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Mamluk metalwork fittings in their artistic and architectural context

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CHAPTER 2

Typology and Development of Mamluk Metalwork Fittings

INTRODUCTION

Each of the four categories of Mamluk metalwork fittings that form the basis of this study, namely doors, doorknockers, window grilles, and window shutters can be subdivided into a small number of types, based on their design. The types were either present from the beginning of the Mamluk period or they were introduced at some stage within the Mamluk era. They are taken as the starting point from which the evolution of fittings throughout the Mamluk period is traced. Three parameters will be discussed for each type. Firstly, the design of a type will be characterized in general, after which developments within the design through time, and possible experiments by individual metalworkers, will be discussed. Secondly, the techniques both for manufacturing the basic components of these artifacts and for embellishing their surface with a variety of decorative devices will be considered. The question why certain techniques were favoured above others will be posed. Finally, for each type the preferred decorative motifs, which for the most part consist of geometry, floral designs, and epigraphy, will be examined. The meaning of these motives will then be analyzed in order to understand the message that was conveyed by such fittings. The development of doors will be shown first, since this is the category with the largest number of extant specimens, and window shutters, doorknockers, and window grilles will follow in that order.

2.1 DOORS

All Mamluk doors consist of a wooden support onto which metalwork plaques are nailed. These either cover the entire surface or leave parts of the wood visible to the onlooker. Four types of Mamluk metalwork doors can be distinguished on the basis of their design: the overall star pattern door, the medallion door, the panelled door, and the door with metal bands. After pinpointing the main characteristics of the layout of each of those, the development of the designs of each type will be traced, after which the technique and the decoration will be discussed.

2.1.1 *Overall star pattern doors*

The first type to be discussed is the overall star pattern door, the most laboriously decorated of all Mamluk doors. All the extant examples are found in religious buildings in Cairo, one Aleppine specimen excepted.[1] Such

[1] The entrance door (cat. no. 22/1) to the *bīmāristān* of Arghūn al-Kāmilī (755/1354).

doors were manufactured throughout the entire Mamluk period, the earliest specimen being datable to 662/1262, although the majority of extant examples were manufactured in the 14th century. The standard design of the overall star pattern door is composed of three elements: a large geometric central field consisting of star designs, two rectangular inscription bands above and below this, and a border frame that surrounds not only the entire composition but that also acts as a demarcation zone between the central geometric field and the epigraphic bands (see Fig. 1). Of all three elements, the geometric field attracts most attention, not only as it physically dominates the greater part of the door and takes in a central position but also because of the intricacy of the pattern itself.

Extant specimens from the early Baḥrī period, however, show that not all metalworkers had yet taken this symmetrical layout as their starting point. The design of two late 13th century doors is entirely dominated by a large star pattern field surrounded by a geometric border, a layout that is strongly reminiscent of two pre-Mamluk overall star pattern doors installed in Cairo.[2] They differ, however, from these forerunners in that a single narrow oblong inscription band is positioned at the far top of the door, excluded by the border band. This exclusion, in addition to the spatial unevenness between the narrow size of the inscription in relation to the large geometric central field, suggests the epigraphy could well have been an afterthought. This experiment with an almost oversized star pattern in relation to the single inscription band was, however, soon abandoned: from the 14th century on, metalworkers not only displayed their inclination for a fixed and symmetrical door design by positioning pairs of epigraphic bands above and below the geometric field, but they also decreased the space allocated to the central star pattern somewhat while increasing the size of the inscriptions to allow for readability. The latter demonstrates the increasing importance granted to inscriptions, which is simultaneously found elsewhere in Mamluk metalwork portable objects.

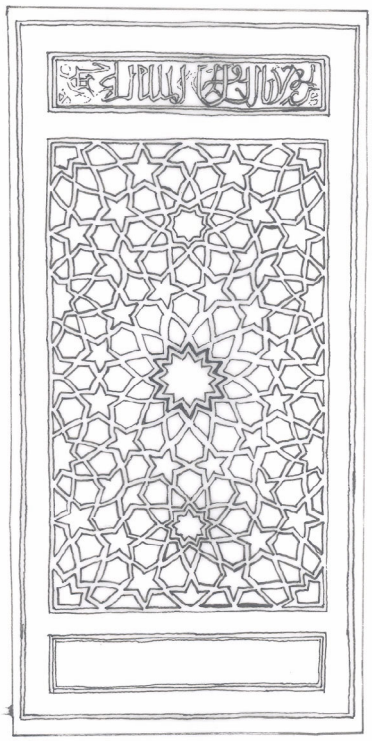

Fig. 1

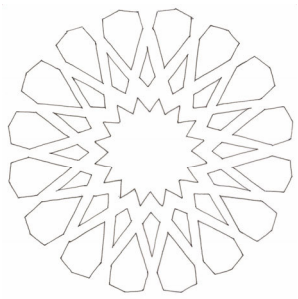

Fig. 2

Irrespective of the characteristics of the entire layout, the design of the main focus of this type – the geometric field – comprises a few specific components. It is built up of combinations of stars, kite-shaped figures, and polygons. Dominating the design are the multiple star units that consist of a central star, which adjoins an inner circle of kite-shaped figures, and an outer circle of hexagons (see Fig. 2).[3] The number of these adjoining figures corresponds to the number of points of the star. Frequently, the geometric pattern is further diversified by so-called polygon units of various shapes that fit into the residual space between star units and which act as a linking device holding the entire pattern together. They range from simple pairs of arrowhead-shaped figures adjoining two hexagons to heptagons or octagons that adjoin small stars alternating with small polygons.

[2] The Mamluk examples are: the entrance door (cat. no. 3/1: Plate 7) to the complex of Sultan al-Manṣūr Qalā'ūn (683–84/1284–85), and the door (cat. no. 5/1: Plate 14) that originally belonged to a building ordered by Amir Mankūtamur (698/1296). The two pre-Mamluk examples are the entrance door (cat. no. II/1: Plate 271) of the mosque of al-Ṣāliḥ Ṭalā'iʿ (555/1160) and a door (cat. no. V/1: Plate 279) in the mausoleum of al-Imām al-Shāfiʿī (608/1211).

[3] For a mathematical approach to the composition of star patterns, see Lee (1987).

Often, the designers chose to compose geometric patterns of two star units of different size and a polygon unit, which they distributed over the field in two different ways. One arrangement is characterized by a linear organization, in which units were dispersed along vertical or horizontal axes (Plate 53). The other is characterized by its distribution of star units at the extremities of a central X-shape (Plate 26). Irrespective of the linear or the X-shape distribution, there seems to have existed an urge to create hierarchical levels within the design, and this was brought about by surrounding large units with smaller ones. Sometimes, this hierarchy was further enhanced by adding relief to the design by creating star units composed of embossed plaques and surrounding them with smaller flat units. This simultaneously added playfulness to the entire design and endowed it with a three-dimensional monumental quality.

There was a clear tendency among the designers of these star doors to create patterns in which the different units could easily be distinguished. However, this aesthetic was not always adhered to in the early Baḥrī period: the geometric fields of two late 13th-century doors are characterized by intricately connected star patterns whose component parts are difficult to unravel (Plates 7, 14).[4] This effect was created by allowing neighbouring stars to share their adjoining hexagons with each other, which makes for a close intertwinement of all star units. It spurred the onlooker's eyes to range over the star pattern without finding a clear place to rest, an optical effect that had already been achieved on two other, pre-Mamluk, doors in Cairo on which a similar distribution of star units had been applied (Plates 271, 279).[5] This approach was abandoned in the early 14th century for a seemingly more ordered and mathematical focus in the star design.

Besides stars and polygons, there is one other component of star designs that needs attention, and that is the role of nails in the design. From a practical point of view they merely function to attach the metal plaques to the wooden support. However, they were designed to play a visual role with their fluted heads standing out in relief. In general, they adorn the surfaces of the metal plaques at regular intervals, their numbers often corresponding with the number of points or corners of stars or polygons. Some individual metalworkers, however, decided to experiment with these nails for the benefit of the design. One late Mamluk metalworker inventively concentrated these nails in relief around the smallest components of the design, allowing them to compete for attention with the larger star units that they surrounded (Plate 237).[6] An early Mamluk metalworker sought a contrasting aesthetic: by hiding all nails under strips of metal he created a smooth uninterrupted surface (Plate 28).[7]

How were the different components of the star patterns applied onto the wooden support? The simplest method was to nail the stars, kite-shaped figures, and polygons individually onto the support without the help of any outlining device. This left part of the support of the door visible, as the metalworker left some space open between each plaque. A more complex method made use of framing plaques that delineated the design, on the one hand, and infill plaques consisting of the usual components like stars and polygons, on the other hand. Two types of framing plaques may be distinguished: the first consisted of narrow strips of metal in relief, some straight, others twisted, that created the outlines of the design, thereby framing geometric cavities into which the infill plaques were nailed. The other type, which was more widely used in Mamluk times, not only outlined the pattern but also served to hold the infill plaques in position, for they were fastened on top of them, their contours

[4] The entrance door (cat. no. 3/1) to the complex of Sultan al-Manṣūr Qalā'ūn (683–84/1284–85), and the door (cat. no. 5/1) that originally belonged to a building ordered by Amir Mankūtamur (698/1296).

[5] The two pre-Mamluk examples are the entrance door (cat. no. II/1) of the mosque of al-Ṣāliḥ Ṭalā'iʿ (555/1160) and a door (cat. no. V/1) in the mausoleum of al-Imām al-Shāfiʿī (608/1211).

[6] Two identical entrance doors (cat. nos. 54/1 and 53/1) positioned in the mausoleum and *sabīl-kuttāb* (908–10/1503–4) and in the *madrasa* (910/1504) of Sultan al-Ghūrī, respectively.

[7] On the entrance door (cat. no. 9/1) to the *khānqāh* of Baybars al-Jāshankīr (707–9/1307–10).

holding the stars and hexagons in place. Both methods – with or without a framing device – seem to have appealed to Mamluk metalworkers, as both are found throughout the period.

The planning of a geometric pattern for a door would have demanded considerable measuring and calculation on the part of the designer. The metalworker al-Jazarī, who wrote the only extant medieval Arabic treatise telling of the manufacture of metalwork doors, suggests that, prior to the casting process, the caster was aware of the number of plaques needed for the geometric design.[8] This implies that the full amount of metal components needed for the specific measurements of a door was calculated in advance. It remains unclear whether metalworkers on the whole made use of previously drawn designs or cartoons before they started the process of manufacturing and applying the plaques. Several studies concerning the application of geometric patterns in media like wood, metal, and tile mosaic in the 20th century have shown that craftsmen through experience obtained a familiarity with a range of patterns, and this abolished the need for a preparatory design.[9]

In contrast to the metal front, the reverse of this type of door is of wood, into which designs are either carved or onto which motifs are applied by adding wooden strips to the support. Instead of a large central geometric field as found on the front, these reverse sides are mostly subdivided into panels square and rectangular in shape. The amount of work spent on the insides of doors varies throughout the Mamluk period. Some of the early ones were kept very simple, as the decoration merely consisted of subdividing the panels by means of swastikas.[10] In the 14th century some of these panels were much more richly decorated with star designs filled with leafed scrolls, motifs that were of course reminiscent of the decoration of the front.[11] This greater emphasis on detail is directly linked to the high quality of execution of the metalwork façade. At the end of the Mamluk period the panels on the insides of overall star pattern doors again show a simplified subdivision.

What techniques did the metalworkers employ to produce the numerous plaques that constituted the design and to work the metal's surface? Throughout the Mamluk period sand-casting was the preferred technique not only to mass-produce the core components of which the central star design was made up but also to manufacture the floral border plaques and the nails for attaching the plaques to the support. It was a highly efficient technique for reproducing the large number of repetitive plaques, be they flat or embossed, or of openwork or closed shape, as the metalworker could reuse the same mould a number of times. To give an idea of the number of identical plaques needed to make up the entire design the example of the entrance door (cat. no. 9/1) to the *khānqāh* of Baybars al-Jāshankīr (707–9/1307–10) may be cited. Its total number of stars (inclusive of half and quarter stars) is 73, whereas the hexagons and the kite-shaped figures amounted to 280 pieces each.[12]

The merits of sand-casting for the easy multiplication of the numerous plaques needed to compose these star patterns are clear: this mass production saved time, and thus money, for far less effort was devoted to the

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[8] Jazarī (1990), 330.

[9] For a metalworker in Damascus who explained his working method by saying he made use of the hundreds of designs that were contained in his head, see a study by Kalter (1992), 71; for the experience of craftsmen in the application of geometric designs and their intuitive understanding of intricate mathematical problems in the art of carpentry, more specifically the making of wooden grilles, see Orazi (1976), 104–5; for the art of *zilij* in Morocco, see Paccard (1981) I, 390. In the latter case, a design was at first drawn in the sand, probably because of the huge measurements of the surface – six by twenty metres. Then, Paccard observed that the craftsman started to work from a central star from which the entire design was regulated by the adjoining of plaques.

[10] Such as those on the entrance door (cat. no. 3/1) to the complex of Sultan al-Manṣūr Qalā'ūn (683–84/1284–85) and the door (cat. no. 5/1) ordered by Amir Mankūtamur (698/1296).

[11] Such as the panels of the entrance door (cat. no. 9/1) to the *khānqāh* of Baybars al-Jāshankīr (707–9/1307–10) and the entrance door (cat. no. 24/1) to the *madrasa* of Sultan al-Nāṣir Ḥasan, which was made in 764/1363. The rear side of the latter door also carries some carved oblong inscription bands that alternate with the larger rectangular panels.

[12] The design of this Mamluk door is composed of 12 9-pointed star units, each adjoining nine kite-shaped figures and nine hexagons; eight half 9-pointed star units, adjoining 4.5 arrowhead figures and hexagons each; five 12-pointed star units, each adjoining in their turn 12 arrowhead figures and 12 hexagons; four half 12-pointed star units at the lateral sides, adjoining six arrowhead figures and hexagons each; four quarter 12-pointed star units at the corners adjoining three arrowhead figures and three hexagons each; 20 pairs of loose hexagons adjoining 20 pairs of arrowhead figures. This amounts to a total of 73 stars (inclusive of half and quarter stars), 280 hexagons and 280 arrowhead figures.

actual designing of forms. Tied up with this is, however, the hidden pitfall that this kind of mass production actually leads to a reduction of decorative motifs, as if the metalworker by applying this technique imposed upon himself a limitation of shapes. Remarkably, although the variety in motifs is indeed decreased, this is not immediately apparent on these doors. The latter is intimately linked to the fact that the component parts, i.e. the stars, hexagons and other polygons that make up the different star units, are all attached at different angles, which changes their impact. It is only when one looks closely that the repetition becomes evident.

The practicality of the casting technique for this type of door was already understood by pre-Mamluk metalworkers, which is elucidated by the metalworker responsible for the manufacture of the palace doors at Āmid, al-Jazarī, who gave a detailed account of this method.[13] He started by cutting various moulds for the differently sized flat and embossed multi-pointed stars, for the infill plaques of diverse shapes that were to be positioned between them, and for the nails that were to fasten both the stars and the surrounding bars of the geometric grid. He then made an imprint of these moulds by pushing them into the sand after which he removed them again. He then continued by pouring molten brass into the pits, after which he retrieved the cast plaques from the sand and smoothened their surface, using both file and plane.

To these basic forms, the Mamluk metalworkers applied a variety of techniques to embellish their surface. The techniques employed were casting, inlaying, engraving, and incising. For reasons of efficiency, metalworkers often prepared the surface of the moulds with decorative motifs, resulting in cast plaques, all bearing identical surface decoration. They were ready to be applied in the chosen geometric design after the corners of these plaques had been smoothed through filing. The moulds, however, had to be renewed on a regular basis as their re-use in the casting process had a wearing effect, especially on the quality of the surface decoration and on the corners of the plaques.

Notwithstanding the advantages of this technique for repeated reproduction, the metalworkers also applied an engraving technique to the surface of plaques. For this, the metalworker used a hammer to direct the sharp-pointed graving instrument or burin into the metal surface. With each blow the instrument would go in and out of the metal again, leaving irregular indentations where the metal was pushed aside; some of these are visible when looked at closely. In addition, engraving served a supporting role in the inlaying technique, by supplying the contours of the patterns that were to receive gold or silver inlay.

Whereas casting and engraving were techniques applied to embellish the surface of plaques on doors of the overall star pattern type throughout the Mamluk period, the inlaying technique was used only in the 14th century, as four doors, or parts thereof, show.[14] Although these four were executed using a similar technique, they differ from each other in the material used for inlay and in the quantity in which the inlay was applied. On the two doors manufactured during the first half of the 14th century, copper was used as the main inlaying material. On the earlier one, it was applied in longitudinal strips in the centre of all the framing plaques of the star pattern (Plate 28), while patches of silver were used sparingly to accentuate the embossed stars. On the extant plaques of the other door, copper was employed much more sparingly and only to emphasize the blazon crowning the embossed stars. The two extant inlaid doors made during the second half of the 14th century show a much more lavish use of silver, although the doors differ in the quantity of inlay used and the visual effect achieved with it. The metalworker responsible for the latest door created contrasting areas by inlaying all the

[13] Jazarī (1990), 331.

[14] The entrance door (cat. no. 9/1) in the *khānqāh* of Baybars al-Jāshankīr (707–9/1307–10), the door of the mosque of Amir Amir Alṭunbughā al-Māridānī (738–40/1338–40) of which only parts (cat. nos. 19/1–19/3) remain, the *qibla* door, dated to end 761/end 1360, (cat. no. 24/6) in the *madrasa* of Sultan al-Nāṣir Ḥasan, and the entrance door (cat. no. 26/1) to the *madrasa* and *khānqāh* of Sultan Barqūq (788/1386).

infill plaques and the inscription bands while avoiding using it on the framing plaques and border frames (Plate 80). A totally different aesthetic was developed by the maker of the fourth door: here, gold, silver, copper, and a black organic material were used as a blanket covering the entire surface in meticulous decorative motifs (Plate 67). Instead of supporting or emphasizing the star pattern, as was the case on the other three specimens, the design was made subordinate to both the technical ability of the metalworker and to the rich shine of the precious metals.

Although the extant specimens differ in the approach and quantity of inlay, the technique by which these doors were enriched was executed along the same lines. As has been pointed out above, the metalworker prepared the brass or bronze surface by engraving the outlines of the design on it. Those areas that were to be inlaid were then roughened and, where silver and copper would be applied, even undercut. Silver or copper sheets were then hammered into these depressions, held tightly by the jagged contour lines and the uneven ground. Besides silver sheets, wires were also used, and these were hammered deeply into the irregular lines made by the burin. Those areas that were to receive gold were much more finely worked with engraved parallel lines, after which the gold was hammered in.

The metalworker sought different effects by applying the inlaying technique, the most important being the creation of a multi-coloured palette by adding gold, silver, the red of copper, and a black organic material, or a combination of these, to the yellowish bronze or brass.[15] The question arises whether inlaying was the only technique used by Mamluk metalworkers to create a multi-colour palette on Mamluk doors. As the practice of painting wood in a variety of colours had taken root on Mamluk wooden doors, it does not seem far-fetched to imagine the metalworker also applying paint, either on the wooden support or on the metal plaques themselves. Traces of red and blue paint found on an early 13th-century overall star pattern door from the Ulu mosque in Cizre, former Jazīrat b. ʿUmar, shows that metalworkers had indeed experimented with this before Mamluk times.[16] From the Mamluk period itself, there is only written evidence for the addition of paint: Bourgoin noted in the accompanying text to a door also drawn by him that it carried traces of red paint on the wood below the plaques.[17] Unfortunately, this door has not survived, and none of those extant shows any trace of paint.

There were other effects the inlayer might have intended to achieve besides adding colour. By using contrasting colours certain designs could be highlighted, which is exemplified by the blazon inlaid in red on a yellow ground or by the embedding of gold-inlaid rosettes into a background of silver leafed scrolls on another door. Another intention of applying gold and silver could be to display the wealth of the patron, something which the lavish use of inlay on the *qibla* door, dated to the end of 761/1360 (cat. no. 24/6: Plate 67) in the *madrasa* of Sultan al-Nāṣir Ḥasan suggests. A totally different effect was sought by the metalworker responsible for the entrance door (cat. no. 9/1: Plate 28) to the *khānqāh* of Baybars al-Jāshankīr (707–9/1307–10), an experiment which was never followed up. He used strips of red copper inlay with the intention of hiding the nails that fastened the plaques to the wooden support. To achieve this, he first gouged out longitudinal depressions in the framing plaques to accommodate the nails. After positioning the nails, he then covered them with copper strips, which were hammered into the recessions. This method required quite a thick layer of copper designed for this particular usage, a thickness unheard of in the case of silver or gold inlay.

The fourth and last technique employed for surface decoration was incising, a method restricted to

[15] According to Atıl [*et al.*] (1985), 44, the black organic material is often identified as a mixture of hydrocarbons, such as tar, bitumen, and mastic, a brownish resin from the bark of trees.
[16] This door (cat. no. VI/1), published in Museum (2002), 95, was made during the reign of Maḥmūd Sanjar Shāh (atabeg of Cizre from 1208 to 1241AD) for the Ulu mosque in Cizre and is housed today in Istanbul, the Museum of Turkish and Islamic Art, inv. no. 4282.
[17] Bourgoin (1892) III, 10 (part of chapter '*La menuiserie*').

provide inlaid areas with additional detail. For this purpose a pointed instrument or 'scriber' was pushed gently into the soft and thin surfaces, creating such delicate designs as the veining of leaves or the flowing lines of the internal arrangement of a lotus flower.

A variety of techniques were also employed for the oblong inscription bands, which appear on overall star pattern doors in four different variations, namely in openwork, inlaid with precious metals, in *repoussé*, or engraved. Of these four different manifestations, inscriptions executed in openwork were favoured. For creating the openwork inscriptions bands, the Mamluk metalworker used three different methods: casting, filing and sheet-cutting. The former two techniques seemed to have demanded considerable skill and patience on the part of the craftsman. In the case of casts, the result was dependent on the metalworker's expertise to force the fluid metal to reach all the irregular curves, whether thick or narrow, of the inscriptions set against a background of floral scrolls. It remains unclear what material these moulds were made of or, for that matter, the patterns around which sand was packed to form the hollow in the mould. At least with respect to the 19th century, the use of wooden patterns for sand-casting is attested by extant fragments of wooden epigraphic bands.[18] Remarkably, these fragments are identical to the inscription bands now attached to the door of the *madrasa* of Sultan Baybars (660–62/1262–64), whose inscriptions were indeed a 19th-century addition. They were not, however, the original patterns as the measurements differ slightly.[19]

The second method applied for inscription bands was filing; first the metalworker had to pierce a number of holes into a rectangular plaque, after which the openwork design could be filed further out. This must have been quite a time-consuming enterprise as the metal was quite thick. The introduction of the jig-saw would have made this method much more practical, but evidence to support the existence and the use of this instrument in the Mamluk period is absent.

The third method which was used for producing openwork inscription plaques was sheet-cutting, a technique characterized by cutting numerous apertures of small size in a thin sheet of metal. The visual effect sought after by the metalworker was the creation of two different planes: a ground pierced with numerous small holes shaped in the design of scrolls serving as an airy background against which the foreground of dark plain cut-out letters stood out. In contrast to its widespread employment for manufacturing openwork sheet-cut lamps, its use on doors was limited.[20] Its restricted application can perhaps be explained by the thinness of the material, which made it liable to damage. Moreover, a metalworker already manufacturing the basic geometric elements of a door by way of the casting technique would perhaps prefer to apply this technique for the inscription bands as well.

Inlaying, *repoussé* and engraving were used more sparingly for inscription bands. The inlaying technique was applied only on two 14-th century doors where the choice for this method is explained by the presence of inlay on the main star pattern field.[21] Twice – in the late 13th century – an experiment with

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[18] These wooden fragments are housed in Berlin, Museum für Islamische Kunst, nos. I 2832 and I 2834, and read "al-malik" and "and strengthen his authority in the year 661" (*wa a'izz aḥkāmahu sana 661*), respectively.

[19] The measurements of I 2832 are: H (inclusive of frame): 15.3 cm; H (exclusive of frame): 13.9 cm; W (inclusive of frame): 15.1 cm. The measurements of the corresponding fragment now attached to the door in the French Embassy at Giza, but that formerly belonged to the *madrasa* of Sultan Baybars are: H (inclusive of frame): 16.7 cm; H (exclusive of frame): 13.7 cm; W (inclusive of frame): 14 cm. The measurements of I 2834 are: H (inclusive of frame): 17.1 cm; H (exclusive of frame): 14.2 cm; W (inclusive of frame): 29.3 cm. The measurements of the corresponding fragment now attached to the *madrasa* are: H (inclusive of frame): 17 cm; H (exclusive of frame): 13.6 cm; W (inclusive of frame): 28.5 cm.

[20] Only two extant doors carry this type of panel: the entrance door (cat. no. 9/1) of the *khānqāh* of Baybars al-Jāshankīr (707–9/1307–10), and the entrance door (cat. no. 46/1) of the mosque of Qāḍī Abū Bakr b. Muzhir (884/1479–80). However, the authenticity of the technique used on the latter door is questionable as the inscription panels were manufactured and installed during a restoration campaign, as the inscription itself reveals. For the technique used on metal lamps, see Behrens-Abouseif (1995), 7.

[21] The *qibla* door(cat. no. 24/6), dated to the end of 761/the end of 1360, in the *madrasa* of Sultan al-Nāṣir Ḥasan and the entrance door (cat. no. 26/1) to the *madrasa* and *khānqāh* of Sultan Barqūq (788/1386).

inscriptions in *repoussé* is encountered in which a raised inscription on the front of a metal sheet was produced by hammering from the back, after which the contours were refined through chasing.[22] It is not entirely surprising why this technique did not become popular, as the readability of the existing specimens is hampered not only by the narrow size of the bands but also by the stretching of the letters and the lack of sharp outlines. Moreover, the technique hindered creating different levels for the distribution of the words, something that was sought after to develop more space for inscriptions. The third alternative to openwork for inscription bands was the engraving technique. It is first encountered at the very end of the Mamluk period on two doors made for Sultan al-Ghūrī.[23] By that time the engraving of inscription bands had become a firmly established practice for medallion doors and doors of the metal bands type. The popularity of these two types of doors during the 15th century explains the introduction of engraved epigraphic bands on the two late overall star pattern doors.

After this discussion of the various techniques, the topic of the different decorative motifs used on overall star pattern doors will now be discussed. The types of decoration that metalworkers applied to the surface of the metal plaques are geometric, floral, epigraphic, and heraldic. They play various roles, ranging from structuring the patterns in the case of geometry to merely filling surfaces as in the case of vegetal designs. Of each type of decoration their role in the design, their allocated locations, and their different forms of appearances will be addressed.

Two levels can be distinguished in the role that geometry played in the structure of the design. Firstly, it functioned to compartmentalize the entire support of an overall star pattern door into a number of sections: the central field, the elongated rectangular plaques above and below it, and the border bands surrounding the former two. Secondly, geometry also played the main part in subdividing the central field, being built up of star systems. Depending upon the distance of the onlooker to the door, different visual impressions were created within the geometric field. From nearby, the onlooker was confronted with a multitude of individual geometric forms, ranging from stars to hexagons. When the geometric door was viewed from a slightly greater distance, each complete star unit could be perceived as a circle or a medallion. When the entire pattern was viewed from even further away, the impression was created of an infinite pattern, the continuity of which was suggested by the cutting of the design in halves where it bordered the edges on all four sides.

In contrast to the large role of geometry in the composition of the design, the presence of geometric patterns filling the interiors of openwork plaques or decorating the actual surface of plaques is almost negligible. If present at all, they consist of zigzag patterns, guilloche bands, and fretwork. They are found on two doors only where they are marginalized to the border design or, when adorning the central field, applied in small numbers when compared to the multitudes of plaques surrounding them decorated with vegetal motifs.[24] This limited use of geometric surface decoration is not surprising given the dominant role that geometry already played in the entire layout of the door.

While geometric patterns dominate the internal layout of overall star pattern doors, floral motifs serve as the principal internal decoration of the entire central field and the border bands. The plant forms are confined within the borders of the geometric plaques of stars, hexagons, and kite-shaped figures that make up the central geometric design. They fill their entire internal space, most often in an openwork mode. The vegetal designs are

[22] The entrance door (cat. no. 3/1: Plate 9) of the complex of Sultan al-Manṣūr Qalāʾūn (683–84/1284–85), and the door (cat. no. 5/1: Plate 17) that originally belonged to a building ordered by Amir Mankūtamur (698/1296).
[23] Two identical entrance doors (cat. nos. 54/1 and 53/1: Plate 229) positioned in the mausoleum and *sabīl-kuttāb* (908–10/1503–4) and in the *madrasa* (910/1504) of Sultan al-Ghūrī, respectively.
[24] The door (cat. no. 5/1) ordered by Amir Mankūtamur (698/1296) and the *qibla* door (cat. no. 24/6: Plate 70) dated to the end of 761/end of 1360 in the *madrasa* of Sultan al-Nāṣir Ḥasan, respectively.

predominantly stylized, often consisting of stems branching off with bifurcated leaves, to which trefoils or palmettes might be added. The earliest introduction of more naturalistic elements into the repertoire is found on the inlaid *qibla* door (cat. no. 24/6) in the *madrasa* of Sultan al-Nāṣir Ḥasan which contains lotus flowers, peonies and rosettes. Thereafter, the latter were only sporadically found on overall star pattern doors, which might be explained by a desire on the part of the metalworker to use a restricted repertoire because of economic reasons. Another explanation is that the use of naturalistic flowers was abandoned when the inlaying technique fell out of fashion on overall star pattern doors, just as its introduction onto metal fittings was closely connected to this same technique.

The border bands of many star pattern doors are also filled with floral, mostly openwork, designs. Although these border bands are made of numerous rectangular plaques, they were attached in this way to create a continuous design, which ranged from simple foliate stems to bands with cloverleaf motifs and trefoils. Unlike the floral motifs which served as the dominant decoration in border bands and in infill plaques, foliate stems were also used as background fillers in the case of epigraphic bands. Often, these are subdued and merely consist of some stems and tendrils interwoven between the consonants. Their effect is much stronger when they are modeled in spirals, which not only create a sense of movement but more importantly visually lift the inscriptions up so that they stand out.[25]

Epigraphy is the third type of ornament that makes up an integral part of the decoration of this type of door. After some initial experiments with their location, as described above, early in the Mamluk period inscriptions attained a fixed position in rectangular bands above and below the central field. The metalworkers showed great consideration for the legibility of these texts: not only are most of them executed in the readable *naskh* or *thulth* scripts, but the size of both bands and epigraphy were adjusted according to the height of the doors.

From the second half of the 14th century, simultaneously with the rise of the inlaying technique being applied on metal doors, epigraphy was also occasionally made part of the decoration of both the central field and the border bands.[26] There, inscriptions are placed in roundels at the cores of the stars or in the polygons in the border band. Here, however, legibility is not always the main objective: the radial mode used for the titles of the sultan on the embossed 18-pointed stars on the entrance door (cat. no. 26/1) of the *madrasa* and *khānqāh* of Sultan Barqūq (786–88/1384–86) does not facilitate reading the inscription but reveals instead an inclination for playfulness. Moreover, their specific design links the content of the inscriptions to the celestial bodies. The lengthened *hastae* of the consonants that spell out the epithets of the sultan are formed like the rays of the sun, while the bisecting ends of the *hastae* near the top are linked so as to form a star, again enclosing the name of the patron.[27]

The message communicated in the rectangular bands is quite standardized, the most popular being references to patronage. The titles of the patron are in most cases preceded by an introductory phrase. This introduction may refer to the patron ordering the construction, typified by phrases such as 'what was made for' (*mimmā ʿamila bi-rasm*) and 'he ordered the construction of' (*amara bi-inshāʾ*). The latter formula is either followed by a reference to the door itself or a mention of the type of building. More commonly found

[25] See the entrance door (cat. no. 24/1: Plate 56), dated 764/1363, which is nowadays located in the entrance portal of the mosque of Sultan al-Muʾayyad Shaykh (818-24/1415-21), but which had originally been made for the *madrasa* of Sultan al-Nāṣir Ḥasan.
[26] Found on the *qibla* door (cat. no. 24/6: Plate 68) of the *madrasa* of Sultan al-Nāṣir Ḥasan, on the entrance door (cat. no. 26/1: Plate 80) of the *madrasa* and *khānqāh* of Sultan Barqūq (786-88/1384-86), and on the two entrance doors (cat. nos. 53/1: Plate 227 and 54/1) located in both the *madrasa* (908–9/1503) and in the mausoleum and *sabīl-kuttāb* (908–10/1503–4) of Sultan al-Ghūrī.
[27] For introducing the idea of solar symbolism in the case of Mamluk metalwork, see Allan (1982), 88.

introductions are phrases simply introducing the patron with the expression 'glory to our lord' (*ʿizz li-mawlānā*). The content rendered in these bands ranges from simply mentioning the name of the patron to more extensive protocols, which include honorific titles. Though the latter might boast of the worldly and religious powers of the patron, also the humbleness of the patron before God is expressed, as in the added phrase 'the poor slave of God Most High'(*al-ʿabd al-faqīr ilā Allāh taʿālā*).[28]

Religious inscriptions are threefold. Most common are pious invocations in favour of the patron such as 'may God reinforce his victories' (*aʿizza Allah anṣārahu*) or the shortened version 'may his victory be glorious' (*ʿazza naṣruhu*). On the whole they occupy the final part of the inscription, as if finalizing it and they are found on almost all doors. In contrast to this, Qurʾānic verses (Qurʾān 62:9 and 9:18) are only found twice on overall star pattern doors. On these two, these verses are granted the most conspicuous position as they either take up each of the two epigraphic bands or they fill the upper band while the titles of the patron are pushed to the band located at the base.[29] The third type of inscription with a strong religious connotation is the unique twofold repetition of the word 'Allāh' on the door installed in the *minbar* in the *madrasa* of Sultan al-Nāṣir Ḥasan. This is the shortest and most simple formula found on Mamluk doors of the overall star pattern type and its choice might be linked to the door's unique position in the *minbar*, a location not used for metalwork doors of any type, except for one other specimen, i.e. a door with metal bands in the mosque of Ibn Ṭūlūn.[30]

If they are present at all, dates are positioned at the latter part of the inscription. They are absent on doors made in the first century of Mamluk rule, taking into account the fact that the authenticity of the date on the earliest Mamluk door is questionable.[31] The earliest genuine occurrence of a date is attested on the entrance door (cat. no. 24/1) to the *madrasa* of Sultan al-Nāṣir Ḥasan, dated 764/1362–63. The fact that this door is the first to contain a date is not surprising given the mosque's history. Although construction work had started in 757/1356 or 758/1357, the building was not yet finished at the time of the sultan's death in 762/1361.[32] Six years had elapsed between the initiation of the project and the final stages of the construction of which the manufacture of the door was part. Given this passage of time it does not come as a surprise that the metalworker chose to record the exact year as opposed to another, earlier date registered on the doorknockers (cat. no. 24/9) attached to the door in the *qibla* wall of the *madrasa*. Moreover, the inclusion of the date was necessary as the metalworker chose to give additional historical information giving evidence of the death of the sultan by referring to him as 'the martyr' (*al-shahīd*) in the same inscription.

Signatures are absent on Mamluk star doors except for one added during restoration works in the late 19th century by a craftsman who emphasized his specific contribution of calligraphing the large epigraphic bands with the words 'Aḥmad wrote it' (*katabahu* Aḥmad).[33] It might well be that some signatures were lost owing to wear and tear or that they were replaced during restoration work. However, there are no recordings whatsoever

[28] The latter is recorded, for example, on the lower inscription band on the entrance door (cat. no. 24/1) to the *madrasa* of Sultan al-Nāṣir Ḥasan (764/1363), now located in the entrance portal of the mosque of Sultan al-Muʾayyad Shaykh.
[29] The two oblong bands filled with religious verses are found on a single leaf door (cat. no. 58), now located in the French Embassy in Cairo while the religious verse and the titles of the patron are found on the former entrance door (cat. no. 24/1) of the *madrasa* of Sultan al-Nāṣir Ḥasan, made in 764/1363.
[30] This door (cat. no. 6/1) was ordered by Sultan Lājīn.
[31] The authenticity of the date 661 on the door (cat. no. 1/1) that formerly belonged to the *madrasa* of Sultan Baybars is questionable on two counts. Not only is its date expressed in numerals, which is highly unusual for dates on Mamluk constructions, but also the actual date, i.e., 661AH seems odd given the fact that the *madrasa* of Sultan Baybars was finished only in 662 AH. As will be discussed in Section 4.3, fittings like doors, dependent in size as they are upon the immediate context in which they were installed, were usually manufactured only at the latest stage.
[32] Maqrīzī (1853) II, 316, recorded the year 757/1356 for the start of the construction of the *madrasa*. According to Ibn Ḥabīb (1982) III, 209-10, construction had only begun in 758/ 1357. According to Maqrīzī (1853) II, 316, the minaret above the portal collapsed just before the sultan's death in *Rabīʿ al-Ākhir* 762/February 1361 killing many orphans.
[33] On the extreme left of the lower inscription band of the *qibla* door (cat. no. 24/6) in the *madrasa* of Sultan al-Nāṣir Ḥasan.

of this in the notes of the Comité. Moreover, their absence on doors whose inscriptions were not tampered with suggests that signing doors was not a well-established tradition in Mamluk times.

Finally, a number of doors carry inscriptions added during the 19th and 20th century, which give evidence of restoration work. They often refer to both the party that gave the assignment and those who executed it, in the majority of cases the Comité, often inclusive of the year in which the work was executed. They are usually found in the oblong band at the base of the door, replacing earlier work. In addition to this, many doors also carry *hijrī* dates in numerals, incised on the surface of the plaques of the central field. These record the date of restoration.

Compared to the overall presence of geometry, floral motifs, and epigraphy on star pattern doors, the role of heraldry is spatially much more limited. Its use is attested on only four doors and consists of two figural heraldic devices on doors from the Baḥrī period and two epigraphic ones from the late Mamluk period.[34] Although they are limited in number, the metalworker stressed their significance by their position, placing them at the centre of the largest stars, which on the whole constituted the main focus of the geometric design. Moreover, attention was further drawn to the two early figural specimens, as they were positioned on top of an embossed star. In one case, red copper inlay was used to stress the visibility of the blazon even further.[35]

The above has shown that throughout the Mamluk period the makers of overall star pattern doors adhere closely to designs, ornament and techniques that were for the most part already defined in the early Mamluk period. This somewhat conservative approach makes it difficult to attribute dates to doors that have lost their provenance.[36] Unique applications of decorative motifs and experiments with different techniques such as inlaying or *repoussé* show, however, that individual craftsmen were looking to distinguish themselves from their colleagues.

2.1.2 *Medallion doors*

The second type of door under consideration is the medallion door. Its design is composed of a medallion, four corner-pieces, two oblong panels and border bands framing the field (see Fig. 3). This type was developed in Cairo where all extant examples still adorn the exterior or interior of buildings, except for one door which is installed to the south of Cairo in Madīnat al-Fayyūm.[37] The earliest extant specimen dates to the late 13th century and conforms to type as far as its layout is concerned, although it remains somewhat of an anomaly because of its animal figural decoration.[38] The tradition took wing only from the time of Sultan Barqūq onwards; his *madrasa* and *khānqāh* boasts no less than six identical medallion doors (cat. nos. 26/3–26/8), initiating a period of preference for this type.

The core element of this type is an openwork medallion with trefoil finials above and below, which dominates the central part of the door both in position and size. It is enclosed on all sides by four openwork

[34] The earliest two are figural: the lion on the door (cat. no. 1/1) of the *madrasa* of Sultan Baybars (660–62/1262–63), and the cup, found on three 16-pointed embossed stars (cat. nos. 19/1–19/3) formerly on the door of the mosque of Amir Alṭunbughā al-Māridānī (738–40/1338–40). The heraldic lions are gone today, but their former presence is attested by a drawing made by Bourgoin (1873), pl. 74, located there on the two 12-pointed stars in the lower half of the door. The epigraphic blazons with tripartite fields were found on the two entrance doors (cat. nos. 53/1 and 54/1) of the *madrasa* (908–9/1503) and the mausoleum and *sabīl-kuttāb* (908–10/1503–4) of Sultan al-Ghūrī.

[35] In the case of the three 16-pointed stars (cat. nos. 19/1–19/3) that belonged to the door of the mosque of Amir Alṭunbughā al-Māridānī (738–40/1338–40).

[36] This is the case, for example, with doors cat. nos. 58 and 59.

[37] The door (cat. no. 52/1) in the mosque of Princess ʿAṣalbāy (903–5/1498–99).

[38] This is the door (cat. no. 7/1) made in the name of Amir Sunqur al-Ṭawīl (before 699/1299–1300).

corner-pieces the shape of which – a triangle with a trefoil finial projecting from its long leg and pointing towards the centre – accentuates the position of the central medallion even more. Above and below the main field an oblong band, often carrying an epigraphic message, is located and is surrounded by a geometric or floral border band. Identical frames surround the entire design.

The design of medallion doors leaves the wooden support partially visible, not only because the metalwork only partly covers the entire door but also because the support is visible through the holes of the openwork metal medallions and corner-pieces. Today, the timber of this support is often in a bad state, which could be explained by a dearth of good wood at the time of construction or could have been driven by economic reasons. The warping of the wood owing to sun, wind, and humidity on the unprotected support for centuries might also partly explain the current state of damage. There are no traces of paint visible on these wooden supports today, which could easily have been applied for the benefit of adding a multi-colour palette and for contrast against the openwork yellowish bronze or brass. Carved designs in the wood, which could have created an interplay of designs between wood and metal, are also absent.

Geometry plays a much lesser role in the design of the main field than in overall star pattern doors. However, it is not altogether absent, as is attested by two specimens whose medallion in each case is filled with an openwork star design.[39] With a 12-pointed star unit at its centre and six half 12-pointed star units to the side, they are visually linked to the overall star pattern doors, which could well have served as a source of inspiration to the metalworker. Metalworkers, however, clearly preferred to fill the interior of the medallion with openwork floral motifs, the mobility of which was much better suited to the round form.

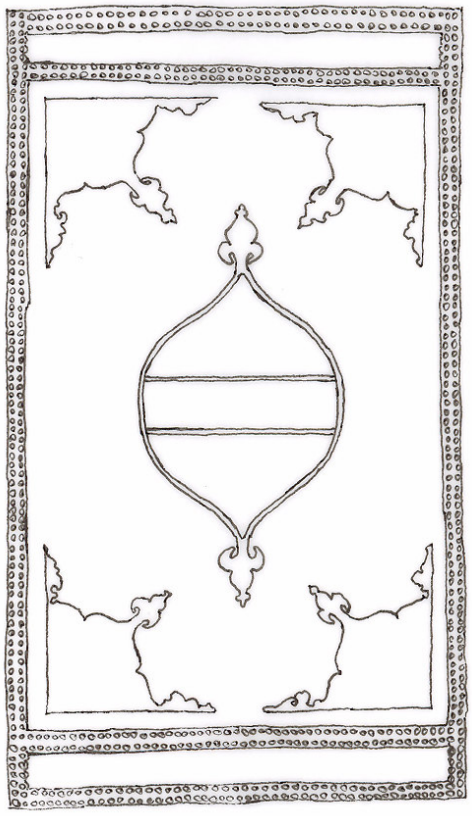

Fig. 3

Mamluk metalworkers created a powerful play of movement by means of opposing directions within the openwork medallions. They drew attention to the core by placing a closed disk at its heart, which was surrounded by a circle of trefoils that pointed towards it. At the same time, however, they created a centrifugal force by filling the rest of the medallion with palmettes and trefoils that pointed outwards, an effect that was emphasized because these floral motives were interspersed with leafed stems that also wavered out towards the medallion's edge. This aesthetic was only briefly abandoned during the second and third decades of the 15th century when metalworkers experimented with an oblong epigraphic band along the entire width in the centre instead of the round disk.[40] All sense of centrifugal movement is lost for the surrounding split leaves are not given any proper direction. Although this experiment granted additional space to inscriptions, metalworkers abandoned this design,

[39] The entrance door (cat. no. 28/1: Plate 102) to the mosque of Amir Maḥmūd al-Ustādār (797/1394-95) and the entrance door (cat. no. 47/1: Plate 195) to the mosque of Amir Qajmās al-Isḥāqī (884–86/1479–81).

[40] This is the case on the interior doors (cat. nos. 32/1: Plate 132 and 32/2: Plate 135) in the mosque of Sultan al-Mu'ayyad Shaykh (818–24/1415–21), the entrance door (cat. no. 35/1: Plate 143) in the *madrasa* of Sultan al-Ashraf Barsbāy (826–27/1423–24), and the entrance door (cat. no. 37/1: Plate 153) of the mosque of Amir Jānī Bak al-Ashrafī (830/1427).

favouring the visual effect brought about by the movement of motifs acting as foils.

As was the case on overall star pattern doors, the reverse sides of medallion doors were devoid of metal decoration. If the wooden reverse was carved at all, it was done by way of panels of different shape that alternated with one another. Most of these were quite simple, as their panels show a subdivision into a swastika design or simple star shapes, which were left plain without any floral infill. Clearly, the public that saw the exterior mattered more than the users of the building itself. The reverse sides of the six medallion doors (cat. nos. 26/3–26/8: Plate 91) installed in the *sahn* of the *madrasa* and *khānqāh* of Sultan Barqūq (786-88/1384-86) show the most elaborate decoration with square panels filled with stars and octagons alternating with oblong bands, which have the titles and the blazon of the sultan carved into them. This exuberance does not come as a total surprise considering the fact that the tradition of medallion doors really took wing from this moment on and much energy was still spent on them.

Although the general design of medallion doors differs from that of overall star pattern doors, Mamluk metalworkers employed the same techniques of manufacture on both, although sometimes with a different focal point. Again, casting was the preferred technique for producing the multiple identical wedges of the medallions, the components of the corner-pieces, and the separate elements of the border bands. The caster could exploit the time-saving qualities of this technique even further by working the surface of the mould with ornaments. These could vary from quite superficial decorations to deep strong lines, as in the case of the entrance door (cat. no. 27/1: Plate 101) of the *madrasa* of Amir Īnāl al-Yūsufī (794–95/1392–93). In this specimen the deep strong lines on the medallion's surface not only enhanced the robust feel of the metal but, because of their depth, the metalworker could use the rays of the sun to create sharp contrasts of light and shadow. A second much less widely used method was sheet-cutting, which was employed to produce the openwork medallions and their corner-pieces.[41] As these sheets were quite thin, they were prone to damage which, in addition to the economic use of the casting technique, explains why this cutting technique was far less prolifically employed.

With respect to the inscription bands, engraving and casting were the preferred techniques, both used in turn throughout the Burjī period. With cast openwork inscription bands the metalworkers continued a practice that had already been popular for overall star pattern doors. It was engraved bands, on the other hand, that were newly introduced on metalwork doors in Mamluk Cairo during the 14th century. They appeared for the first time when the tradition of medallion doors took wing, as if the novel design triggered a taste for other innovations as well.[42] There were certain advantages to be gained in using engraving. Firstly, it opened up the possibility to increase the number of words that could be fit into a limited space while still attaining an acceptable level of legibility. Secondly, this technique allowed the introduction of a wide variety of detailed backgrounds to the inscriptions, ranging from almost mechanical whirls of spiral scrolls to stems and leaves playfully surrounding the consonants. Thirdly, these backgrounds of tiny engraved ornaments were given a more important role than their much simpler counterparts in the cast specimens: the meticulously engraved background with its whitish shine pushed the dark consonants outwards, almost suggesting they were set in relief. This greatly enhanced readability, not least because the craftsmen were more inclined to add diacritical marks.

The range of technical possibilities of the engraving technique was extended even further by the metalworker responsible for the knotted designs on the interior doors (cat. nos. 26/3 to 26/8: Plate 88) in the *madrasa* and *khānqāh* of Sultan Barqūq (786–88/1384–86). On the one hand, he created clear contrasts between

[41] As found on the medallion doors (cat. nos. 26/3 to 26/8) in the *madrasa* and *khānqāh* of Sultan Barqūq (786-88/1384-86).
[42] The tradition took wing from the *madrasa* and *khānqāh* of Sultan Barqūq (786-88/1384-86) onwards, in which six medallion doors (cat. nos. 26/3 to 26/8) were positioned in the *sahn*.

light and dark by alternating dense engraved lines which created dark areas with light ones resulting from the burin hardly having touched the metal. On the other hand, there was a play with contrasting textures: those sections that were left untouched remained smooth while a multitude of engraved spirals gave a roughened effect and even left the impression of carving in relief.

There were other experiments with techniques in this type of door. In two different specimens, metalworkers combined the casting technique with that of engraving in order to produce different planes within the medallion.[43] They did so by casting the openwork designs of the medallion and placing them on top of a metal ground that was engraved with ornament. They thus created two differently decorated planes, which themselves rested on the primary plane of the undecorated wooden support, something absent on all other medallion doors as their openwork designs were nailed directly onto the wood. The creation of two planes must have been inspired by overall star pattern doors in which a clear division is also to be found between the outlining pattern – the framing plaques – and those filling the outlined spaces, the infill plaques. This same source of inspiration must have inspired the metalworkers to use a star design to fill the medallion.

Besides casting and engraving, the inlaying technique was sometimes used to decorate the surface. The technique was identical everywhere and consisted of sheet silver inlaid in the way already explained for overall star pattern doors. Its use was restricted time-wise, as it is found on medallion doors during a time span of only 40 years, starting with the interior doors (cat. nos. 26/3 to 26/8) in the *madrasa* and *khānqāh* of Sultan Barqūq (786–88/1384–86). All inlaid doors have in common that the use of silver inlay was spatially restricted, being confined to such areas as the edges bordering both the openwork medallion and the corner–pieces, which were highlighted with repetitive rows of rosettes. Sometimes parts of the oblong bands were also inlaid, but here the designs highlighted by the inlayers were also all floral. Even though the inlay was sparse, it has been possible to identify a single workshop active in Cairo between 818/1415 and 830/1427 that was responsible for at least three doors and a fragment.[44] They all share a peculiar inlaid motif, consisting of a repetition of a 6-petalled rosette flanked by a leaf.

The types of decoration that were applied by way of casting, engraving, and inlaying were geometry, floral motifs, epigraphy, heraldry, and figural images. Again, as was the case in the overall star pattern doors, geometric forms such as the circle, triangle and rectangle were used for composing the main layout. Their role as fillers of these outlining devices is, however, very limited. Only twice did geometric patterns based upon star designs occupy the central medallion and their corner-pieces. More often, they fill border bands that were introduced in addition to the more common floral ones. As surface decoration, geometry is used only sporadically: if present, it appears as spirals forming the background of inscriptions or as knotted designs topping pseudo-kufic scripts.

Floral motifs play a dominant role as a filler device as they are the main openwork forms used for decorating the interior of medallions and corner-pieces. They also dominate the border bands which are made up of repetitive rows of trefoils and slender cloverleaf motifs set on a straight baseline. Besides providing the openwork designs, floral ornament is the principal decorative device with which the openwork surface is covered. Moreover, it serves as a background to inscriptions. Irrespective of their role, they are most often stylized, consisting of whirling stems, bifurcating leaves, trefoils, and palmettes. The lotus flower is found only

[43] The entrance door (cat. no. 28/1: Plate 102) to the *madrasa* and mausoleum of Amir Maḥmūd al-Ustādār (797/1394-95) and the entrance door (cat. no. 47/1: Plate 195) to the mosque of Amir Qajmās al-Isḥāqī (884–86/1479-81).

[44] The inlaid motif is found on the two medallion doors (cat. nos. 32/1: Plate 134 and 32/2) in the vestibule of the mosque of Sultan al-Muʾayyad Shaykh (818–23/1415–20), on the entrance door (cat. no. 37/1: Plate 155) of the mosque of Amir Jānī Bak al-Ashrafī (830/1427) and on a fragment (cat. no. 60) in the Keir Collection.

once, late in the 15th century.[45]

Throughout the Mamluk period, the shape and position allocated to inscriptions on medallion doors is standardized. Most common are the oblong bands above and below the medallion field. In addition to this, metalworkers during the second and third decades of the 15th century also created space for epigraphy in the medallions, in the form of either a roundel at the core or a central oblong band covering the entire width of the medallion.[46] On one specimen the metalworker combined the shapes of the oblong and the circle by cutting the roundel in two and attaching the parts, respectively, above and below the horizontal band, in addition to which he also placed small epigraphic octagons in the border band.[47] After this experimental phase the Mamluk metalworkers returned to the aesthetic in which the medallion was left intact.

Although the craftsmen on the whole show a preference for the readability of the *naskh* script, there are some experiments with a type of pseudo-kufic which features strong knotted designs at the centre of the bands.[48] In the latter case, the script is clearly made subordinate to the knots, which have a monumental quality to them. Besides these, there are two examples of radial inscriptions that added a playful touch to an otherwise standardized use of epigraphy.[49]

In terms of the content of the epigraphy, medallion doors closely follow the lines already expounded on in more detail in the case of overall star pattern doors. Again the most commonly found inscriptions are the titles of the patron. They are either preceded by the introductory phrase 'ordered the construction of' (*amara bi-inshāʾ*) or 'glory to our lord' (*ʿizz li-mawlānā*), both of which were used throughout the period. With the former phrase the metalworker either introduced the door itself or referred to the construction of the building, again without any preference for one or the other.

If Qurʾānic verses are present, they are given a prominent position, as evidenced by their location in the upper epigraphic band on the entrance door (cat. no. 28/1) to the *madrasa* and mausoleum of Amir Maḥmūd al-Ustādār (797/1394-95) or filling the core of a central star as on the entrance door (cat. no. 46/1) to the mosque of Amir Qajmās al-Isḥāqī (884–86/1479–81). A part of Qurʾān 9:18 is set on the latter door in a radiating mode. The other inscription, Qurʾān 15:45–47, which speaks of paradise, is entirely appropriate to the function of the building, part of which was intended as a mausoleum. While two other medallion doors (cat. nos. 39/1 and 39/2) belonging to the mosque of Qāḍī Yaḥyā b. al-Zayn (848/1444) also contain Qurʾānic verses, namely Qurʾān 62:9 and 72:18, their authenticity must be questioned, for they are part of a continuous openwork inscription that also relates to the restoration of these doors in the 19th and 20th centuries, respectively.[50]

As for signatures and dates, only the latter were found on medallion doors. However, a strong tradition of adding dates was absent among the metalworkers who dealt with this type of metal fittings, as only two extant doors are dated.[51] As these are centuries apart, their presence should be understood to be accidental, being the

[45] On the entrance door (cat. no. 47/1: Plate 197) of the mosque of Amir Qajmās al-Isḥāqī (884–86/1479–81).
[46] An epigraphic roundel is found on the medallion doors in the *madrasa* and *khānqāh* of Sultan Barqūq (786–88/1384–86: Plate 85), on the entrance door (cat. no. 35/1: Plate 144) to the *madrasa* of Sultan Barsbāy (826–27/1423–24), and on the entrance door (cat. no. 47/1: Plate 196) to the mosque of Amir Qajmās al-Isḥāqī (884–86/1479–81).
[47] On the entrance door (cat. no. 35/1) to the *madrasa* of Sultan Barsbāy (826–27/1423–24).
[48] On the interior doors (cat. nos. 26/3–26/8: Plate 88) in the *madrasa* and *khānqāh* of Sultan Barqūq (786-88/1384-86), on the entrance door (cat. no. 28/1: Plate 105) to the *madrasa* and mausoleum of Amir Maḥmūd al-Ustādār (797/1394-95), and on the entrance door (cat. no. 47/1: Plate 198) to the mosque of Amir Qajmās al-Isḥāqī (884–86/1479-81).
[49] On the entrance door (cat. no. 35/1: Plate 144) to the mosque of Sultan Barsbāy (826–27/1423–24), and on the entrance door (cat. no. 47/1: Plate 196) to the mosque of Amir Qajmās al-Isḥāqī (884–86/1479–81).
[50] The same is in all probability true for door cat. no. 34/2; although in this particular case the Qurʾānic verse located in the upper inscription band is isolated from the reference to the restoration that can be found in the lower oblong inscription band.
[51] The door (cat. no. 7/1) made in the name of Amir Sunqur al-Ṭawīl (before 699/1299–1300) and the entrance door (cat. no. 50/1) to the mosque of Amir Azbak al-Yūsufī, made in *Ramaḍān* 900/4 June to 3 July 1495.

individual choice of the metalworker or of the overseer of the building.

Although the role of heraldry is limited in both size and number, the position of blazons reflects their importance. This is exemplified by two early Mamluk medallion doors carrying a heraldic device in a roundel at the core of the medallion.[52] In another case, several identical blazons are found in the border band, probably because the central position was already taken by a Qurʾānic verse in radiating mode.[53]

Finally, the role of figural imagery needs to be discussed, as animals, whether naturalistic or fantastic, abound on the earliest medallion door.[54] Both its openwork medallion and its corner-pieces are filled with bifurcated stems and leafed scrolls interspersed with geese, dogs, panthers, donkeys, hares, and harpies. Whether it was originally intended for a secular or a religious building is unclear, as its original provenance has been lost. However, the presence of animal figures did not stop 15th-century constructors from allowing it to serve in a religious context, for it was installed at the entrance portal of the mosque of Sultan al-Ashraf Barsbāy at al-Khānqāh (841–42/1437). It is possible that the small size of the animals and their subdued role in the exuberant floral design allowed its installation in a mosque. It might well have been tolerated because the door was facing the exterior, and it is only when you go through it that you transcend from the worldly to the religious sphere.

Although it is impossible to attribute a provenance to this door with any certainty, the presence of the floral scrolls with interspersed animals points to a link with the Jazīra. Although no metalwork doors with this type of decoration are extant, its use on the long-vanished palace door of Āmid is attested by the description written by its maker al-Jazarī, who describes the inlaying of the inner vertical edge which overlaps the opposing leaf with different kinds of silver leaves and animal heads.[55] In addition, an identical use of animals embedded in a religious context is also found on the inside cover of a Qurʾān, originating from Anatolia or the Jazīra, and datable to the period between 1250 and 1350 AD.[56] It is quite possible that a metalworker who originated from this region had found employment in Cairo and was responsible for applying this design of scrolls with interwoven animals on this door. Another possibility is that the openwork plaques that make up both the medallion and the corner-pieces were ordered or bought in that region, after which they were attached to the wooden support in Cairo.

The question remains why this door design took wing only from the time of Sultan Barqūq onwards, although a specimen was already available in Cairo during the late 13th century. Is this coincidence of survival or does it reflect the actual situation is something we cannot answer now. When the medallion door became popular from the Burjī period onwards, the type immediately took on a design that was to last until the end of the Mamluk era. This is not to say that metalworkers were not inclined to leave their personal mark on individual doors. In such experiments, they took the medallion as a starting point by filling it with geometry in different planes or by cutting the medallion in half through adding inscriptions to it.

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[52] A 3-tiered epigraphic blazon on one of the interior doors (cat. no. 26/3: Plate 85) in the *madrasa* and *khānqāh* of Sultan Barqūq (786-88/1384-86) and a scimitar, whose left half has been replaced today by a restoration date, on the door (cat. no. 27/1: Plate 101) to the *madrasa* of Amir Īnāl al-Yūsufī (794–95/1392–93).

[53] On the entrance door (cat. no. 47/1) of the mosque of Amir Qajmās al-Isḥāqī.

[54] The patron of this door 9cat. no. 7/1: Plate 21) was Amir Sunqur al-Ṭawīl who might have ordered it for his stable which he had constructed below the citadel in Cairo. Eventually the door was installed at the entrance portal of the mosque of Sultan al-Ashraf Barsbāy in al-Khānqāh. Its possible origin might be the Jazīra, something which will be discussed in some more detail in Section 3.1.2. Currently, the door is housed in Cairo, the Museum of Islamic Art, inv. no. 2389.

[55] Jazarī (1990), 335.

[56] The binding, published by James (1992), 196–97, covers part 2 or part 13 of a 30-volume Qurʾān, and is part of the Khalili collection, Qur433 and Qur132. The scrollwork is interspersed with two types of human heads, alternating with elephants, foxes, leopards, dragons, and griffins.

2.1.3 *Panelled doors*

The third type of Mamluk metal doors is the panelled type, which is characterized by its subdivision into panels. Seven specimens, or parts thereof, are extant, all of them set in the exterior walls of the Umayyad mosque in Damascus, which possibly housed even more of them at one time.[57] In all but one, the metal faces the exterior, the exception being the door in the north wall (809/1406) which faces inwards. Six of them were manufactured between 808/1405 and 820/1417 while one was an early Ottoman addition made more than a century later in the year 933/1527.[58] All of them were installed during restoration campaigns as they had been damaged by fires[59] or needed to be restored as they had fallen into disuse during civil unrest.[60]

All these doors are composed of two leaves, each leaf being subdivided into slightly recessed square or rectangular panels placed one above the other, their number varying from three to five (see Fig. 4). On some doors these panels are of identical shape and size, while on others a more varied field was created by alternating large rectangular panels with oblong bands. Irrespective of their shape, metalworkers favoured a symmetrical arrangement on both leaves of one door. The panels were separated from one another by flat undecorated sheets that were nailed onto the wood. In some cases these sheets were adorned with large bosses standing out in relief.

Internally, each panel is built up of plaques of different sizes and decoration, most of them with their ornament in relief, some of them flat and undecorated. These latter fill the gaps between the ornamental ones, while serving at the same time as a kind of background from which the plaques stand out in relief. In the case of multiple plaques in one panel, they are distributed either into different horizontal registers or in cross-wise sections with a centrifugal focus. When only a single ornament adorns the panel, there is no further subdivision of the field.

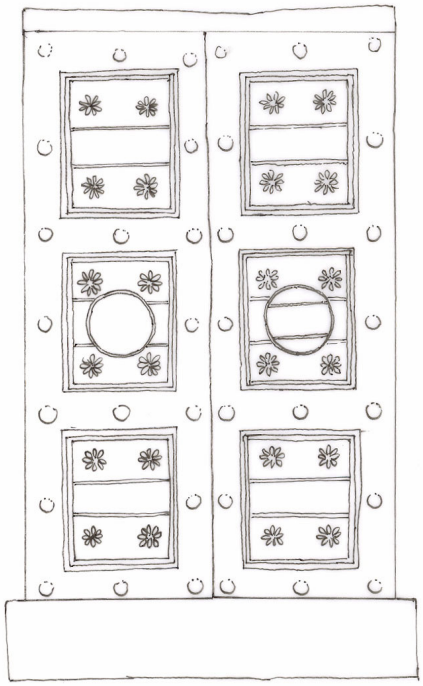

Fig. 4

The reverse of the panelled doors is also subdivided into panels: they are of square or oblong shape and alternate with each other. The oblong bands are left undecorated; the square panels have simple geometric motifs created by wooden strips nailed on top of them. The surface of the framework strips is left undecorated as are the infill plaques.

In contrast to the variety of techniques employed both on overall star pattern doors and on medallion doors, the makers of panelled doors used casting and the hammering of brass sheets in *repoussé* as their two preferred methods for creating the relief plaques. The employment of the casting technique was practical, for many of the plaques, the rosettes in particular, were used in quite large quantities. Hammering

[57] These are cat. nos. 29/1: Plate 114, cat. no. 29/2: Plates 115 and 116, cat. no. 31/1: Plate 121, cat. no. 31/2: Plate 124, cat. no. 31/3: Plate 127, cat. no. 31/4, 131, and cat. no. 57/1, Plate 245. The wooden door positioned in the *qibla* wall of the Umayyad mosque in Damascus is a replacement, as are two other doors in the north wall.

[58] This being the main door (cat. no. 57/1) in the west wall of the Umayyad mosque.

[59] Among the fires that destroyed large parts of the mosque, including some of its doors, was the one in *Rajab* 884/27 September to 26 October 1479, recorded by Ibn al-Ḥimsī (1999), 235–39.

[60] Nuʿaymī (1951) II, 403–4; Sauvaire (1896), 219–20. Al-Nuʿaymī narrates that the small side doors in the east wall of the Umayyad mosque had been closed off and blocked from view by shops built against the mosque's wall during the civil unrest in Damascus at the beginning of the 15th century. In 820/1416 the side doors were again restored to their original location.

was used especially for those inscriptions that were unique, such as the Qurʾānic verses or the single occurrence of a patron's name. After the process of casting or hammering in *repoussé* was finished, the plaques were nailed into the desired pattern onto the panels. The spaces between them were filled up with flat undecorated pieces cut out of thin metal sheets.

Let us now turn to the different kinds of decoration and their position on these doors. Geometric forms play different roles on different levels, both in the composition of the design and as ornament in themselves. They are not only used to divide the leaves up into square or rectangular panels, but also to subdivide these panels into units of squares, rectangles, and circles. Within these smaller units they sometimes function to outline the central motifs in the shape of stars or polygons. And finally they are used as ornament themselves, in relief.

Floral patterns are always used for ornamental purposes, adorning plaques of mostly square shape positioned within the panels. They consist of rosettes in different shapes, with round, spiked or whirling petals. Most often they play a supporting role in the composition of the panels, acting as a balancing device as they are positioned in the corners. On the latest panelled door (cat. no. 57/1), the early Ottoman one, they constitute its main decoration, dominating the two large rectangular panels, and taking a multitude of different shapes.

Inscriptions form an important part of the decorative repertoire on these doors, which is not only apparent in their consistent presence but also in the prominent position they take on these doors. They either occupy an entire panel or they are centrally positioned in oblong bands or in roundels.

The space allocated to inscriptions differs greatly not only from door to door but even within the panels themselves on one single door. This is shown by the distribution of inscriptions on the only surviving door (cat. no. 29/2) in the north wall (809/1406) where the single words 'Allāh' and 'He alone' (*waḥdahu*) on the two upper panels embedded in empty space contrast with the bulk of information inscribed on the central panels. Even the readability of the inscriptions on the latter panels differs considerably: the even distribution of the *bismillah* and the beginning of Qurʾān 15:46, reading 'Enter ye into them' on the central right panel (Plate 117) favours its legibility and contrasts sharply with the cramped rendering of the latter part of the central left panel which contains the remainder of the verse ('in peace and security') in combination with references to the date of the door's renewal. The calligrapher clearly favoured the themes of monotheism and the reference to paradise to historical fact.

Irrespective of the sacrifice made to readability, this door shows a liveliness and a playfulness in the epigraphy that is barely encountered on any of the other types of doors. This is illustrated by its lower left panel (Plate 119) on which the designer did not just calligraph the words making up the name of the sultan, but made an actual pictorial image of that name in itself. He created a majestic feel to the words 'al-Malik al-Nāṣir' by elongating their *hastae*, and continuing the remainder of the name in an ascending stepped form, which has the visual effect of lifting up the words, and with them the sultan himself. The result was a powerful, royal image against which the subsequent names of the governor stand out rather prosaically.

With respect to the content, the two main topics addressed are patronage and religion. On most doors, simple references to God, sometimes in combination with Qurʾānic verses, are alternated with the name of the patron. The former are always positioned in panels that are situated higher up than those containing the name of the patron. By positioning God above man, a clear hierarchical effect was achieved.

This type of door is exceptional in that its texts differentiate between the person actually responsible for the door, who is introduced by the phrases 'on the order of' (*bi-ishāra*) or 'under the supervision of whom'(*bi-*

naẓr man), and the sultan during whose reign the door was made. This arrangement gives the simultaneous impression of a strong allegiance to the sultan alongside the independence of the governors or viceroys responsible for the restoration activities of the major mosque in the second capital of the Mamluk realm. In all probability the addition of the sultan's name was compulsory, given the fact that it was in all likelihood the state that provided the financial means for the restoration of these doors; the costs of rebuilding would have weighed too heavily on the income provided by *waqf* revenues.[61]

The playfulness already alluded to in the context of the rendering of calligraphic texts is also apparent in some of the phrases chosen by the designer to introduce the patron. These introductory phrases refer to the humility of the patron in the form of small rhymes, exemplified by '*bi-naẓr man zādahu qalīl'* followed by 'Sulaymān ibn Khalīl', the rhyme of which is unfortunately lost in the English translation which reads 'Under the supervision of him whose provisions are few […] Sulaymān ibn Khalīl'.[62] The presence of this phrase in all probability inspired the maker of the adjacent central door (cat. no. 57/1) in the West side a century later to come up with an even longer rhyme.

Besides references to ruler and patron, inscriptions with religious overtones play an important part. These may comprise one of the 99 names of God, or short references to His sovereignty as in 'power belongs to God' (*al-mulk li-llāh*). Their importance is shown by the space they are given, taking up entire panels. Twice, Qurʾān 15:46, reading 'Enter ye into them in peace and security' (*idkhulūhā bi-salām āmināīn*), preceded by the *bismillah*, occurs.[63] It refers to entering into paradise which metaphorically not only connects these actual doors to those of paradise, but also suggests a connection between the sacred space of this particular mosque and paradise.

Finally, two doors also contain the date of manufacture. On the door (cat. no. 29/2) in the north wall (809/1406) the statement of the year, the final part of the central inscription band, is preceded by the month (*fī shahr Allāh al-Muḥarram*). The other date is far less straightforward. Instead of writing the date in full, the metalworker responsible for the early Ottoman door (cat. no. 57/1), positioned in the centre of the west wall of the mosque, resorted to *abjad*, the creation of numbers, or in this case a date, by choosing consonants of certain numerical value.[64] Here, the combination of the letters *jīm, lām* and *ẓā'* adds up to the year 933/1527.

Although the presence of blazons is restricted to three doors, heraldic devices were given a pivotal position at the centre of a panel.[65] There, they may fill most of the panel, forming the sole design but for some smaller rosettes that surround them. Alternatingly, while still positioned at the core of the panel, they are of smaller size, positioned at the centre of an inscription, which they cut in two.

Through the presence of multiple blazons belonging to different persons on one door, ideas about hierarchy were expressed. On the northern side door (cat. no. 31/3: Plates 129–130) of the east wall (820/1417), the epigraphic blazons of Sultan al-Muʾayyad Shaykh, during whose reign the door was made, are set in large roundels in the central panels and dwarf the small ones in the lower panel belonging to the amir, who was actually in charge of the door's manufacture. Interestingly, on the central door (cat. no. 29/1: Plate 114) in the east wall (808/1405) the pairs of blazons which refer to the sultan are equal in size to those representing the amir. If hierarchical levels were indeed present here, they must have been expressed by the location of the

[61] For more details on the payment for the restoration of doors in the Umayyad mosque, based on an account by Ibn al-Ḥimsī, see Section 5.3.
[62] Found on the door (cat. no. 31/2) located on the northern side of the west wall, made in 819/1416.
[63] On the door (cat. no. 29/2) in the north wall (809/1406) and on the northern side door (cat. no. 31/3) in the east wall (820/1417).
[64] For a table containing the numerical value of all the letters in the Arabic alphabet, see Wright (1896), 1–2.
[65] Blazons are found on the central door (cat. no. 29/1) of the east wall (808/1405), on the door (cat. no. 29/2: Plates 117, 118) in the north wall (809/1406), and on the northern side door (cat. no. 31/3: Plate 129) in the east wall (820/1417).

sultan's emblems in the upper panel, and those of the amir in the lower one. However, the equal size of both blazons conveys the impression of an amir – the future Sultan al-Muʾayyad Shaykh as it happens – who so constructed his emblem as to suggest he was of equal importance to the sultan.

The short time-span of 12 years in which most of the panelled doors were manufactured makes it irrelevant to trace their development through time. The metalworkers responsible for them made use of identical techniques and chose from a restricted repertoire of decorative motifs in which rosettes in a wide variety of shapes and epigraphy were the preferred ornament. Within this shared language, however, there is a fascinating search discernable to individualize the doors. By changing the size or the subdivision of the panels or in the invention of different calligraphic forms that added a certain playfulness, each door stands out in its own right.

2.1.4 *Doors with metal bands*

The fourth and last Mamluk door type is that named after its only and most striking decoration, namely metal bands. This type was popular throughout the Mamluk period, in worldly as well as religious contexts. Extant specimens are found in all the major cities of the Mamluk realm where they were used as entrance doors or – often in multiple copies – in the interior of buildings. They also recur in miniature paintings of the Mamluk period, the only one of all four types of doors to be thus depicted.[66]

Doors of this type are characterized by horizontal oblong metal bands present in various numbers. The most fashionable is that consisting of two oblong metal bands positioned at the top and at the base of the wooden support (see Fig. 5). Sometimes these bands are enclosed by a narrow openwork border consisting of trefoils alternating with cloverleaf motifs. This restricted use of metal leaves large unbroken panels of empty wood visible, an aesthetic that could have invited the addition of colour through the painting of the wooden surface. That painting was indeed applied on these wooden supports is attested by the description of a door in the endowment deed of the *zāwīya* and *sabīl* of Sultan Faraj b. Barqūq in Cairo: "a wooden door painted in colours covered with gilded bronze and gilded inscriptions" (*bāb min khashab al-madhūn al-mulawwan mughallaf bi'l-nuḥās al-mudhahhab wa'l-katā'ib al-mudhahhaba*).[67] No traces of paint on extant doors have, however, been discovered so far.

It can be argued that the layout of doors with two oblong bands is closely linked to those of the overall star pattern type and the medallion door. If the entire central decoration of the latter two is omitted, what remains is a pair of oblong bands, positioned in the self-same location as is used in those doors which have no decoration other than metal bands. The growing popularity of this much simplified type of door decoration in the 15th century might well be explained by scarcity of metal or the tight budget of the patron.

Besides this characteristic partial covering, there are doors of this type the surface of which is entirely covered with oblong bands (see Fig. 6). They are found especially in secular constructions such as *khān*s or city gates,[68] but in Jerusalem specimens were also installed in structures of a religious nature.[69] The otherwise austere

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[66] All the doors that were depicted show two metal bands. See for example, the door depicted in *Kashf al-asrār*, Istanbul, Süleymaniye Library, Lala Ismail 565, 27r, datable to the mid-14th century, and published in Haldane (1978), 53, no. 11; the door in a house, represented in the *Maqāmāt* of al-Ḥarīrī, dated 734/1334, Vienna, National Bibliothek, A.F. 9, 104r, and published in Haldane (1978), 64; a door in a palatial structure in the *Shāhnāma* of Firdawsī, dated 917/1511, Istanbul, Topkapi Palace Museum H 1519, fol. 115a, depicted in Atıl (1984), 166.

[67] Lamei Mostafa (1989), 38, line 109; 40, line 109.

[68] Such as the door (cat. no. 55/1: Plate 240) in Aleppo, *khān* al-Qaṣṣābīya (916/1510), or that (cat. no. 56/1: Plate 243) in the *khān* of Governor Khāʾirbak min Malbāy (920/1514) in the same city.

impact of mostly undecorated metal bands covering the entire surface of a door is uplifted by the presence of multitudes of nails topped with heads of lozenge or rosette shape, which are so distributed as to form grids of hexagons or 6-pointed stars onto the metal bands.[70]

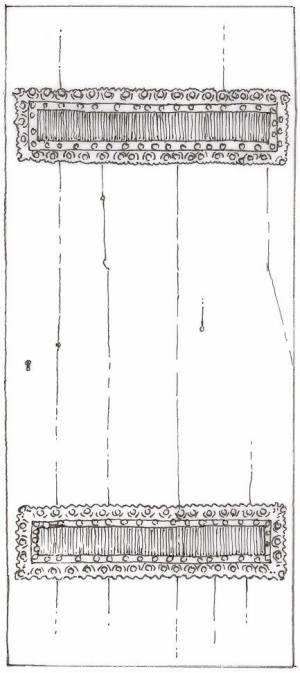

Fig. 5

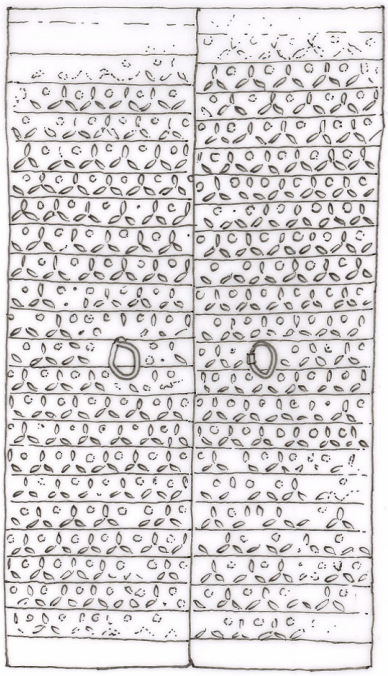

Fig. 6

The techniques used for embellishing the surface of the oblong bands and for manufacturing the openwork border frames are for the most identical to those used on medallion and overall star pattern doors. For the border bands, casting was the preferred technique, as it produced the small identical pieces that were closely fitted next to each other to form a continuous pattern. The nails of various forms that were used in great quantities to fix the bands to the support and at the same time to enliven them with geometric patterns were also best produced through casting.

The technique most popular for decorating the surface of the oblong bands usually with inscriptions was engraving. The metalworker started by outlining the consonants with a sharp graving-instrument or burin after which the same tool was used to work the background with small details. The spaces between these small designs were either blackened or slightly scraped away, which also had a darkening effect. The contrast in colour visually lifted up the light-coloured consonants against the darkened background. In those cases where a scraper had been used, this effect was even strengthened as the dark, slightly recessed areas visually pushed the consonants to the fore. Occasionally inscriptions were also executed in other techniques, such as *repoussé*. This technique is found on a *minbar* door from the late 13th century and on two doors in Aleppo in the beginning of

[69] The entrance door (cat. no. 23/1: Plate 51) of the mausoleum of Jamāl al-Dīn Bahlawān (753/1352) and the entrance door (cat. no. 25/1: Plate 76) of the mausoleum of Ṭashtamur al-ʿAlāʾī (784/1382–83) in Jerusalem.

[70] Repetitive patterns of hexagons are for example found on the entrance door (cat. no. 23/1: Plate 51) of the mausoleum of Jamāl al-Dīn Bahlawān (753/1352) in Jerusalem and on the entrance door (cat. no. 56/1: Plate 243) of the *khān* of the governor Khāʾirbak min Malbāy (920/1514) in Aleppo. Repetitions of 6-pointed stars are found on the entrance door (cat. no. 55/1: Plate 241) of the *khān* al-Qaṣṣābīya (916/1510) in Aleppo.

the 16th century.[71] The early use of this technique on the minbar leaves, time-consuming as the metalworker produced a raised inscription on the front of a metal sheet by hammering from the back, coincides with that on two overall star pattern doors, which points to a short-lived period of experimenting with this technique.[72] Besides *repoussé*, inlaying[73] and casting[74] were used on doors outside Cairo, which might explain the deviation from the norm of engraved bands in Cairo.

The decoration on this type of doors comprised floral, epigraphic, heraldic and figural motifs. Stylized floral motifs such as foliate stems and small scrolls were either used as background fillers, positioned between the large consonants that made up the inscription bands, or they served as framing borders, consisting of trefoils alternating with cloverleaf motifs. With regard to epigraphy, most doors entirely covered with metal bands are devoid of inscription bands, except for two specimens in Aleppo where an oblong inscription band is positioned in the upper half of each of the two leaves.[75] Much more common are inscriptions on doors with a limited number of oblong bands. In the majority of cases, the inscriptions on doors with two oblong bands are identical. The metalworkers aspired towards readability, using both the natural qualities of the *naskh* script and contrasting designs and colours to enhance this. The message that was put across was of identical purport on all bands: namely, praising patronage. Often the titles of the patron were preceded by the introductory phrase 'there constructed this blessed place' (*inshāʾ hādhā al-makān al-mubārak*).

Finally, one specimen the bands of which are decorated with figural imagery has come to the fore, namely a door located in the *madrasa* of Qāḍī ʿAbd al-Bāsiṭ (823/1420) in Cairo.[76] Besides an engraved band filled with inscriptions of floriated kufic and *naskh* separated by medallions enclosing polo-players, falconers, and arms bearers it contains two bands filled with animals chasing each other. The specific content of the inscriptions is not mentioned in the notes of the Comité, although it is remarked that the inscriptions consist of isolated expressions devoid of historic importance. The subject, the style and the type of benevolent inscriptions immediately link these bands to Ayyubid or Mosul metalwork, which implies they were detached and transferred from another much earlier construction to be used in this specific *madrasa*. Although it is remarkable that such figural emblems of royalty found a place within a Mamluk religious building, it is not unheard of that figural imagery should be used in such a context, as has already been shown by the scrolls interspersed with animals on a medallion door (cat. no. 7/1), which was transferred to and used in the mosque of Sultan Barsbāy in the first half of the 15th century.

2.2 WINDOW SHUTTERS

Window shutters are used in Mamluk buildings to fence off the mosque from the exterior world, for example during the night. They are mostly found in combination with window grilles: if the shutters are opened

[71] The technique is found on the two leaves of the door (cat. no. 6/1: Plates 18, 19) of the minbar ordered by Sultan Lājīn for the mosque of Ibn Ṭūlūn in Cairo, on the entrance door (cat. no. 55/1: Plate 242) in the *khān* al-Qaṣṣābīya (916/1510) in Aleppo, and on the entrance door (cat. no. 56/1: Plate 244) of the *khān* of Governor Khāʾirbak min Malbāy (920/1514) in Aleppo.

[72] These are the entrance door (cat. no. 3/1) to the complex of Sultan al-Manṣūr Qalāʾūn (683–84/1284–85), and the door (cat. no. 5/1) that originally belonged to a building ordered by Amir Mankūtamur (698/1296).

[73] On the door (cat. no. 48/3) in the *madrasa* of Sultan Qāitbāy in Jerusalem (884–87/1479–82).

[74] On the entrance door (cat. no. 55/1) to the *khān* al-Qaṣṣābīya (916/1510) in Aleppo and on the entrance door (cat. no. 56/1) to the *khān* of the governor Khāʾirbak min Malbāy (920/1514) in Aleppo.

[75] The entrance door (cat. no. 55/1) to the *khān* al-Qaṣṣābīya (916/1510) and the entrance door (cat. no. 56/1) to the *khān* of the governor Khāʾirbak min Malbāy (920/1514). The latter door is also inclusive of two large composite blazons that are positioned above the oblong inscriptions.

[76] The description is based on the notes of the Comité (1922) XXXII 1915–19, 130–31, pl. 149, as the current location of this door is unknown. Plate 149 only shows a small fragment, consisting of knotted kufic set in between two medallions, each filled with an arms bearer.

during the day, the grilles still serve as a protective shield. On the whole, both the visibility of the design and the readability of the inscriptions on shutters are hampered, as the grilles are always positioned in front of them.

In their most basic form, consisting of two undecorated leaves made of wood, window shutters are found throughout the Mamluk period. The shutters that are the focus of attention here, however, have some decoration added to them in the shape of two metal oblong bands, one positioned at the top and the other below. The majority of these bands are edged with an openwork floral border. Sometimes an openwork rectangular framework is added to this; it encloses a large field in the centre. Specimens of this type are found in Cairene buildings from the 14th and 15th century.[77]

From this short description it immediately becomes apparent that these shutters overlap in design with doors of the metal bands type. As their decoration and techniques are also identical to those of such doors and have already been discussed under the preceding heading, these features will not be discussed in any detail here.

There is, however, one specimen among window shutters that deserves greater attention as its design deviates from the metal band type.[78] Instead of metal bands, it has a star pattern in the central field, bordered on all four sides by a trefoil framework. The execution of the central geometry is extremely simple: plain strips cut out of brass sheets were nailed onto the wooden support in the desired pattern. All this is clearly related to the designs on overall star pattern doors, but either the means of the patron or the skill of the craftsman must have been restricted.

2.3 DOORKNOCKERS

Often the only visual traces of the former presence of doorknockers on Mamluk metal doors are two adjacent holes in the two leaves of the wooden support. These gaps are most clearly visible on the medallion doors where knockers were allocated a position above the central roundel that so dominated the door's design. The absence of so many of them cannot simply be explained by wear and tear, as they were usually attached at a height that was beyond easy reach. It seems more probable that many were removed at one time or another to be reused or sold on the market.

The small number of objects remaining *in situ* gives a distorted picture of what must once have been a prolific industry. With this in mind, it is nevertheless possible to distinguish certain types on the basis of their design within the group of extant knockers. Only when more specimens turn up within each group, may questions begin to be answered as to the stylistic development of each type and its relative popularity in Mamluk times. It might then also become possible to attribute dates or provenances to knockers that lack such clear markers as epigraphy, something that is now impossible. Despite these constraints, a better insight into Mamluk doorknockers can begin with identifying certain types.

Before doing so it is important to note that doorknockers are often composed of four different parts, only one of which, namely the hanger, plays a role in the distinction of the types. The hanger, the actual part intended for knocking, is the most conspicuous segment of a doorknocker, not only because it is usually the

[77] The earliest extant ones (cat. nos. 26/14 to 26/19: Plate 96) are located in the *madrasa* and *khānqāh* of Sultan Barqūq (786–88/1384–86).
[78] A shutter (cat. no. 13/1: Plate 33) in the mausoleum and *madrasa* of Amir Sunqur Saʿdī (715/1315), to the right of its entrance door.

largest in size but also because its shape varies the most. Then there is the suspension loop with a long pin attached to it that goes through an opening in the upper part of the hanger before being screwed into a wooden support. The third component is the suspension disk with a hole in its centre to allow the pin of the loop to go through so that the attachment to the door is somewhat hidden. Finally there is the boss intended for knocking pinned onto the support below the hanger so to allow the hanger to be banged. The suspension disks are always present on doors where the wood is at least partly visible, such as on doors belonging to the medallion type or the group decorated with two metal bands. They are absent on overall star pattern doors for the star pattern plaques that surround the knocker already hide the hanger's attachment from view.

Three types of doorknockers can be distinguished. Two of them can be clearly defined, as there are at least a certain number of specimens extant. They belong to the holes-and-bosses type or the interlace type. In addition, there is a miscellaneous group, consisting of a few objects with quite noticeable characteristics. Irrespective of the differences in design of the above-mentioned types, the techniques with which they were manufactured and the materials used for making them overlap during the Mamluk period. Bronze or brass were the favoured materials for doorknockers in this era, with the occasional addition of gold, silver, and copper when precious metals were used to highlight certain details. Casting was the preferred technique used for producing the different components, which consisted of hangers, suspension disks, suspension pins or hoops, and bosses intended for knocking. Both the lost wax method and sand-casting could have been used, although the latter was probably the most popular as this enabled the metalworker to use the same mould more than once. This was a beneficial factor especially as doorknockers were on the whole intended to function in pairs and may have been produced in even larger quantities when sets of identical doors were needed in one and the same building, as was the case in the *madrasa* and mausoleum of Sultan Qāitbāy (874–79/1470–74) in Cairo.[79]

Although the surface of doorknockers was sometimes left plain, the majority of doorknockers did receive some kind of surface treatment. The metalworkers used three different methods: decoration applied as part of the casting process, engraving in the form of lines and vegetal motifs after the casting process was completed, or the technique of inlay. Although casting and engraving were surely the most popular techniques, doorknockers decorated with inlay pop up occasionally throughout the Mamluk period.[80]

2.3.1 *The holes-and-bosses type*

The first type consists of round or elongated hangers characterised by holes along the outer and inner edges that alternate with teardrop-shaped bosses.[81] Within this type, two sub-groups might be distinguished on the basis of the shape of both the hanger and the holes in it. The first group consists of round hangers with triangular protrusions around the edge and a lobed or star-shaped opening at their centre (see Fig. 7).[82] The

[79] In this complex a number of pairs are still extant, such as cat. nos. 41/6, 41/14, 41/20, and 41/22.

[80] Examples are the hangers (cat. no. 4/2: Plates 12, 13) in Hebron, in the mausoleum of Ibrāhīm, the hangers (cat. no. 24/9: Plate 74) on the *qibla* door in the *madrasa* of Sultan al-Nāṣir Ḥasan, the hanger (cat. no. 26/2: Plate 83) on the entrance door to the *madrasa* and *khānqāh* of Sultan Barqūq, and the hanger (48/3) on the *madrasa* of Sultan Qāitbāy in Jerusalem.

[81] In order to keep the basic categories limited, I include in this basic group those few knockers whose hangers do not contain teardrop-shaped bosses but that otherwise fit into the category.

[82] Belonging to this group are: a pair of knockers (cat. no. 8/1: Plate 25) at the entrance door to the *madrasa* of Sultan al-Nāṣir Muḥammad (698–703/1299–1304); a knocker (cat. no. 25/5: Plate 78) attached to a door in the mausoleum of Amir Ṭashtamur al-ʿAlāʾī (784/1382–83) in Jerusalem; a now lost pair (cat. no. 35/2: Plate 147), which formerly adorned the entrance door of the *madrasa* of Sultan al-Ashraf Barsbāy (826–27/1423–24), published in Comité (1916) exerc. 1914, pls. 14a, b; doorknockers (cat. nos. 35/4: Plate 149 and 35/6: Plate 151) in the *sahn* of the same *madrasa*;

latter is sometimes surrounded by small round holes that alternate with teardrop-shaped bosses. Along the exterior, there are always seven or eight larger holes that again alternate with bosses. Surface decoration on the hangers is on the whole absent, with the exception of one specimen the entire exterior of which is covered with leafed stems. The suspension disks have a serrated or flush edge and are on the whole left undecorated except for some concentric circles, but for one specimen (cat. no. 8/1) which is inlaid with a radiating inscription. The suspension hoop, where extant, is plain and round shape or has the form of a feline head.[83]

Those hangers that are still extant *in situ* are all found in religious buildings in Cairo and Jerusalem dating to the 14th and 15th century, the earliest going back to the beginning of the 14th century. When these hangers are compared among themselves, there does not appear to have taken place a change in or development of the hanger's design during the Mamluk period. Nor did the metalworkers experiment with a different technique, for casting remained the preferred method. The type remained basic in all its facets and seems to have already been crystallized out in the beginning of the Mamluk period. Given the presence of identical doorknockers in pre-Mamluk Damascus and Aleppo,[84] it is quite possible that this type was also manufactured in Damascus during the Mamluk period, although no datable specimens seem to survive *in situ*.

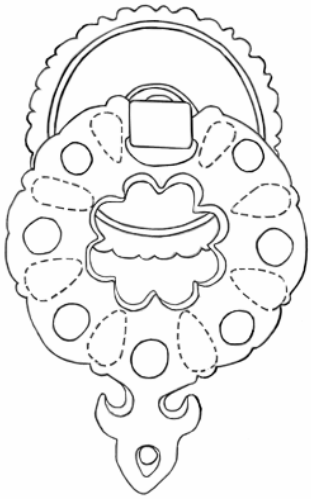

Fig. 7

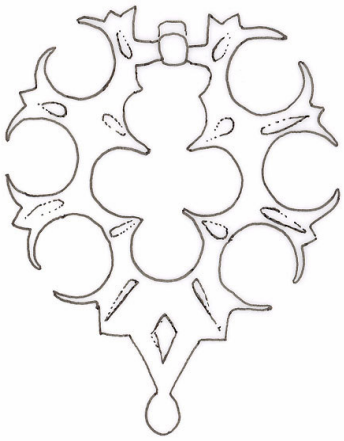

Fig. 8

The second group featuring holes and bosses is strictly speaking not a part of the corpus studied, as all of them have lost all evidence of the original context in which they functioned.[85] But as they clearly form a group, and as revival Mamluk doorknockers are often based upon this type, as will be discussed in Section

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doorknockers (cat. no. 41/6: Plate 172, cat. no. 41/14, cat. no. 41/22: Plate 178) in the *sahn* of the *madrasa* and mausoleum of Sultan Qāitbāy (877–79/1472–74); a doorknocker (cat. no. 41/25: Plate 179), published in Robinson (1988), 128–29 and pl. M16, now in the Keir collection, but originally belonging to the above-mentioned *madrasa* and mausoleum of Sultan Qāitbāy; a hanger (cat. no. 66: Plate 257) now in the Israel Museum, inv. no. and provenance unknown; a knocker (cat. no. 73: Plate 265), published by Migeon (1907) II, 230 without details on its provenance.

[83] Although feline heads occasionally crown the suspension hoops of this type of doorknocker, a miniature in an early 14th-century Mamluk copy of the *Maqāmāt* shows a different use of animal figures in Mamluk doorknockers, namely a feline head acting as a suspension disk for a hanger. The mouth of the lion's head encloses a ring-shaped handle with a round protruding element at its base. The depicted doorknockers in this manuscript, which is attributed to Syria, and which is now in London, British Library, Or.add 22114, fol. 98, are of monumental size, as they take in about a quarter of the height of the entire door. The use of feline heads on suspension disks has not yet been encountered on extant Mamluk doorknockers.

[84] Identical hangers are for example found on the entrance door to the *bīmāristān* of Nūr al-Dīn b. Zengī (545–49/1150–54) in Aleppo and on his *madrasa* and mausoleum in Damascus (563–76/1167–72).

[85] They are: a hanger (cat. no. 64: Plate 256) housed in The Saint Louis Art Museum, inv. no. 40:1926, published by Steiner (1991), 22; a hanger (cat. no. 67: Plate 258), published in Sotheby's London (30 April 1998), lot 10; a hanger (cat. no. 68: Plate 259) published in Sotheby's London (22 April 1999) 46, lot 74 and Christie's London (10 Oct 2000) 154, lot 284; and a hanger published in Sotheby's London (13 April 2000) 18, lot 10.

3.3.1, it is important to devote some attention to them. The specimens that belong to this category differ from the one above in that their hangers are often more slender round or elongated in shape. More importantly, instead of holes they are characterised by a multifoil design where the concave lobes, often six or seven in number, are often flanked by teardrop-shaped bosses (see Fig. 8). A large lobed hole dominates the centre of the hangers. In addition, they differ from group one in that surface decoration is much more prolific on this sub-group: not only are the hangers decorated, mostly with engraved leafed stems but also the suspension disks are covered with epigraphic designs in a radiating mode.

The earliest known example (cat. no. 64: Plate 256) carries the name of Sultan al-Manṣūr Qalāʾūn on its suspension disk. The inscriptions of the other extant examples are illegible owing to wear and tear, so that information as to date or patron is lost. This lack of historical information, in addition to the fact that the provenance of these detached hangers is lost and their surface decoration consists of vegetal motifs of a generic type that cannot be linked to a specific period, leaves the question open as to when this sub-type was popular in the Mamluk period. It is obvious, however, that even the earliest knocker that is datable to the late 13th century, is entirely embedded within the Mamluk style, with such clear markers as inlaid radiating inscriptions and undulating foliate motifs.

Irrespective of their differences, both sub-groups seem to be closely affiliated to a hitherto unique pair of Mamluk handles (cat. no. 4/2: Plates 12, 13) composed of six closely connected pairs of dragons, made for the mausoleum of Ibrāhīm al-Khalīl at Hebron.[86] The dragons are grouped pair-wise with facing heads that are linked by their wide-spread jaws whose upper and lower lips touch each other (see Fig. 9). Each pair is in turn connected to the next in two ways: at the exterior a triangular protrusion is formed where

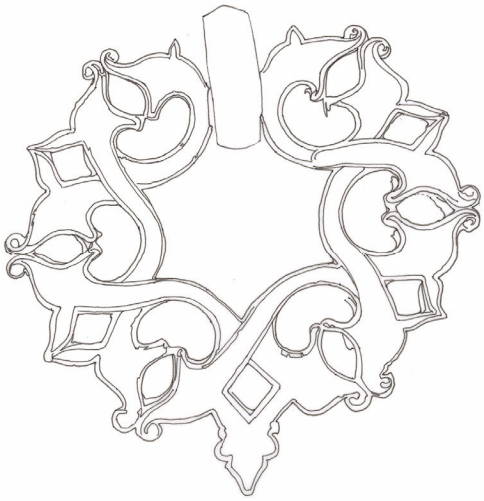

Fig. 9

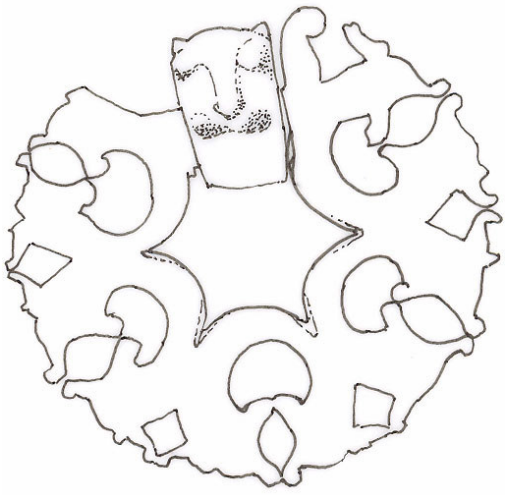

Fig. 10

the elongated ears of adjacent dragons touch while towards the interior the long necks touch and create the contours of a flowing hexagon. By arranging these dragons in such a way, gaps were created between the beaks, the ears, and the necks, respectively. The doorknockers that belong to the two sub-groups under consideration should be considered stylized versions of this type of dragon-handle. On the stylized versions,

[86] The pair was in all probability part of the redecoration campaign ordered by Sultan al-Manṣūr Qalāʾūn in around 685/1286, which, according to the inscription on door cat. no. 4/1, was commissioned on the first of *Rajab* 685/30 August 1286.

the openings so characteristic of dragon-handles not only recur but constitute the main feature of these handles. Moreover, the protruding triangles along the edge of both groups are present in the dragon-handle, where they form the touching ears of adjacent dragons.

This stylization of dragon-handles was probably not a Mamluk invention, as some stylized specimens occur on pre-Mamluk buildings in Damascus and Aleppo.[87] Moreover, this dragon-hanger was also not typically Mamluk, as another specimen (see Fig. 10) is known that has been attributed to the Jazīra in the late 12th to early 13th century.[88]

2.3.2 *The interlace type*

The second type of doorknocker that can be distinguished on the basis of the design of its hanger is the so-called interlace type. The interlace type has a round or elongated hanger the interior of which is filled with openwork stems. Two sub-groups may be distinguished on the basis of the interior organization, which is either based upon stems branching off from a central star or consists of four loops surrounding a central roundel or lozenge in the case of the second group.

The first sub-group, characterised by a star-shaped centre from which emanate openwork stems and trefoils, usually has protruding trefoils along the outer edge while the lower end of the hanger is emphasised with a large trefoil finial (see Fig. 11). On the whole, the stems that branch off from the hanger's core are executed in an arrested mode, except for one pair (cat. no. 24/2) in which the metalworker established some degree of mobility, which gives the impression that the stems move up and down. All hangers are cast, some inclusive of surface decoration, while on the two latest pairs (cat. nos. 53/3 and 54/2) the surface is embellished through engraving.

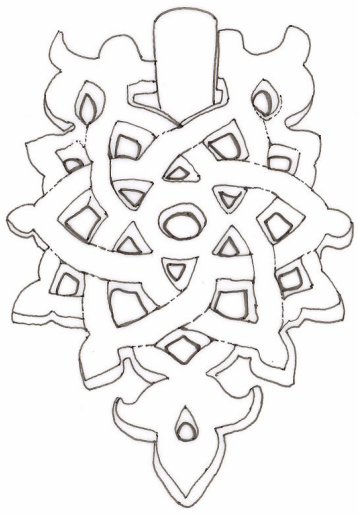

Fig. 11

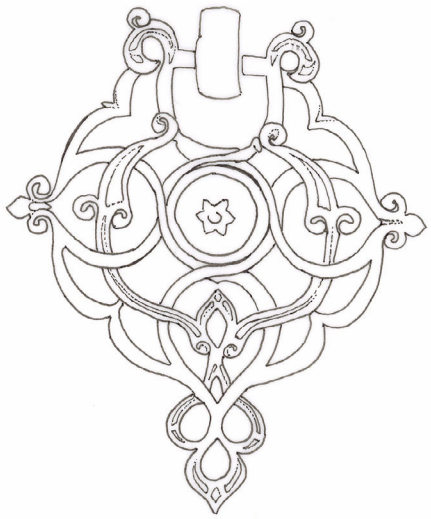

Fig. 12

[87] For example the hangers (cat. nos. I/1: Plate 266) on the entrance door to the *bīmāristān* of Nūr al-Dīn b. Zengī (545–49/1150–54) in Aleppo and on his *madrasa* and mausoleum in Damascus (563–76/1167–72).

[88] The hanger is part of the collection of the Louvre, inv. no. MAO 97, and is published in Bernus-Taylor (2001), 232, no. 160. The relation between this hanger and the Mamluk specimens of dragon-handles will be discussed in some more detail in Section 3.3.1.

Four specimens that belong to this type are attached to religious buildings in Cairo, the earliest ones being the pair of handles at the entrance door made for the *madrasa* of Sultan al-Nāṣir Ḥasan (764/1363).[89] Their size – they measure about 75 cm in height – is quite exceptional and immediately evokes questions as to their practical function.[90] With respect to Damascus, the only extant specimen of this type so far known is the one (cat. no. 42/1) formerly attached on the *madrasa* of Qāḍī Quṭb al-Dīn Muḥammad al-Khaiḍarī (878/1473).

The surface decoration on hangers belonging to this group is restricted to floral stems. Only once is epigraphy found, in this case designed in a radiating mode and following the shape of the suspension disk of the above-mentioned doorknocker (cat. no. 42/1: Plate 181) made for the *madrasa* in Damascus. The epigraphic content adheres closely to what is common on doors, in that the inscription mentions the patron that ordered it, and adding a pious invocation addressing the patron. Interestingly, however, the inscriptions are void of terminology addressing the knocker itself but refer instead to the door for which it was made (*mimmā ʿamila bi-rasm bāb al-madrasa*).

The second sub-group of interlace hangers are characterised by a central lozenge or roundel, which is surrounded by four loops.[91] The latter are either embedded in an openwork maze by surrounding bifurcated stems or they are accentuated by trefoils that are plaited through them (see Fig. 12). The stems do not merely serve to fill the interior but they actually define the exterior form of the hanger as well. The outer edge of this type of hanger is cusped with small protruding trefoils and ends below in a larger trefoil finial. The loop through which the hanger is attached is either round or has the shape of a feline head. If the suspension disks are present, they are cusped in shape.

All hangers are cast while surface decoration is applied through engraving and, in one particular case, through inlaying. The latter is exemplified by the earliest extant specimen (cat. no. 26/2: Plate 83) that was formerly attached to the entrance door of the *madrasa* and *khānqāh* of Sultan Barqūq (786–88/1384–86). It clearly stands out from the rest once due note is taken of the technical skill of the metalworker. The artisan not only used the inlay-technique to highlight the surface and added epigraphy to the central roundel, but he also managed best to create different planes with the trefoils sliding through the loops.

As for the surface decoration, the metalworkers were prone to embellish the core of the hanger, a location already emphasized by its design. There, they advertised the patron, either by tracing his blazon or by referring to him by way of an inscription. Floral scrolls and hatched lines further enlivened the surface of the stems and trefoils that made up the openwork maze of the hangers. The suspension disks were left relatively plain, some concentric circles being added to their surface. A single knocker stands out because of the animal figures that play an important role in its embellishment. They are three-dimensional and consist

[89] Belonging to this sub-group is the pair of doorknockers (cat. no. 24/2: Plate 57) on the entrance door to the *madrasa* of Sultan al-Nāṣir Ḥasan (764/1363); a single doorknocker (cat. no. 42/1: Plate 180) once attached to the *madrasa* of Qāḍī Quṭb al-Dīn Muḥammad al-Khaiḍarī (878/1473) in Damascus, and now housed in the National Museum of Damascus, inv. no.3641E; a hanger (cat. no. 43/2: Plate 183) on the entrance door to the *madrasa* of Sultan Qāitbāy at Qalʿat Kabsh (880/1475) in Cairo; the pairs of hangers (cat. nos. 53/3 and 54/2: Plate 239) on the entrance doors of, respectively the *madrasa* (908–9/1503) and the mausoleum and *sabīl-kuttāb* (908–9/1503–4) of Sultan al-Ghūrī; and finally a doorknocker (cat. no. 72: Plate 264), published in Herz (1895), pl. 6, no. 92, now housed in Cairo, the Museum of Islamic Art, inv. no. unknown. This last object cannot be connected to a specific building.

[90] This topic will be addressed in more detail in Section 4.2.

[91] To this group belong a knocker (cat. no. 26/2: Plate 83) formerly attached to the *madrasa* and *khānqāh* of Sultan Barqūq (786-88/1384-86), but now in Copenhagen, the David Collection, inv. no. 32/1997; the pair (cat. no. 37/2: Plate 156) at the entrance door of the mosque of Amir Jānī Bak al-Ashrafī (830/1427); the pair (cat. no. 47/2: Plates 199, 200) at the entrance door of the mosque of Amir Qajmās al-Isḥāqī (884–86/1479–81); the pair (cat. no. 50/2: Plate 221) at the entrance door to the mosque of Amir Azbak al-Yūsufī (900/1495).

of a pair of open-mouthed dragons flanking the top ends of the handle and a feline head crowning its suspension pin.[92]

All the extant specimens that belong to these two sub-types were made from the second half of the 14th century onwards. Should this design be considered a Mamluk innovation, developed as an alternative to the holes-and-bosses type in a period in which experiments in Mamluk fittings abound? That the design was not typically Mamluk will be shown in Section 3.3.2 in which the existence of a variety of interlace hangers that were made in the Jazīra during the first half of the 13th century will be discussed. Until more evidence comes to the fore, we remain in doubt whether this type indeed appeared for the first time in Mamluk Cairo during the late 14th century or whether we are faced here with a continuation of a tradition of cast interlaced motifs of which the intermediate specimens have vanished.

2.3.3 *Miscellaneous types*

Besides the two types described above, there are a few other knockers that need to be discussed but whose numbers are so small that they cannot be defined as clear groups. Attention will be focused upon two different kinds of knockers.

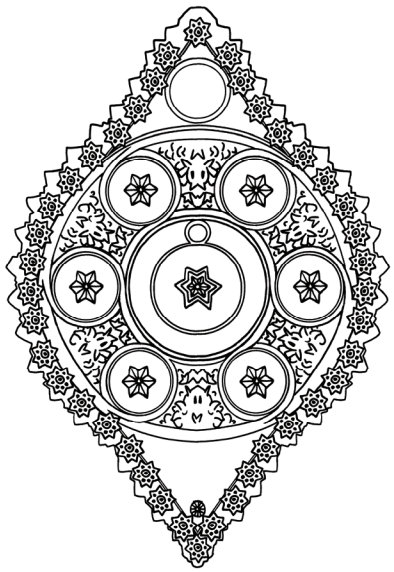

Fig. 13

Of the first kind of door-hangers that need to be addressed, there are only three specimens left, the oldest being a single knocker (cat. no. 17/2: Plate 39) attached to the Bāb al-Qaṭṭānīn (737/1336–37) in Jerusalem and another, much more finely executed and dated pair (cat. no. 24/9: Plates 74, 75), in Cairo on the *qibla* door of the *madrasa* of Sultan al-Nāṣir Ḥasan. The hanger (see Fig. 13) consists of a large circular plate that in contrast to the first two types has a closed form that is topped above and below by a protruding triangle or trefoil. Large bosses in relief dominate the plate, one positioned at the centre and others of even size located on the surrounding broad band. The outer rim of the hanger is edged with nails with rosette heads.

When the decoration is taken into consideration, the latter in Sultan al-Nāṣir Ḥasan clearly stands out, not least because the artist employed the inlaying technique for adding both colour and grandeur by meticulously adding further details. In addition, the floral designs that constitute the main decoration consist not only of the customary leafed stems but contain such flowers as lotus blossoms and peonies. Next to the floral motifs, epigraphy is an important decorative device, set in radial mode surrounding the central boss and on each of the protruding bosses themselves. Although the epigraphy on the flanking bosses is now illegible owing to both wear and tear and dirt that could not be removed, the content of the inscription surrounding the central boss is exceptional in that it carries both the city of

[92] These are the pair of doorknockers (cat. no. 47/2: Plates 199, 200) attached to the mosque of Amir Qajmās al-Isḥāqī (884–86/1479–81).

manufacture, i.e. Damascus, and the date (the end of 761/end of 1360), both of which are hitherto unique on Mamluk hangers.

The second kind of knocker is the simplest type of all and it will require only limited attention. The extant specimens are either present as a pair or as single hangers only, which does not necessarily mean that they were never part of a pair.[93] They consist simply of a ring whose circular shape tapers to one end where two knobs are joined, or are shaped as a horseshoe. Their decoration varies from none whatsoever to small circles stamped into the metal, or cast epigraphy. This simple type of doorknocker was favoured among Mamluk miniature painters, who drew them in pairs as circular rings attached by a simple suspension hoop to the wooden support without the addition of suspension disks.[94] A protruding trefoil finial pointing downwards could be added to these rings.[95]

2.4 WINDOW GRILLES

In general, metalwork window grilles were widely used in Mamluk buildings throughout the period. While they allowed both light and air to penetrate a building, they also served to protect it by fencing it off from the exterior world. Today they are still found in large quantities serving exactly these purposes. Sometimes they were used as well to protect more fragile grilles of stucco and glass.[96] The majority of grilles still *in situ* are composed of lattice-work design, consisting of horizontally and vertically placed bars and bosses where the bars intersect. Grilles of this category recur in Mamluk miniatures, where they adorn houses and palatial structures.[97] They were manufactured for purely practical reasons, as they are devoid of any decoration or additional embellishment. However, there is a small group of much more ornate grilles still extant that were created with an aesthetic intention in mind. In the discussion of grilles that follows below, attention will be diverted from the large group of non-decorated practical objects and directed instead to this small group that is distinctive in its addition of decoration.

Extant grilles can be subdivided into two groups on the basis of their design, namely the bosses-and-bars type and the overall geometric type. The main characteristics of each group will first be described, and then the techniques and the decoration applied on these grilles will be discussed.

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[93] These are a pair (cat. no. 25/2: Plate 76) on the door of the mausoleum of Ṭashtamur al-ʿAlāʾī in Jerusalem, a single hanger (cat. no. 41/2: Plate 167) attached to the *madrasa* and mausoleum of Sultan Qāitbāy in Cairo, and a single hanger (cat. no. 70: Plate 261) in the Keir Collection, published in Fehérvári (1976), pl. 57d, no. 166.

[94] See the hangers on the door depicted in *Kashf al-asrār*, Istanbul, Süleymaniye Library, Lala Ismail 565, 27r, datable to the mid-14th century, and published in Haldane (1978), 53, no. 11; those on the door in a house, represented in the *Maqāmāt* of al-Ḥarīrī, dated 734/1334, Vienna, National Bibliothek, A.F. 9, 104r, and published in Haldane (1978), 64; doorknockers in the *Maqāmāt*, London, British Library, Or.add 22114, fol. 35, datable to the early 14th century; and hangers on a door in a structure in the *Shāhnāma* of Firdawsī, dated 916/1511, Istanbul, Topkapi Palace Museum H 1519, fol. 326a, depicted in Atıl (1984), 168, pl. 11.

[95] The pair of hangers on two doors depicted in the same manuscript, the *Shāhnāma* of Firdawsī, dated 916/1511, Istanbul, Topkapi Palace Museum H 1519, fol. 115a and fol. 146a, depicted in Atıl (1984), 166, pl. 9 and 167, pl. 10.

[96] For this specific use in the Dome of the Rock, recorded in the 14th century, see ʿUmarī (1924), 140; Mayer (1932), 45. For stucco and glass windows in the monuments on the Ḥaram al-Sharīf in the pre-Ottoman and Ottoman periods, see Flood (2000).

[97] See for example the six grilles, depicted in the representation of a structure in *Kashf al-asrār*, Istanbul, Süleymaniye Library, Lala Ismail 565, 27r, datable to the mid-14th century, and published in Haldane (1978), 53, no. 11; the small grille of a house represented in the *Maqāmāt* of al-Ḥarīrī, dated 1323, London, British Library, Add. 7293, 80r, and published in Haldane (1978), 64; a grille of a house in another copy of the same manuscript, circa 1300, London, British Library, Or.add. 22114 (datable to the early 14th century), fols. 35, 50, 133, (50r being published in Haldane (1978), 69, no. 26); a grille set in a palatial structure, a frontispiece to the *Iskandarnāma* of Aḥmadī, 1467–68, Istanbul, Istanbul University Library, T 6044, fol. 1b, depicted in Atıl (1984), 161, pl. 2. London, British Library Or.add. 22114, a copy of the *Maqāmāt*, fol. 98 shows a slightly more ornate variety of a bosses and bars grille, with large square-shaped bosses.

2.4.1 *The bosses-and-bars type*

The bosses-and-bars type is characterised by grilles built up of alternating bosses and bars that are joined both in a horizontal and vertical mode to make up a grid (see Fig. 14). At the sides, half conical trims cover the spaces where the bars are fitted into the wooden or stone framework of the window.

In the case of those grilles that show more elaborate decoration, this is applied either by way of surface ornament or by the addition of other, three-dimensional and centrally located designs. In the latter case, this extra richness could be achieved by simply adding differently shaped bosses at the centre or, in more elaborate fashion, the grille-maker included elements such as miniature grilles or trefoil finials between the basic composition of bosses and bars. This type of grille not only in its basic form but inclusive of ornament as well is found throughout the Mamluk period. It was widely dispersed geographically for examples are found in buildings in Cairo, Jerusalem, Damascus and Aleppo.

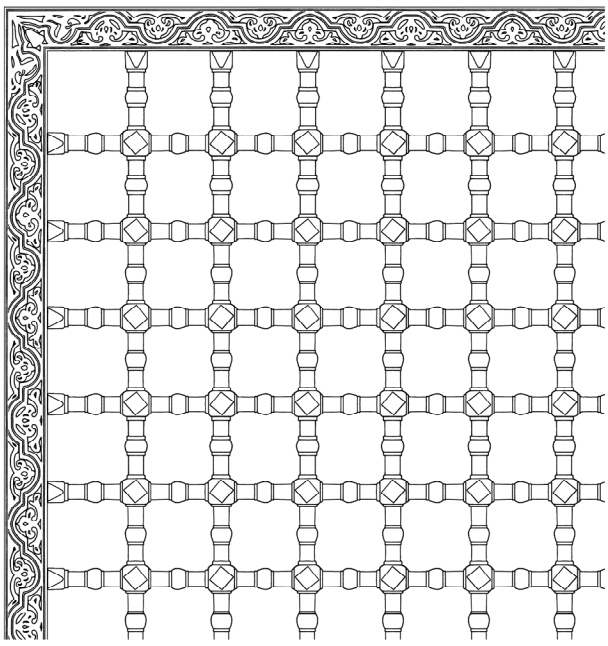

Fig. 14

The manufacturing process of this type of grille can be subdivided into three stages: the production of the basic components, the application of decoration on their surfaces, and the combination of these basic elements into an actual grid. For providing the basic components (bosses and bars), the casting technique was the one most widely used and was preferred because of its suitability for the multiplication of identical units. In some cases, however, the metalworker resorted to cutting thin sheets of brass or bronze into round or star-shaped forms, after which he modelled them into the appropriate shapes for bosses and bars.[98] Whereas the 14th century shows the presence of grilles executed both in sheet metal and in the heavier cast forms, the 15th century only yields evidence of the latter. An explanation for this could well be that the strength of the cast components was preferred to the feebleness of the sheet metal, which was more prone to damage. Moreover, the need for the malleable sheet as the preferred support for inlay had disappeared when the inlaying technique stopped being used on grilles during the 15th century, as will be discussed below.

After the bosses and bars had been produced, decoration would sometimes be applied to their surface. The most common techniques for this were casting and engraving. By varying the depth of the cast and engraved lines, the metalworker created not only differences in relief but allowed the play of light and shadow. In addition, right up to the end of the 14th century the technique of inlaying with gold, silver and bronze was also practised on grilles in Cairo and was applied to the flattened surfaces of the bosses and to the round bars. Silver constituted the preferred inlaying material, filling most of the worked surface, while

[98] See for example the grille (cat. no. 21/1: Plate 45) made in the name of al-Malik al-Muẓaffar (747–48/1346–47), now housed in Cairo, the Museum of Islamic Art, inv. no. 37749.

gold and copper were used for minor details. Finally there is one extant example from the end of the Mamluk period on which gold was applied by way of overlay.[99] Written sources attest that this method of plating surfaces with gold was already employed earlier in the Mamluk period, but physical evidence of this is absent.[100] That the technique of overlaying was not unknown in the production of fittings before Mamluk times is shown by al-Jazarī, who used and described this technique while manufacturing a part of the palace doors of Āmid, pouring red copper over an engraved brass plate so as to coat the entire surface of it.[101]

After the surface decoration had been applied, the individual elements needed to be put together into an actual grille. The broken grille above the entrance door of the mosque of Amir Shaykhū al-ʿUmarī (750/1349) in Cairo gives good insight into the method used, as the internal structure is visible owing to some bosses having lost their front surface (see Fig. 15). Through these apertures an interior horizontal bar is apparent, round in section, which covers the whole width of the window. Onto this round bar, bosses alternating with bars were slotted, making up a horizontal row. To connect the horizontal rows with each other, small vertical bars were used that were positioned in holes on the top or bottom of the bosses, which were located above each other. In the grille under consideration many of the vertically applied bars are now gone, thereby indicating that an inner iron or wooden structure on a vertical axis was absent.[102]

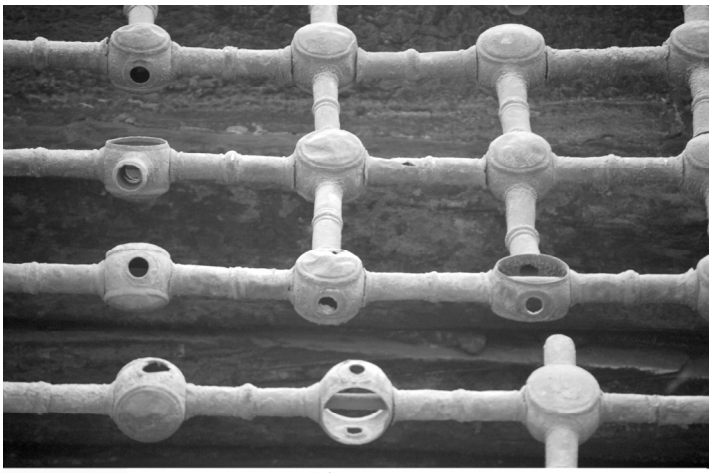
Fig. 15

If surface decoration was applied, metalworkers on the whole chose to embellish all the bosses, in addition to which sometimes the bars were also decorated. The decoration ranges from geometry, floral motifs and heraldry, to epigraphic designs; the latter were the most popular. As already seen before, geometric shapes such as roundels and lozenges served to outline the ornament that fills the bosses. They are only sporadically found, however, as fillers of the bosses, perhaps because the design of the bosses-and-bars type already made a strong geometric impact. However, the grilles of al-Anṣarī (cat. nos. 49/1 to 49/3: Plates 215 to 218) form an exception: there the metalworker filled the central bosses with zigzag patterns and braided forms, while filling the remainder of the bosses with hatched lines.

Floral motifs play a large role in filling the bosses. They comprise stylized undulating leafed stems and rosettes. They either take in the entire surface of a boss or play a more subdued role, surrounding a central inscription.

Heraldic signs are used on some grilles from the Burjī period where they fill the entire surface of a boss. If used, they are present in large quantities on one and the same grille, as metalworkers often chose to

[99] On a window grille (cat. no. 49/3: Plate 217), now housed in Kuwait, Kuwait National Museum, inv. no. LNS 128M, and attributed to the mausoleum of Azdamur in al-Anṣarī near Aleppo.
[100] ʿAbd al-Wahhab (1946) I, 150 recorded brass grilles plated with gold (*muwahhana bi'l-dhahab*) in the *qibla īwān* of the mosque of Amir Alṭunbughā al-Māridānī (738–40/1338–40), which are not *in situ* today. Besides this, the endowment deed of the *sabīl* of Sultan Faraj b. Barqūq records two large windows with thick lattices of gold-plated bronze (*shubbākān kabīrān bi-sanābil ghilāẓ min al-nuḥās al-mudhahhab*). See Lamei Mostafa (1989), 40, line 114 for the descriptive part of the *waqf*.
[101] Jazarī (1990), 334.
[102] For a drawing of a Persian steel grille from the late 17th century with an identical method of compilation, see Allan (1996), 205, fig. 12.

fill half of the bosses with a repetitive blazon, alternating them either with inscriptions consisting of the titles of the patron or with floral motifs.[103] Either way, the grille boasted the presence of the patron.

Of all four types of decoration, the grille makers showed a preference for embellishing grilles with inscriptions. Their content consists of the titles of the patron, signatures, religious inscriptions and dates. Consistent with metalwork fittings in general, the titles of the patron are most often used. These were composed either of repetitions of the same single reference to the patron, repeated over and over again on each single boss, or they consisted of a number of different titles that were distributed over the subsequent bosses of the horizontal rows of the grid.

Signatures form a remarkable group of inscriptions on this type of fitting, as they occur a number of times especially in the late Mamluk period, sometimes in quite staggering numbers. At least four different craftsmen can be distinguished on the basis of their signatures: firstly the illustrious Muḥammad b. al-Zayn, also known to have signed portable objects, was responsible for a 14th -century grille in Jerusalem.[104] Besides this there are at least three grille makers known from the late 15th century who signed their work, one of whom was Zayn al-ʿAbdīn al-Zaradkāsh, who made three grilles in two different buildings in Cairo.[105] And then there were Yūsuf b. al-Kamāl and Muḥammad b. al-Kamāl who were probably brothers and who signed a grille each belonging to a mausoleum in al-Anṣarī, a village near Aleppo.[106]

This upsurge of signatures, especially at the end of the 15th century in both Cairo and al-Anṣarī, is unique, as this situation is mirrored neither on other metal fittings in religious buildings nor is it found on contemporary portable Mamluk metal objects. The outburst seems coincidental when the differences in style and distribution of the signatures are taken into consideration. Here three variations can be clearly detected. Firstly, Muḥammad b. al-Zayn clearly distinguished his signature from the other inscriptions by not only allocating different positions to each but also by choosing different techniques and styles. Whereas his signature is engraved on a narrow iron strip in a cursive script and positioned on the lintel bar of the wicket gate, the visibility of the Qurʾānic verse could not have been enhanced more by its execution on an iron cresting with the text itself rendered in bold openwork, and by its location of the entire cresting on top of the grille.[107] The second variation, as seen on the late Mamluk grilles from Cairo, is less extreme, as this metalworker did not vary the technique or style but clearly differentiated the location for each type of inscription in that the titles of the sultan were positioned on the bosses – clearly the most prestigious location – whereas he placed his own multiple signatures on a vertical line of bars. The third variation differs in that on the grilles from the mausoleum of al-Anṣarī the signatures are integrated into the entire inscription, both formally and technically. As the signatures in Jerusalem, Cairo, and al-Anṣarī do not have anything in common, they should be regarded as the individual choice of the craftsmen responsible. Muḥammad b. al-Zayn was already in the habit of signing his portable objects and could easily have transferred this predilection to a fitting. As for the two, or three, craftsmen responsible for the grilles of the mausoleum in al-

[103] Examples of this are the grilles (cat. no. 47/7 and cat. no. 47/8: Plate 208) in the mosque of Amir Qajmās al-Isḥāqī (884–86/1479–81) and the grille (cat. no. 62: Plate 254) housed in Cairo, the Museum of Islamic Art, inv. no. 7029.
[104] Muḥammad b. al-Zayn manufactured the grille (cat. no. 12/1) installed in Jerusalem, *madrasa* al-Isʿardīya, a basin and a bowl, something which will receive more attention in Section 5.2.1.
[105] Zayn al-ʿAbdīn al-Zaradkāsh signed the grilles (cat. no. 45/1: Plates 187 to 190) in the *sabīl-kuttāb* of Sultan Qāitbāy (884/1479–80) and that (cat. no. 47/7: Plate 207) in the mosque of Amir Qajmās al-Isḥāqī (884–86/1479–81).
[106] Yūsuf b. Kamāl and Muḥammad b. Kamāl were responsible for two grilles (cat. no. 49/1: Plate 215 and cat. no. 49/2: Plate 216) in the mausoleum of Azdamur in al-Anṣarī (893/1488). The name of a fifth metalworker responsible for a grille (cat. no. 49/3: Plate 217) attributed to the same mausoleum is, unfortunately, illegible. This grille is now housed in Kuwait, National Museum of Kuwait, inv. no. LNS 128M.
[107] For an photograph depicting the grille topped by the openwork cresting, see Burgoyne & Richards (1987), 373, pl. 33.4. For detailed photographs of the openwork cresting and the iron strip with the signature of the metalworker, see eidem, 376, pls. 33.20 and 33.21.

Anṣarī, it seems probable that they stimulated each other to differentiate their individual works clearly by adding their respective names.

Much more limited in number are religious inscriptions and dates, both of which are found twice. With respect to the religious texts, the metalworker stressed their importance by making them stand out visually from the rest of the decoration. As already discussed before, Qurʾān 2:255 on the grille made by Muḥammad b. al-Zayn is executed in bold openwork and located conspicuously topping the grille. This passage, the 'Throne Verse' is the most frequently encountered statement about God's nature in Islamic epigraphy. The religious inscription 'Help from God and a near victory' on one of the grilles from al-Anṣarī is also in bold openwork and set at the centre of the design. Its shape, a roundel encompassing the inscription – which is written twice, once in mirror image – attracts even more attention. It is the only mirror image found on Mamluk metalwork fittings. A date occurs twice, both times on the grilles from al-Anṣarī. These dates also mention the month and are part of a larger inscription consisting of the titles of the patron and the signature of the maker.

2.4.2 *The geometric type*

The second type of grille is the so-called geometric grille, the main design of which is based upon the repetition of a geometric pattern. Although they were created as an alternative design for the bosses-and-bars type, the restricted number of extant examples suggests they were never very popular. This is also implied by their much more limited geographical spread, for all specimens of this type occur in Cairene buildings from the 14th century. Two sub-types can be distinguished: those with a design based upon star units and those the pattern of which is based upon an imbricated pattern of half circles.

On the grilles on which stars are the dominant element, a distinction can be made between those that are built up of repetitive even-sized units (see Fig. 16) and those with a strong central focus made up of a single dominating star unit. The ones based on a repetitive star pattern are found only at the beginning of that century, a situation that has a parallel in the contemporary abandonment of non-hierarchical geometric designs in doors with an overall star design.[108] In contrast to those grilles with a repetitive star design, those with a single star dominating the grille are small in size and executed either in rectangular or round shapes. All those extant are located in the *madrasa* and *khānqāh* of Sultan Barqūq (786–88/1384–86).[109] Although this latter type relates very successfully to the small size that was chosen for it, it did not become fashionable in later Mamluk buildings.

The second sub-type consists of an imbricated pattern of horizontal rows of half circles with protruding buds at their centres (see Fig. 17). From afar it gives the impression of being built up of fish scales. Of the few specimens that survive, only one is still extent in its original location, i.e. the grille (cat. no. 28/4: Plate 110) in the *madrasa* and mausoleum of Amir Maḥmūd al-Ustādār (797/1394–95).

What were the techniques whereby this type of grille was manufactured? First of all, in contrast to the bosses-and-bars type, this type did not consist of an internal structure providing strength and an external surface meant for decoration, but instead comprised one single layer of openwork designs. The latter was

[108] These are the grilles (cat. no. 10/1: Plate 29 and cat. no. 10/2: Plate 30) installed in the *madrasa* of Amir Ṭaybars al-Wazīrī (709/1309–10), located in the al-Azhar mosque. The presence of a non-hierarchical geometric design in doors with an overall star design is discussed earlier in Section 2.1.1.
[109] These are grilles with cat. no. 26/9: Plate 93, cat. no. 26/10: Plate 94, cat. no. 26/11, cat. no. 26/12: Plate 95, and cat. no. 26/13.

achieved by casting either an entire grille in one piece or by casting multiple parts of a grille, after which these were welded together. The surface of most extant geometric grilles was not further enlivened with decoration, for reasons shortly to be discussed. On those few grilles where designs are found, they were applied during the same casting process that made up the grille itself. After their completion, the grilles were

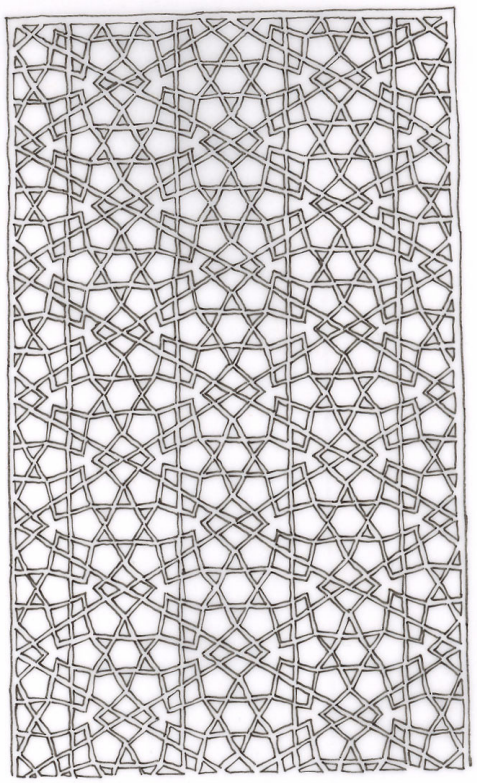

Fig. 16

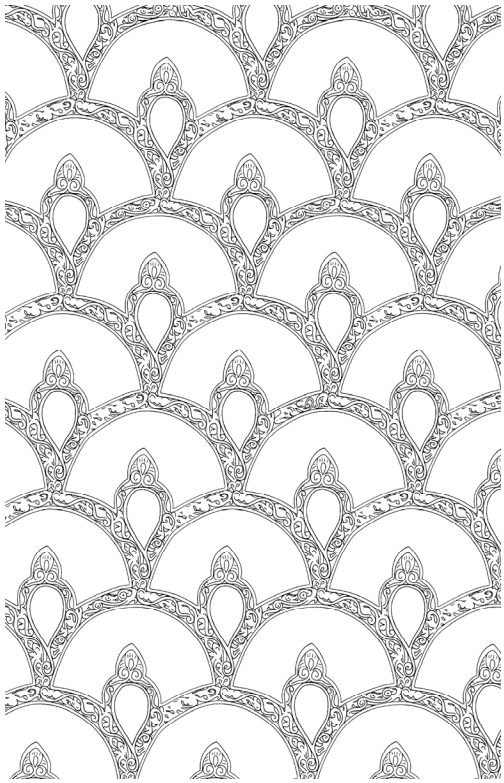

Fig. 17

sunken into a wooden framework that was prepared by grooves being gouged out into their four sides to hold the grille in place.

The technical advantage of embellishing a surface that is composed of multiple cast small units as against decorating a large piece cast in one might well explain, at least in part, the presence of surface decoration on the bosses-and-bars type as opposed to the overall geometric type the surface of which is often undecorated. However, the design of the latter being more decorative in its own right might also have prevented the metalworker from adding to an already playful design. Whatever the reason behind this might have been, it is obvious that the overall geometric type is not only restricted in the number of extant examples with a decorated surface but also in the variety of the decoration applied on it, as this is limited to floral and heraldic motifs. Their distribution over the field differs remarkably: the blanket of undulating leafed stems covering the entire surface of one of the grilles (cat. no. 28/4: Plate 111) in the *madrasa* and mausoleum of Amir Maḥmūd al-Ustādār (797/1394–95) contrasts with the presence of a single motif comprising a small tripartite blazon, positioned at the centre of three grilles (cat. no. 26/10: Plate 94 and cat. no. 26/11) in the *madrasa* and *khānqāh* of Sultan Barqūq (786–88/1384–86). The latter's pivotal location and the fact that it is surrounded by interwoven openwork star and trefoils, however, emphasize its importance.

2.5 MEANING OF THE DECORATIVE THEMES

Now that the major types of Mamluk fittings have been discussed, the focus will shift to the decorative themes used on Mamluk fittings and the meaning they convey. Of all the motifs present on Mamluk metalwork fittings, geometric shapes are spatially the most dominant. On doors and grilles they function as entities in themselves but they are also subsidiary to the entire design. From an optical point of view it is easy to understand why geometric motifs such as the star patterns used on overall star pattern doors were popular in the Mamluk period. The geometric intricacies of the patterns still stimulate the senses of the viewer and lock the eyes. Simultaneously, the eyes are forced to move over the pattern as if the motifs themselves are in movement. Thus the patterns attract the attention of the viewer to that part of the building that provides entrance, acting as a mechanism to draw people in.

Was this combination of an entrance door and its decoration with star patterns chosen only for aesthetic reasons? Some authors claim there is a deeper meaning to, and a positive connection between, the function of the door and the presence of star motifs on it. According to Jakeman, the star design in the Mamluk period – used not only on metalwork doors but on Qurʾānic frontispieces and tombstones as well – acts as a mediator in managing the transition between the worldly and the religious sphere.[110] As the author believes the patterns to be talismanic in function, they influence the act of transition itself.[111] Pertaining to Islamic art in more general terms, another author believes the door to be a zone of transition between two worlds as well: the star patterns that decorate the door's surface might encourage the viewer to contemplate the values of Islam.[112] In a much wider context, the harmonious proportions of star patterns and the circle as the basis of geometry, irrespective of their location, have also been interpreted as being reflections of the doctrine of unity (*tawḥīd*).[113]

Although the star patterns constitute the dominant motif on overall star pattern doors, the existence of other types of doors in Mamluk constructions in Cairo suggests the symbolic connection between doors and star patterns as proposed by Jakeman was not deemed imperative. Moreover, star designs were not exclusive to doors but were used – and indeed developed – in Cairo on *minbar*s and *miḥrāb*s in the Fatimid period and those continued right into the Mamluk period. In these particular furnishings, the function of transition is absent. The one author who might have given inside information about the interpretation of star patterns on doors, i.e. al-Jazarī who left a description of the overall star pattern door which he made for the palace in Āmid, does not address the topic of symbolism inherent in star designs. The question whether the viewer understood these patterns to be a representation of a Muslim cosmology cannot be answered positively.

Besides star patterns, there are other geometric motifs on fittings that might be associated with the stellar bodies. Rosettes, frozen or in whirling mode and depicted on portable metalwork objects, have been interpreted as sun-symbols.[114] On fittings, this motif is most widely used on doors of the panelled type, on which the link with the stellar bodies is emphasized still further, as many of them are surrounded by a star-shape. The variation in their appearance, however, suggests them to be decorative more than symbolic. Their

[110] Jakeman (1993) I, 162.
[111] In addition to this, Jakeman (1993) I, 156, 166 has interpreted the overall star pattern door as an aid in the light of the Sufi search for God in the Mamluk period.
[112] Critchlow (1995), 102.
[113] Burckhardt in Said & Parman (1988), ix–x; Nasr in Critchlow (1995), 6.
[114] Allan (1982), 53, 61; Baer (1998), 123.

decorative function is emphasized even more by their location on these doors off-centre, fixed as they are mostly in the corners acting almost as a filler device.

In addition to rosettes, there is another decorative image that has been associated with the sun, which is the radial inscription that spells out some of the titles of the sultan. The idea evoked by this design of the ruler associating himself with the sun has already been extensively discussed for portable metalwork objects.[115] The importance given to this particular motif on metalwork doors is articulated by the conspicuous location of this type of radial inscription, for example on the centrally located embossed stars, and the use of shiny inlay in gold or silver for these designs. It suggests that the makers who transferred this motif on doors were well aware of its graphic and symbolic import.

The second type of ornament that abounds on Mamluk fittings is vegetal motifs. Their popularity can be understood in several ways. The movement of stems and bifurcated leaves, when adorning the flat surface of fittings, transforms the 2-dimensional surface and visually adds a third plane. This optical effect is strengthened by the use of openwork foliate stems filling medallions or the angular plaques of overall star pattern doors. In the latter case, the mobility of the moving stems contrasts with the sharp lines of the stars and hexagons that they fill. In medallions, metalworkers played with the denseness of the foliate stems and their direction. To pull the viewer in, they positioned dense patterns of floral motifs at the core of the medallion around a central disk while covering the remainder of the space with more widely spaced foliate stems. In this way, these vegetal motifs work as a magnet, drawing people closer. It is difficult, however, to charge these motifs with a meaning besides their optical effect and the aesthetic pleasure that they might evoke.

After the discussion of possible interpretations for geometric and vegetal motifs, the message put across by the inscriptions on fittings is much more straightforward. The importance of epigraphy is underlined by the fact that it was allocated standard locations on doors and grilles. On doors of the metal bands type and on some grilles of the bosses-and-bars type they even constitute the sole ornament. The striving towards legibility that is apparent in the choice of the readable cursive *naskh* hand further indicates the significance attached to the content of the epigraphy. In addition to the readability, metalworkers aspired after the comprehension of the texts by keeping the composition of the inscriptions standardized, consisting as it does of recurring features like an introductory phrase, the titles of a patron, and a pious invocation in favour of the patron.[116] If the introductory phrase is inclusive of a verb like 'ordered the construction of' (*amara bi-inshāʾ*) or 'that which was made for' (*mimmā ʿamila bi-rasm*), this is usually followed by the object that is ordered (either the fitting or the building for which it was made), then by the titles, and concluding with a pious invocation. If the inscription starts with a noun as an introductory phrase like 'glory to' (*ʿizz li-mawlānā*) or by a preposition followed by a noun like 'under the supervision of' (*bi-ishāra*), they are immediately followed by the titles of the patron and the invocation. If dates are present in either option, they are positioned at the end of an inscription.

The message most widely communicated on Mamluk metalwork fittings is that of patronage, which is clear not only in the recurrence of the commissioner's name on almost every object but also in the amount

[115] Allan (1982), 24–26, 88, has argued for the presence of sun-symbolism on Mamluk objects, equating Sultan al-Nāṣir Muḥammad b. Qalāʾūn with the source of light for the earth. Hillenbrand (1986), 34, argues also that the reference to the sultan expressed in epigraphic rays invites the conclusion that the sultan is himself the sun. These interpretations have been received with some scepticism by Bloom (1999), 50, who refers to Lapidus (1984), 179 in whose article the Mamluks are portrayed as far from vainglorious, but instead as being restricted in political and religious aspiration. He argues that the Mamluks, contrary to the Fatimids and the Ottomans, were more humble servants of religion, and accepted a local political destiny. This, however, does not exclude the introduction of powerful symbols reflecting kingship under certain Mamluk rulers.

[116] This type of invocation is common on Mamluk coins as well. For examples of this, see Balog (1964), 15.

of space taken up by the names. The available space differs, however, considerably according to the size of the object, the technique used – inscriptions executed in openwork usually contain less titles than engraved inscription bands, which might partly explain the growing popularity of the engraved band on doors during the Mamluk period – and the practicality of housing inscriptions. The latter is best apparent on grilles of the bosses-and-bars type, where inscriptions have to be squeezed onto the small surface of the bosses. Irrespective of the specific reason, the restrictions with regard to space forced metalworkers to limit the number of honorary titles so that a disparity is visible between the full protocol of a particular sultan and the titles present on fittings. The titles on the whole consist of general laudatory phrases about the patron, such as 'the high, the lordly' (*al-ʿālī al-malikī*) but some include titles referring to lineage (Sultan al-Nāṣir Ḥasan; cat. no. 24/1), to the sovereignty over the Holy Cities (Qāitbāy; cat. no. 41/5), and to *jihād* (Barqūq; cat. nos. 26/1 and 26/3) as well. In addition, amirs in the provinces tended to mention their specific office in their titles (cat. nos. 29/2, 49/1, 49/2, 55/1, and 56/1).

Compared to the overwhelming references to patronage, the number of signatures of metalworkers is relatively small. The four different craftsmen that are known all signed grilles.[117] Unfortunately not much information can be gleaned from the signatures, as *nisba*s or references to specialisations within the craft of metalworking are absent. They prefix their names by the generic term 'the work of' (*ʿamal*). Three of them present themselves quite humbly by referring to themselves as slave (*ʿabd*) and sign their names only once, except for Zayn al-ʿAbdīn al-Zaradkāsh in Cairo who vaingloriously signed his artefacts a staggering number of 16 and 15 times, respectively, the number corresponding to the number of horizontal rows on each grille. Only great pride on the part of the craftsman for his work could explain this.

Qurʾānic verses are present on 12 Mamluk fittings: 11 of them are found on doors while one is located on a grille. The verses that are used are: 2: 255,[118] 9:18,[119] 15: 45–47,[120] 39: 73,[121] 62:9,[122] and 72:18.[123] Of these, Qurʾān 9:18 is the most frequently used, four times in all, while Qurʾān 15:46 and 62:9 also turn up more than once, i.e. three and two times, respectively. The popularity of verse 9:18 is not surprising as it is the most commonly used verse on Islamic monuments in general, where it is often combined with the founder's name.[124] The verse's topic is well suited to its location on the entrance façades of religious buildings as it speaks of true believers performing prayer. The location of the other verses also seems to have been chosen with care; their content is in agreement with the function of the fittings, i.e. as doors which provide believers with entrance to places of prayer. Verses 15:45–47 and 39:73 speak of paradise and of the doors providing entrance to it. Qurʾān 62:9 refers explicitly to the Friday prayer, while the Oneness of God and places of worship are the subject of verse 72:18. Much more general in content,

[117] These are grilles cat. nos. 12/1, 45/1, 47/7, 49/1, and 49/2.
[118] On the grille (cat. no. 12/1) installed in the *madrasa* al-Isʿardīya in Jerusalem. The verse runs up to the word 'sleep' (*nawm*).
[119] On the entrance door (cat. no. 15/1) of the mosque and mausoleum of Amir Ulmās al-Nāṣirī (729–30/1329–30); on the entrance door (cat. no. 24/1) of the *madrasa* of Sultan al-Nāṣir Ḥasan (757–61/1356–60); on the entrance door (cat. no. 47/1) of the mosque of Amir Qajmās al-Isḥāqī (884–86/1479–81); and the entrance door of the *madrasa* of Sultan Qāitbāy in Jerusalem (884–87/1479–82).
[120] Qurʾān 15:45–47 occurs on the entrance door (cat. no. 28/1) of the *madrasa* and mausoleum of Amir Maḥmūd al-Ustādār (797/1394-95); Qurʾān 15:46 occurs on two doors in the Umayyad mosque in Damascus, one on a door in the north wall (cat. no. 29/2), dated 809/1406 and another on the northern side door in the east wall (cat. no. 31/3), which was manufactured in 820/1417.
[121] On the door (cat. no. 20/1) attributed to the mosque of Amir Aṣlam al-Silāḥdār (745–46/1344–45).
[122] On one of the entrance doors (cat. no. 34/2) in the *madrasa* of Qāḍī ʿAbd al-Bāsiṭ b. Khalīl (822–23/1419–20), on the entrance door (cat. no. 39/1) on the north side of the mosque of Qāḍī Yaḥyā Zayn al-Dīn (848/1444) and on the door (cat. no. 58) currently in the French Embassy in Giza and whose provenance is as yet unknown.
[123] On the entrance door (cat. no. 39/2) on the south side to the mosque of Qāḍī Yaḥyā Zayn al-Dīn (848/1444).
[124] Dodd & Khairallah (1981) I, 63 and II, 43–53 list a total of 159 occurrences of this verse, which are, according to the authors, usually placed over the doorways of Islamic monuments.

however, is verse 2:255 in which the basic Muslim doctrine of the Oneness of God and His omnipresence are the focus of attention.[125]

When religious verses and references to patronage are combined on one and the same fitting, the Mamluks chose to place God above the worldly ruler by positioning the Qur'ānic verse or the reference to God literally above the name of the founder. The execution of the epigraphy also favoured the religious message: it was either given more space, or rendered in a different technique, or the script was slightly adjusted so as to create a visual and formal difference between the religious and political message.[126] The idea expressed is that of a certain humbleness towards God. This picture contrasts with the abundant presence of titles that glorify the ruler on the majority of fittings and with the message put across by the radial inscription in which the ruler was identified with the giver of light.

If present, dates make up the final part of an inscription. Of the 15 fittings that are dated, doors were evidently the preferred location for such information, with eleven dating inscriptions found on them. On the majority of these fittings, the dates specify the year and the month. The question whether these dates signify the date of commission or of completion cannot be answered. A number of dates clearly refer to the completion, as not only does the inscription include 'and its completion was in the month of'(*wa-kāna al-firāgh fī shahr*) but the date corresponds with the final stage of the construction of the building (cat. nos. 26/1 and 50/1). A similar conclusion can be reached for two fittings (cat. nos. 24/1 and 24/9 in the *madrasa* of Sultan al-Nāṣir Ḥasan) that carry a date that lies beyond the actual inauguration of the building in question. A discrepancy is apparent on one door (cat. no. 24/1): the inscription starts with 'ordered the construction of this door', implying a commission by a living person, and continues to refer to the sultan as 'the martyr' (*al-shahīd*) in addition to mentioning the date 764/1363, which lies two years after the death of the sultan.[127] For some fittings, on the other hand, it seems that the date signifies the commission and the work in progress. The inscription on the metalwork door in the Bāb al-Qaṭṭānīn (cat. no. 17/1) in Jerusalem reads 'and this in the months of the year 736' (1335–36) whereas the renewal of the entire construction was finished only during the months of the year 737/1336–37 as recorded in the inscription band above the portal.[128]

Finally, attention must be focused on the figural imagery found on Mamluk metalwork fittings, specifically the recurring presence of the lion and the dragon. The lion, often rendered in stylized form and on the whole only depicted by the head, is mostly used crowning the suspension pins of doorknockers and is found throughout the entire period. The lion also occurs on an embossed star that, according to a drawing made by Bourgoin, formerly adorned the door in the *madrasa* of Sultan Baybars.[129] Dragons are found only twice on doorknockers: once (cat. no. 47/2: Plates 199 to 201) their heads crown a hanger and flank a feline head between them, while the other (cat. no. 4/2: Plates 12, 13) entirely consists of pairs of dragon heads

[125] It is remarkable that the Throne-verse occurs only once on Mamluk metalwork fittings as it was a highly popular verse on Islamic buildings in general, as the listing of 113 appearances by Dodd & Khairallah (1981) II, 10–16 indicates. The verse was counted 28 times on Mamluk buildings, but once only on a metalwork fitting.

[126] The door (cat. no. 48/1) in the *madrasa* of Sultan Qāitbāy in Jerusalem is an exception, for here the titles of the patron are rendered in bold *naskh* while a much smaller inscription in kufic containing a Qur'ānic verse is set in the central section right through this statement of patronage. This rendering is an example of the experiments with calligraphy on metalwork objects during the time of this sultan. For more information on this experimentation, see Newhall (1987), 181–89.

[127] This contrasts with the findings of Blair (1992), 8 and Blair (1992:a), 69, who argues that most dates on the buildings she studied refer to the commission of the building. The late date as recorded on the entrance door (cat. no. 24/1) is not unique in the *madrasa*: four marble bands in the courtyard carry an identical date. See Van Berchem (1903), 251–52. They give evidence that the interior decoration of the *madrasa* continued well after the sultan's death in 762/1361.

[128] Van Berchem (1925), 127–28.

[129] Bourgoin (1873), pl. 74.

whose necks are intertwined. In addition to this a variety of animals such as panthers, parrots and hares are set in the winding openwork foliate scrolls that make up the medallion and the corner-pieces of a late 13th-century medallion door (cat. no. 7/1).

This occurrence of lions and dragons in Cairo is not restricted to metalwork fittings. These two types of animals are also occasionally seen on the façades or entrance portals of Mamluk structures where they are usually cut in stone or marble, such as the lions on the *madrasa* of Sultan Baybars (660–62/1262–63) in Cairo and on the bridge of Abū'l-Munajjā built by the same patron in 665/1266–67.[130] In addition, stone dragons were positioned on the console brackets of the doorway in the al-Mazharīya mosque and are found on three marble slabs that were taken from Mamluk constructions but that had probably originated in Seljuq Anatolia or Ayyubid Syria.[131]

Irrespective of the material, the preferred location for these two types of animals in Mamluk constructions in Cairo is the façade of a building or the actual entrance door. This selfsame connection is visible also in Seljuq and Ayyubid architecture, and even in a Christian context in the Jazīra. In the Seljuq era, carved lions and dragons abound on the façades and entrance portals of civil and religious buildings alike.[132] Other gateways and doors combine the two animals. On the Talisman Gate of Baghdad, built by the caliph al-Nāṣir (618/1221), two wide-mouthed dragons with knotted tails menace a seated figure, which is positioned between them, while two lions are positioned below their tails.[133] Intertwined dragons crown the entrance gate to the citadel of Aleppo, probably ordered by the Ayyubid ruler al-Malik al-Ghāzī in the early 13th century, while stone-carved lions are positioned at the inner gates.[134] The same combination appears in contemporary Christian contexts as well, above the entrance doors of churches in the same area, as the church of Khiḍr Elyās in Mosul and the Jacobite Church in Jazīrat b. ʿUmar show.[135] Similar combinations of lions and dragons are also found on wooden medallion doors that originated in Seljuq buildings.[136] During the first half of the 13th century, the motif also recurs in the Jazīra on metalwork dragon-handles with feline-headed suspension pins that were attached to both religious and palatial buildings.[137] And finally the same theme is also found on an Arabic frontispiece-miniature of the *Book of Antidotes* (*Kitāb al-diryāq*), datable to the early 13th century.[138] The position of this motif on the frontispiece is analogous to its depiction on a door, as both are connected with the idea of entrance.

This well-established association of dragons and lions to the façade of constructions can hardly be considered coincidental but suggests instead that a symbolic meaning was attached to them in this particular location. In astrology, the lion is strongly connected to the sun, as the sun has its *domicilium* in Leo, a combination that can be traced back as far as the 4th millennium BC.[139] In this combination, the lion is

[130] For occurrences of the lion on other buildings ordered by the same sultan, see Mayer (1933), 106–10.
[131] These slabs are now in the Museum of Islamic Art in Cairo, inv. nos. 1120, 12752, and 13488. For a description and depiction of each slab, see Ibrahim (1976), 11–14, pls. 6–8. For the dragon on the façade of the mosque, see eadem, 11–13, pls. 3–5.
[132] For an overview of dragons, the majority of which are situated on entrance portals, see Öney (1969). More examples are present in Kühnel (1950: a), 6–9 and Ibrahim (1976), 13. For lion figures, see Öney (1971). Most are rendered full-body. However, nos. 17 to 30 consist of lion heads only.
[133] Van Berchem (1910) I, 82–83, pl. 31; Sarre & Herzfeld (1911–20) III, pl. 11.
[134] For the stone-cut pair of dragons above the entrance gate to the citadel proper, see Herzfeld (1954–56) II (planches), pl. 35b. For the protruding lion-heads at both sides of the inner gate, see idem, pls. 37a–b, 38.
[135] Preusser (1911) II, pls. 16:2, 34. The iconography on the slab from the Jacobite Church differs from other examples in that it shows a lion with an open-mouthed dragon on its back.
[136] For an example of this, see the wooden door in Berlin, Museum für Islamische Kunst, published in Ettinghausen (2001), 255, pl. 424.
[137] For a discussion of this type of metalwork dragon-handle, see Section 1.3.
[138] See the article by Azarpay (1977) that is devoted to the topic of the dragon.
[139] Hartner (1938), 115, 119.

portrayed on metalwork vessels from Herat and Mosul.[140] The dragon, known as Jawzahr, is connected to the nodes of the moon's orbit; his head and tail are associated with solar or lunar eclipses.[141] Pairs of dragons in an astrological setting were perceived as the givers and takers of light as they not only devoured the sun and moon but also gave birth to them, thereby symbolising eternity and prosperity. The latter interpretation implies that these animals were chosen with a talismanic purpose in mind.

The depiction of lions and – to a lesser extent – dragons on doorknockers in the Mamluk period provides a visual connection between the Mamluks and their Turkish ancestors. A consciousness of their Turkish ancestry is also apparent in their preservation of Turkish elements in their nomenclature.[142] Besides Turkish words for the sun, the moon, and metals such as iron, a variety of beasts and birds of prey feature in the names of the Mamluks. In the ancestral religion of the Turks of the steppe each of these elements was charged with meaning.[143]

Although the Mamluks exerted huge effort to adjust themselves to the Sunni environment in which they ruled, their preservation of Turkish elements in their names suggests they were still aware of – and holding close to – some aspects of their heritage. The presence of dragons and lions on Mamluk buildings – that had been common on the constructions in more eastern regions – indicates a link to their Turkish culture too. In Cairo, their specific location on the entrances to buildings is continued; the dragons have, however, lost their knotted tails and have diminished in size. Although these symbols might have lost their specific astrological meaning, their presence suggests a belief in apotropaic symbols. Positioned at the entrance as talismans, their intended purpose might well have been to ward off evil.

Whether the introduction of these motifs in Cairo was instigated by a deliberate wish of the patrons or was spurred by itinerant craftsmen originating from the Jazīra, we cannot tell. Whichever was the case, the Mamluk patrons and their building masters did tolerate the use of these animal motifs on this highly visible location. Given the negative attitude towards the depiction of living creatures on religious artefacts, it is not surprising that, in the Mamluk period, stylized versions of these doorknockers eventually win ground.

CONCLUSION

The aesthetic of fittings is first and foremost defined by the treatment of their surface, which transforms the object and adds new layers to it. In the application of designs and decorative motifs, the metalworkers chose strong organising schemes to enhance a strict arrangement of different units, based on symmetry. In this organisation of space, rectangles, circles, and star patterns play a defining role. Their strong lines, in combination with the large size of doors and grilles, and the use of metal as the main material gives the fittings a strong robust feel and a defensive quality.

A second characteristic is the rhythmic repetition of small identical units. This is immediately apparent when looking at grilles of the bosses-and-bars type the construction of which is based on the

[140] For a ewer attributed to Herat and datable to the late 12th and early 13th centuries, see Allan (1982), 48–50. For a brass pen-box ascribed to Mosul from the 13th century, see Ward (1993), 83, no. 62.
[141] For a depiction and explanation of these nodes, see Hartner (1938), 122.
[142] For a list of the names of Mamluks and their meaning, see Sauvaget (1945), 35–56. According to Ayalon (1991), 319, the adherence to Turkish names emphasized the exclusivity of this military class.
[143] For a discussion of these elements and their meaning, see Roux (1984); for the importance of the moon as a symbol of death and resurrection, see idem, 128–32; for the importance of animals and the link between a depicted animal as a personal marker and man, see idem, 210–15; for the Turkish belief in iron as a sacred material, see idem, 79–80.

multiplication of two different units, namely the boss and the bar. The multiple stars and polygons on overall star pattern doors are also multiplied over and over, as are the wedges that make up the medallion on medallion doors. This repetition suggests the idea of infinity. Star patterns on overall star pattern doors are cut off along the sides implying they would have continued were it not for the borders. The idea of continuity and infinity is also visible in the uninterrupted movement of foliate stems filling a medallion. The visual effect attained by the repetition of star patterns or the maze of foliate stems in a medallion is that they work as a magnet encouraging the movement of the eye. It invites people to draw near and to enter the building.

A third aesthetic is the creation of different planes to enhance if not depth then at least the illusion of it. The most straightforward manner for achieving this was through the addition of relief plaques or bosses, a theme commonly found on doors of the overall star pattern type, on grilles, and on doorknockers. The effect was further enhanced by juxtaposing flat elements with embossed ones. Metalworkers even created visual effects with much simpler forms, like multitudes of plain nails in high relief on doors totally covered with metal bands. Not only did the distribution of the nails in geometric forms enliven the otherwise plain surface, but their height also allowed an interplay of shadow-lines in strong sunlight. Another manner in which depth was created was by the use of openwork through which the underlying supporting layer could be seen. The effect was maximised when openwork foliate scrolls were used, as their weaving movements up and down added to the illusion of multiple planes.

Archaism is the key word that comes to mind when the development of fittings throughout the Mamluk period is traced. Within this standardization, some metalworkers still took the opportunity to experiment: new types of fittings were established such as the medallion door and the doorknocker in the shape of an embossed disk. Metalworkers also showed their individuality by exploring new techniques or designs, which often remained unique to a particular fitting. However, the period shows a continuation of designs, techniques and decorative motifs, most of which were already present in the early stages of Mamluk rule. This suggests that Mamluk metalworkers were able to build upon already existing traditions, a topic that will be dealt with extensively in Chapter Three.

How can the archaism that governs the majority of Mamluk fittings be explained? Firstly, it might well have been a deliberate choice to adhere to a ‘Mamluk’ style, a style identifiable with that of the ruling classes. To the beholder, it would evoke the identification of the building with the lineage of Mamluk rulers, and would provide the patron with a visual link between himself as founder, his predecessors, and his contemporaries. If it was decided, either by the patron or by the metalworker, to deviate from the standard, alternatives were sought in the variation of their size, the techniques of surface decoration, in the ornament, or by applying more expensive materials. They would not, however, diverge from the main characteristics that govern the ‘Mamluk style’.

Secondly, and perhaps more importantly, the high speed of production needed to keep up with the vast building projects of the ruling class might also have caused a standardisation of metalwork fittings. In between 648/1250 and 923/1517 more than 2000 buildings or annexes were erected and buildings restored.[144] Given these numbers, it is not surprising that metalworkers sought refuge in techniques such as casting that enabled the easy multiplication of doorknockers, which were often found in pairs or even in

[144] Meinecke (1992) II, pp. VII–VIII lists a total of 2279 new and lost constructions in addition to the restoration of buildings or extensions to already existing buildings.

multiple numbers and that they favoured the production of grilles and doors that were composed of small identical units. The common plain surface of grilles of the bosses-and-bars type also points to a continuous demand and a limited time frame. Given this principle of repetition, fittings could be distinguished from one another by advertising the name of the founder in a legible message so as to tell it apart from work commissioned by other elite patrons. Hence the abundant use of the patron's titles.

Finally, the type of decoration, sometimes in combination with their specific location, mirrors some of the aspirations and ideas current within Mamluk society. The dominating presence of founders' names shows not only the importance granted to ownership but also the need to make oneself visible in a culture in which the lives of the elite were dominated by competition and internal strife. Secondly, a grading is expressed on doors that contain both the names of the patron and Qurʾānic verses. Although the glorification of the patron is ubiquitous on the majority of fittings, and radial inscriptions might even connect the ruler to the sun as giver of light, by placing Qurʾānic inscriptions near the top of the door, well above the titles of a patron, a hierarchy was expressed in favour of God. In such a case the humility of the Mamluk patron was given visual expression. Furthermore, the presence of decorative motifs with magical properties on some doors and doorknockers is indicative of an awareness of and connection with their Turkish ancestry, something that appeared side by side with their strong allegiance to Sunni Islam, as advertised in their endowment of religious buildings.