Geometry in Gold

an Illuminated Mamlūk Qurʾān Section

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Introduction

One of the many important exhibits in the 1976 London exhibition ‘The Arts of Islam’ was the first volume of an elaborate and magnificent Mamlûk Qurʾān, described in the exhibition catalogue as fourteenth-century and of Damascene origin. In 1988 David James catalogued two detached folios from the same manuscript for the exhibition ‘Islamic Calligraphy’ in Geneva, dating them to 1345-70 and retaining a Damascene origin on the basis of a waqf inscription in the first volume. More recently Tim Stanley suggested that the inscription had no bearing on the actual date of production and dated the manuscript instead to the second quarter of the fourteenth century.

The following is a study of the final volume (Juz‘ 30) of the same Qurʾān. Recently it has become possible to reassess this formerly dispersed section, reuniting its verses with a final textual commentary and two full-page illuminated finispieces. Being the final section of the Qurʾān, this Juz‘ contains the shortest suras and therefore the highest number of decorated headings of any section. These, in addition to the illuminated finispieces, afford us a considerable amount of stylistic evidence for the origin and date of production of the Qurʾān. Careful analysis reveals the Qurʾān to be a masterpiece of geometric planning and execution and a highly important work of early Mamlûk art. The overall quality and inventiveness of the illumination points to the work of a master artist, and several factors point more specifically to the work of Muhammad ibn Mubādhir, one of the leading illuminators in Mamlûk Cairo at the turn of the 13th/14th century. A full analysis of the illumination and a discussion of its links to Muhammad ibn Mubâdhir’s style are given below.

An unusual and significant feature is the presence of an extensive contemporary commentary in the margins, which was undoubtedly included as part of the original scheme. It presents three different types of Qurʾānic exegeses relating to the meaning, reading and grammar of the Qurʾān, and its presence was considered important enough within the general design of the manuscript to have been laid out with careful geometric and proportional principles in mind. Indeed, close examination of the whole manuscript shows there to have been a highly inventive and skilfully executed system of geometric and proportional principles underlying the whole production. The result is simultaneously complex and simple, powerful and refined, and deserves to be ranked alongside the greatest examples of early Mamlûk manuscript production.
The Mamlük Dynasty & Artistic Patronage

The Mamlük dynasty arose in the mid-13th century, as the Ayūbid dynasty, which had been in power for nearly a century, declined. The word Mamlük means ‘owned’ in Arabic and refers to the long-held tradition in the dynasties of the central Islamic lands of using a professional military class, often of Turkic origin from the Caucasus and southern Russian steppes, to support the reigning dynasty. By the 13th century, in Egypt and the Levant real political power was in the hands of the military class, which had started to develop its own system of hierarchy and political loyalty. The final demise of the Ayūbid dynasty and the establishment of the Mamlük dynasty in Egypt was precipitated by several factors, including internal squabbles amongst the Ayūbid ruling class, the military and social stress of the crusade of King Louis of France in 1249-50, Sulṭān Turānschīh’s (r. 1249-50) antagonising of the Mamlük ruling class, and the lack of a male heir. In 1250 CE the first nominal Mamlük ruler of Egypt, al-Malik al-Mu'izz Aybak al-Turkmanī, assumed power. Thereafter ensued two decades of infighting until al-Malik al-Zahir Baybars I, who ruled from 1260-77, brought some stability to the dynasty. The Mamluks ruled Egypt and Syria until the Ottoman conquest in 1517. The first Mamlük line, the Bahri, reigned from 1250 until the last decade of the 14th century, when the Buji line took over.

The Mamlük period was generally a prosperous one for the region and allowed commerce and culture to flourish. Trade with other parts of the Islamic world was strong, as were commercial links with the Orient and with the Christian powers of the Mediterranean basin, including Italy, Northern Spain and Sicily. Artistic and cultural patronage also flourished and resulted in the building of the countless mosques, madrasas, mausolea, hammāms, fountains and other buildings that made up the glory of Mamlük Cairo. It also resulted in the production of fine manuscripts and bindings, as well as some of the greatest examples of inlaid metalwork ever produced, and sophisticated social and cultural expressions such as heraldry.

A particularly prolific area of artistic patronage during the Mamlük period was manuscript production, especially of Qur’āns. This may have been related to the self-appointed status of the Mamlük sultans as the defenders and upholders of Sunni Islam in the face of threats as diverse as the Christian Frankish kingdoms, the Isma‘ili Assassins and the infidel Mongols. This role gave Mamlük court patronage a natural focus on religious strength and expression, resulting not only in the production of magnificent Qur’ān manuscripts for institutional and personal use, but also in the more immediately visible mosques and madrasas that sprung up all over Cairo, Damascus and other Mamlük cities.

This role as fidei defensor was further enhanced by the Mamluks’ status as custodians of the three holiest places of Islam – Mecca, Medina and Jerusalem. This was a
privilege they guarded jealously, going so far as to deny the Timurid prince Shahrukh of Persia permission to provide a cover for the Ka'ba in Mecca during the reign of Barsbay (1422-38). That a large number of Mamluk Qur'ans have survived is due not only to prolific production in the period, but also in part to the number of Qur'ans that were produced under royal patronage or were assigned to religious endowments (waqfyya). Mamluk Qur'an manuscripts in general are notable for their grandeur and monumentality, both in calligraphic terms and in sheer physical size. Large, bold, flowing scripts such as rayhani, and especially muhajjar, were the most frequently used, and these were often written on a large scale with relatively few lines to the page. These were appropriate scripts for a dynasty that prided itself on its muscular military and religious status. The manuscripts themselves were often very large, and the visual and spiritual effect of a double-page spread measuring perhaps a metre by a metre and a half, with eleven lines of text in a monumental script on each page, must have been awe-inspiring. Between 1329 and the end of the 14th century at least eighteen Qur'ans were produced whose vertical dimensions exceeded 50 cm, and several more of a similar scale were produced later, such as a Qur'an measuring 86 by 54 cm, now in the John Rylands library, Manchester. These were even larger than the royal Qur'ans produced for the Ilkhanid rulers of Iraq and Iran, the largest of which, made in Baghdad for Sulayman Oljeitu (r. 1304-16), measured 72 by 50 cm. Another distinguishing feature of Mamluk Qur'an production was exquisite illumination. The artists took the already established vocabulary of Islamic ornament, characterised by the use of geometric and vegetal motifs, and developed it into a style that became distinctly Mamluk. They introduced new features, such as a particular type of shaded blossom or globule (see below), or enhanced existing ones such as hatching within illuminated text areas, or interlocking and overlapping geometric forms with the circle and the star as the dominant motifs. All this they infused with a tightness of design and a vibrancy of colour to produce illumination that was simultaneously delicate and powerful, detailed and monumental.
The Manuscript

An illuminated Qur'an section in muhaqqaq script with extensive contemporary marginal commentary.
Illumination attributable to Muḥammad Ibn Muḥādir.

Mamlūk, probably Cairo, circa 1298-1310 CE.
Dimensions: 47 by 33 cm.
18 ¼ by 13 in.

Arabic manuscript, 30 folios, seven lines per page written in bold muhaqqaq script in brown ink on finely burnished cream paper, Basmallahs written in gold throughout, verse divisions marked within text area with illuminated roundels, fifth verses marked with cusp-shaped illuminated devices in gold and red in margin, tenth verses marked with large illuminated roundels in gold and red in margin, sūra headings written in blue thuluth script on elaborately illuminated rectangular panels with stylised palmettes extending into margins, further illuminated devices in margins marking juz' and ḥāzān divisions and sajda loci, extensive marginal commentary consisting of tafsir, qira'at and ḥādīth written in naskh script in red, brown and blue ink arranged horizontally, diagonally and vertically with visible impressed guide rules, ff. 28v and 29r with additional marginal illuminated panels surrounding text of Surat al-Nās and closing prayer, f. 29r with illuminated border bands and a large square illuminated panel beneath the closing prayer, ff. 29r and 30v with textual description of marginal commentary surrounded by an illuminated band with roundels extending into the margin, f. 30r with a full-page illuminated panel with a roundel and cusped arms extending into the outer margin, modern green morocco binding in Mamlūk style.
The script of the main text is a bold mufhayacq, and its style and relation to other scripts of the period will be discussed below. First, however, it is worth describing the spatial proportions of the text area.14 The main text area is half the height of the full page (a ratio of 1:2), but placed centrally so that of the total page height the upper margin accounts for a quarter, the text area a half, and the lower margin another quarter (see diagram A). The proportions of the width seem to have been calculated with the book open as a double-page spread, an arrangement that makes visual sense given that the reader would view the codex as a series of double pages rather than single ones.

The dimension of the width of the two text areas together, including the space between them on the inner margin around the spine, is two thirds of the overall width of the double page (a ratio of 2:3). This attention to geometric and spatial proportion sets the tone for the even more creative system inherent in the illumination.
The sequence of production is revealed where two devices overlap in the margin, as, for instance, on f. 12b, where the fifth and tenth verse markers overlay the hizb marker. It would appear that the Qur'anic text was the first on the page, followed by the marginal commentary. That the marginal commentary was completed prior to illumination can be seen on f. 16v opposite the beginning of Sūra Layl, where the illuminator has had to draw round the commentary in order to execute his marginal palmette (see illustration M on p. 32). The sūra headings and larger marginal devices, the hizb, juz', and sajda markers, would have been completed next, followed by the marginal fifth and tenth verse markers. All the illuminated devices are edged with a narrow blue surround with short projecting filaments or tracery motifs, giving them a radiating effect.

The manuscript is decorated with a very fine array of illuminated devices marking the various text divisions and liturgical instructions. It is well known that geometric forms are the basis for much Islamic illumination, and it is often their strict mathematical formality juxtaposed with the meandering internal vegetal decoration that creates such visually striking works of art. However, a thorough survey of the geometric basis of the illumination here shows that geometric considerations provide not only the general framework for the decoration, but also the precise size and proportion of each device or panel, as well as the internal decoration of the latter. This imbues the illumination with a spatial harmony and internal coherence that was no doubt intentional.
**SINGLE VERSES**

**Illumination:** Single verse divisions are composed of gilded roundels within the text area, using one of two different internal designs. The most frequently used has an internal design of an intertwining rope motif formed by the interweaving of two cusped trefoil devices. The result has a vaguely floral feel (see illustration B1). The less frequently used form is composed of eight half-petals arranged in a spiral form producing a Catherine-wheel device (see illustration B2). Both are illuminated in gold and articulated with coloured dots.

**Geometry:** The interlaced trefoil motifs that form the internal design of the most common type are based on two opposing equilateral triangles (see diagram B3). The points of the triangles can be joined to form circles, which are in exact proportion to each other and to the exterior circle in ratios of 1:2 and 3:4, i.e. the diameter of the innermost circle is equal to the radius of the outermost circle. The diameter of the roundel is exactly the same as the diameter of the smaller internal circle within the fifth verse marker (see below).
**FIFTH VERSES**

*Illumination:* The fifth verses are marked both within the text area and adjacently in the margins. The textual marker is most often one of the single verse divisions described above, but occasionally the illuminator has used instead a teardrop motif consisting of a gold roundel with pointed upper and lower parts and an internal trefoil device (see illustration C). In the margin opposite these points is a much larger roundel with a pointed top, again forming a teardrop motif (see diagram D). This form represents a stylised letter *ha*, indicating the number 5 in the *abjad* system. The internal design of these devices consists of scrolling vegetal interlace in gold, with the interstices coloured with green and orange-gold.

**Geometry:** The geometric basis for this shape is a circle surmounted by an equilateral triangle (see diagram D). There are several exact proportional ratios involved in this device. The diameter of the outer circle is the same as the length of each of the sides of the equilateral triangle. The distance from the base of the cone to the pointed tip is one and a half times the width, so that the ratio of width to height is 2:3. The smaller inner circle, which forms the basis for the central element of the illuminated split palmette, is exactly half the size of the main circle (1:2), i.e., the radius of the main circle is the same as the diameter of the inner circle. The large circle to small circle ratio is 2:1. Thus the geometric ratios used in this device are 2:3, 1:2, 1:3, or their converses.
**Tenth Verses**

**Illumination:** The tenth verses are marked within the text with a normal single verse marker, and adjacent in the margins with larger gilded roundels containing a six-pointed star (see diagram E). In the centre of the star is the word 'asbar' (ten) in a gold Eastern Kufic script. The intervening spaces within the roundel are filled with vegetal interface.

**Geometry:** The internal six-pointed star is made up of overlapping segments of six circles. This relates closely to elements of geometry in the two finispieces (see below).
HIZB AND JUZ

Illumination: The hizb and juz' markers are situated in the margins and consist of large pointed ovoid devices with border bands of scrolling foliate segments in gold, blue and white (see diagram F). The blue and white foliate elements are very unusual, with a blue ground and small white meandering cauliflower-like forms, which are no doubt stylised vegetal motifs, but which occasionally resemble miniature Chinese cloud-bands. They also appear in the border bands of the sûra headings, sajda markers and finispieces, but appear to be unique to this manuscript, appearing in no other published Manāki or Ilkhání Qur’āns. Within the central area of this ovoid marker is either the word hizb or the ordinal number of the juz', in this case al-dātir wa 'ashrūn, indicating the end of the 29th juz' on f. 1r of this manuscript. These words are in a gold Eastern Kufic script, and the intervening space is filled with gold scrolling vegetal motifs.

Geometry: The geometric basis for this device is again the circle, in this case segments of two large overlapping circles, somewhat like the central section of a Venn diagram and similar to the central features of the of the sûra headings (see diagram F).
SAJDA

Illumination: The sajda markers, the points at which the reader of the Qur'an should prostrate in prayer (from Ar. sjd, to prostrate), are marked in the margins in this manuscript with a large semicircular device (see diagram G). The illumination consists of an outer band with scrolling vegetal forms in gold, blue and white, interspersed with shaded globules - essentially the same border design as in the sira headings (see below for discussion), the hiz/juz' devices and the two finispiece pages. The central semicircle contains the word sajda in gold Eastern Kufic script on a ground of gold scrolling vegetal motifs.

Geometry: The design is based on a circle, the ratio of the inner circle to the outer one being 2:3.