

## Original Research Article

## An Analysis of the Design Plan of the Mehrabi Kufic Inscription from the Kakuyids Era in the Ghadamgah Mosque (Pilgrimage Site) of Farashah, Yazd\*

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Received: 22/04/2025

Accepted: 25/05/2025

Available online: 01/10/2025

### Abstract

Kufic inscriptions in Iran are considered an art that was basically formed under the influence of the beliefs and convictions of the society rulers in the religious monuments. With the arrival of Islam in Iran, most of the inscriptions on these buildings included Quran verses in Kufic script. The Mosque-Ghadamgah of Imam Reza (AS) in Farashah, Yazd has a stone-shaped Mihrab (Altar) dating back to 512 AH, the Kakuyids era coincides with the Seljuk time. During this era, the Kufic inscriptions appeared in more detail and diversity compared to the previous stages. The main objective of this research is to deeply comprehend the Design Plan (DP) and visual concepts of this inscription in the relevant historical and cultural context. This study has applied a qualitative research method by addressing a case study. To get this, the Mihrab Kufic inscription of the mentioned mosque has been analyzed and examined; the analysis method covers the written structure, features, and techniques of the design. The research findings show that the inscription artist has used a design plan with exact basic proportions to create these Kufic inscriptions, that has addressed visual features such as rhythm, symmetry, proportions, and other related items. The research findings show that a design plan was used in the Kufic inscription, including the verses (23) of Surah al-Shura and (55) of Surah al-Ma'idah in the Mihrab of the Farashah Mosque-Ghadamgah in Yazd city. This design plan was formed based on a precise proportion of 32/32 with a minimum ratio of 1/32 above the baseline and a ratio of 5/5 with a minimum size of 1/5 below this guiding line. The major guiding lines, middle guiding lines, and all the arrangements in this Kufic inscription are placed based on these proportions, as it can be observed that the artist has determined and designed the ratio of the letters and their connections using these architectural features.

**Keywords:** *Farashah-e Yazd, Kakuyids, Kufic Inscription, Islamic Calligraphy, Seljuk Era.*

\* This article extracted from Ph.D. thesis of "Sahar Salehi" with the title "The Evolution of Layout Design in Kufic Inscriptions of Mihrabs from the Seljuk and Ilkhanid Periods," that under supervision of Dr. "Mahnaz Shayestehfar" and

Dr. "Seyed Aboutorab Ahmadpanah", with the advisory of Dr. "Mohammad Khazaei" which was been done at Tarbiat Modares University, Tehran, Iran.

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## Introduction

The Kufic inscriptions flourished at the beginning of the arrival of Islam in Iran due to the presence of the Muslim ruler, as the main content of them included the verses of the Holy Quran. Along with the spread of Islam in Iran, the construction of Mosques in cities also increased, so there was at least one mosque in most of these cities. These Mosques were not only religious places but also had political, cultural, and social functions. Therefore, special attention was paid to the construction and design of these buildings. The architecture of the Mosques changed over time, and attention to decorations was one of these developments that gradually spread to religious buildings. These decorations usually included vegetal, geometric, and inscriptional motifs. The Seljuk era (429 AH/1038 CE–590 AH/1195 CE), which coincided with the reigns of the Kakuyids and the Khwarizmshahian Dynasty, is a considerable time for studying the Kufic inscriptions. During this era, the art of Kufic inscriptions expanded more compared to the previous eras in terms of the variety of script styles.

During this time, the art of Kufic inscriptions expanded more, compared to the previous times in case of the variety of writing styles; as it can be said that in the early centuries, Kufic inscriptions had a structure with a simple design in comparison with the Seljuk time, as the simplicity turned into the complexity, detail, and variety in the design of the writing styles within the Seljuk time. There are several works of Kufic inscriptions belonging to this age, including the Mihrab of the Farashah Mosque-Ghadamgah in Yazd, which dates back to 512 AH and is attributed to a king from the late time of the Kakuyids, who was a ruler with an independent government in Yazd city under the Seljuks. Generally, Kufic inscriptions were usually presented in religious buildings in different ways, including simple ones or in combination with other vegetal and geometric decorations. In a general classification, the Decorative Kufic can be adopted for these motifs (Makinejad, 2018, 17). Regardless of the presenting method, Kufic inscriptions follow one of three structural designs of written (inscribed), vegetal, or geometric motifs.

Therefore, considering the structural order of inscriptions governing the components, the main research questions here are as follows: 1. How does this order arise between the components of a Kufic inscription? 2. What are the principles and rules? And, 3. How does this order reflect in the design plan of an inscription work?

To address these questions, the study focuses more on the Kufic inscription of the Mihrab located in the Farashah Mosque-Ghadamgah in Yazd city from the Kakuyids' time, contemporary with the Seljuks. The research aims to gain a deep understanding of the design order and visual concepts of this inscription, considering the relevant historical and cultural context.

To get this, the research seeks to understand and analyze the reason and the quality of fundamental ratios such as  $1/9$  (the place of main and middle guiding lines above the baseline),  $1/27$  and  $1/32$  (the place of thin lines or other arrangements above the baseline),  $2/5$  and  $3/5$  (the place of guiding lines below the baseline), and the  $1/5$  ratio (the place of thin lines or arrangements below the baseline), influencing the written structure and the design plan of the Kufic inscription. These ratios have a major role in creating visual order and structural proportions as the basic units, in making letters, and defining the distance between the guiding lines (descender, middle, and Ascender). A deep understanding of these relationships can lead to the discovery of the logical orders governing the design of decorative Kufic letters and the formation of the design plan.

## Research Method

This research is a qualitative study by adopts a case study based on the library and documentary sources. In this regard, the Kufic inscription on the Mihrab of the Mosque-Ghadamgah is analyzed and interpreted. By capturing the image of the Mihrab, the historical characteristics of the inscription were discussed, followed by an analysis and interpretation of the design plan and the proportions systematically. The analysis method includes the study of the written structure, characteristics, and design techniques in the form of a design plan.

## Research Background

There has been frequent research in the form of published papers and books on Kufic inscriptions, as follows. The study of Makinejad (2018), untitled 'Structure and Appearance of Decorative Kufic (Gol-dar, Gereh-dar) Inscriptions in the Seljuk and Ilkhanid Eras'. In this article, the researcher analyzes examples of Kufic inscriptions from the Seljuk and Ilkhanid eras from the perspective of their formation structure. The major point of their study is the consideration of three systems of Kufic inscriptions, including vegetal, geometric, and written motifs. In another study by Salehi et al. (2021), titled 'Analysis of the Structure and Visual Features of the Kufic Inscription of Surah Yasin in Shushtar Grand Mosque', the authors refer to the use of the main guiding lines by the inscription artist, which were effective in shaping the written letters of this Kufic inscription. Hatami et al. (2023) have addressed the identification of the guiding lines in the Kufic inscription of the Tomb of the Twelve Imams of Yazd in a study titled "Study of the calligraphy principles and visual arrangements of the Garivar inscription of the Tomb of the Twelve Imams of Yazd".

Among the articles reviewed, which were in common with the current study from the point of Kufic inscriptions, the design plan and the governed principles and rules have not been addressed. One of the major principles is the proportions between letters and their effect on the design plan. In this research, the details of applying them in the design plan of this Kufic inscription have been discussed. In other research, by Ghoochani (1996) untitled Kufic inscription on the Mihrab of the Ghadamgah of Imam Reza (AS) (Yazd Farashah), the author has read the inscriptions of the Mihrab and published their text in order. Moreover, Farid (2021) in his book untitled "The Coexistence of Pattern and Writing in Iranian Art" has focused on the various scripts of Kufic inscriptions in combination with the geometric and plant decorations, followed by classification and analysis of them. Considering the relevant research and other studies that have addressed the subject of Kufic inscriptions in other buildings, it can be noticed that the Kufic inscriptions of

the Mihrab, the design plan, and the principles and rules governing it have not been addressed in any research studies before; therefore, the current study is distinguished from them in this regard.

## Inscriptions of the Kakuyids and Seljuqs

The government of the Kakuyids dynasty coincided with the rule of the Buyids, the Khwarazm Shahs, and the Seljuqs, who ruled in central and western Iran. "In the first half of the fifth century AH, coinciding with the weakness of the Buyids and the rise of the Ghaznavids, the Kakuyids had a significant role in the events of the Jabal region as independent rulers. With the beginning of the Seljuk rule in Iran, the Kakuyids lost control of the cities of Isfahan, Hamadan, and Rey, and their power was limited to the city of Yazd. From this time onwards, the Kakuyids continued to rule under the Seljuqs as semi-independent rulers, and their attention was drawn to cultural issues" (Arjah, 2003, 1). The Seljuk government in Iran initiated in the year 429 AH/1038 CE and continued until 590 AH/1195 CE. The ruling dynasty was established by Tughril Beg and his brother Chaghari Beg of the Turkmens, following the final defeat of Masoud Ghaznavi (Zarrinkoob & Zarrinkoob, 2024, 147). Given that this time was "a time of intense warfare, the characteristics of intensity of action, famine, plague, hardship, and ignorance were usual during this time" (Lambton, 2023, 14).

However, it should be noted that it was a time in which Iranian civilization achieved advances incomparable with the previous times. Scholars such as Ghazali, Shahrestani, Nasafi, Anvari, Nizam al-Mulk, Omar Khayyam, Abu Sa'id Abi al-Khair, and Mu'izzi all lived in such an age, as their works are still considered among the valuable works of Iran (ibid.).

Moreover, the artistic works of this time represent the more diverse achievements of them compared to their previous times. In architecture, they have shown elements of spatial compositions in combination with greater use of brick materials, especially in the structures of mosques, and more attention to the decorations of

them, including vegetal, geometric, and inscriptional motifs. According to the definition, an inscription is a Script design that is performed on materials such as stone, brick, plaster, tile, wood, and other similar materials (Ghelichkhani, 2011, 310). According to the definition, inscriptions have both an apparent and a semantic dimension valuable to the audience.

According to the definition, inscriptions have two meaning aspects: one apparent and the other profound, both are valuable to the addressee. Most of these inscriptions include verses of the Quran, and sometimes the Zekr or prayers attributed to the prophets and other religious figures. In addition, at the end of inscriptions, sometimes there are title of artists, construction date, and the explanations related to the building's endowments" (Azizpour & Salehi Kakhaki, 2013, 156). Moreover, Kufic inscriptions, similar to "calligraphy, is rooted in the Quran and arise from the transcendent capacities of the name of God." (Shahidani, 2018, 91). Kufic script is one of the first scripts expanded with the arrival of Islam in Iran; and is believed as "the oldest script of the Islamic time that entered from the field of calligraphy to the fine arts from the phase of preserving and recording language to the aesthetic aspects of art (Ghelichkhani, 2011, 318). It is believed that "the most honorable kind of visual art in the Islamic world is calligraphy, especially when it is applied for writing the text of the Holy Quran, as the spirit of a religious art. In religious inscriptions, the Arabic script is often in combination with vegetal motifs as decoration" (Fazaeli, 2022, 188). Following the application of Kufic script in writing books, it gradually entered the architecture field by the relevant artists, and thereby, various types<sup>2</sup> of Kufic inscriptions were formed, sometimes implemented on buildings on a huge scale of dimensions. Among them, simple Kufic inscriptions, in combination with vegetal or geometric motifs, can be mentioned, which is also known as "decorative Kufic inscription".

These inscriptions had a simple writing style at the beginning of Islam's arrival in Iran, but over time, they turned into more complex motifs in combination

with vegetal and geometric decorations. One of the developments in Kufic inscriptions occurred during the Seljuk time that had an increased attention to the variety of writing styles in more detail. Compared to the previous ages.

### **Farashah mosque-Ghadamgah, Yazd**

The Farashah Mosque-Ghadamgah in Yazd is located in a village called Farashah. It includes four mosques and two Husayniyya. Among them, Farashah Mosque-Ghadamgah is of great importance, as it is known as one of the Ghadamgahs (Footstep) of Imam Reza (AS). "This building is considered as one of the oldest evidence for the migration of Imam Reza (AS) from this route" (Nazari & Nikzad, 2013, 111). The Farashah Mosque-Ghadamgah in Yazd is a "Gonbad-Khaneh, a domed-shaped building with two Shabestan (stāna), a portal, and several auxiliary rooms. There is an inscription in Kufic script from the sixth century AH in Shabestan, and a dated inscription located in the Mihrab. This building, according to the inscription text, is known as 'Mashhad, Ali ibn Musa al-Reza, peace be upon him' and was built in 512 AH" (Afshar, 1995, 383).

Regarding the history of the Mihrab, it can be interpreted that the inscription of this Mosque-Ghadamgah dates back to 512 AH, the reign of Garshasb bin Ali bin Faramarz of the Kakoids, and was constructed under the rule of a person named Ali bin Muhammad. The size of this inscription is 60×116 cm, and the scripts are written in nine parts" (Ghoochani, 1996, 82). Garshasb II (Ala al-Dawlah Abu Kalijar Garshasb II bin Ala al-Dawlah Amir Ali) is the son of Ali bin Faramarz. Following his father's death in a battle close to Rey, he was chosen by the Seljuks to rule Yazd and Abarkuh. His name is carved in this Mihrab, which is a valuable historical monument. The other significant parts of the Mihrab include a simple Kufic inscription scribed in combination with vegetal motifs presented in the background. It includes holy verses (23) of Surah Al-Shura and verse (55) of Surah Al-Ma'idah. This inscription is larger compared to the other Kufic inscriptions of the Mihrab, which is placed

on the outer edge of it. This inscription is the main focus of this research, due to the less eroded parts and larger dimensions compared to other inscriptions on this Mihrab.

### Inscription & design plan

The art of inscription is related to architectural decorations, that has been used in textiles as well, but due to its application in building decorations on a large scale, it can attract the viewer's attention. In Islamic art and architecture, the characteristics such as arrangement, order, and proportion are fully considered (Bolkhari Ghahi, 2024, 20), as besides the magnificence of Kufic inscriptions, the presence of these characteristics of order and proportion also makes the artworks visually respected. There are many inscription works remaining from the Islamic era that are preserved in Iran. Many of these works are either in the place of their original creation, such as mosques, schools, holy shrines (Imamzadeh), Ghadamgah, and other similar places, or they are kept in museums around the world.

In this regard, a major question that attracts the viewer's mind, especially the art experts, is the way these inscriptions have been formed on large dimensions and decorations, and also the manner based on which the inscription artist was able to create such works. The answer to this question probably addresses the application of principles and rules used by inscription artists, in addition to their creativity and the space allocated to inscription work. One of these principles is the rule of considering the proportions prevailing in the scripts and applying decorations in these artworks.

According to the specific definition of proportion "It is one of the rules considered in calligraphy, which rather includes all the other principles and rules of it, that means the proportions of other rules are also measured by this ratio" (Ghelichkhani, 2011, 99). Inscription is an art rooted in calligraphy, as it can be said that since proportions dominate so much of calligraphy, they are probably dominating the art of inscription as well. However, the definition of proportion, regardless of the calligraphy

concept, is defined as "the relative and comparative connection between the various parts and the whole of an element." It is also believed that the measurement between two things creates a ratio, and the equality of these ratios is called harmony or proportion (Bemanian et al., 2010, 15). Here, numbers, dimensions, and proportions derived from mathematical rules are significant. In a space where the inscription work is created, the overall space can be considered as a 1/1 as a general unit, and the other components of that inscription can be measured about this determined general unit.

"The order of proportions creates a set of established visual ratios between parts and the whole. Although these ratios may not be perceived at first glance by the viewer, however, the visual order they create can be realized and even recognized by repeated experiences" (Ansari et al., 2011, 47). Proportions in artworks can also bring an aesthetic sense of feeling in addition to making an order (Hayaty, 2024, 55), and is able to transfer it to the viewer. Since the art of inscription is related to writing skill, and has a close relation with calligraphy, as a form of decorating words, thereby art of inscription can also have these characteristics.

Calligraphy is written by using a pen, and the calligrapher is an artist who has gained all the relevant skills. One of these skills is observing the precise proportions in the calligraphic texts, which are written with calligraphic pens in defined dimensions. For writing ancient books, calligraphy was used. One of the main differences between calligraphy and inscriptions is related to dimensions and proportions. There are two hypotheses proposed on inscription art; first, Kufic inscriptions are categorized as calligraphic scripts, thus the manner of presenting large dimensions of Kufic inscriptions needs to be answered. If the second hypothesis is true, the script and decorations associated with Kufic inscriptions were designed by the calligraphic artist; this hypothesis also needs to be addressed regarding the manner the artist has designed them. Regardless of the way Kufic inscriptions are created, the answer to this question targets the expression of "design plan", which refers to the way Kufic

inscriptions are formed and presented in large dimensions compared to the scale of the calligraphy pen. It refers to the artist's use of main guiding lines (baseline or background guiding line, ascender guiding line, descender guiding line), middle guiding lines, and grid system according to basic proportions in the formation of Kufic inscriptions. This term refers to the artist's use of main guidelines (baseline, ascender guideline, descender guideline), middle guidelines, and arrangements according to basic proportions in the formation of Kufic inscriptions. It is considered as it refers to a roadmap an artist may need for designing and even performing Kufic inscriptions, and for connecting the letters; it is required to define the beginning and end of the letters, and keep the equal horizontal and vertical thicknesses throughout the inscription. It is supposed that the inscription artist was aware of the knowledge of proportions, design, calligraphy, and image theory. Of course, these examples could have been the work of one person, someone who, in addition to knowing calligraphy, also benefited from other sciences. However, these patterns could have been performed by a single artist, of course, someone who, in addition to knowing about calligraphy, also mastered other skills. Perhaps it refers to a person who later (during the Timurid and Safavid courts) was known as "Kalantar" (Farid, 2021, 93). In this regard, it is rather obvious that Kufic inscriptions were created by artists who could design scripts and writing styles, in addition to the knowledge of proportions and mathematical relationships.

### Design plan for Kufic inscription of the Mihrab in the mosque-Ghadamgah-e Farashah

The Kufic inscriptions of the Mihrab of the Mosque-Ghadamgah Farashah include several parts: (1), (3), (6), (7), (8), (9), (10), and (11) (Fig. 1). Other scripts of this Mihrab are types of Sols and Raqqa inscriptions. The whole Kufic inscriptions of this stone-shaped Mihrab include: verses of the Koran from Surahs of Al-Shura, Al-Ma'idah, Al-Ahzab, Al-Mu'minun, Al-Ikhlās, in addition to the names of the person who ordered its construction, the ruler of time, the date of instruction, and also the names

of the artist in parts of (8), (9), (10), and (11), which all have a historical aspect.

As part 1 in Fig. 1 shows, the Kufic inscription includes verse (23) of Surah Ash-Shura stating, 'That is that whereof Allah gives glad tidings to His servants, [to] those who believe and do righteous deeds. Say, [O Muhammad], 'I ask of you no reward for it except love of [my] relatives' and whoever commits a good deed - We will increase it for him in goodness. Indeed, Allah is Forgiving and Appreciative.

ذٰلِكَ الَّذِي يُبَشِّرُ اللّٰهَ عِبَادَهُ الَّذِيْنَ اٰمَنُوْا وَعَمِلُوا الصّٰلِحٰتِ قُلْ لَا اَسْئَلُكُمْ عَلَيْهِ اَجْرًا اِلَّا الْمَوَدَّةَ فِي الْفُرْبٰى وَمَنْ يَقْتَرِفْ حَسَنَةً نَّزِدْ لَهُ فِيْهَا حُسْنًا اِنَّ اللّٰهَ غَفُوْرٌ شَكُوْرٌ

And also the verse (55) of "Surah Al-Ma'idah states"

Your ally is none but Allāh and [therefore] His Messenger and those who have believed - those who establish prayer and give zakāt, and they bow [in worship].

This part of the inscription has a longer text and larger dimensions compared to other parts of the Kufic inscription on the stone-shaped Mihrab with no erosion or wear, thereby, this part of the Kufic inscription has been considered for the analysis of the relevant design plan.

The Kufic inscription of the Mihrab starts from the viewer's eyesight on the right and ends on the left; right (Fig. 2 (a)), top (Fig. 2 (b)), and left (Fig. 2 (c)). This part of Kufic inscription is composed of simple Kufic scripts, in which some letters such as (H) (ح) and (K) are

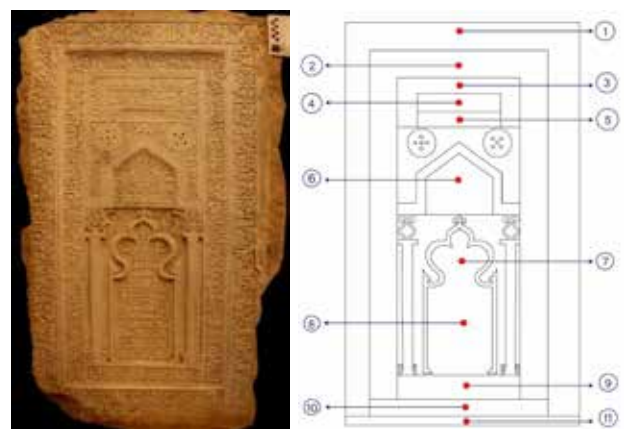


Fig. 1. The stone-shaped Mihrab of the Fara Shah Mosque-Ghadamgah in Yazd; The place of storage: Astan Quds Razavi Museum. Source: Authors archive.



Fig. 2. Kufic inscription of verse 23 (Surah Al-Shura) and verse 55 (Surah Al-Ma'idah) on the Mihrab of the Imam Reza (AS) Mosque-Ghadamgh in Farashah, Yazd. Source: Authors archive.

decorated by double-leafed motifs. In the background of this Kufic inscription, plant decorations have been used. In forming the Kufic inscriptions, observing orders is of great importance as they determine the type of Kufic inscription. The established orders in Kufic inscriptions include the written, vegetal, and geometric ones. However, not all inscriptions necessarily include all three parts, but generally the decorative inscriptions have them in some way” (Makinejad, 2018, 19).

Therefore, it can be stated that Kufic inscriptions have at least one of these orders. The Kufic inscription of verse (23) of Surah al-Shura and verse (55) of Surah al-Ma'idah in the Mihrab of the Farashah Mosque-Ghadamgah in Yazd has only the writing (script) order, but there are various Kufic inscriptions in other Islamic monuments that may have all three writing, vegetal, and geometric orders (Fig. 3).

In Fig. 3, the Kufic inscription of verse (23) of Surah Ash-Shura has been shown. This inscription has a written order and does not follow a vegetal or geometric one. The order of vegetal pattern points to a repeated principled Eslimi pattern throughout the entire inscription. So, it cannot be stated that this inscription follows an order of vegetal pattern just due to some form of it within the prolonged letters such as (ح) (h) and (ك) (k).



Fig. 3. The Islamic written order and decorations attached to the Kufic inscription letters of the Mihrab of the Imam Reza (AS) Mosque-Qadamgah in Farashah, Yazd. Source: Authors.

The presence of specific written (inscribed), vegetal, and geometric orders in Kufic inscriptions signifies a principled rule in their design. If we look for the meaning of “order” in a specific “arrangement” which points to “array, organization, hierarchy, continuity, value, proportion, harmony, and concord between objects in specific dimensions” (Molla Salehi, 2023, 9), then significance of proportion, harmony, and consonance would be appeared in Kufic inscriptions, in connected letters and in words as this order is followed throughout.

This could mean that one of the inevitable principles in script letters is to observe proportions, as letters are designed and performed according to specific sizes. Proportions to form letters and the placement of them in Kufic inscriptions are usually based on specific dimensions and ratios. The manner these proportions have been applied in the design plan of the Kufic inscription on the Mihrab of the Farashah Mosque-Ghadamgah is the main research question, which will be addressed below.

Generally, in Kufic inscriptions, there is diversity of form and movement in letters that are subject to a specific order and a certain discipline. The letter movements in horizontal and vertical directions, while showing diversity and differences, follow a coefficient as the basis for measuring the length, dimension, and thickness of the letters (Azizpour & Salehi Kakhki, 2013, 155). The basis of measurement is according to the proportions applied by the artist. If the formation space and the artist’s available space are considered to be 1/1, other proportions are created by dividing this unit. As shown in Fig. 4, this overall proportional space of 1/1 in this Kufic inscription follows the overall proportion of 32/32. Thus, the overall space is divided into 32 units, and the letters are designed and presented within the spatial limits of these 32 units. The beginning and end of the letters are also formed based on the guidance of these specific proportions and do not deviate from the minimum proportion of 1/32 (Fig. 4).

The calligraphic seat line of this Kufic inscription is placed on scale 5 of the 32 overall division scale according to the defined proportions; So, if this Kufic inscription is

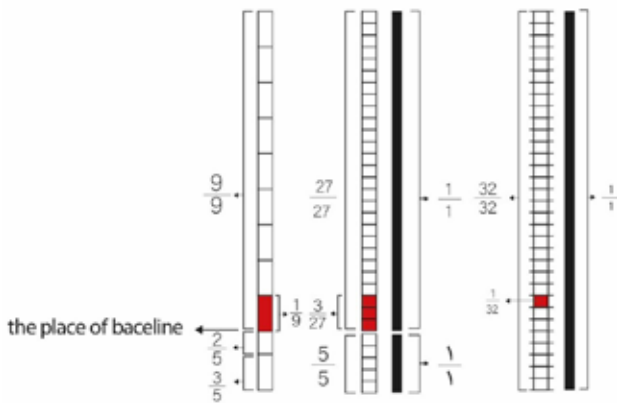


Fig. 4. The horizontal proportions in the Kufic inscription on the Mihrab of the Farashah Mosque-Ghadamgah of Imam Reza (AS). Source: Authors.

divided into two parts: one above the baseline and two others below it, then the proportions below the baseline follow the general proportion of 5/5 and for the design or performing letters, the proportions follow the ratios of 2/5 and 3/5. The thickness of the letters below the baseline is designed and performed according to the ratio of 3/5, while the space between the letters below this guiding line follows the proportion of 2/5. The letters in this Kufic

inscription are designed and performed exactly based on these proportions (Fig. 5).

The script proportions of this Kufic inscription above the baseline follow the ratio of 27/27 or 9/9, and the letter design based on this guiding line follows these proportions in the design plan. The smallest overall proportion unit in this Kufic inscription above the baseline is 1/32, and the largest proportion unit is 1/9. The smallest proportion unit below the seat line is 1/32, and the largest one is 3/32. The importance of these proportions is dependent on the way an artist applies them to design or perform letters.

Considering the effect of proportions on the placement of these guiding lines in the design plan of this Kufic inscription (Figs. 6, 7 & 8), the design plan of the Kufic inscription in verse (23) of Surah al-Shura and verse (55) of Surah al-Ma'idah in stone shape Mihrab of the Farashah Qadamgah Mosque has been discussed. The main calligraphic lines include the baseline, the descender line, and the ascender line. The baseline is a guiding line called Korsi on which the letter connections are designed to carry words. 'Korsi line is a presumed line

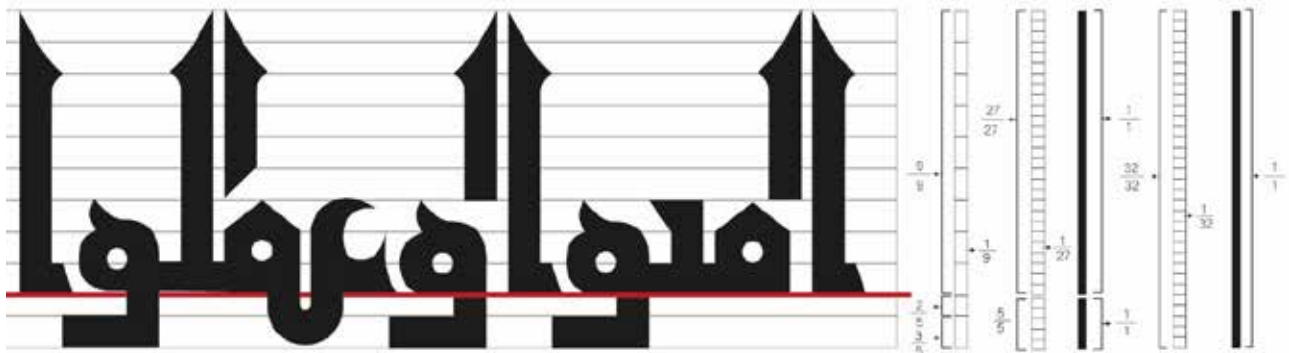


Fig. 5. The proportions in the Kufic inscription of Mihrab in the mosque-Ghadamgah of Imam Reza (AS) in Farashah, Yazd. Source: Authors.



Fig. 6. The guiding lines of the Kufic inscription of the Mihrab in the Mosque- Ghadamgah of Imam Reza (AS) in Farashah, Yazd. Source: Authors.



Fig. 7. The calligraphic guiding lines in the Kufic inscription on the Mihrab of the Mosque-Qadamgah of Imam Reza (AS) in Farashah, Yazd. Source: Authors.



Fig. 8. Small horizontal guiding lines on the Kufic inscription in the Mihrab of the Mosque-Ghadamgah of Imam Reza (AS) in Farashah, Yazd. Source: Authors.

used to regularize and align letters. Different baselines are mentioned in the sources (Hatami et al., 2023, 5). Typically, there is one baseline in most of the inscriptions; however, there are also examples with multiple baselines<sup>3</sup>. The general form of the letter design is placed on a baseline (Badiei Gorti & Sheikhi, 2022, 34). In addition to using the baseline in this Kufic inscription, the ends of the letters are placed on the descender, and the prolonged and raised letters in this inscription do not go beyond the ascender guiding line (Figs. 6 & 7).

In the design structure of the Kufic inscription, 11 calligraphic guiding lines have been used to design verses 23 (Surah Ash-Shura) and verse 55 (Surah Al-Ma'idah) (Fig. 7).

There are eight (8) middle guiding lines, which are located between the baseline and the ascender line to be used for design and placement of the initial letter of the words except for the raised letters such as (a) (الف), including the initial letters of (b/t/th) (ب/ت/ث), (d/z) (د/ذ), (e/g/gh) (ع/غ), (F/Gh) (ف/ق), (S/Sh), (س/ش), (T/Z), (ط/ظ) and (W), (E), (Y), (ه), (و), (و).

These guiding lines are designed and implemented precisely based on the proportions stated above the baseline, with proportions of 1/9 or 3/27. Moreover, all the letter connections in this inscription are designed on the baseline. The remaining guiding script lines have been performed below the baseline, such as guiding line 1 to fit the ends of the letters and their arches. In this Kufic inscription, the 11th guiding script line is placed to indicate the beginning and end of the raised letters such as (A), (L), (K), and (H). (ك), (ل), (الف) and (ح). All these guiding lines follow the defined scales throughout the Kufic inscription. Some part of letters is not placed on any of these guiding lines, such as the arches of A/Gh), (F/Gh) (ف/ق), (ع/غ), and the round space of the letters including (م, ه, ف, ق) (M, H, F, Gh) and similar letters. Parts of some letters, such as the curves of (ع/غ) (ف/ق), and the circular shapes of letters with eye-like forms such as (ق, ه, ف, ق), are not aligned with any of the main guide lines or the intermediate ones (based on defined proportions). Given that some of these letterforms were not designed according to known guidelines, it is likely that the script of this Kufic

inscription follows a different linear system. Accordingly, auxiliary lines were drawn on this Kufic inscription to enable a more precise analysis of its structure (Fig. 8).

It is likely that these thin lines have been performed precisely according to the defined scales and rules by the calligraphic artist while creating this Kufic inscription. The presence of horizontal guiding lines adhering to a precise scale rule, and the careful placement of scripts on the lines, raises the following question: Are there any other uncovered scales in performing the letters with vertical thickness in the Kufic inscription of the case study? To answer this question, lines with the same proportions were drawn on the vertical thicknesses of letters such as (الف), (ك), (ن), (ت/ز), (ل), and (ح/ج/خ). The reason was clear, as in general view, the thickness of the horizontal letters was equal to the thickness of the vertical ones.

To prove it more precisely, it was observed that proportions of  $1/32$  were also followed in the design of vertical letters, with the difference that 32 units in the size of vertical letters increases or decreases according to the dimensions of the script text (Fig. 9).

Due to the presence of square proportions of  $1/32$  by  $1/32$ , the artist has likely followed a grid system to perform this Kufic inscription. Since the smallest scale unit in this work is placed on the horizontal lines, it can be mentioned that the scaling rules in this Kufic inscription are based on both horizontal and vertical lines (Fig. 10).

All the mentioned rules and the graphical analyses point to the use of a Design Plan by the inscription artist who has initially prepared in initially according to a lined guiding grid system, based on the precise scaling, then has specified the main and the middle guiding lines to design the letters on it. The artist who created the inscription ‘has determined the script font by precise calculation of writing space and split it, and has appropriately organized the motifs and letters in proportion to the space provided’ (Azizpour & Salehi Kakhki, 2013, 156). The script font, which is approximately identical to the thicknesses of the Kufic inscription, in both horizontal and vertical directions, has been performed according to the basic defined scales in the form of a design plan.

The artist, by utilizing a design plan, has created overall order and unity in the script of this Kufic inscription. This design plan, which was likely prepared and implemented by the inscription artist before beginning the work, serves as a guide to observe all the mentioned considerations, as well as to maintain the balance of positive and negative spaces, rhythm, symmetry, and other visual features in the artwork.

This design plan, which the inscription artist probably implemented before starting to design the Kufic inscription, is a way to observe all the above-mentioned points, as well as the artist’s observance of positive and negative spaces, rhythm, symmetry, and other visual features.

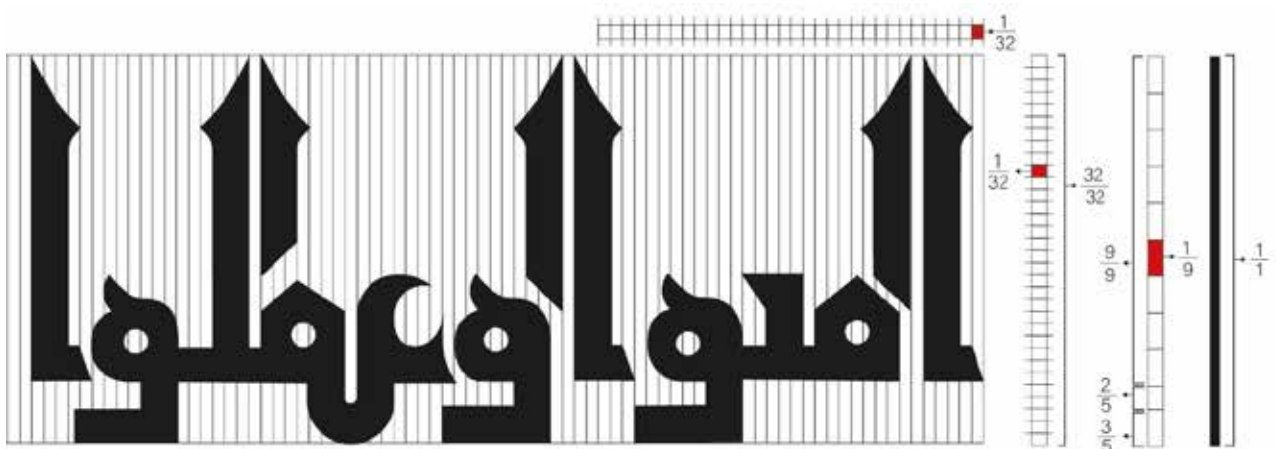


Fig. 9. Graphical study of the vertical lines in the Kufic inscription of Mihrab in the Mosque-Ghadamgah of Imam Reza (AS) in Farashah, Yazd. Source: Authors.



Fig. 10. Grid system in the Kufic inscription of the Mihrab in the Mosque-Ghadamgah of Imam Reza (AS) in Farashah, Yazd. Source: Authors.

‘To create balance, Persian artists have highly noticed these spaces in addition to the appearance of a pattern, as a significant feature of motifs in Iranian art, especially during the Islamic era’ (Danesh Yazdi, 2008, 57). This Kufic inscription, in addition to inscribed parts, has Eslimi motifs in the background space, in which the presence of these motifs is likely to keep a balance between positive and negative spaces in the inscription work. ‘The artwork space consists of two positive and negative spaces, which are not necessarily pointing to a conceptual aspect, but rather it addresses the visual characteristics and the ratio of these two factors in sharing space’ (Makinejad et al., 2010, 87).



In Kufic inscriptions, the presence of the raised letters such as (A) (الف) creates a space between these extensions. ‘The higher the letter heads are, the more space is created in this part of the inscription. To create a balance between the heaviness of the descender part of the inscription and the lightness of the ascender part, the craftsmen added decorative elements to the top of the inscription’ (Blair, 2015, 65). In some types of Kufic inscriptions, the motifs are largely influenced by the negative (empty) space of the letters and act as a positive space to balance the negative ones in inscriptions, all around the frame space (Farid, 2021, 177). In the Kufic inscription of the stone shape of Mihrab in the Imam Reza (AS) Mosque-Ghadamgah in Farashah, Yazd, Eslimi motifs have been designed and performed in a negative space of the inscription separate from the letters. The presence of Eslimi motifs in the negative spaces among the raised letters reduces the intensity of negative spaces and makes a balance between the positive and negative spaces in this Kufic inscription.

But what happens if the Kufic inscription is separated from the Eslimi negative space? It is interesting to know which one the artist designed in the inscription first, the scripts or the motif in the background? To address this question, the Kufic inscription was first separated from the Eslimi background, and then, the negative spaces between the raised letters were measured to gather some data (Table 1).

A repeating unit among the negative spaces of raised letters, such as (a) (الف), refers to another visual feature called rhythm, which is a reason for Kufic inscription to appear so eye-catching. The inscription artist has created these balanced spaces of Eslimi motifs to decrease the negative spaces and create a spatial rhythm in these Eslimi motifs in the background of the inscription. In these types of inscriptions, the Eslimi and Khataei motifs are placed between the letters of the scripts to stylize the background of the inscription and give it a fascinating texture. The background motifs vary from sparse or extensive in terms of density. However, the Kufic script represents a special expression in these motifs, and the contrast between the stylized surface of Eslimi and Khataei with the angular and thick surfaces of the Kufic script makes the inscription more attractive (Makinejad, 2010, 164). It seems that the Kufic script of this inscription was first inscribed, and then the artist has designed Eslimi motifs between the precisely created negative spaces. By using the letter’s form and the various arrangements of them, the artist has created an artwork full of mystery, to capture the mind of viewers in a celestial realm to contemplate freely, even if the viewer exposes it frequently, and becomes lost in the meaning of Quranic words (Halimi, 2011, 78). The formation of the inscription alongside the Eslimi motifs multiplies the beauty of these Kufic inscriptions.

Another visual feature observed in this Kufic inscription is the item of symmetry at the ends of the raised and vertical letters, such as (a) (الف) (Fig. 11). ‘Symmetry is seen in all [Persian] arts and is the basic rule for one of the recognized foundations of Iranian art; however, in architecture, art of gilding, knotting, carpet and fabric weaving, the characteristic of symmetry exists

Table 1. Eslimi motifs, rhythm, and equality of positive and negative spaces. Source: Authors.

Description	Kufic inscription on the Mihrab of the Mosque-Ghadamgah of Imam Reza (AS) in Farashah, Yazd
Eslimi motifs in the background	
The rhythmic space between letters	

or compared to the other art' (Makinejad, 2010, 186). The inscription artist 'has applied some characteristics, including the structural capability of the strokes, and the symmetrical form of them to maintain visual balance' (Badiei Gorti & Sheikhi, 2022, 34).

In this Kufic inscription, symmetry has been shown in some raised letters, such as (a) (الف) in the vertical line on its left and right halves.

Finally, the adherence to other principles of visual characteristics, including balance and unity, is notable in this Kufic inscription. Unity 'has been represented as the most significant eternal secret in Islamic art; an extraordinary effort by the Muslim artist to manifest and represent (unity and order), (Halimi, 2011, 54). Moreover, 'unity has been presented throughout the inscription by preserving the rhythm quite consciously, as it has brought unity to all parts of the inscription' (Zabolizadeh Ghazanfarabadi & Sheikhi, 2022, 80). Generally, unity in a visual work is formed when a set of characteristics is observed to let it move toward it. In this Kufic inscription, observing a set of features, including making a design, presenting an inscription based on a

design plan, observing the balance between the positive and negative spaces, the repetition of equal negative spaces, the presence of symmetry in raised letters such as (a) (الف) and the use of Eslimi motifs in the background of the inscription, all have created a sense of unity in this Kufic inscription.

### Conclusion

The results of this study show that the Kufic inscription on the stone-shaped Mihrab in the Imam Reza (AS) Farashah Mosque-Qhadamgah follows a written order. This Kufic inscription was designed and performed according to the basic proportions of 1/1 equal to 32/32, which is the basic rule for making the grid system. However, the horizontal guiding lines above the baseline are 1/1 equal to 9/9 with the smallest unit of 1/9. The horizontal guiding lines below the baseline are 1/1 equal to 5/5, with their smallest units of 2/5 and 3/5. All these proportions are related to the primary ratio of 32/32, and the basis for the formation of the design plan is based on these proportions, as the guiding lines on which letters are placed are created on these proportions. A design plan is a scheme on which

### Symmetry in raised letters



Fig. 11. Symmetry in the raised letters of the Kufic inscription in the Mosque-Ghadamgah of Imam Reza (AS) in Farashah, Yazd. Source: Authors.

the inscription artist uses main guiding lines (the baseline, ascender line, and descender line), middle guide lines, and grid system, based on these proportions, to ensure regularity and alignment of the letters. In the design plan of this Kufic inscription, (11) guiding lines have been used. Guiding line (1) is used to position the ends of the letters. The letter connections are formed on the guiding line (2) to create words on this line.

From guiding line (3) to guiding line (10) (middle guides) are designed to accommodate the letters on them, except for the raised letters. The ascender guiding line (11) determines the height of the vertical letters. Each letter in this Kufic inscription originates from a guiding line and ends on another one, as we cannot find any letter designed out of these lines; the letter connections are placed on the baseline. These (11) horizontal guiding lines are spaced at equal distances from each other, which are designed and performed according to the precise proportions mentioned in the design plan of this Kufic inscription.

Since the thickness of the horizontal and vertical letters is equal in this Kufic inscription, lines with a ratio of 1/32 out of 32/32 were designed and placed on the inscription letters, which resulted in a grid system on which the letters were placed precisely, as the sizes of the checkerboard cells followed the mentioned basic proportions. Other visual features that have been considered by the inscription artist in this Kufic inscription can also be mentioned, such as rhythm, equality of positive and negative spaces, and symmetry. The presence of elongated letters such as (A), (T/Z), (K), (H), (N), (ن), (ح), (ك), (ط/ظ), (الف) has caused a negative space to be formed between the words. The inscription artist, by using a design plan that includes basic guiding lines, intermediate guiding lines, and a grid system, has been able to repeat this negative space evenly throughout the inscription. By designing rhythmic Eslimi motifs in these negative spaces, the artist has reduced the large amount of these spaces and has created a balance between positive and negative spaces. Finally, it can be stated that all of these features, which are based on the proportions in the design plan of this Kufic inscription, have created unity in this Kufic inscription.

## Endnotes

1. Vegetal
2. Plain Kufic, Decorative Kufic including Kufic Mushajjar (Tree-like Kufic), Kufic Mowarraḡ (Foliated Kufic), Kufic Mazhar (Floral Kufic), Kufic Muzaffar (Victory Kufic / Named after patron), Kufic Mu'aššaq (Interlaced Kufic or Cursive Kufic), Kufic Muwashshah (Ornamented Kufic), Kufic Bannā'ī (Architectural Kufic / Square Kufic).
3. For example: The Kufi inscription of Imamzadeh Abdullah Shushtar and ...

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#### HOW TO CITE THIS ARTICLE

Salehi, S., Shayestehfar, M., & Ahmadpanah, A. (2025). An Analysis of the Design Plan of the Mehrabi Kufic Inscription from the Kakuyids Era in the Ghadamgah Mosque (Pilgrimage Site) of Farashah, Yazd. *Journal of Art & Civilization of the Orient*, 13(49), 36-49.

DOI: [10.22034/jaco.2025.514637.1470](https://doi.org/10.22034/jaco.2025.514637.1470)

URL: [https://www.jaco-sj.com/article\\_225243.html?lang=en](https://www.jaco-sj.com/article_225243.html?lang=en)

