكثر من الكتابات التي مثلت على العمائر الإسلامية التي ترجع إلى نفس الحقبة الزمنية. حيث اعتمد الباحث في الدراسة أيضاً على نشر تحف فنية جديدة من العصر المملوكي الجركسي بصفة خاصة وقد اتبع المنهج التحليلي من حيث المقارنة والوصف حيث تظهر الدراسة ان هناك أيضاً اختلافاً ملحوظاً في الشكل ومضمون الكتابة وطرز الأحرف الهندسية.

[EN] Muslim artisans were talented in producing art objects in various decorative forms that have needed a comprehensive study and examination. They generously decorated their artworks with different motifs, especially the Kufic script that played a vital role in the value of these artworks. The geometric Kufic script is widely shown on many buildings dated to the Mamluk period; however, it is scarcely found on the art objects of the same period. The researcher examined examples of Mamluk art objects and parts from architectural edifices with geometric Kufic inscriptions. After conducting an analysis and comparative study, the researcher found out that the style changed in arts, especially in the content and the forms of the letters. The study concludes that there are many differences in the style and contents of the inscriptions rather than those found in the architecture. This apparent change can be seen in the published and unpublished artifacts of the Mamluk era, especially the late period.

KEYWORDS: Circassian Mamluk arts, Geometric Kufic, kufic inscription, Mamluk inscriptions, Mamluk arts.

I. INTRODUCTION

The geometric Kufic has been given this name because it is formed of sentences in square shape inside square, triangular, rounded, or rectangular frames. Sometimes, this makes it so hard to read¹. Numerous examples of geometric Kufic are found in Mamluk architecture². The first example can be seen on the southern wall of the Mausoleum of al-Manşūr Qalāwūn 683-684AH/1284-1285AD³, Bayn al-Qasrayn [FIGURE 6], in which the word «Muḥammad» is written twelve times inside a rectangular frame⁴. Those types of early examples are also shown in the Zāwiyah of Zayn al-Dīn Yūsuf beside the main mihrab⁵ and in the Mosque of al-Mu'ayyad Şayḥ on the flanks of the main entrance of the Mosque⁶. Another example of the same ornamented square Kufic is shown on the *mihrab* of the Ḥānqāh of al-Ġawrī⁷.

The Origins of Geometric Writings

Many theories discussed the origin of the geometric square Kufic. Luis Hauteceur and Gaston Wiet believed that this type of geometric Kufic originated from the Seljuks and was first found in the Mosque of Quṭb al-Dīn in Sindjār, dated back to 598AH/ 1201AD⁸. Samuel Flūry reported that the origin of this type of Kufic was mainly obscure; however, the Chinese arts played a vital role in the occurrence of this script.

While the Chinese arts were involved in the Iranian arts and architecture⁹, they were mostly seen in the great mosque of Mardīn in Irān¹⁰. Therefore, he believed that the Chinese influences were transferred to the arts of the Mamluks and helped form this type

¹ROGERS BEY 1881:101; ĞUM'AH 1969: 36,45-46; FLURY 1939: 1747; 'ABD AL-ḤALĪM 1991 a: 7

²The mausoleum of Qalawūn, Zawiya of Zayn al-Dīn Yūsuf 697AH/ 1298AD, the Ḥānqāh of Baybars al-Ġāşinkīr 706-709AH/1306-1309AD, the Mosque of al-Ṭanbuġā al-Mardānī 739-740AH/1339-1340AD, the Mosque of Aq Sunqur 747-748AH/1346-1347AD, the Madrasah of Sultan Ḥasan 757-764AH/1356-1362AD, the Tomb of Khawand Samrā' known as al-Turba al-Sultāniya 757-762AH/1356-1360AD, the Ḥānqāh of Sa'd al-Dīn ibn Ġurāb 803-808AH/1400-1406AD, the Madrasah of Ğamāl al-Dīn al-Ustadār 811AH/1408AD, the Mosque of al-Mu'ayyad Şayḥ 818-823 AH/1415-1420AD, the Bimaristān of al-Mu'ayyad 821-823AH/1418-1420AD, the Mosque of Kāfūr al-Zammām 829AH/1425AD, the Madrasah of Fayrūz al-Sāqī 830AH/1426AD, and the Mosque of Ğānībak 830AH/1426AD. For more details, see: 'Abd al-Ḥalīm 1991 b: 160-351.

³The marble slabs are found in two groups; the first is four marble slabs encrusted in the southern marble dado of the mausoleum, each measuring 2.54 m x 1.5 m. They are housing the names of the prophet Muḥammad repeated twelve times each. The second group is four square marble slabs smaller than the others. They are 1.5 m x 87 cm each and house the name of the prophet Muḥammad PBUH repeated four times in square form. 'Abd al-Ḥalīm 1991 a: 106-108.

⁴'ABD AL-WAHHĀB 1946: 118; 'ABD AL-RĀZIQ 2009: 240.

⁵BADR 2002: 155.

⁶ROGERS BEY 1881: 101-106, PL.8; 'ABD AL-ḤALĪM 1991 a: PL.2a.

⁷ŞALĀḤ AL-DĪN 2007: PL.LII.

⁸HAUTECOEUR ET WIET 1932: 301.

⁹FLURY 1939: 1748.

¹⁰CRESWELL 1978: FIG.132.

of script¹¹. Annmarie Shimmel noted that this type of angular Kufic was seen in the Safavid architects of Isfahan writing the names of Allah, his prophet and Imām ‘Alī in the drums of the domes¹². Sami ‘Abd al-Ḥalīm emphasizes that it had originated from Irān, Mesopotamia, and Seljuk arts¹³. Thus, the first appearance was in the mosques of Irān and Irāq applied on the ornamental panels made of Terracotta and burnt bricks¹⁴.

Modern researches, such as Mamoun Sakkāl in his PhD dissertation «Square Kufic Calligraphy in Modern Art, Transmission and Transformation» discussed the writings of the authors, e.g., Ralph Pinder Wilson and Robert Hillenbrand, who published a detailed account on the minaret of Mas‘ūd III (439-509/1099-1115) stating that it carried one of the earliest extant structures where we can observe the beginnings of Square Kufic. He also stated the statements given by Tehnyat Majeed around the origins and the places of this type of scripts¹⁵. He concluded that most of the early extant examples are in the east, especially in the first quarter of the 6th H./12th G. century. Sakkāl gave a conclusive remark that other early square Kufic inscriptions also came from the east on several Ghaznavid coins, which could be easily transported, between regions, helping in the dissemination of the script from east to west¹⁶.

Numerous studies discussed the origin of geometric writing; however, recent studies declared the origins of this type of script to the Seljuks in Irān and its surroundings. A dissertation by Aḥmad Sayid Ṣāfi ‘*al-Ḥaṭṭ al-kūfi al-handasī ‘ala al-‘amā’ir al-dīniyah fī Irān mundu awāḥir ‘aṣr al-dawlah al-suljūqiyah ḥata nahāyat ‘aṣr al-dawlah al-timūriyah (al-ṣakl wa-l-maḍmūn) 485-912AH/1092-1506AD*» in 2020 supported the Iranian theory of Iran being the main center for which the square Kufic originated¹⁷.

II. LITERATURE REVIEW

Several scholars focused on studying the forms of the Kufic script. They put the essential bases for studying this issue. The study of the geometric Kufic writings was the result of the efforts of many scholars and researchers. For instance, Sāmi ‘Abd al-Ḥalīm had two important publications related to the study periods. First, «*al-Ḥaṭṭ al-Kūfi al-Handasī al-Muraba; Ḥilya Mi‘māriyah bi Munša’āt al-Mamālīk fī-l-Qāhirah*», 1991¹⁸, introduced a valuable constructive meaning to the types and forms of the square Kufic script.

The second was «*Adwā’ ‘alā al-Hatt al-Kūfi al-Handasī al-Muraba’ wa nuqūsh bi ḡāmi’ al-Mu’ayyad Sayh bi-l-Qāhirah*», 1991¹⁹. Truly, he was the one who laid the

¹¹ FLURY 1939:1748.

¹² SHIMMEL 1990: 11-12.

¹³ ‘ABD AL-ḤALĪM 1991 a: 7.

¹⁴ ‘ABD AL-ḤALĪM 1991 b: 47

¹⁵ SAKKAL 2010: 39-42.

¹⁶ SAKKAL 2010: 43.

¹⁷ ṢĀFI’ 2020: 23-55, 81-202.

¹⁸ ‘ABD AL-ḤALĪM 1991 a: 1-359.

¹⁹ ‘ABD AL-ḤALĪM 1991 b: 3-93.

foundation for understanding the style of calligraphy shown in the architecture of the Mamluks²⁰. One could not also forget the article of the same author «*Mabādi' al-hāṭṭ al-Kuḫī al-tarbīī*», 2004, that clearly discussed the origin of the square calligraphy, especially in the architectural buildings²¹. The unforgettable work of the same author in his dissertation, Sakkal: «Square Kufic Calligraphy in Modern Art» 2010, obviously discussed the origins of the square Kufic script²².

The dissertation given by 'Alā' al-Dīn 'Abd al-'Āl, entitled «*Al-Nuqūš al-Kitābiyah al-Kūfiyah alā al-umā'ir al-Islāmiyah fī Miṣr min Bidāyat al-'aṣr al-Ayyubī Wa Ḥata Nahāyat Al-'aṣr al-Ūtmānī*», particularly examined the development and forms of the Kufic writings on the architecture of the Ayyubids and Mamluks in Egypt. It implies a brief study of the development of the geometric types of the Kufic script²³.

III. OBJECTIVES OF THE STUDY

The major goal of this research paper is to determine whether there have been any changes and developments in the formations and style of geometric Kufic writings on the late Mamluks' arts and architecture. In this paper, I adopted both the descriptive and analytic approaches for published and unpublished artistic and architectural artifacts with geometric Kufic writings. The analytical study included an alphabetic analysis of the letters found on the artifacts and a comparison of those from the early Bahary and late Mamluk periods to highlight any changes.

Additionally, I attempted to clarify that the geometric Kufic texts have evolved in terms of structure, content, and style, focusing particularly on the late-Mamluk objects and architecture.

IV. THE DESCRIPTIVE STUDY

[FIGURES 1A&B]

Square panel with colored marble inlay around the central square-Kufic inscription

Date: Mamluk 8th - 9th H/14th -15th G century.

Place of Preservation: Nāṣir Khalili collection–London²⁴.

Inventory N^o: MXD 100.

Measurements: 57 x 57cm.

Technique: Incrustation- blue-red, black, and white marble incrustation.

Status of Publication: Unpublished.

²⁰ 'ABD AL-ḤALĪM 1991 a: 1-359.

²¹ SAKKĀL 2004: 4-12.

²² SAKKAL 2010: 1-45.

²³ ABD AL-'ĀL 2010: 25-28, 986-996, 998.

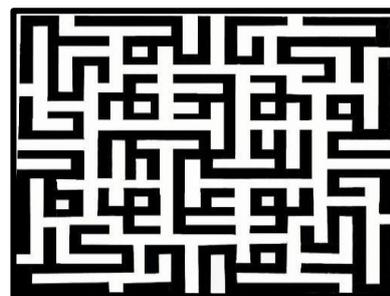
²⁴ «Rectangular panel with coloured marble inlay around the central square-Kufic inscription MXD 100», in: <https://www.khalilicollections.org/collections/islamic-art/rectangular-panel-with-coloured-marble-inlay-around-central-square-kufic-inscription-mxd-100/> Accessed on 22/04/2022



[FIGURE 1A]: «Rectangular panel with colored marble inlay around the central

«Square-Kufic inscription MXD 100», IN: <https://www.khalilicollections.org/collections/islamic-art/rectangular-panel-with-coloured-marble-inlay-around-central-square-Kufic-inscription-mxd-100/>

Accessed on 22/04/2022



[FIGURE 1B]: A drawing of the previous panel done by the researcher

Description: It is a square marble panel encrusted with colored marble inlay. The panel has a delicate frame with incrustated pieces of marble inlay, forming geometric compartments based on intersecting lozenges incrustated in white, blue, orange, gray, and black marble inlay. The frame encloses another square frame. The central frame encloses another small border encrusted with gray incrustation. These types of geometric subjects can be seen extensively in the Mamluk arts of inlaying marble decorating the wall of the religious edifices, such as the dados of the interior walls of the Mausoleum of Qalāwūn²⁵. Decorating the walls of the entrance and the halls of the religious edifices with marble panels was very popular in the arts of the Mamluks. The central square frame encloses a geometric Kufic script that reads from the center to the frames and corners. It encompasses an inscription starting from the center of the writing *I bear trust in (Allah) my cretor* توکلي علي خالقي. During the late Mamluk period, the phrases of invocations were exclusively found in the arts and architecture of the Cairene Mamluk religious edifices. In addition to the invocation phrases, the Quranic inscriptions, and the name of Muḥammad (PBUH) and the witnessing *ṣahādah* were commonly seen in the Mausoleum of Qalāwūn, the Maridānī Mosque, and the Madrasah of Sultan Ḥasan. Later in the Mosque of al-Mu'ayyad Ṣayḥ, the Quranic inscriptions were found in many places of the mosque²⁶. The direction of writings starts from the center of the word توکلي *I bear trust* is repeated four times from the center. The preposition علي is shown repeated four times on the four corners frames of the square. The phrase ends up with خالقي *Allah my Creator, the Creator* and is divided into two parts; حا the initial *ḥā'* and medial *alif* shown beside the preposition علي. The completion of the letters لفي the initial *lam* the medial *qāf* and final *yā'* are seen on a separate position to form one word attached to the frame of the square [FIGURE 1B]. It is noticeable that the techniques of encrusting colored marble *ḥafr wa tanzīl* also distinguished the models of the late Mamluk arts²⁷.

²⁵ CRESWELL 1978:193; ABŪ SEIF 2007:139.

²⁶ ROGERS BEY 1889: N^o.1-8; 'ABD AL-ḤALĪM 1991 a: PL.39, 43- 44, 47, 50; 'ABD AL-'ĀL 2010: 1403. PL.262.

²⁷ A process used extensively in the late Mamluk arts. See: LANE POOLE 1886: 115-123, IBRAHIM 1950: 200 Document, L.1; SALĀḤ AL-DIN 2007: 175-180.

[FIGURES 2 A, B&C]

Ceramic Tile

Place: Museum of Islamic Arts –Cairo

Inventory N^o.2077

Date: First half of the 9th H./15th G. century²⁸.

Technique: Under glazed pottery imitating Chinese porcelain

Place of Discovery: Mosque of Sayyida Nafisah

Measurements: The whole panel measures 44x44cm

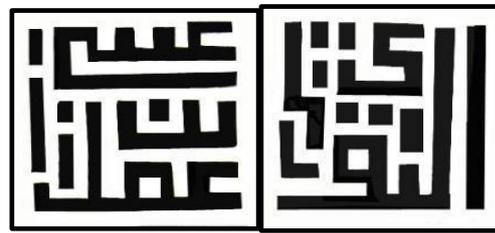
The small panels contain a square Kufic script of 7x7cm.

Status of Publication: The artifact is published²⁹ as a style of art. However, the geometric Kufic text has not been fully analyzed yet.



[FIGURE 2A]: A ceramic tile carries the name of the ceramist Ibn Ġaybī.

©Museum of Islamic Art [Inventory N^o.2077].



[FIGURE 2B] & [FIGURE 2C]

Drawing of the previous panel

©Done by the researcher

Description: It is a square tile made of under glazed pottery. The central area is filled with nashī inscriptions of white on blue coated ground. *توكلي علي خالقي I bear trust in Allah, My Creator.* The Nashī is written in a circular way as the reading ends in the center making a

²⁸ It is an imitation of Chinese porcelain. The museum of Islamic arts in Cairo holds some examples of ceramic fragments carrying the name of Ġaybī (e.g. a ceramic shard Inv.N^o.1124/8). However, this one is made by his son Ibn Ġaybī. It seems that both Ġaybī and his son lived in the Levant in the first half of the 9th AH/15thAD century, as the name of Ġaybī was written in the Complex of Ġars al-Dīn Ḥalīl al-Tawrīzī in Damascus who died in 826AH/1424AD. See: 'ABD AL-RĀZIQ 2007:198, 201; AL-ŠIḤAH 2013: 63-67.

²⁹The artifact is published by many authors as only a brief description. Firstly, it is mentioned by Max Herz in his descriptive catalogue of the Islamic Museum. HERZ 1907: 223- 224. It is also mentioned in the book of *al-Qāhirah, tārḥuha wa funūnaha wa ātārīha* by 'Abd al-Raūf 'Ali Yūsuf, as a description of the fragment without giving an analysis and the style of the letters. A. 'ALI YŪSUF 1970: 117-120; Sāmi 'Abd al-ḥalīm only described the fragment without analyzing the square Kufic text. 'ABD AL-ḤALĪM 1991 b: 175-178. Marilyn Jenkins also gave a description and analysis of the tile without mentioning the forms and the style of the square Kufic text. JENKINS 1984:110,112. The fragment is also mentioned by Dr. Usama Tal'. He didn't state the analysis of the inscriptions. TAL 'AT 2003: 189, PL.7. Another recent study by 'Abd al-Ḥālīq al-Šiḥa also mentioned only the name of Ġaībī and his son without mentioning a full analysis on the style of calligraphy and letters concluding that real name of Ġaībī is Ahmady known as Ġaībī through an artifact in the Museum of Islamic Ceramic at Zamalik [Inv.N^o.7111-2]. AL-ŠIḤA 2013:67, 68.

lobed medallion. A tiny band with Kufic writings runs on the rims of the central decorative scheme and shows a verse from the Qur'an, *إِنَّ الصَّلَاةَ تَنْهَىٰ عَنِ الْفَحْشَاءِ وَالْمُنْكَرِ وَلَذِكْرُ اللَّهِ أَكْبَرُ*, Qur'an XXIX/45. *Indeed, prayer prohibits immorality and wrongdoing, and the remembrance of Allah is greater. And Allah knows that which you do, Allah has spoken in truth.* Four squares intersect Kufic band exhibiting square Kufic inscriptions reading *عمل ابن غيبي- التويرزي* made by *ibn Ġaybī-al-tawrīzī*³⁰. al-Tawrīzī, the craftsman, put his name in other Mamluk pottery wares from the same period³¹.

[FIGURES 3A&B]

A wooden slab on the top of a pulpit

Place: Mosque of ABŪ -l-'Ilā³² in Bulāq

Date: 890AH/1485AD³³

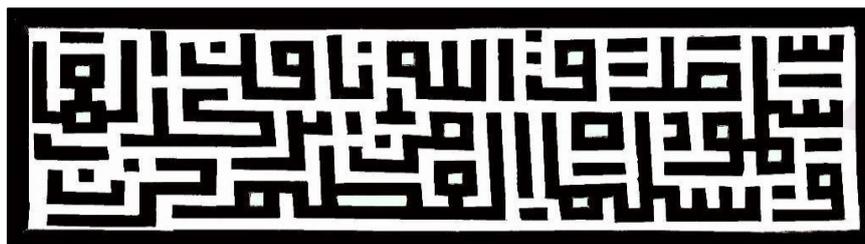
Measurements: 1.20m x 40cm

Technique: Wood inlaid with ivory

Publication: Unpublished- only a part of the writing is read³⁴.



[FIGURE 3A]: A wooden slab on the top of a pulpit in the Mosque of ABŪ -l-'Ilā
Taken by the researcher



[FIGURE 3B]: A drawing of the previous panel. Done by the researcher.

³⁰HERZ 1907: 223-224; YŪSUF 1970: 117-120; 'ABD AL-ḤALĪM 1991 a: 175-178

³¹JENKINS 1984: 110-112; ŠĪHAH 2013: 63-67.

³²Husayn Abi 'Alī known as Abi-l-'Ilā, the pious, the most venerated as he was called by the Sufis. He lived during the sultanate of al-Ašraf Qāyṭbāy in his own cell, where he spent worshipping about 40 years in his own cell of a blocked door; only a small window opened. He had many disciples, such as Ḥawāḡā ibn Qanīš al-Burulūsī who built a small *zāwīya* for the Šayḫ. He was buried in his own *Zāwīyah* in Bulāq adjoining the coast of the River Nile in the 9th AH/15th AD Century. al-Ša'rānī N^o. date: 80. As noted by Ḥasan 'Abd al-Waḥḥāb, the present-day mosque is dated to 890AH/1485AD. 'ABD AL-WAḤḤĀB 1948: 276.

³³'ABD AL-WAḤḤĀB 1948: 276

³⁴Dr Alā' 'Abd al-'Āl only mentioned a part of the script in his dissertation. Moreover, he did not analyze the alphabets and the style of writing. 'ABD AL-'ĀL 2010: 592, 938.

Description: It is a rectangular wooden slab located on the top of the pulpit of the Mosque of Abū al-Ilā. The inscription is rectangular of a geometric Kufic script inlaid with ivory on a wooden background, and the frame is also inlaid. The writing reads from right to left as usual in Kufic models, representing a verse of the Qur'an finalized in an invocation:

وَسَلِّمُوا تَسْلِيمًا. صدق الله العظيم – يا قن(?) من بركة حزن لقمان(?)

Salute him with all respect-God Almighty has spoken the truth. I bear certainty (?) from the blessing of the sorrow of Luqman(?). In the first part, the panel houses the last part of the Quranic verse *وسلمو تسليما- صدق الله العظيم and salute him with all respect-God Almighty has spoken the truth»³⁵*. When seeing the pulpit, the beginning of the verse is not found³⁶, indicating that supposedly another one was assembled and stuck in a certain part from the pulpit, but it is lost. Another possible reading of the second part of the phrase could be read *من* *من بركة حرب المعار(?)* *who gained the blessing of the wars of (?).* In any case, the two possible readings should be taken into consideration as parts of the Sufi conception of the words at that time.

The rectangular panel is framed with a minute frieze of foliate motifs based on small-stylized leaves. The lower part of the panel is framed by another small band with the Nash inscription. It carries the name of the carpenter of the minbar *علي ابن طنين 'Ali ibn Tanin* and reads

«نجارة العبد الفقير إلى الله تعالى الراجي عفو ربه الكريم علي ابن طنين بمقام سيدي حسين أبو علي نفعنا الله»

The woodwork of the poor to Almighty Allah, seeking the mercy of his God 'Ali ibn Tanin in the holy shrine of my lord al-Husayn Abū 'Alī may Allah benefit us. As mentioned by Ḥasan 'Abd al-Wahhāb, this is probably the third signature of a professional and talented carpenter on a pulpit up-to-the end of the Mamluk era. The names of the artisans are rather rare and scarcely found in most Islamic artifacts from different eras. The names of the artisans reflect the artisan's school of art. The carpenters were almost acting like artisans and produced numerous examples of wooden artifacts, such as pulpits, doors, and windows using several methods and techniques of carpentry. They used precious materials such as ivory and mother of pearls to shed light on their decorative elements on the panels and lintels. The carpentry in the late Mamluk period ended, especially when the Ottoman sultan Salim I took most of the professional carpenters to Istanbul after his occupation of Egypt in 923AH/1517 AD³⁷.

³⁵ QUR'AN.XXXIII/56

³⁶A visit to the mosque by the researcher on 21/04/2022

³⁷ For more details, see: 'ABD AL-WAHHĀB:1948: 277; 'ABD AL-WAHHĀB 1955: 545-554.

[FIGURES 4 A, B & C]

Battle axe of a member of the Sultan's guards

Location: Kunsthistorisches Museum, Vienna, Austria.

Museum Inventory Number: HJRK_C_113.

Date of Object: 900–904 / AD 1495–1499.

Material / Technique: Iron, gold damascening, heat-blued.

Dimensions: Length: 99.5cm- Width: 20.5cm.

Period / Era: Late Mamluk.

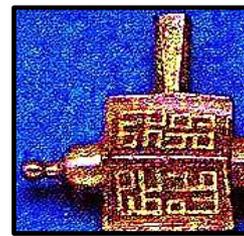
Publication: : Published, but the small geometric Kufic frame is not published.



[FIGURE 4A]



[FIGURE 4B]



[FIGURE 4C]

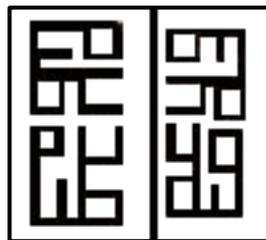
Details Battle axe of a member of the Sultan's guards: Kunsthistorisches Museum, Vienna, Austria

©Museum Inventory N°. HJRK_C_113.

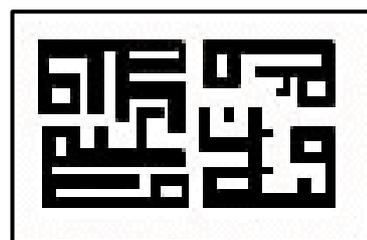
IN: http://islamicart.museumwnf.org/database_item.php?id=object;EPM;at;Mus22;20;en



[FIGURE 4D]



[FIGURE 4E]



[FIGURE 4F]

Drawings in the square panels of the previous axe

©Done by the researcher.

Description: It is an iron battle-axe, which belonged to the guards of the late Mamluk sultan Muḥammad ibn Qāyṭbāy, who ruled Egypt from 901-903AH³⁸ to 1496-1497AD. The blade is encrusted with gold foliate motifs based on some floral scrolls and branches with stems. The epigraphic blazon of the Sultan lies in the middle of the blade of open work technique and reads: «السلطان الملك الناصر ناصر الدين -محمد بن قايتباي - عز نصره» «*The sultan, al-Malik al-Nāṣir Nāṣir al-Dīn Muḥammad ibn Qāyṭbāy, May his victory be glorified*» The handle is slightly

³⁸ ZAMBAUR 1980: 164

decorated; only some hatching makes it easy for the warrior to hold the axe without falling, as well as some foliate designs inlaid with silver. The most obvious part of the axe is a small square frame with geometric square Kufic writings carrying the name of Sultan al-Nāṣir Muḥammad. The shaft is partly faceted and partly fluted a better grip; however, the weapon may have a ceremonial rather than a practical purpose³⁹. Two bands are seen. The first is in the front and has the words of *basmalla* that reads *بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ* and reads in a circular way clockwise from bottom right, up, then left, then down [FIGURE 4D]. The direction moves to the left and then down to the end of the verse. The second frame has square Kufic writings that are so hard to read. The letters are deformed. It is possible that the artisan might make errors and mistakes while trying to get some space or concentrated on the decorative purpose rather than the content. I can assume that has the name of the prophet Muḥammad (PBUH), and the three rightly guided caliphs and read as *عمر و عثمان و علي*⁴⁰. The back has a square frame that holds the square writing in two sections with a four times repeated word «*Muḥammad*» [FIGURE 4E].

[FIGURE 5A&B]

Inscribed wooden lattice window

Date: Egypt 9th -10th H/15th -16th G century.

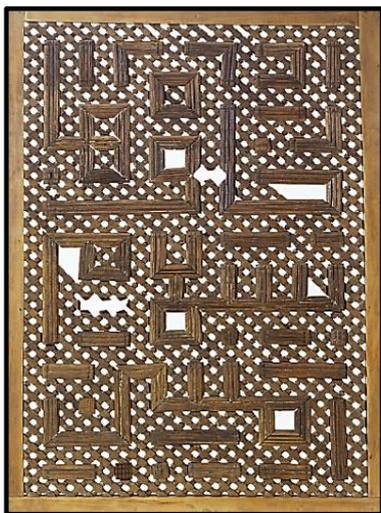
Place: Benaki Museum / Athena.

Inventory N^o: 9286.

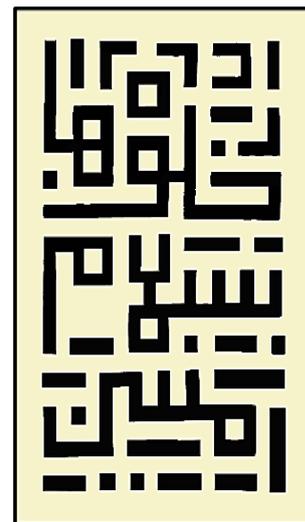
Publication: Unpublished.

Measurements: Height: 113cm- width: 77cm .

Material Technique: Wood carving –open work – assembling.



[FIGURE 5A]: Wooden lattice window
©Benaki Museum [Inventory N^o.9286]



[FIGURE 5B]: Details
©Done by the researcher

³⁹ LEVENSON 1991: 197, PL.87.

⁴⁰This reading is according to the reader's assumption or speculations [FIGURE 4/F].

Description: It is a rectangular wood lattice window considered as a part of a window in a screen or mašrabiya⁴¹. It was supposed to be put in a house or a palace dated to the late Mamluk era. The wooden panel has a wooden frame, and the central part encompasses a rectangular Kufic inscription. A verse of the Qur'an reads (اذْخُلُوهَا بِسَلَامٍ آمِينَ) 46 *Enter ye, here in Peace and Security Qur'an.XV/46*. The formal technique in the background of the script is based on assembled small wooden pieces fixed as the technique used in the mašrabiya. In most secular Mamluk constructions, one could observe this type of windows. This form of windows was seen also in the religious constructions and served as a screen. Walls were put in the maqṣūra of the mausoleums and the spaces between the columns of the arcades⁴². The background of the writings was made of assembled wood units creating geometric formations.

The mašrabiya motifs became one of the focal elements in both the secular and religious Mamluk establishments, confirming both social and religious ideas of Islam and Islamic arts. Later, it became one of the most traditional elements in Islamic architecture, besides its decorative role. It also continued to fulfill its traditional functions, such as circulating air, controlling light, and enabling occupants to retain contact with the outside while preserving their privacy.

The mašrabiya is manufactured by many techniques, e.g., piercing and fixing of two parts; the upper is made of pierced wood, and the lower is made of solid wood⁴³. In the late Mamluk period, the Madrasah of Qāyṭbāy had a rectangle writing on the screen wall of the *Mazmala*⁴⁴.

V. THE ANALYTIC STUDY

The previously described artifacts show characteristics; their shapes, the forms of the letters, and content of each panel vary. The analytic study's methodology starts with the alphabetic analysis of each text, clarifying the crucial changes in the form and content of each text. The analytic methodology proved that obvious changes occurred in the style and forms of the letters, and the content of each panel. **[FIGURES 1 A&B]. A square panel with colored marble inlay around central square- Kufic inscription**

Alphabetic Analysis

The inscriptions are encrusted in a square panel of colored inlaid marble in opaque green **[FIGURE 1A]**. As mentioned before, the phrase forms three repeated words and starts from the center, moving to the corners of the panel, and ending in the four sides of the interior square area. The writing starts from the center by *توكلي* *my trust* repeated four times on the outside corners of the square. The writing then continues with *علي* positioned

⁴¹For more details on the Mašrabiya and its technique and styles. AŠŪR 2018: 245-253.

⁴²Examples could be seen in the Mosque of al-Maridānī and the Azhar Mosque from the works of Qāyṭbāy. CRESWELL 1951: 39; ABŪ SEIF 2007: 185, FIG.133.

⁴³ AŠŪR 2018 :245-253.

⁴⁴ The writings emphasize the šahhādah. See: 'ABD AL-ḤALĪM 1991 a: 312-317.

at the center of the square. The phrase then ends in *خالقي* *Allah, My Creator* repeated four times rotationally on the four sides of the panel [FIGURE 1B]. The final *alif*

Letter	Isolated	Initial	Medial	Final
<i>Alif</i>				
<i>Tā'</i>				
<i>ḥā'</i>				
<i>āyn</i>				
<i>Qāf</i>				
<i>Kāf</i>				
<i>Lām</i>				
<i>Wāw</i>				
<i>Yā'</i>				

[TABLE 1]: Done by the researcher

in *خالقي* is shown like a vertical stroke perpendicular to the horizontal line of the letter *ḥā'*. This form was found in the early types of the Iranian models, as seen in the writings of the main portal of the Mausoleum of Ustād Ali at Samarkand (762-782AH/1360-1380 AD)⁴⁵ since the straightening of the angular letters became the basis of the geometric Kufic. It is also shown in the same common form during the early Mamluk and late Mamluk models, as seen in the Mosque of al-Mu'ayyad Ṣayḥ⁴⁶ and all the Mamluk examples found in the religious edifices. The initial *tā'* in *توكلي* forms two strokes; one perpendicular to the other without dots. The letter is shown in this way in the late Mamluk models, as seen in the tile bearing the name of Ibn Ġaybī al-Tawrīzī⁴⁷ [FIGURES 2A&B]. The initial *ḥā'* in *خالقي* forms a half square opened on the left side, forming two right angles. The letter resembles its twin *ḥā'* in the early Iranian models in form and shape⁴⁸. It appears when reading the word Muḥammad in different edifices, especially in the early Mamluk period in the Mausoleum of Qalāwūn⁴⁹ [FIGURE 6], the back of the minbar of Aq Sunqur [FIGURE 8], and the walls of

⁴⁵ TAL'AT 2003: 190, PL.9.

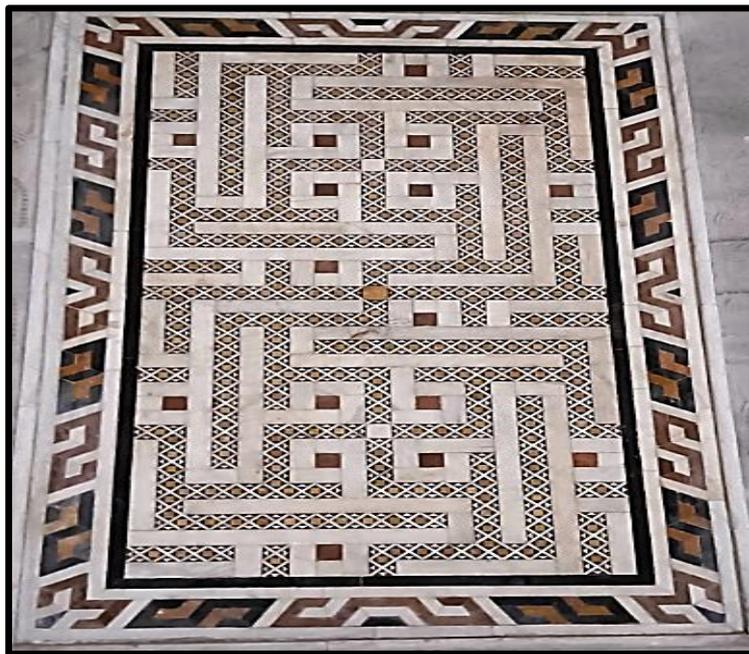
⁴⁶ ROGERS BEY 1889: N^o.1-8.

⁴⁷ TAL'AT 2003: PL.7.

⁴⁸ ŠĀFI' 2020: PLS.27 -28 .

⁴⁹ CRESWELL 1978:193; ROGERS BEY 1889: 104, N^o.8; MAJEED 2006:186-188; ABŪ SEIF 2007:139.

the Qibla in the Maridānī Mosque⁵⁰. The initial *ʿAyn* in علي is shown to resemble the letter *ḥā'* that takes the shape of a half rectangle attached to a lower vertical stroke. It is shown in the early Bahari Mamluk examples in the neck of the Turba al-Sultānīyah, which bears the names of the four rightly guided caliphs of Islam⁵¹. It is also shown in the same form in *Āyat al-kursi* from the Baqarah chapter in the Holy Qur'an, found on one of the panels of the vestibule in the Mosque of al-Mu'ayyad Ṣayḥ⁵². The medial letter *qāf* in خالقي is shown in the form of a square with an elongated line tangent to the following letter. This form of letters is shown in the prototype fixed above the entrance vestibule in the Mosque of al-Mu'ayyad Ṣayḥ⁵³.



[FIGURE 6]: Marble slab- Qalāwun's Mausoleum. Taken by the researcher

The initial *kāf* in توكلني takes the shape of the letter *ʿayn*, but it mainly has a twisted movement to be like the letter "S" and tangent to the base of the following letter. Its style emerged from the early Iranian models as seen in the core of the mihrab of the Mosque of Aštrakan⁵⁴.-The letter *lām* in the word خالقي has two forms in the inscriptions; the first is the initial, which takes the form of a long stroke perpendicular to a horizontal base. The second is the medial *lām* in توكلني which takes the shape of a vertical line perpendicular to a horizontal base, but the medial *lām* in the

⁵⁰ MAJEED 2006:186-187.

⁵¹ ABD AL-ḤALĪM 1991 a: PLS.47, 49.

⁵² ROGERS BEY 1889: N^o.3.

⁵³ ROGERS BEY 1889: N^o.3/a; ABD AL-ḤALĪM 1991 a: 70; ABD al-'ALĪM 1994: PLS.91-92.

⁵⁴ The initial *kāf* in the Quranic verse in the core of the mihrab ليظهره علي الدين كله to proclaim it over all religion is mainly angular and has four right angles. ŠĀFI' 2020: PL.28.



[FIGURE 7]: The Mosque of al-Tanbuḡā al-Mardānī- Square Kufic panel above the south door.
IN: <http://www.islamic-art.org/PhotoArchive/DisplayImages.asp?photoid=972&qualityID=5> Accessed on 02/04/2022



[FIGURE 8]: Marble panel back to the pulpit- the Mosque of Āq Sunque. Taken by the researcher



[FIGURE 9]

&



[FIGURE 10]

Marble panels on the walls flanking the main entrance in the Madrasah of Sultan Hasan. Taken by the researcher.

The word *علي* is quite different, seen like the letter "L" in the four times repeated *علي* running crosswords in the center of the panel. The two medial *lām* are shown extensively in the early Iranian models, as seen in the base of the minaret of the Great Mosque of Mardin (572AH/1176)⁵⁵ and the early Irānian models in the religious buildings, as seen in the *šahādah* in the mihrab of the mosque of Aštrakān⁵⁶. The medial *lām* in *علي* is rare to be found in this form in the Mamluk examples, as seen in the *šahādah* in some of the early Mamluk Monuments, such as the walls of the portal in the Madrasah of Sultan Hasan [FIGURE 10]⁵⁷.

The artisan intended to apply this formation on the final letter to form a decorative centralization of the four words *علي* to be like rays. This formation became one of the characteristics of the late Mamluk style of writing. The final letter *wāw* in *توكلي* is shown in its standard form as a knotted square and turns downwards. It is shown in the same form in the early Bahary Mamluk models, especially in the *šahādah*⁵⁸[FIGURE 10] and in the Mosque of al-Mu'ayyad Šayḥ⁵⁹.

The final letter *yā'* in the three words *توكلي علي خالقي* *I bear trust in Allah, my Creator* makes an inclination to save spaces for writing. In the word *توكلي*, the final *yā'* is broken to set four times on the outside corners of the square. The final *yā'* in *علي* is inclined downwards by the calligrapher to save some space. It is repeated four times with the other analogies. The final *yā'* in the word *خالقي* is seen broken and inclined to set parallel to the sides of the square. The phrase is repeated four times in the panel as one of the focal characteristics of the late Mamluk models of square Kufic.

Rogers Bey describes a similar object that he found on a marble panel in a ruined mosque in *šari' al-Ḥamzāwiy* under the debris; a tile that was a part of a ruined drink basin

⁵⁵ MAJEED 2013: FIG.20[2]

⁵⁶ ŠĀFI' 2020: PLS.27-28.

⁵⁷ ABD AL-ḤALĪM 1991 a: PLS.43-44.

⁵⁸ MAJEED 2006: 212-214.

⁵⁹ ROGERS BEY 1889: N^o.1

for animals carried the same phrase⁶⁰. However, he didn't mention the date of the ruined mosque, which seemed to date back to the late Mamluk era. This tile was not supposed to be used as a part of a drinking basin because of its various colored incrustated surfaces; therefore, it is probably a part of a wall in a religious building, either a mosque or a madrasah dated to the late Mamluk period.

[FIGURES 2A, B & C] A ceramic tile of underglazed pottery imitating Chinese porcelain carried the name of the artisan Ibn Ġaībī al-Tawrīzī

Alphabetical analysis

The initial letter *alif* in *ibn* [FIGURES 2A & B] and *al-tawrīzī* is shown in the form of a vertical stroke applied in a traditional form in the early Bahary Mamluk era, as seen in most of the inscriptions in the Mosque of al-Maridānī⁶¹, *al-Turba al-Sulṭāniya*⁶². The letter *alif* was shown many times in the early records of the mosques and graves, especially in Iran and Isfahān⁶³. The letter was also shown in this form in the late Mamluk era, especially in the Mosque of al-Mu'ayyad⁶⁴.

⁶⁰He read the text as *توكلت علي خالقي*, but scrutinizing shows that the letter *tā'* in *توكلت* is not found, it is mainly *yā'* but the artisan intended to make a decorative harmony in the interior subject. ROGERS BEY 1889: 104, N^o.7.

⁶¹'ABD AL-'ĀL 2010: 62.

⁶²'ABD AL-'ĀL 2010: 66.

⁶³SAKKAL 2019: 59.

⁶⁴ROGERS BEY 1889: FIG.1.

Letter	Isolated	Initial	Medial	Final
<i>Alif</i> الف				
<i>Bā'</i> باء			ب	
<i>Tā'</i> تاء			ت	
<i>Rā'</i> راء	ر			
<i>Zay</i> زاي			ز	
<i>Ayn</i> عين		ع		
<i>Ġayn</i> غين		غ		
<i>Lām</i> لام				ل
<i>Mīm</i> ميم			م	
<i>Nūn</i> نون				ن
<i>Wāw</i> واو			و	
<i>Yā'</i> ياء			ي	ى

[TABLE 2]: Done by the researcher.

The medial letter *tā'* is shown in a horizontal line. For the first time, one could see the letters dotted; however, the character was not found in the early Mamluk examples of geometric Kufic. The early Iranian letters like *tā'* are not dotted, especially those found in the transitional zones of the dome of the Mosque of Varamin in Tehran 722-726AH/1322-1326AD⁶⁵. The isolated letter *rā'* in 'التوريزي' was shown in its traditional form as two long strokes perpendicular to each other. It is shown with no change even in the early examples like those of al-Maridānī⁶⁶ [FIGURE 7] and al-Sultān Ḥasan⁶⁷ [FIGURE 9]. The isolated letter *zāy* is in the form of a vertical stroke, but it is shown here with a dot. It resembles the letter *rā'* in the form of two perpendicular lines. It is rare to see the dotted letters in the early Mamluk period; however, it could be extensively seen in the late Mamluk period. The initial letter *ayn* in عمل makes a square form opened on the left side, as commonly seen in the late Mamluk inscriptions. However, the style of the letter could be seen in the early Iranian and Ilkhanide monuments, as seen in the recesses of the flanks of Ashtrakān Mosque⁶⁸.

⁶⁵A verse from the Qur'an *al-fath* chapter ان فتحنا لك فتحاً مبيناً is inscribed on the drum, mainly in the inner surface of the mosque. The letter *tā'* is not dotted. ŠĀFI' 2020: 36, FIG.39.

⁶⁶ ABD AL-ḤALĪM 1991 a: PL.39.

⁶⁷ZAKĪ 2012: FIGS.12A, B.

⁶⁸Šāfi' 2020: 107, FIG.28.

On the other hand, the artisan *ḡaybī*, who took the epithet *al-tawrīzī*, or formally *al-tabrīzī*, acquired his talent from *Tabrīz* in Iran⁶⁹. This issue proves the strong relations between the Mamluks in Egypt and the eastern territories. Thus, Iranian traditions were transmitted to the arts of the Mamluks, especially after the Iranian migrations because of the Mongols' attacks. In addition to the Chinese impact on the arts of the Mamluks and the great artistic bond between Egypt and China, the Muslim artisans perfectly imitated Chinese porcelain, especially in Iran, by the Safavids⁷⁰. The final letter *lām* in *عمل* shows a vertical stroke perpendicular to another horizontal one making a right angle. The medial letter *mīm* is shown as a small square in the middle of the word *عمل*. This form could be seen in the early Mamluk examples, such as in the word *محمد* in the Mausoleum of Qalāwūn [FIGURE 6]⁷¹.

The medial letter *wāw* in *التوريزي* takes a quadrangular form tangent to a small horizontal stroke. The form of the letter wasn't shown in the early Egyptian or Iranian examples. The stroke of the letter stands horizontally in alignment with the lower base, unlike the traditional *wāw* [FIGURE 2C], which also occurs in the Iranian arts⁷². In this tile, the style of the letter *wāw* is extremely different; thus, it is only seen in the late Mamluk examples. The final letter *yā'* in *التوريزي* is shown in its normal form, which could be seen in the early types of Kufic script like the letter «Z» with five right angles. It is mainly an Iranian innovation found at the entrance of the Mosque of Ashtrakān⁷³.

The medial *yā'*, in the same word, takes the form of a vertical stroke perpendicular to another horizontal one. The letter is dotted, a style that could be seen for the first time in the late Mamluk models⁷⁴. Analyzing this text showed that it was mainly influenced by the Iranian models.

[FIGURES 3A& B] A wooden slab on the top of a pulpit in the Mosque of Abū -l- 'Ilā Alphabetic analysis

The inscriptions [FIGURE 3B] were applied in rectangle Kufic script within a rectangular frame. They were encrusted in ivory, showing geometric rectangular Kufic script that could be read from right to left as typical Kufic inscriptions.

⁶⁹ALI YŪSUF 1970: 117-120.

⁷⁰ḤASAN 2014: 18-35.

⁷¹CRESWELL 1978: PL.70; 'ABD AL-ḤALĪM 1991 a: PL.2.

⁷²SAKKAL 2010: FIGS.120b1-5

⁷³ The final letter *yā'* could be seen in a panel adorning the right flank of the entrance, which has a panel surmounts a recess in the form of a mihrab and the entrance of this mosque in a phrase *هُوَ الَّذِي أَرْسَلَ رَسُولَهُ بِالْهُدَىٰ وَدِينِ الْحَقِّ لِيُظْهِرَهُ عَلَى الدِّينِ كُلِّهِ وَلَوْ كَرِهَ الْمُشْرِكُونَ* It is He who sent His Messenger with guidance and the religion of truth to manifest it over all religion although those who associate others with Allah dislike it, QUR'AN LXI/9; ŠĀFI' 2020: PLS.27-28.

⁷⁴ By reading and analyzing the styles and the contents of the letters in the early Mamluk models in Cairo, the dots on the letters were not found. I think the artisan put the dots to fill the empty spaces between the letters and the phrases.

Letter	Isolated	Initial	Medial	Final
<i>Alif</i>	ا			آ
<i>Ba'</i>		ب		
<i>Ta'</i>		ت		
<i>Ta' or ta' marbūtah</i>				ة
<i>hā'</i>		هـ		
<i>dāl</i>			د	
<i>Rā'</i>			ر	
<i>zāy</i>			ز	
<i>sīn</i>		س	س	
<i>ṣad</i>		ص		
<i>Za'</i>			ذ	
<i>āyīn</i>			ع	
<i>qāf</i>			ق	ق
<i>kāf</i>			ك	
<i>lām</i>		ل	ل	ل
<i>mīm</i>		م	م	م
<i>nūn</i>				ن
<i>Hā'</i>				هـ
<i>wāw</i>				و
<i>Yā'</i>		ي	ي	

[TABLE 3]: Done by the researcher.

The isolated letter *alif* in the word الله and العظيم takes the form of a vertical stroke in the usual form of the Mamluk letters. This type of letters is shown in the phrases of *ṣahādah*⁷⁵ as seen in the early Bahary Mamluk models, such as the Mosque of al-Ṭanbuġā al-Maridānī⁷⁶ and the forms in the panels of the madrasah of Sultan Ḥasan⁷⁷. The second type is the final *alif* in the word تسليما that takes the same form of a vertical stroke.

The initial *bā'* in بركة takes the form of two vertical strokes perpendicular to a horizontal base. In the early Mamluk examples, this letter wasn't shown widely but instantly could be noticed in a panel at the entrance of *al-turbah al-sulṭāniyah*⁷⁸. The initial *tā'* in تسليما is similar to the previous *bā'* of two vertical strokes perpendicular to a horizontal base. The form of the letter is seen in the late Circassian models, such as the Mosque of al-Mu'ayyad Ṣayḥ⁷⁹. The letter *tā'* is seen in its final form. Possibly it gives the two conceptions either *tā' marbūṭah* or the normal letter *tā'* that comes at the end of the word; therefore, the word could be read as بركة *barakah*, or بركت *barakat* because the form of the *tā'* is a little bit confusing in reading as it takes a form of a reversed "L" shape. If we consider the reading بركت is the right one, it emphasizes the pronunciation and writing of the final *ta'* in the holy Qur'an⁸⁰.

The initial *hā'* in حزن or حرب is represented in its typical form of a rectangle opened on the left side. This form was shown in the early models, such as the word «*Muḥammad*» in the early Bahary Mamluk examples like that of the walls of the Mausoleum of Qalāwūn [FIGURE 6], the dome of Zayn al-Dīn Yūsuf [697AH/1298AD], and the back of the pulpit of the Mosque of Aq Sunqur^{748AH/1347AD}. It reappeared in the Circassian Mamluk period in the mihrab of the Ḥānqāh of Qansuwah al-Ġawrī 908AH/1503⁸¹. The medial *dāl* in the word صدق is shown in a new form; a special case that mainly differs from those found in the early Mamluk models. This one implements an elongated vertical stroke in the form of reversed letter «L» considering it as a step of the

⁷⁵ The witnessing is seen for the first time in square Kufic in the Minaret of Quṭb al-Dīn Maḥmūd bīn 'Imād al-Dīn Zengī (598 AH/1202 AD) in the plains of Sinjār. MAJEED 2006: 211.

⁷⁶ ABD AL-ḤALĪM 1991 a: PL.39

⁷⁷ MAJEED 2006: 212, FIGS.26-27a .

⁷⁸ ' ABD AL-ḤALĪM 1991 a: PL.49.

⁷⁹ ROGERS BEY 1889: N^o.3.

⁸⁰ In al-Rūm chapter of the Holy Qur'an, Allah, the Almighty says: فَأَقِمْ وَجْهَكَ لِلدِّينِ حَنِيفًا فِطْرَتَ اللَّهِ الَّتِي فَطَرَ النَّاسَ عَلَيْهَا لَا تَبْدِيلَ لِخَلْقِ اللَّهِ ذَلِكَ الدِّينُ الْقَيِّمُ وَلَكِنَّ أَكْثَرَ النَّاسِ لَا يَعْلَمُونَ ۝ Allah's handiwork according to the pattern on which He has made mankind: no change (let there be) in the work (wrought) by Allah; that is the standard Religion, but most among mankind understand not. Qur'an.XXX/30 . The final letter *ta'* is also mentioned in this form in Maryam chapter from Holy Qur'an ذِكْرُ رَحْمَتِ رَبِّكَ عَبْدَهُ زَكَرِيَّا A mention of the Mercy of your Lord to his worshiper Zachariah, (2). Qur'an.XIX/2.

⁸¹ Tehnyat Majeed called the formula of the prophet Muḥammad PBUH in the square Kufic panels, such as *char Muḥammad*. She stated that this formula occurred in the square Kufic panels of many places in Cairene edifices. She noted that the straight lines of the *hā'* and the *dāl* are meaningless. MAJEED 2006: 186-187.

evolution of the letter. In the Bahary models, the letter took the form of a small rectangle opened on the left side, as seen in the *ṣahādah* in the Mosque of al-Maridānī⁸². However, in the late Circassian period, the letter took the same form of a small rectangle opened on the left side as seen in the *ṣahādah* of the inner core panel of the mihrab in the Ḥānqāh of al-Ġawrī⁸³.

The medial letter *rā'* in the word برکه is represented like a reversed letter «L». It is shown in its normal form from the early Mamluk models, as seen in the *ṣahādah* examples in the Mosque of al-Maridānī⁸⁴ [FIGURE 7]. The final *zāy* in the word حزن (or *rā'* as حرب) is shown as its similar *rā'* as a horizontal bar perpendicular to a vertical base. The dot of the letter is seen above the letter. The documented data revealed no evidence of the occurrence of this letter in any panel or inscriptions from the Bahary Mamluk period. It was recorded on the panels of the late Mamluk period, as seen in the tile bearing the name of Ibn Ġaybī al-Tawrīzī⁸⁵ [FIGURES 2A&B], while the *zāy* in al-Tawrīzī is quite similar to that in the pulpit of Abū -l-ʿIlā [FIGURE 3B].

The medial letter *sīn* in تسليما is shown in its ordinary form of three vertical strokes set perpendicularly to a horizontal base. This form is seen in the early Iranian types of letters in the core of the mihrab of the Mosque of Ashtarkān⁸⁶. The early types of the *ṣahādah* in the Bahary Mamluk examples were used in the entrance of the Madrasah of Sultan Ḥasan [FIGURE 10]⁸⁷ with the same form of the letter that mainly continued until the late Mamluk period. The initial *ṣād* in the word صدق is seen as a small rectangle resembling the *mīm*. No records were shown in this letter in the Bahary examples. However, in the Iranian models, the letter is depicted in the same form with an unequal side rectangle in the stucco mihrab of the Mosque of Aṣṭrakān⁸⁸. The medial *ayn* in العظيم takes the form of a square with a vertical stroke attached to the following letter.

The medial letter *qāf* in ياقن (or it could be medial *fā'* as نافل and لقمان represented in three forms; the first resembles the *ayn* (as in the form of a square with an elongated neck. The second is a square with a vertical stroke that only touches the left side of the word. This form could be observed in the panel from the entrance of the Mosque of al-Muʿayyad Ṣayḥ⁸⁹. The second form is seen in the word ياقن, which is represented in the form of a square with a neck tangent to the left side of the word. The third form is the final *qāf* in the word صدق is presented in the form of a small square attached to a curved base shown as a square opened on the upper top. In the late Mamluk period, the model of the final *qāf*

⁸² ABD AL-ḤALĪM 1991 a: PL.38.

⁸³ ṢALĀḤ AL-DĪN 2007: PL.LII.

⁸⁴ ABD AL-ḤALĪM 1991 a: PL.38.

⁸⁵ JENKINS 1984: 106, PL.10/d.

⁸⁶ ṢĀFĪ 2020: 106, PL.27.

⁸⁷ MAJEED 2006: 212, FIGS.26-27a.

⁸⁸ ṢĀFĪ 2020: PL.34, FIG.103.

⁸⁹ ROGERS BEY 1889:N^o.3; MUNTASIR 2000:PL.58.

could be noticed in the final words from the chapter of the Qur'an صدق الله العظيم as seen in a verse from the Qur'an written in a panel of the vestibule in the Mosque of al-Mu'ayyad Šayḥ⁹⁰. The initial *kāf* in بركة forms two horizontal intersected rods located within two vertical angular lines forming the letter «S». This form is shown in the early Iranian types as seen in the cavity of the mihrab of the Mosque of Ashtrakān⁹¹. This form also occurred in the late Mamluk in the Mosque of al-Ġimālī Yūsuf⁹². The letter *lām* is shown in two forms; the first is the initial in the words لقمان-العظيم الله shown in the form of a vertical elongated stroke mainly attached to the following letter by a horizontal line. The form of the letter is shown in the early Iranian models, as seen in the mihrab of the Mosque of Ashtrakān⁹³. It is repeated in the Bahary Mamluk examples, such as the Mosque of al-Maridānī and Sultan Ḥasan⁹⁴. The second type is a medial *lām*, as seen in the words الله and تسليما represented in the same form as the initial one.

The letter *mīm* (or *'ayn* as it could be العمار) has two forms; the first is the medial in لقمان or العمار and is shown as a square attached to a vertical bar. The early Iranian types show this form of *mīm* as seen in the Mosque of Ashtrakān⁹⁵ and the word *Muḥammad* in the Mausoleum of Qalawūn [FIGURE 6]⁹⁶. The medial *mīm* is also seen in the word تسليما in the same form. The second form, which is the final one in the word العظيم is represented in the form of a square attached to an emerging horizontal stroke. The final *nūn* or *rā'* as it could be العمار in the text is seen in the words (لقمان-العمار -حرب)،(حزن) or ياقن- نافل and takes the form of a square opened on the top and has its dot in its gap. This form is seen in the early Iranian prototypes, especially the mihrab of the mosque of Aštrakān⁹⁷. The letter is seen in the Bahary Mamluk models of writing in the drum of the dome of *al-sultāniyah*, but the letter is seen as a square opened on the top and twisted upwards without the dot⁹⁸. The

⁹⁰ It reads في مقعد صدق عند مليك مقتدر In a seat of honor near a Sovereign Perfect in Ability. Qur'an.LIV/55 in a panel fixed in the wall of the entrance vestibule. ROGERS BEY 1889: N^o.3/a; 'ABD AL-ḤALĪM 1991 a: 70; 'ABD AL-'ALĪM 1994: PLS.91-92.

⁹¹The initial *kāf* is seen in a panel inside the mihrab, exhibiting a verse from surat al-Faṭḥ in the Holy Qur'an هُوَ الَّذِي أَرْسَلَ رَسُولَهُ بِالْهُدَىٰ وَدِينِ الْحَقِّ لِيُظَاهِرَهُ عَلَىٰ الدِّينِ كُلِّهِ. It is He who sent His Messenger with guidance and the religion of truth to manifest it over all religion. QUR'AN.LXVIII/28; ŠĀFI' 2020: 108-109, FIG.28.

⁹²'ABD AL-ḤALĪM 1991 a: 295, PL.88.

⁹³ The initial *lām* could be observed in the word of the word of Almighty الله Allah in the Shahada seen in the cupola of the mihrab لا اله الا الله- محمد رسول الله in a form of a vertical stroke perpendicular to a horizontal base and in the word لله in its initial form. It is shown in its medial form in the words - علي - كله in the verse N^o.28 from Surat al-Faṭḥ ليظهره علي الدين كله [see note 93]. ŠĀFI' 2020: 109, FIGS.27-28.

⁹⁴ MAJEED 2006: 213-214, FIGS.25-26.

⁹⁵ ŠĀFI' 2020: 111.

⁹⁶ MAJEED 2006: 195.

⁹⁷ It mainly occurred in the words المشركون، حسين، حسن، عثمان with a square form opened from the top and a dot hollowed inside. ŠĀFI' 2020: FIG.29.

⁹⁸'ABD AL-ḤALĪM 1991 a: 163, PL.49.

final *nūn* is seen in the same form in a marble slab of colored faïence preserved in the King Faiṣal Research Center of Islamic Studies and shown with the dot on the core of the letter⁹⁹.

In the final *hā'* in the word of Almighty Allah صدق الله العظيم in الله, the letter is in the form of a square and seen in its ordinary form in the early Bahary Mamluk examples as seen in the Mosque of al-Maridānī [FIGURE 7]¹⁰⁰.

The final *wāw* in the word وسلموا has never been changed since the occurrence of the early Iranian models in the mihrab of the Mosque of Aštrakān¹⁰¹. This form is extensively shown in many examples of the Bahary period, as seen in the Mosque of al-Maridānī and Sultan Ḥasan [FIGURES 7&9]¹⁰² using the same composition as this one of Abū-l-ʿIla. The same form occurred in a panel preserved in the Museum of the University of Pennsylvania¹⁰³. The letter *yā'* has two forms. The medial *yā'* in تسليم and العظيم is seen as an elongated square opened on the lower end and is mainly attached to the following letter with a vertical stroke.

[FIGURES 4A, B&C] A battle axe of a member of the Sultan's Guard

Alphabetic Analysis

Letter	Singular	Initial	Medial	Final
<i>Alif</i>				
<i>Bā'</i>		ل		
<i>Ḥā'</i>		ح	ح	
<i>Dāl</i>				د
<i>Rā'</i>				ر
<i>Sīn</i>			س	
<i>lām</i>		ل	ل	
<i>Mīm</i>			م	م
<i>Hā'</i>				ه

[TABLE 4]: Done by the researcher

⁹⁹ It is seen in a Qur'an verse ان المتقين في جنات ونهر Indeed, the righteous will be among gardens and rivers, in the word المتقين . QUR'AN. LIV/54.; 'ABD AL-ḤALĪM 1991 a: 186, PL.54.

¹⁰⁰ MAJEED 2006: 212.

¹⁰¹ ŠĀFI' 2020: FIG.27.

¹⁰² MAJEED 2006: 212.

¹⁰³ It is a panel of red, black, and white stone with pieces of mosaic forming the corner decorations. The inscription says «لا اله الا الله محمد رسول الله صلي الله عليه» «There is no God but Allah, and Muḥammad is His Messenger. Allah may bless him» is rendered in a geometric form. It carries Inventory N^o. NEP58. It was purchased from YOUSSEF BEY CHIHA 1923. 'ABD AL-ḤALĪM 1991 a: 195, PL.55.

The inscription is written in a square type of writing on two sides; the front and the back. The front is mainly comprised of two sections. The first is the *basmalla* and reads from down upwards. The second is hardly readable, but most probably it contains the names of Muḥammad محمد -Umar عمر -Uṭmān عثمان -Alī as the artisan mistakenly forgot to incrust the name of Abū Bakr to fit available spaces in the frame. Therefore, the analysis is concentrated on the style, and the forms of the readable words displaying the *basmalla* and the word of Muḥammad محمد repeated four times. The inscription is applied on an iron surface inlaid with gold. The singular letter *alif* in the word الرحمان and الرحيم takes the form of the classic vertical stroke, as seen in most of the Mamluk examples and models. The final *alif* is also seen in الرحمان, which is not written in the opening of the Holy Qur'an *al-fātiḥah*. The initial *bā'* in the word بسم forms a vertical stroke perpendicular to a horizontal line, as seen in most of the early Mamluk models, such as the Sultaniya Mausoleum¹⁰⁴.

The letter *ḥā'* has two forms, the initial one in الرحمان and الرحيم, which is shown in a unique form like a rectangle opened on the left side, and the right wing is slightly irregular in shape. The *ḥā'* in الرحمان was cut from the left side and first shown in this inscription. The second form is the medial *ḥā'* that is clearly shown as a small rectangle of a 90-degree position, especially in the word «Muḥammad» محمد in the front. This kind of letter might be reduced to get some space in the frame for writing. The second type of the *ḥā'* is shown in the back, as seen in the word «محمد» which is repeated four times [FIGURE 4E]. The letter takes the shape of a square opened from one side. The word is seen as a broken figure, and the main axis is seen after the *ḥā'* and the *mīm* making a central right angle curve. This kind of epigraphic scene is shown in Iranian inscriptions, as seen in the core of the mihrab of the Mosque of Aštrakān¹⁰⁵.

The final letter *dāl* is shown as a square or rectangle opened on one side. A prototype occurred in the early Bahary Mamluk examples, as seen in the Mausoleum of Qalawūn in the word *Muḥammad* formula [FIGURE 6]. Those inscriptions exist in the Mosque of al-Maridānī¹⁰⁶ and the Mosque of Aq Sunqur [FIGURE 8]¹⁰⁷. In the front, the word «محمد» exhibits another form of the letter, seen as a small rectangle opened on one side with a stroke shorter than the other. It could be seen in the models of the 9th H./ 15th G. century as seen in the word «محمد» in the marble slab preserved in the National Museum of Pennsylvania University in Philadelphia¹⁰⁸. The final *rā'* in الرحمان and الرحيم is shown as a straight line, slightly distinctive, in this period. The artisan used to reduce the letters to

¹⁰⁴ ABD AL-ḤALĪM 1991 a: PL.49.

¹⁰⁵The core of the mihrab is filled with three plaques holding the names of the imams محمد وعمر وحسن وحسين

و.عمر ومحمد وجعفر وموسى وعمر ومحمد وعمر وحسن ومحمد وعثمان ŠAFĪ' 2020:FIGS.29, 34.

¹⁰⁶ MAJEED 2006: 209, FIG.18.

¹⁰⁷ ABD AL-ḤALĪM 1991 a: PL.42.

¹⁰⁸ ABD AL-ḤALĪM 1991 a: 192, PL.55.

gain space in the frame. The letter was shown in this way, frequently, in its singular form, as one could see in the *ṣahhādah* of many examples in the Mamluk period. The letter is also shown as a short stroke in a second position at the end of the word الرحمان.

Generally, it could be seen in many ways. However, this form has a unique character as the artisan tried to fit some available spaces for writing in the frame. It could be seen in the Iranian mosques as seen in the cavity of the mihrab of the Mosque of Ashrakān¹⁰⁹. It is worth saying that this style of letters has mostly an Iranian influence. The medial *sīn* in بسم has the form of a horizontal base with three fluted edges. The medial form of the letter could be noticed in the buildings of the 6th H./12th G. century, as seen in the base of the minaret in the Great Mosque of Mardīn 572AH/ 1176-1177AD¹¹⁰.

The letter *lām* is seen in two forms. The initial form in the word of Allah الله is the *basmalla* of the front in the upper frame [FIGURE 4D]. The ordinary form is shown as a vertical stroke perpendicular to a horizontal line. It is shown with no significant changes. The letter *mīm* is shown in two forms: The initial one on the front side above in the word محمد is in the shape of a square and mainly seen before in most of the Iranian models, such as the inscription *ṣahhādah* of the main iwān in the mosque of Feramin¹¹¹. The form is seen in the name of *Muḥammad*¹¹² in the inner walls of the dome *al-qubba al-manṣuriyah* of al-Manṣur Qalāwūn [FIGURE 6] in Bayna-l-Qaṣrayn¹¹³. This model is also seen in the marble panel in the Museum of Pennsylvania¹¹⁴. The back side has the name of *Muḥammad* [FIGURE 4E]. However, the initial *mīm* takes the shape of a square attached to a long stroke to the next letter. The second form is the medial *mīm*, which is shown in four types; the first is a rectangle opened from one side in the words الرحمن and الرحيم; a style is uniquely shown in Islamic arts as if the artisan tried to make it only for decorative purposes. The second type of the medial *mīm* takes the form of a square with two elongated extensions to the previous and next letter, as seen in the name *Muḥammad* محمد on the back side [FIGURE 4E]. The letter *ha'* in the *basmalla* of the front panel [FIGURE 4D] takes the form of a square

¹⁰⁹ The cavity of the mihrab is ornamented with two rectangular panels carrying the names of the four Caliphs of Islam. The final letter *rā'* in the name of ABŪ Bakr has the same form. ŠĀFI' 2020: FIG.30.

¹¹⁰ In the month of Muḥarram 572AH/ August 1176AD, Quṭb al- Dīn al-Ġāzī, the Artuqid ruler of Diyārbekr (today Diyarbakır in eastern Anatolia) built the stone minaret of the Great Mosque of Mardin. On the other lower end of the minaret, a shallow square band occurred showing four lines of the Qur'an وَمَنْ يَتَوَكَّلْ عَلَى اللَّهِ فَهُوَ حَسْبُهُ «And whoever puts his trust in God, regarding his affairs, He will suffice him». QUR'AN, LXIII/3. As mentioned by Tehnyat Majeed, this type of geometric writing is called *ma'āqilī inscription*, which is a highly stylized form of Arabic found predominantly in architecture and characterized by angular letter forms and the absence of both diacriticals and short vowels. However, two features distinguish *ma'āqilī* from ordinary *Kufic*. First, the rectilinear letter forms are more geometric in appearance as they are designed on a square grid. Second, they are ordered on a strict and consistent negative/positive spatial rhythm. MAJEED 2013: 363-366, FIG.20[2].

¹¹¹ ŠĀFI' 2020: 38.

¹¹² Tehnyat Majeed, in her dissertation called the name of Muḥammad as *Char Muḥammad*. MAJEED 2006: 186.

¹¹³ MAJEED 2006: 186.

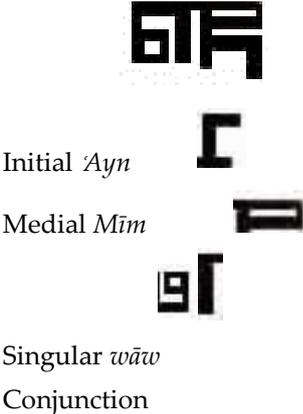
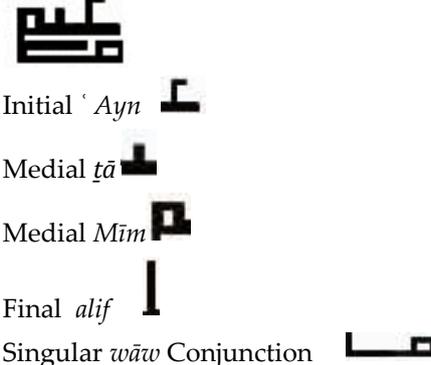
¹¹⁴ For more details on this panel, see: 'ABD AL-ḤALĪM 1991 a: 195, PL.55.

attached to an elongated head set parallel to the previous *lamāt*. It is shown in a unique form supposed to characterize the style of the letters in this period. It is noticeable that the final letters of the *basmalla* were omitted, such as the medial *yā'* in الرحيم and the final *nūn* in الرحمان intentionally by the artisan just to fit available spaces in the writing frame.

For the front of the small panel [FIGURE 4F], the reading of the words in the right section of the panel is somehow problematic. The words are hardly readable. However, I can assume that they can be read as the names محمد and the caliphs عمر – عثمان – علي, from the upper right to the upper left, then lower right and lower left. Here, the direction of the letters starts counter-clockwise from the upper right to the upper left, then lower left and lastly to the lower right.

The previous inscription is hard to read. The names of the rightly guided caliphs could be the estimated interpretation of this reading as they were found in the Mamluk buildings, as seen in the neck of the dome of al-Turba al-Sultāniyah¹¹⁵. So, the names of the caliphs are shown in the Mamluk buildings. The estimated reading of this inscription is the names of Muḥammad (PBUH) and the four caliphs. However, the names of Ali علي and Abū Bakr were omitted, perhaps by the artisan, to fit some spaces in the rectangular frame. The table below shows the estimated reading and analysis for the letters. [TABLE.5]

¹¹⁵ ' ABD AL-HALĪM 1991 a: PL.43-44.

Word	Estimated interpretation
 <p>Initial Mim</p> <p>Medial ḥā'</p> <p>Medial mīm</p> <p>Final dāl</p>	<p>The probable reading of this name is Muḥammad محمد according to the slight presence of the initial <i>mīm</i>, the medial <i>ḥā'</i>, the medial <i>mīm</i> and the final letter <i>dāl</i>. The medial <i>ḥā'</i> could be written in this form intentionally by the artisan to fit the available space for writing, or it could be mistakenly written. [FIGURE 4F]</p>
 <p>Initial 'Ayn</p> <p>Medial Mīm</p> <p>Singular <i>wāw</i> Conjunction</p>	<p>The probable reading of this word is 'Umar عمر, From right to left, starting with the initial 'Ayn, medial <i>mīm</i>, and the final <i>rā'</i> in the form of an elongated vertical stroke. It was not applied in its ordinary form and was put in this way to save space. The conjunction <i>wāw</i> is attached to the final <i>rā'</i> could be the artisan's attempt to fill in some space inside the frame, or the artisan mistakenly wrote it this way. [FIGURE 4F]</p>
 <p>Initial 'Ayn</p> <p>Medial <i>tā'</i></p> <p>Medial Mīm</p> <p>Final <i>alif</i></p> <p>Singular <i>wāw</i> Conjunction</p>	<p>The possible reading of this word is عثمان عثمان the third caliph of Islam. The initial 'Ayn is obvious, like a square opened from the left side. The medial <i>tā'</i> is clearly shown in its ordinary form. The medial <i>mīm</i> is shown like a square with its final completion moved downwards to the final <i>alif</i>. The final <i>alif</i> is curving downwards to fit spaces according to the direction of the word. The <i>wāw</i> conjunction is shown before the word as it is attached to it to be عثمان و as seen in the previous word عمر و [FIGURE 4F]</p>
 <p>the final <i>nūn</i> in <i>Uṭmān</i></p> <p>The conjunction <i>wāw</i> was supposed to be followed by the name of the last caliph 'Ali علي</p>	<p>The possible reading of this word is the completion of the final <i>nūn</i> in <i>Uṭmān</i> عثمان possibly followed by the conjunction <i>wāw</i> and it is supposed to be the beginning of the word علي. However, the artisan didn't find enough space for completing the writing. He also omitted writing the name of Abū-Bakr أبو بكر in order to fit space in the frame. [FIGURE 4F]</p>

[TABLE 5]:Done by researcher

The names of the four caliphs were used in the architectural edifices outside Iran, especially in a stone funerary stela belonging to the Mosque of al-Aliwiyah in Ghazna 451-494AH/1059-1099AD and in the mihrab of al-Nūrī Mosque 568AH/1172AD¹¹⁶. In the Mamluk and late Mamluk eras, the names of the four caliphs could be normally seen in the arts and architecture as a way of venerating the four caliphs of Islam. The idea of inscribing the names of the four caliphs of Islam became one of the formulas in the Mamluk monuments, as seen in the flanks of the entrance in the Madrasah of Sultan Hasan from the Bahri Mamluk era¹¹⁷ and the drum of al-Turba al-Sultaniyah¹¹⁸.

[FIGURE 5/A, 5/B] Inscribed wooden lattice window preserved in Benaki Museum–Athena

Alphabetic Analysis

Letter	Isolated	Initial	Medial	Final
<i>alif</i>				L
<i>Bā'</i>		!		
<i>Ḥā'</i>			Ḥ	
<i>Dāl</i>	Ɔ			
<i>Sīn</i>			س	
<i>Lām</i>			ل	
<i>Mīm</i>		م		م
<i>Nūn</i>			ن	ن
<i>hā'</i>		ه		
<i>wāw</i>			و	
<i>Lām alif</i>				لا
<i>yā'</i>			ي	

[TABLE 6]: Done by the Researcher

¹¹⁶ SAKKAL 2010: FIGS. 1.5/a,b.

¹¹⁷ ABD AL-ḤALĪM 1991 a: PL.44.

¹¹⁸ ABD AL-ḤALĪM 1991 a: PL.47.

The inscriptions [FIGURE 5B] were written in a rectangular wooden screen *mašrabiyyah* in assembling work. The panel is framed with a wood frame. The type of script is rectangle Kufic, and the words are read from up to down.

The isolated letter *alif* ألف in ادخلوها is shown as a normal model in the early Mamluk examples. Also, it is shown in the late Mamluk examples as seen in the panels beside the mihrab of the Ḥānqāḥ of sultan al-Ġawrī¹¹⁹. The initial letter *bā'* باء in بسلام is represented as a vertical stroke perpendicular to a horizontal line. The dot was put underneath. This form of letters could be traced in the early Islamic prototypes, as seen in the core of the mihrab of al-Nuri Mosque in Mūsīl 568AH/1172AD¹²⁰. On the other hand, the letter is shown in Iraqi models in two marble panels discovered in Baġdād¹²¹. The isolated *dāl* in ادخلوها is represented in its regular form like two horizontal strokes intersected by vertical lines.

The medial letter *sīn* in بسلام is shown in its traditional form. This model was shown in the early Mamluk examples¹²². It is represented in the form of three vertical strokes perpendicular to a horizontal line. This form was also shown in the early Iranian models of inscriptions, especially in the core of the mihrab of the Mosque of Ashtarkān¹²³. The medial *lām* in ادخلوها takes the form of a vertical stroke perpendicular to the rest of the letter *ḥā'*. This form was not changed in the previous models.

The letter *mīm* here is shown in two forms: The first, i.e., the final *mīm* in بسلام, is shown like a square with a straight-line perpendicular to an elongated vertical stroke. The second is the initial *mīm* in آمنين, which takes the form of a square connected to a horizontal stroke. It is shown in its ordinary form, as seen in most of the models of the Bahary and late Mamluk inscriptions¹²⁴. The letter *nūn* is shown in two forms. The first is the medial *nūn* in آمنين, which is shown in its normal form of two vertical strokes perpendicular to a straight line, and its dot is shown above. The second is the final *nūn* in the same word in the form of a half square on a lower level than the preceding letters, while its dot is shown above it¹²⁵. The initial *ḥā'* in the word ادخلوها is shown as two squares tangent above each

¹¹⁹ ṢALĀḤ AL-DĪN 2007: 272, FIG.244.

¹²⁰ GRASSI 2013: FIG.3.

¹²¹ Two marble slabs were discovered by C. Niebuhr in Kufa during the mission of 1833 and published in 1780. He announced that he discovered many examples of this model in Baġdād. One of those pieces holds an inscription of square Kufic from the Holy Qur'an بعد من قبل ومن بعد *To Allāh belongs the command [i.e., decree] before and after* QUR'AN. XXX/4; MARCEL 1833: 227, PL.I.

¹²² 'ABD AL-ḤALĪM 1991 a: PL.39, 43-44, 47, 50.

¹²³ ṢĀFI' 2020: 106, PL.27.

¹²⁴ The initial *mīm* is shown in this form, especially in the inscriptions comprising the *ṣahādah* and the names of the prophet Muḥammad especially those found in the Mausoleum of Qalāwūn. VAN BERCHEM 1894: 139. al-Ṭanbuġā al-Maridānī, Madrasah of sultan Ḥasan, the mosque of Aq Sunqur, and later in the Mosque of al-Mu'ayyad Ṣayḥ from the late Mamluk period. ROGERS BEY 1889: PLS.2,3; 'ABD AL-ḤALĪM 1991 a: PL.39, 43-44, 47, 50, 101.

¹²⁵ In the Iranian prototypes, the letter *nūn* is shown in its straight form equal to the alignment of the main line as seen in the inscriptions of the mihrab of the Mosque of Aštrakān 715-716 AH/1315AD. ṢĀFI' 2020: 113, PL.27.

other. This model of letters is shown in the Iranian inscriptions in a rectangle divided into two equal parts¹²⁶.

The final letter *wāw* in ادخلوها is shown in the form of a square creating vertical and horizontal intersected lines. This form of *wāw* resembles the early Mamluk models, as seen in the words *al-šahādah*, which once became a model in some religious buildings¹²⁷. The final letter *wāw* is not changed also in the late Mamluk models, such as the flanks of the main entrance of the Madrasah of Fayrūz al-Sāqī 803AH/1426AD¹²⁸. The final letter *lam alif* in بسلام is shown in its ordinary form, like two squares. The upper is opened on the top. The letter here is represented in the same form as the early Mamluk examples, as seen in the Maridānī Mosque [FIGURE 7] and the Madrasah of Sultan Ḥasan [FIGURES 9,10]¹²⁹. Accordingly, the form of the letter never changed in the early or late Mamluk period. The medial letter *yā'* in آمين is shown as two vertical bars perpendicular to a straight line, and the dots underneath take the shape of a horizontal stroke¹³⁰. In the late Mamluk period, the dots of letters were frequently used. A good example is seen in the inscriptions of the tile with the name of Ġaybī al-Tawrīzī [FIGURES 2B & 2C]. In this slab, the dots were attached to the letters, especially in the letter *hā'* in ادخلوها. The dot was put over the letter. Therefore, the dots became a main characteristic of the geometric Kufic script.

After studying and making an alphabetic analysis of the artifact, a conclusive remark could be made as the invocation texts and phrases became one of the focal evolution in the contents of the texts of the late Mamluk geometric Kufic. Another important observation was that the direction of the text was not running clockwise or radically. It ran from up to down which was not usual in the Mamluk models. This scheme became one of the characteristics in late Mamluk models of the geometric Kufic script.

The previous survey of the published and unpublished objects, comprising geometric Kufic script, explored conspicuous observations and the development of the script, stated in the table below: [TABLE 7]

¹²⁶ It is clearly shown in the core of the mihrab of the Mosque of Ašhtrakān 715-716AH/1315 AD in هو as a part of the Qur'an ودين الحق رسوله بالهدى هو الذي أرسل QUR'AN. LXI/9; ŠĀFI' 2020: 114, PL.27.

¹²⁷ The *šahādah* phrases were shown mostly in marble panels in the Mosque of al-Maridānī, the Madrasah of sultan Ḥasan, the *sultāniya* dome, and the flanks of the main entrance in the Madrasah of Ġamāl al-Dīn al-Ustadār. 'ABD AL-ḤALĪM 1991 a: PL.39, 43-44, 60-61; MAJEED 2006: 209-210.

¹²⁸ 'ABD AL-ḤALĪM 1991 a: PL.80-81; A. 'ABD AL-'ĀL 2010: FIG.166.

¹²⁹ 'ABD AL-ḤALĪM 1991 a: PLS.38-39, 43.

¹³⁰ In the Iranian models, the letter *yā'* has taken the same form but without the main dots. It is shown in the main mihrab of the Mosque of Ashtarkan. ŠĀFI' 2020: PL.28.

Points of Comparative Analysis	Bahrite Mamluk inscription models	Late Mamluk inscription models Evolutionary aspects
Word formation	Singular and complete phrases were used. Singular words, like «Muḥammad», are among the earliest examples known as «mirrored inscriptions» and are found in the Mausoleum of Qalāwūn ¹³² [FIGURE 6], al-Mardānī ¹³³ [FIGURE 7], and Aq Sunqur ¹³⁴ [FIGURE 8].	The form of the phrases changed in the late Mamluk models showing two separate phrases together, such as in [FIGURES 2A&B] with the inscription عمل ابن غيبي - التوريزي. A new style of words was formed. The final <i>tā'</i> in the inscriptions of Abū -l-'Ilā [FIGURE 3B] showed the two forms of <i>tā' marbūṭah</i> and the normal letter <i>tā'</i> at the end of the word. Therefore, the word could be read as بركة <i>barakah</i> , or بركت <i>barakat</i> , possibly بركت by emphasizing the pronunciation and writing the final <i>ta'</i> as in the holy Qur'an. ¹³¹
Text direction	Most of the text models run clockwise as seen in the panel flanking the main entrance in the Madrasah of Sultan Ḥasan ¹³⁵ [FIGURES 9&10]. The words run from upper to lower right then lower to upper left. Repetitive words on the panel decorating the drum of <i>al-turbah al-ṣultāniyah</i> show the names of the four caliphs «محمد- أبو بكر - عمر - عثمان - علي» and are read clockwise from upper and lower right to lower and upper left. The same direction occurred in the <i>Ṣahhādah</i> phrase in a marble slab preserved in the right wall of the entrance in the Madrasah of Sultan Ḥasan [FIGURE 10], as well as the panel with the names of Muḥammad and the four caliphs in the same location at the entrance of the same Madrasah of Sultan Ḥasan ¹³⁶ [FIGURE 9].	Inside the square epigraphic panels, the words radiate from the center to the corners of the panels. This phenomenon could be seen in the marble incrustated panel preserved in the Naṣir Ḥalīlī collection in London [FIGURE 1A]. The initial <i>yan</i> in علي seen in the form like the initial <i>kāf</i> [FIGURE 1B] was uncommon in Mamluk models. Due to the radiating phenomena, the artisan had to minimize some letters, like the initial <i>kāf</i> in توكلت, which is seen in the central part of the panel. Also, the final <i>tā'</i> in the same word is minimized and mixed with its three twins uniquely shown in the Mamluk models of square epigraphy. The final letter <i>yā'</i> in خالقي was also minimized by the artisan to get some space for completing the other words. It took the shape of a reversed letter «L» set in the same alignment as the square frame.

¹³¹ QUR'AN.XIX/2.¹³² ABD AL-ḤALĪM 1991 a: PL.2.¹³³ ABD AL-ḤALĪM 1991 a: PL.37.¹³⁴ ABD AL-ḤALĪM 1991 a: PL.42 .¹³⁵ ABD AL-ḤALĪM 1991 a: PL.43.¹³⁶ ABD AL-ḤALĪM 1991 a: PL.44.

<p>Accuracy</p>	<p>The words and phrases are accurately applied with no spelling errors, such as the names of the four caliphs of Islam in <i>al-Sulṭaniyah Dome</i>, the inner flanked walls in the Madrasah of Sultan Ḥasan; the singular words like «Muḥammad» «محمد» in the Mausoleum of Qalāwūn [FIGURE 6], Ḥānqāh of Baybars al-Ġāšinkīr¹³⁷, the Mosque of al-Mardānī [FIGURE 7], and the Mosque of Āq Sunqur [FIGURE 8]; the Šahhadah and the names of the four caliphs in the flanks of the walls of the portal in the Madrasah of Sultan Ḥasan [FIGURES 9 &10].</p>	<p>The square and rectangle writings in the late Mamluk period show some spelling mistakes, such as the small plaques inlaid with gold on the battle axe bearing the name of Sultan al-Nāšir Muḥammad son of Qāyṭbāy [FIGURES 4A, B&C]. Noticeably, some words were spelled wrongly, such as the <i>basmallā</i> بِسْمِ اللّٰهِ الرَّحْمٰنِ الرَّحِیْمِ. The word بِسْمِ has its final <i>mīm</i> omitted. The word الرَّحْمٰنِ has its medial <i>mīm</i> and <i>nūn</i> omitted, and it is written with <i>alif</i> not as the Holy Qur'an. The word الرَّحِیْمِ also doesn't have its final <i>mīm</i>. The letter forms and the formation of some words are deformed, making them hardly readable. I presented a possible reading of the letters in the front small-incrusted panel of the axe [FIGURE 4D]. The reading of this panel could be عمر-وعثمان محمد- as in the table mentioned above. Some deformities could be seen, such as the medial <i>ḥa'</i> in the word محمد, which is shown as a straight line to fit some space in the panel. The conjunction <i>wāw</i> is shown attached to the word وعمر and عثمان, while the final <i>nūn</i> is shown on the opposite side of the panel. The words علي and ابو بكر are omitted from the text. This inscription proved that the artisan made some errors and mistakes to fit the available space for writing. On the other hand, the script might be applied by an artisan instead of a calligrapher, who was not professional in reading and writing the geometric Kufic writings.</p>
<p>Theory of filling spaces</p>	<p>Through observation, the words and phrases were written without filling the spaces by signs and marks or even decorative elements. To fill the spaces, the artisan sometimes repeated the words and the phrases, such as the word "Muḥammad" in the Mausoleum of Qalawūn</p>	<p>In the Benaki Museum's panel [FIGURE 5A&B], some considerable changes occurred in the forms and styles of the letters. Firstly, the appearance of marks on letters like the <i>sukūn</i> on the isolated <i>dāl</i> of اذْخُلُوْهَا in the form of a small square is miss-placed here and shown over the final <i>wāw</i>. The <i>fatha</i>, as a long vowel over the initial <i>ḥā'</i>, is also miss-placed above the initial <i>ḥā'</i>. The <i>damma</i> is</p>

¹³⁷ ' ABD AL-ḤALĪM 1991 a: PL.36.

	<p>[FIGURE 6], al-Mardānī, and Aq Sunqur, as well as the Ṣahhādah surrounding the drum of the dome of <i>al-Sultāniyah</i>, and the back of the pulpit of the mosque of Āq Sunqur [FIGURE 8]</p> <p>It is observed also that dots, marks and signs were not seen in the Bahrite Mamluk models.</p>	<p>seen like an overturned «L» shape over the final wāw. Nevertheless, there are originally two signs above the initial ḥā' and the medial lām in the Qur'an. The short vowel sign <i>kasrah</i> in the initial bā' in بِسْمِ اللَّهِ is represented in the form of a horizontal rectangle under the initial bā'. It is the same as the long vowel <i>fatha</i> above the medial sīn. The Nunation (three vowel diacritics) <i>tanwīn</i> under the final mīm is shown in the same form of two rectangular lines, with the second one miss-placed under the next word. The long sequenced vowel <i>madd</i> in the word آمِينَ is seen in the form of a long rectangle above the isolated alif and mīm. The short vowel <i>kasrah</i> takes the shape of a small horizontal bar under the initial mīm. The same is repeated two times under the medial nūn, and yā' and is miss-placed under the final nūn. The long vowel <i>fatha</i> appears above the final nūn taking the shape of a horizontal line. The same characteristics occurred in the wooden panel in the pulpit of the mosque of Abū-l-Ilā [FIGURES 3B] Secondly, it is clear that the dots and marks were added simply to fill the empty spaces in the composition, rather than being vowel marks, such as the dots that were added on the letters of the square Kufic panel in the tile of Ġaybī [FIGURES 2B&C]& [TABLE 8], the wooden slab on the top of the pulpit in the Mosque of Abū-l-Ilā at Būlāq [FIGURE 3B], and the wooden lattice window [FIGURE 5B] &[TABLE 8].</p>
<p>Content</p>	<p>In the Bahrite period, religious contents were observed, such as the word of the Prophet «Muḥammad» in the Mausoleum of Qalāwūn [FIGURE 6], al-Mardānī [FIGURE 7], Aq Sunqur [FIGURE 8]. The names of the rightly guided caliphs were seen in the <i>al-sultāniyah dome</i>, and the flanks of the portal of the Madrasah of Sultan Ḥasan [FIGURE 9]. The</p>	<p>The artifacts discussed in this study bear new phases of contents in the late Mamluk models. According to the researcher's analysis, it was only during the Circassian period that we could see the name of artisans written in square Kufic script. A good example is a ceramic tile bearing the name of Ibn Ġaibī al-Tawrīzī [FIGURES 2A&C]; a phenomenon that demonstrated a distinct development of the square writings of the late Mamluk period. Verses from the Qur'an are also found in the late</p>

	<p>Šahhādah is seen in the Mosque of al-Maridānī [FIGURE 7] and the entrance of the Madrasah of Sultan Ḥasan. [FIGURE 10].</p>	<p>Mamluk artifacts, as seen in the Mosque of al-Mu’ayyad and the wooden lattice window of Benaki Museum [FIGURE 5B]</p> <p>The Sufi words showing blessing and invocation could be attributed to the late Mamluk models of writing. They are mainly seen in a wooden panel inlaid with ivory on the top of the pulpit in the Mosque of Abū-l-‘Ilā at Būlāq [FIGURE 3B].</p> <p>The first possible reading of the second part of the text shows words that express blessings and sufi words derived from Qur’anic verses (؟) <i>وَسَلِّمُوا تَسْلِيمًا صدق الله العظيم يا قن(؟) من بركة حزن لقمان(؟) Salute him with all respect-God Almighty has spoken the truth. I bear certainty from the blessing of the sorrow of Luqman.</i> The other possible reading of the second part of the phrase could be (؟) <i>من نافل(؟) بركة حرب المعار(؟) who gained the blessing of the wars of (?).</i> In any case, the two possible readings should be taken into consideration. To sum up, these types of phrases could be considered Sufi or invocative words, which were unusual in the Mamluk or late Mamluk square Kufic models. Moreover, this panel was found on a minbar of a mosque related to Šayḥ Abū-l-‘Ilā who was a Sufi and a venerated man in the late Mamluk period¹³⁸.</p>
--	--	---

¹³⁸ For details, see note 32. As mentioned by al-Maqrīzī, the Mamluks always venerated the Sufis and the great imams of Islam. In 227AH, Šams al-Din Qarāsunqur built his grave adjoining the tombs of the Sufis in the necropolis of Bāb al-Našr. He constructed a *sabil*, a mosque, and a small basin beside the grave al-Šufiyah. The emir Mas’ūd ibn Ḥutayr built a grave adjoining the tombs of Sufis. Sayf al-Din Kukāy and Ṭajār al-Dawādār did the same. Moreover, the emir Ṭaštumur al-Sāqī renewed the graves and built tombs adjoining the graves of Sufis. In the late Mamluk era, emir Yūnus al-Dawādār also renewed the grave of the Sufis, and emir Qijmās built another grave beside the tomb of Yūnus al-Dawādār. AL-MAQRĪZĪ 2003: vol.4, 918-920.

<p>Technique</p>	<p>Carving technique on stones can be shown on the external drum of <i>al-Sultāniyah dome</i>, showing the three-time repetitive word «Muḥammad» and the names of the four rightly-guided caliphs. Marble incrustation was applied to the majority of the early Mamluk examples as seen in the Mausoleum of Qalāwūn [FIGURE 6], the Mosque of al-Mardānī [FIGURE 7] the Mosque of Aq Sunqur [FIGURE 7], and the Madrasah of Sultan Ḥasan. [FIGURES 9&10]</p>	<p>For the first time, incrustation or inlay¹³⁹ on metalwork was applied in geometric writings aside from the marble incrustation process. The inlay process was applied on the battle axe [FIGURES 4A,B&C]. The square writings served an ornamental purpose as well, a phenomenon showing that the evolution of geometric scripts in the late Mamluk period was used for the first time to inlay the square writings on artifacts. Alternatively, one can assume that the art of incrustation in the late Mamluk period declined, especially from the time of Sultan al-Aṣraf Ṣābān to the end of the reign of al-Zāhir Barqūq¹⁴⁰. The economic situations was enhanced during the reign of Sultan Qāyṭbāy, especially during his financial reforms in the army and the currency, as well as his successful wars¹⁴¹ and ability to overcome many economic hardships. This development led to a revival in the arts, such as metalwork, manuscript illumination, and carpet weaving¹⁴². A decline began under the reign of al-Nāsir Muḥammad ibn Qāyṭbāy. During his time, chaos and disturbance spread in Egypt. Struggles took place between the Mamluks: <i>urbān</i> and <i>ḡulbān</i>. In Ṣāban 903AH/ March1497AD, the water of the river Nile decreased, causing famines and plague, which in turn increased prices¹⁴³. Despite these circumstances, the arts of inlaying remained prosperous in the late Mamluk period.</p>
-------------------------	--	---

[TABLE. 7]: Done by the Researcher

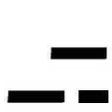
¹³⁹In Arabic, *takfīt* or *taṭ'īm* is a process of enriching a metal object by overlaying parts of its surface with patterns formed from metal wires or sheets different in composition and color from the ground material of the artifact. Although this craft is of considerable antiquity, it did not become popular in Islam until the middle of the twelfth century. BAER 1983: 4-5. The inlay technique was introduced into Egypt and Syria in the thirteenth century by a group of metalworkers bearing the nisba «al-Mawsili»; all trained in Mosul (northern Iraq) or in the Mosul style of inlay. WARD 2004: 59.

¹⁴⁰James.W. Allan noted that between 1360 and the accession of Barquq in 1382, the Mamluk metalworking industry suffered a decline in quantity, not quality. He also stated the writing of al-Maqrīzī, which said that the decline appeared in the Mamluk metalworking of this period. ALLAN 1984: 85-94.

¹⁴¹ IBN IYAS 1935: vol.3, 317-324; DAISUKE 2009: 27-51.

¹⁴² EL.BINDARI 2015: 71.

¹⁴³ IBN IYAS 1935: vol.3, 326-392.

<i>Fatha</i>	<i>ḍamma</i>	<i>kasrah</i>	<i>Sukūn</i>	<i>tanwīn</i>	<i>Šadda</i>	<i>madd</i>
						

[TABLE 8]:The form of the marks of geometric letters in the late Mamluk models. Done by the researcher

VI-CONCLUSION

Geometric Kufic script on late Mamluk artifacts underwent a new phase of development, demonstrating a wide range of characteristics. The analysis of the present study made the following conclusions:

- The style and shapes of the words and letters evolved on late Mamluk models, such as the geometric inscriptions in the tile of Ibn Ġaybī al-Tawrīzī [FIGURES 2A&B], showing a sentence with two separate words. This style of making square frames and applying square writing was mainly an Iranian effect that first occurred in the late Mamluk models of writing.
- The letter forms also evolved, particularly in the geometric inscriptions of the minbar of Abū-l-'Ilā [FIGURE 3B] when the final *tā'* in *برکت* could be written in two ways, either *برکة* or *برکت*, like that in the Holy Qur'an.
- On the wooden panel at the Benaki Museum, the calligrapher filled the spaces using marks and signs over letters and added dots [FIGURES 5A&B] [TABLE 8]. The same was applied to the wooden panel of the minbar of Abū-l-'Ilā [FIGURES 3B].
- The phrases' direction also evolved, sometimes radiating from the center towards the panel's corners, such as the marble slab at the Nāṣir Khalili collection in London. (FIGURES.1/A, 1/B).
- Spelling errors could be observed on geometric Kufic texts belonging to late Mamluk models, such as the small incusted band of the battle axe of al-Nāṣir Muḥammad ibn Qāyṭbāy [FIGURES 4D& 4F]. These errors indicate that the phrase was applied by a craftsman, not a calligrapher emphasizing a decorative scheme rather than an epigraphic context.
- New words were added to texts. Sufi phrases were added to religious contexts, such as on the wooden panel of the minbar of Abū-l-'Ilā [FIGURES 3A&B]. Names of the artisans also appeared on late Mamluk models (e.g., Ibn Ġaybī al-Tawrīzī) [FIGURE 2A-C]. Verses of the Qur'an were also added to the late Mamluk artifacts, as seen in the Mosque of al-Mu'ayyad and the wooden lattice window from Benaki Museum [FIGURES 5 A&B].

- It is possible to see how the geometric Kufic on late Mamluk models (e.g., a battle axe with the name of al-Nāṣir Muḥammad Ibn Qāyṭbāy [FIGURE 4A-C] that was applied by an inlay *takfīt* process for the first time, side by side to the marble incrustation and carving processes *ḥafr wa tanzīl*. Generally speaking, geometric Kufic calligraphy started to be used on late Mamluk arts and architectural panels.

VII. ACKNOWLEDGMENT

I wish to express my deepest thanks to the curators of the Museum of Islamic Art in Cairo for their great help and assistance. I also wish to express my thanks and gratitude to Greta Vasileiou, the head of the Islamic Antiquities Department at the Benaki Museum of Athena, for her generous assistance. I have also to express my deepest regards to Katherine Blanchard, the keeper of the Near East Collections at the University of Pennsylvania, and Alessandro Pezzati, the senior archivist in the Pennsylvania Museum, for helping me and responding to my inquiries. Lastly, I would like to express my deepest gratitude to the Southern Cairo's Architecture Office employees for their assistance and care.

BIBLIOGRAPHY

- 'ABD AL-ĀL. A.: «al-Nuqūš al-Kitābiyah al-Kūfiyah 'ala al-'Amā'ir al-Islāmīyah fi Miṣr min Bidāyat al-'Aṣr al-Ayyūbī wa ḥatta Nahāyat al-'Aṣr al-'Uṭmānī (567-1220AH/1171-1805AD), Dirāsah Āṭāriyah Fanniyah» =«The Kufic Inscriptions on Islamic Monuments in Egypt from the Beginning of the Ayyubid Period until the End of the Ottoman Period 567-1220AH/1171-1805AD, An Archaeological and Artistic Study», PhD Thesis, Faculty of Arts, Department of Islamic Archaeology, Suhāg University, 2010.
- 'ABD AL-ḤALĪM. S.: *al-Ḥaṭṭ al-Kūfi al-Handasī al-Muraba'*, ḥilya Mi'māriyah bi Munša'āt al-Mamālik fi-l-Qāhirah, =*The Geometric Quadrangular Kufic, An Archaeological Molding on the Mamluk Constructions of Cairo*, Alexandria (Mu'asassat Šabāb al-Ġāmi'ah) 1991.
- 'ABD AL-ḤALĪM. S.: «Adwā' 'alā al-Ḥaṭṭ al-Kūfi al-Handasī al-Muraba' wa Nuqūshuh bi ḡāmi' al-Mu'ayyad Šayḥ bi-l-Qāhirah» = «A Spot Light on the Geometric Quadrangular Kufic in the Mosque of al-Mu'ayyad Šayḥ in Cairo», *Periodical of the Faculty of Arts, Mansūrah University*, 1991, 3-93.
- 'ABD AL-RĀZIQ.A.: *al-Funūn al-Islāmīyah fi-l-'asrayin al-Ayyūbi wa-l-Mamlūkī* =*Islamic Arts in the Ayyubid and Mamluk Period*, Cairo (Dār al-Ḥarīrī lil ṭibā'ah) 2007.
- 'ABD AL-RĀZIQ.A.: *al-'Imārah al-Islāmīyah fi Miṣr Munḍu al-Faṭḥ al-'Arabī ḥata Nahāyat al-'Asr al-Mamlūkī* =*Islamic Architecture in Egypt from the Arab Conquest until the end of the Mamluk Era*, Cairo (Dār al-Fikr al-'Arabī) 2009.
- 'ABD AL-WAHAB Ḥ.: *Tariḥ al-Masāḡid al-Aṭāriyah* =*History of the Archaeological Mosques*, Cairo (Dār al-Kutub al-Miṣriyah) 1948.
- 'ABD AL-WAHAB Ḥ.: «Tawqī'āt al-Šunna' 'alā Aṭār Miṣr al-Islāmīyah» =«The Craftsmen's Signatures on the Monuments of Islamic Egypt», *BIE XXXVI L'Egypte*, 1953- 54, 533-558.
- ABŪ SEIF, D. B. : *Cairo of the Mamluks*, Cairo (The American University in Cairo Press) 2007.
- «al-Maridani», in: <http://www.islamic-art.org/PhotoArchive/DisplayImages.asp?photoid=972&qualityID=5>
Accessed on 20/4/2022
- ALLAN, J. W.: «Sha'ban, Barquq, and the Decline of the Mamluk Metalworking Industry » *Muqarnas: An Annual on Islamic Art and Architecture* 2, 1984, 85-94.
- ASHOUR.A.F. : «Islamic Architectural Heritage. Mashrabiya», *Islamic Heritage Architecture and Art* 2, WIT Transactions on The Built Environment, University of Sharjah, United Arab Emirates, vol. 177, 2018, 245-253.
- BADR. M.M.: «Aṭar al-Ḥaḍarah al-Sulḡūqīyah fi Duwal Šarq al-'ālam al-Islāmī 'alā-l-Ḥaḍaratayn al-Ayyūbiyah wa-l-mamlūkiyah» = «The Impact of the Seljuk Civilization in the Near East on the Ayyubid and Mamluk Civilizations», vol.2, Cairo (Zahrā' al-Šarq Press) 2002.
- BAER. E. : *Metalwork in Medieval Islamic Art*, New York (State University of New York Press) 1983.
- «Battle axe of a member of the Sultan's Guard», in: http://islamicart.museumwnf.org/database_item.php?id=object;EPM;at;Mus22;20;en
Accessed on 20/04/2022
- EL.BINDARI. A.: *Crowds and Sultan, Urban Protest in Late Medieval Egypt and Syria*, Cairo (The American University in Cairo Press) 2015.
- CRESWELL. K.A. C.: *Moslem Architecture of Egypt*, vol. 2, New York (Hacker Art Books) 1978.
- CLÉVENOT. D.: *Splendors of Islam*, New York (Vendome Press) 2000.
- DAISUKE. I.: «The Financial Reforms of Sultan Qāytbāy», *Mamluk Studies Review*, Middle East Documentation Center (MEDOC), The University of Chicago, vol.13, N°.1, 2009 : 27-50.
- GRASSI .V. : «The Never-Ending Story of The Chinese Influence on the Origin of Square Kufic Script», In *Orientalia Lovaniensia Analecta , Islam and Globalization, Historical and Contemporary Perspectives*,

Proceedings of the 25th Congress of L'Union Européenne des Arabisants et Islamisants, Leuven – Paris – Walpole, MA, 2013, 555-580.

ĞUM'AH. I. : *Dirāsah fi Taṭawur al-Kitābāt al-Kūfiyah 'ala al-Aḥğār fi al-Qurūn al-Ḥamsah al-ūla min al-Hiğrah* =A Study on the Evolution of the Kufic Inscriptions on the Stones in the First Five Hijri Centuries, Cairo (Dār al-Fikr al-'Arabī) 1969.

HAUTECOEUR. L, WIET. G. : *Les Mosquées du Caire*, 2vols, Paris (Librairie Ernest Leroux) 1932.

HERZ BEY. M. : *A Descriptive Catalogue of the Objects Exhibited in the National Museum of Arab Arts*, Cairo (National Printing Department)1907.

IBN IYĀS. M.A.: «*Badā'i' al-Zuhūr fi Waqā'i' al-Duhūr* =The Wonders of the Flowers through the Events of Times, Released by Paul Kahle, and Muḥammad Mustafa Ziyada, vol.3 Istanbul (Staatsdruckerei) 1936.

IBRĀHĪM. A, «*Waṭīqat al-Amīr Aḥūr Qarāquğā al-Ḥasanī*»=«The Endowment Deed of Emir Aḥūr "Master of the Sultan's Horse's Stables" Qarāquğā al-Ḥasanī» , *Bulletin of the Faculty of Arts, Cairo University*, vol. XII, part II, Cairo, 1950, 200-210.

JENKINS. M. «Mamluk Underglaze-Painted Pottery: Foundations for Future Study.» *Muqarnas* 2, 1984, 95–114.

LANE POOLE. S. : *The Art of the Saracens in Egypt*, London (Chapman and Hall. Ltd) 1886.

LEVENSON. J. A.(ed.): *Circa 1492: Art in the Age of Exploration*, Washington(Yale University Press, New Haven and London) 1991.

MAJEED T.: «A Phenomenon of the Square Kufic Script: The Cases of Ilkhanid and Işfahān and the Baḥrī Mamluk Cairo», PhD Thesis, Faculty of Oriental Studies University of Oxford, 2006.

MAJEED T.: «Ma'qili Inscriptions on the Great Mosque of Mardin: Stylistic and Epigraphic Contexts', in *The Writing on the Wall: Calligraphy in Islamic Architecture*, MOHAMMAD GHARIPOUR, IRVIN CEMIL SCHICK(eds.), Edinburgh (Edinburgh University Press) 2013, 363-378.

AL-MAQRĪZĪ. T.A.: *al-Mawa'iz wa-l-'Iṭibār fi Dīkr al-Ḥiṭaṭ wa-l-Āṭār* =Homilies, and Considerations through the Mentioning of Streets and Monuments), Released by Ayman Fu'ād Sayid, vol.4, London, 2003.

MARCEL. M.J. : «Notice sur Quelques Inscriptions Koufiques d'un Genre Singulier», *Journal Asiatique*, Septembre, France, 1833, 227-232.

JENKINS.M:«Mamluk Underglaze-Painted Pottery: Foundations for Future Study» *Muqarnas* 2, 1984, 95-114.

MUNTASIR.D.M.: «Monumental Quranic Inscriptions on Cairene Religious Monuments», MA Thesis, The American University in Cairo, 2000.

OMAN. G.: «IL "Cufico Quadrato": Tentativo di Definizione delle Tre Varieta Sinora Riscontrate», *Quaderni di Studi Arabi*, Istituto per l'Oriente C. A. Nallino, vol.16, 1998,69-88.

RAMADAN. F.A.: *Ğāmi' al-Mu'ayyad Ṣayḥ* =The Mosque of al-Mu'ayyad Ṣayḥ), Alexandria (Mu'assasat Ṣabāb al-Ğāmi' ah lil tibā'ah) 1994.

«Rectangular panel with coloured marble inlay around central square-kufic inscription», in: <https://www.khalilicollections.org/collections/islamic-art/rectangular-panel-with-coloured-marble-inlay-around-central-square-kufic-inscription-mxd-100/> Accessed on 22/04/2022

ROGERS BEY (M.E.T) . : «Mémoire sur eCertaines Inscriptions en Caractères Coufique Cares», *BIE*, Deuxième Série, Le Caire, Séance de Décembre, 1881, 100-106.

al-Ṣa' rānī. A *al-Ṭabaqāt al-Kubra* =The Great Classes), vol.2, Egypt, N.D.

ṢĀFI'. A. S.: «al-Ḥaṭṭ al-Kūfi al-Handasī 'ala al-'Amā'ir al-Dīniyah fi Irān munḍu Awāḥir 'Aşr al-Dawlah al-Suljūqīyah ḥata Nahāyat 'Aşr al-Dawlah al-Timūriyah= al-Şakl wa-l-Maḍmūn 485-912AH/1092-1506AD= The Geometric Kufic Script on the Religious Buildings of Iran from the End of the Seljuk Reign until the End of the Timurid Dynasty Forms and Contents 485-912AH/1092-1506AD)», MA Thesis, Faculty of Arts, Alexandria University, 2020.

THE GEOMETRIC KUFIC INSCRIPTIONS ON THE LATE MAMLUK ARCHITECTURE AND ARTIFACTS: A NEW
PERSPECTIVE THROUGH SOME ARTIFACTS

- SAKKAL.M.: «Mabādi' al-Ḥaṭṭ al-Kūfī al-Tarbī'ī» =The Principals of the Quadrangular Kufic, *Ḥurūf 'Arabiyah*, N^o.13, 2004: 4-11
- SAKKAL.M.: «Square Kufic Calligraphy in Modern Art, Transmission and Transformation», PhD Thesis, University of Washington, 2010.
- SAKKAL.M.: «Square Kufic Tessellations», *ABGAD* 14/14, 2019,40-68.
- SALĀḤ AL-DĪN. W.A.: «The Marble Mihrābs under the Circassian Mamluks in Islamic Egypt», MA Thesis, Faculty of Arts, 'Ain Šams University, Cairo, 2007.
- SCHIMMEL. A.M. : *Calligraphy and Islamic Culture*, London (I.B.Tauris & Co. Ltd) 1990.
- AL-ŠĪḤAH.A.A.:«al-Ḥazzaf Ġaybī al-Tawrīzī al-Qarn 8-9AH/14-15AD, Iṭlālāh Ġadīdah fī Daw' Tawqī' Yunšar li Awal Marrah»«The Ceramist, Ġaybī al-Tawrīzī 8-9AH/14-15AD Centuries A New Perspective Through a First time Published Signature», *Adumatu* 27, January, 2013,63-67.
- TALĀAT. U. : «Some Aspects of the Artistic Relations Between Egypt and the Countries of the Silk Roads A Study on Pottery, Proceedings of the Nara Symposium For Digital Silk Roads», *National Institute of Informatics NII, Organized by UNESCO*, December 10-12, 2003, Nara Ken, New Public Hall, 185-193.
- VAN BERCHEM. MAX.: «*Materiaux Pour un Corpus inscriptionum Arabicarum*», Première Partie, Egypte, Paris (Ernest Leroux) 1894.
- WARD. R. : «Brass, Gold and Silver from Mamluk Egypt: Metal Vessels Made for Sultan Al-Nāšir Muḥammad». A Memorial Lecture for Mark Zebrowski, *Journal of the Royal Asiatic Society (JRAS)* 14/1, Cambridge University Press, 2004, 59-73.
- YŪSUF. A. A, «Ġaybī al-Tawrīzī» in *al-Qahirah, tārihuha, Atāriha, wa Funūnha = Ġaybī al-Tawrīzī, in Cairo, its History, Monuments and Arts*, Cairo, 1970.
- ZAMBAUR. E.V.: *al-Uṣrāt al-Ḥākimah fī al-Tārīḥ al-Islāmī =The Ruling Dynasties in Islamic History*, Bayrūt (Dār al-Rā'id al-'Arabī) 1980.