

## Mosaic production in the early Islamic period

Recent research into late antique and early medieval mosaic production, in particular Diklah Zohar's work on sixth-century Jordanian pavements, has provided a vivid picture of craft practice.<sup>1</sup> It is a long way from the traditional model of fixed 'schools' or 'workshops'. Instead, both the epigraphic evidence of mosaicists' signatures and stylistic evidence of different hands suggest that there was a more flexible system in which individuals joined together for particular projects, working as a team for the duration of a job, then parting ways. Collaborators on the same mosaic did not all work in the same style, implying that they had not trained together, although they were all broadly familiar with the same visual conventions. Mosaicists might well have spent their whole career working in the same region and the few inscriptions recording mosaicists' places of origin suggest it was normal for them to stay close to home.<sup>2</sup> Zohar has identified two artists practising in the Madaba diocese for at least a couple of decades, travelling 28 km at most, although not always working with the same colleagues for each job.<sup>3</sup> At most, there are indications of groups of two or three craftspeople, usually family members, working together longer-term.<sup>4</sup>

The system described above makes sense in circumstances of full artistic employment. Regular local commissions would have been needed to keep such a pool of mosaicists in training. Madaba and its surrounding settlements clearly met this requirement between the sixth and eighth centuries, and major cities such as Jerusalem presumably supported even larger numbers of artisans. This was largely thanks to an active culture of ecclesiastical patronage; the majority of known commissions of mosaics in the early medieval Mediterranean, either on floors or walls, were for churches.

This article will discuss mosaic production practices in the eastern Mediterranean as these conditions changed during the early Islamic period. It will focus on two areas of decoration in the Great Mosque of Damascus, one from the early eighth century during the Umayyad caliphate, and one from around fifty years later in the early Abbasid period. In both cases I will look for evidence of the numbers of mosaicist employed, the division of labour, and the standardisation (or not) of techniques and motifs.

### 1. Stone walls and glass floors

Before getting to Damascus, a methodological question needs to be dealt with. Almost all the surviving mosaics from the pre-Islamic eastern Mediterranean are on floors, made mostly with stone tesserae. And while floor mosaics were certainly commissioned in the early Islamic period, the examples I will be using here are on walls, and made mostly with glass tesserae. Can working practices in the two media be usefully compared? I think they can, for several reasons.

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<sup>1</sup> Zohar 2006; Zohar 2010; Zohar 2012. Also see Hunt 1994; Poulsen 2012; for the organisation of Roman mosaic production see Wootton 2016; for mosaicists in early Islamic Jerash see Lichtenberger and Raja 2017.

<sup>2</sup> A father and son team, Marianos and Aninas, recorded their names on two sixth-century synagogue floors 8 km apart, at Beth Alpha and Beth Shean: *SEG* 61.1465; Zohar 2012, p.173. In 548/9, Viktor and Kosmas from Askalon worked in Gaza, 25 km away: *SEG* 50.1489; Poulsen 2012, p.131. Sometimes individuals travelled further, however; in 574 Andreas from Aila/Eilat worked about 185 km away in Arindela/Gharandal in Jordan: *SEG* 53.1884; Poulsen 2102, p.131.

<sup>3</sup> Zohar 2006, esp. pp.148, 151.

<sup>4</sup> For an inscription naming the mosaicists Soelos, Kaioumos and Elias as a single household, see Hunt 1994, p.121. See note 2 for Marianos and Aninas.

Firstly, the materials were not completely segregated. Many wall mosaics, including those in the Great Mosque of Damascus, use stone tesserae for pink, red and white.<sup>5</sup> Some floor mosaics, both in the Byzantine and early Islamic period, included glass tesserae to highlight certain features.<sup>6</sup> This suggests that floor and wall mosaicists were supplied from the same sources, and probably also that they were equally skilled in cutting tesserae from the two materials.

Second, many of the buildings which had floor mosaics also had wall mosaics. The upper walls have gone from most of the churches in which mosaic floors have been excavated, so the decoration of their apses has been lost. But both from archaeological finds of loose glass tesserae, and from written references, we know that apse mosaics were common across the Byzantine world.<sup>7</sup> Floor and wall mosaicists therefore depended on the same patrons for their living, and may also have been on-site at the same time.

Thirdly, the skills needed for the two media are almost identical: chipping tesserae into shape, mixing and laying plaster, and composing the designs. Which leads to the fourth point, that there was substantial crossover in motifs between floor and wall mosaics. Three examples from a floor mosaic contemporary with the Umayyad phase of the Damascus mosque can illustrate this (fig. 1).<sup>8</sup> The nave floor of St Stephen's at Umm al-Rasas in Jordan was laid in 718-19, about three years after the Great Mosque was completed. It depicts cities and buildings along a river, as well as trees and acanthus scrolls, as do the wall mosaics in the mosque. The motifs on the church floor are simpler. But various details – such as roofs depicted as parallelograms sticking out from tower walls, or U-

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<sup>5</sup> For the materials and colours in the Great Mosque of Damascus and the Dome of the Rock, see Van Berchem 1969, pp.309-10, 364-65.

<sup>6</sup> One round green glass tessera was used for the centre of a cross on the floor of a fifth-century church at Evron in Galilee: Jacques 1987, p.54. In the sixth-century sanctuary mosaic of a church in Chhim in Lebanon, green glass tesserae are used in the image of a lion: Waliszewski 2012, p.141. Talgam 2014, pp.175-76 notes that green, blue and yellow glass tesserae were common in late antique and early medieval floors in the Galilee and Beth Shean valley, and Piccirillo 1993, p.19 mentions green and blue glass tesserae in Jordanian floors. Moving to the early Islamic period, floors at the palace at Qastal in Jordan included many glass tesserae: Bisheh 2000, 435. Many glass cubes were used in the floors in an early Islamic house in Ramla, particularly for significant parts of the composition such as a quote from the Qur'an, and the depicted capitals of an arch framing it: Rosen-Ayalon 1976, pp.111, 116, 119. And at the Umayyad site of al-Sinnabra in Israel, glass tesserae used for floral patterns on floor, replacing earlier images of birds in stone tesserae: Da'adli p.150.

<sup>7</sup> See James 2017 esp. pp.208-11, 230-31 for fifth- and sixth-century mosaics known from fragmentary remains. Piccirillo 1993, p.19, lists examples at Madaba, Jerash, Pella, Mar Liyas, Umm al Hadumas, Umm al-Rasas and Petra, concluding that "many churches of the region were decorated with wall mosaics"; also see p.144 for fragments of a glass apse mosaic at the Memorial of Moses on Mount Nebo. Written references to apse mosaics include Choricus's description of the church of Saint Sergius in Gaza: Mango 1986, p.62, and al-Azraqi's of the sixth-century glass wall mosaics at San'a' in Yemen: King 1980, p.38; other mosaics on walls and 'ceilings' of Yemeni churches were described in the tenth-century *Kitāb al-Diyārāt*: Shahīd 2009, p.281. Stone and glass tesserae were found at sixth- or seventh-century churches at the Lakhmid site of al-Hirah in Iraq: Talbot Rice 1932, p.282. The al-Qusayr monastery and the church of al-Ashmunayn in Egypt kept their apse mosaics until the Fatimid period: Pruitt 2020, pp.109-10. Also see Burdajewicz 2020, p.325 for fragments of wall mosaics. Burdajewicz also argues (p.328) that late antique churches with mosaic floors were more likely to have painted walls, while those with wall mosaics tended to have marble paved floors. Nonetheless, her Table 1 of fourteen sites lists six with definite evidence for both floor and wall mosaics, and a further five with wall mosaics for which the type of floor covering is unknown; only three sites are listed as definitely having wall but not floor mosaics.

<sup>8</sup> Georgopolou 2002 also draws comparisons between the mosaics in the two buildings.

shaped acanthus leaves with lines of black tesserae inset around the curve, or trees with solid areas of dark tesserae surrounding and separating the lighter leaves – are shared.

In the mid-tenth-century al-Mas'udi wrote that "mosaic is a thing made from glass and delightful coloured stones"; the distinction between glass and stone mosaic was not necessarily fixed.<sup>9</sup> I will continue under the assumption that working conditions and practices were comparable for wall and floor mosaicists, and that there was probably some overlap of practitioners.

## 2. The Umayyad mosaicists

From the late seventh to the mid-eighth century the Umayyad caliphs and princes commissioned mosaics for their palaces, bathhouses and mosques. Examples are known in modern Syria, Jordan, Lebanon, Palestine and Israel, then collectively known as Bilad al-Sham.<sup>10</sup> Churches in the region also continued to be redecorated with mosaic, if not with quite the same frequency of the previous two centuries. The major departure from the system described above, in which mosaicists depended mainly on work from churches in their local areas, was in the centrally-organised construction of a series of high-profile mosques. Between the 690s and 710s, mosaics were laid in the Dome of the Rock and Aqsa Mosque in Jerusalem, and the congregational mosques of Mecca, Medina, Damascus and Aleppo.

The Great Mosque of Damascus, built for caliph al-Walid I (r. 705-15), was the largest of these projects, originally displaying around 7,500 square metres of mosaic. Much has been lost, nonetheless some substantial areas of decoration from this period are in-situ. The 'Barada Panel' along the back wall of the west portico of the courtyard has been particularly well studied.<sup>11</sup> It is not the most revealing example for this paper, however. Its symmetrical composition stretches the whole thirty-odd metre length of the wall, and the motifs of palatial buildings, towers and fruit trees probably carried symbolic meanings.<sup>12</sup> For both reasons, the mosaicists are likely to have been working to a predetermined design, perhaps developed by a single artist, and so individual hands may be harder to distinguish. The Barada Panel was also heavily restored in the 1960s.<sup>13</sup>

Instead I will look at the mosaic inside the nine double windows along the upper level of the west arcade wall, which show acanthus scrolls interspersed with vases and cornucopia (fig. 2). My assumption is that such 'decorative' designs are more likely to reflect the habitual practices of the craftspeople. This is not to say that mosaicists were not capable of varying their style quite dramatically to suit the taste of a patron, or to follow compositions laid out by their colleagues. Nonetheless, it seems unlikely that they would significantly change their methods of composing basic forms in the course of one job. And while a patron might ask for an acanthus scroll, they would

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<sup>9</sup> De Meynard 1869, vol.2, pp.199-200.

<sup>10</sup> For an overview see James 2017, 256-69. For early Islamic mosaics at particular sites see Bisheh 1993 (Qasr al-Hallbat); Khamis 2001 (Baysan); Hamarneh 2015 (Mshatta); Taha and Whitcomb 2015 (Khirbat al-Mafjar); Lichtenberger and Raja 2017 (Jerash); Hamarneh 2017 (Shuqayra al-Gharbiyya).

<sup>11</sup> Among others: Brisch 1988; Förtsch 1993; Flood 2001, ch.2; Georgopolou 2002.

<sup>12</sup> For the multiplicity of these meanings see George 2018.

<sup>13</sup> Simonis 2012.

probably not specify how many points each leaf should have. The variations in forms to be discussed below will therefore be taken as plausible indicators of the work of different people.<sup>14</sup>

The shape of the windows has also sheltered them from damage to some extent, and so the surfaces are less affected by medieval or modern repairs. Far from giving the patchwork effect of the decoration in some of the more exposed areas of the mosque, there seem to be only two phases: the original Umayyad mosaic of 705-15, and restorations of the 1960s. The 1960s work is identifiable by its brightness, the lack of subtle shading of motifs, and the uniformity of colour and shape of the tesserae. The eighth-century mosaic is identifiable partly by comparison with motifs in the Dome of the Rock, but also by the broad consistency of the composition and palette across the whole portico wall. The known medieval restorations elsewhere in the mosque were generally not designed to closely match the earlier ones around them, and even where the attempt was made, the style and colours are different.<sup>15</sup> While there is currently no scientific evidence to date the mosaics of the west portico to the eighth century, the large amount of decoration from a single period can only plausibly be explained as original, given the grand scale of caliphal investment when the mosque was built, compared with the relatively modest repairs of later centuries.

There is mosaic on the inner faces of the piers either side of the windows (fig. 3), and on the soffits of the arches. In the discussion below, I will refer to each double window by number counting from the south, and to piers or soffits as *p* or *s*, and as *a* for south or *b* for north (for example, the south pier of the northern double window would be *p9a*).<sup>16</sup> The east and west faces of the wall in which the windows are set were also mosaicked, but there is not space here to include these panels in the discussion.

### Sequence of work

The stages in which the decoration was applied can be seen from horizontal lines of damage in the mosaic which formed at the edges of the underlying plaster layers. There are one or two breaks across each pier, and another where piers and soffits meet. Liz James notes that the lime plaster in which tesserae were set could have taken several days to dry, except at the height of summer, so these sections do not indicate a day's work, as in fresco painting.<sup>17</sup> The estimated time to complete one square metre of mosaic, including the time needed for cutting the tesserae and mixing the mortar, has been estimated as 5.8 person days.<sup>18</sup> Cutting the tesserae could take almost half the time,<sup>19</sup> so assuming this was done beforehand, the laying of the mosaic would be approximately three person-days per square metre. The piers are the thickness of the wall, about one metre wide, and 2.5 metres high to the springing of the window arches. It is unlikely that two people would have had enough space to work side-by-side on the same face, so in this case person-days become actual

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<sup>14</sup> For the possibility of identifying mosaicists' 'handwriting' from incidental details of their work, see Zohar 2012, pp.169-171.

<sup>15</sup> There is no publication that identifies or illustrates all phases of mosaic in the mosque; the most complete discussion so far is Van Berchem 1969. I am currently working towards producing a monograph on this topic.

<sup>16</sup> The one pier without any mosaic remaining is *p9b*.

<sup>17</sup> James 2017, pp.58-59.

<sup>18</sup> DeLaine 1997, pp.113, 181-82

<sup>19</sup> James 2017, p.116. The discovery of thousands of unused tesserae in Jerash, stored in a house which appears to have been under repair when the earthquake of 749 hit, suggests that tesserae were cut before laying began: Lichtenberger and Raja 2017, pp.1006-08.

ones, and it would have taken a bit under four days to complete one half pier, a plausible length of time for the largest application of plaster to stay fresh. Half a pier is probably also the most that could be completed by a mosaicist standing on the sill without scaffolding, given the height of the windows. The compositions on the piers are unified across the plaster breaks, although the larger motifs tend not to cross them. In one case, *p3a*, the break curves around a vase, suggesting that the plaster was applied with the design already in mind (fig. 4).

The soffits appear to have been mosaicked on a single skim of plaster each, and the designs on the soffits are self-contained. All the divisions between piers and soffits are marked by two acanthus bulbs facing horizontally inwards towards a circle (fig. 5). Damage often occurs at the edges of the plaster layers – as can be seen in fig. 5, where the mosaic on the lower part of the soffit is modern restoration – but even where the mosaic is undamaged, changes in the shade and density of tesserae indicate the edges of the layers. The pairs of bulbs are sometimes placed at the bottom of the curved section of plaster, and sometimes at the top of the flat face. In the latter cases, the designs below seem to have been squashed to accommodate the motif, implying that the soffits were completed first – for example compare *p6a* and *p6b* in fig. 3. Starting with the soffits would also make sense from the point of view of erecting scaffolding, as it would avoid placing it against freshly laid mosaic lower down.<sup>20</sup>

#### Composition and division of labour

The decoration shows both some standardisation, and a high level of variety which becomes more obvious the closer one looks. All the designs are plant scrolls, and the background of the mosaic alternates consistently, window by window, between dark blue and gold. So at the most general level of design the windows were planned as a set. The overall allocation of materials and colours seem pragmatic. The most visible mosaics on the exterior east face of the wall all have gold backgrounds; by alternating with the blue, less gold is used for the windows, while on the west face of the wall, which is always in shadow, gold is mainly replaced by light yellow-green. Decisions like this must also have been taken centrally, although there is some variation between windows in the particular shade of gold and the palette of other colours.

A middle level of composition seems to have taken place within each unit of two piers and two soffits, although not in a straightforward sense of one designer per window. As can be seen in fig. 3, the facing pairs of piers match each other, with asymmetrical features sometimes copied as reflections and sometimes as translations, but none of the compositions are repeated precisely between the units. Although this could be interpreted as deliberate variety imposed by a single artist, I suggest instead that there were many designers, because approaches to motifs also vary between windows. This can be seen particularly clearly by comparing the lotus flowers, which appear on about half the piers and a quarter of the soffits. This is a traditional motif in eastern Mediterranean floor (and presumably wall) mosaics, and all the examples here are recognisable as belonging to the type.<sup>21</sup> Their shapes nonetheless differ widely. Notably, the inter-window variation is greater than the intra-window variation, as can be seen by comparing examples from *p8a* and *p8b* (fig. 6) with ones from *p9a* or *s2b* (fig. 7), or those from *s3b* in fig. 10 below.

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<sup>20</sup> In the twelfth-century apse and arch of San Clemente in Rome, one of the few sites where it has been possible to identify the sequence of mosaic work in detail, the mosaicists worked downwards and outwards from the top of the arch: Basile 2000, p.150.

<sup>21</sup> Hachlili 1998, esp. p.116.

There are also different levels of stylistic coherence within windows. This is best seen by looking at the acanthus leaves. Some are shown as chunky spiky shapes (*p3*), some as long feather-like forms (*p2*), some as narrow U-shaped bulbs (*p4* and *p6*) and some as masses of curving fronds (*p8*). In window 8 this last style is followed across both piers and both soffits, suggesting that one individual was responsible for sketching the designs onto the plaster for the entire window. But in most cases there is some variation between the vertical sections of plaster on the piers – one type of leaf at the bottom and another at the top – although the designs still match horizontally across the windows.

The soffits are generally less complex in design than the piers, which is not surprising given that the mosaicists were applying the tesserae to a curved surface above their heads. Although they do not all correspond to the adjoining piers in stylistic terms, the pairs of soffits usually match either other, and they are almost all internally symmetrical around a medallion or wreath at the apex of the arch. However, there are exceptions even to this: *s3* and *s5* have different arrangements of plant-scrolls and entirely dissimilar motifs at the apexes (fig. 8), and *s6b* has an asymmetrical design (fig. 9).

The most that can be said, based on the description above, is that the designs of windows were partially standardised. One individual probably designed the motifs for each vertical level of plaster on the piers of a double window, and one individual (although not necessarily the *same* one) usually (although not always) designed the mosaic on each pair of soffits. Sometimes one person seems to have taken charge of the entire length of both piers, and one did so for all four mosaicked surfaces in the case of window 8 – but this is an exception. Simple motifs, such as the lotus flowers, follow an approximate ‘house style’ for each window. This is less apparent for the larger motifs, which may have been drawn by whichever individual was best at them. This lack of uniformity shows that the row was not precisely divided up with one ‘master’ mosaicist per window. The system was more flexible than this, changing from window to window, allowing many individuals to create sections of design.

The impression of ad-hockery continues at the most detailed level of the application of tesserae. There was division of labour within each window, but it is hard to find a rule which applies to all nine. Soffits tended to be divided at the apex of the arch, with different mosaicists completing the north and south sides. Again the lotus flowers are good diagnostic features. The rough intra-window standardisation noted above applies to the outlines of these flowers; on *s3b*, all four lotuses have rounded cups with simple shading and prominent buds. When it came to filling in the outlines with tesserae, the mosaicists followed their own methods, adding another level of variation. So the two flowers on the south side of *s3b* have buds of single petals, and the two on the north side have three-part tufts (fig. 10). Similarly, the lotuses on *s2b* all have thin spiky buds and lines adding texture to the bowls, but on the southern two flowers the lines are two tesserae thick and two-tone (fig. 7), while on the northern two flowers they are single tessera loops of one colour. From a distance the effect is uniform – none of the differences would be remotely visible from the ground – but the ways of constructing the shapes are particular enough to indicate different hands. On other soffits, however, three different hands can be identified; two mosaicists per arch seems to have been the minimum, but more could be involved.

If this number seems implausible, it should be remembered what a labour-intensive project the Great Mosque was. From a chance survival of papyri we know that the town of Aphrodito in Egypt was ordered to provide funds towards employing forty skilled workers for the mosque;<sup>22</sup> we can assume that similar (and larger) demands were made on towns and cities across the caliphate. The

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<sup>22</sup> Bell 1912, p.373.

size of the windows also needs to be kept in mind. Most published images of the mosaics have nothing in them to indicate scale, but a photograph taken of the north portico in the 1920s clearly shows the windows as around twice the height of a person (fig. 11).<sup>23</sup>

Similar variations in motif show that some vertically symmetrical sections of pier were divided left and right. As I said, it would be difficult for more than one person to stand on the same side of the windowsill at once, so here the situation may have been an experienced mosaicist starting the motif, and a less experienced one taking over to finish it, while the first person moved on to another window. Other sections of design, less easily divisible, seem to have been completed by one person. The same hand does not always appear on the top and bottom of the same pier, nor always on facing sections (for example see the lotus flowers from the lower levels of *p8a* and *p8b* (fig. 6).

It may be possible to distinguish individual hands in more than one window. The construction of acanthus bulbs on *p4a* is very similar to that on *p6b* – although other features on the two piers differ. The thickly-outlined curving leaves on *p7a* are also extremely similar to those on *p9a*. But it is hard to do this in most cases; there are more peculiarities than patterns. There are several motifs and techniques which only appear once, such as a bunch of grapes on *p4a*, figs on *s4a*, the alternation of blue-and-white with green leaves on *p2a*, the method of laying the gold background in tight curves on *p1b*, and of laying a single line of yellow-green tesserae down the middle of every leaf on *p3a*. The technique of shading leaves with parallel diagonal stripes of alternating light and dark green tesserae is used on both piers of window 8, but nowhere else, not even on the soffits of the same window, which are otherwise similar in the outlines of their composition.

#### The Umayyad organisation

All of the above suggests that many craftspeople were working at the same time, if not on all nine windows at once, then on many of them. The evidence also argues against a fixed system of self-contained teams. This conclusion is strengthened by looking at the designs on the exterior face of the wall, and on the soffits of the main arches of the arcade. They use the same range of motifs to those discussed already, for example the eight-pointed star at the apex of *s2b* (fig. 8) is also used in main arch 7, and the parallel stripes on leaves are found on the exterior face of the pier between windows 7 and 8 (fig. 12), that is, next to the window in which they are also used. But – perhaps predictably by this point – there is no systematic relationship to the compositions inside the windows in the same bay; there is nothing to suggest that the same group of people always took charge of one vertical slice of wall. In addition, despite their many different approaches to details, the mosaicists appear to have been skilled in a shared visual repertoire. Precisely *because* of the lack of strict standardisation, I would not interpret this as something imposed by a foreman, but as evidence that the craftspeople had comparable training and experience – everyone learnt how to depict a lotus flower, for example. This has implications for the long-running debate about the origins of the mosaicists. Were they brought in from the Constantinopolitan court, as medieval Arabic writers claimed, or were they called up from closer to home?<sup>24</sup> The material seem to me to support the second model. An imperial workshop – which in that case *would* probably be the appropriate term – would presumably train its members in the same style. Individuals and small family groups, mainly working within their own neighbourhoods but gradually coming into contact

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<sup>23</sup> The north portico wall was replaced in the late tenth or eleventh century, and the shapes of the windows are slightly different from the Umayyad ones, but the dimensions are similar.

<sup>24</sup> On this question see among others Van Berchem 1969, p.371; Hillenbrand 2012, p.173; James 2017, p.269.

with other mosaicists in the region as new teams formed for each job, seems more likely to produce the combination of large-scale commonality and small-scale variety that can be seen in the mosque.

In conclusion, the Umayyad phase of the Great Mosque of Damascus appears to replicate, in a very concentrated form, the pattern of the regional mosaic industry as it had been for the previous couple of centuries. The difference was that a pool of mosaicists who would normally be spread over an entire province were brought together in one building. At a rough estimate, the mosque required a surface area of mosaic fifty times that of a contemporary church floor (again taking St Stephen's at Umm al-Rasas as the comparison). It is possible that the job employed *every* active mosaicist in the surrounding area.

In terms of the effect on the eastern Mediterranean mosaic industry, it also has to be remembered that the Damascene mosque was one of several large commissions clustered chronologically, but not all geographically. The Dome of the Rock in Jerusalem was built the best part of a generation earlier, in the 690s. Perhaps some mosaicists who worked there were among the more experienced in Damascus, but nothing can be said for certain. The other buildings are much closer together in time, and all but one were commissioned by the same patron, so it is likely that there was overlap in their workforces. The Prophet's Mosque at Medina, the Holy Mosque of Mecca, al-Aqsa Mosque in Jerusalem and the Great Mosque of Damascus were all built during the reign of al-Walid I (705-15) and the Great Mosque of Aleppo was built one or two years later for his brother Sulayman. For a dozen years, the mosaicists of Bilad al-Sham may have spent almost all their time on huge caliphally-funded building sites, mixing with and learning from others drawn from across the region. They would also have had to travel unprecedented distances – over a thousand kilometres from Jerusalem or Damascus to Mecca – whereas for a sixth-century mosaicist, a hundred kilometres was an unusually long journey.

Descriptions of depicted trees and palaces make it clear that the mosaics at Medina had the same iconography as Damascus, and Aleppo was said to have been consciously modelled on the earlier mosque in its use of mosaic, so probably also in its imagery.<sup>25</sup> The Prophet's Mosque at Medina was completed in 709, and the Damascus mosque in 715 or 16, so the common aesthetic in the mosaics discussed above may be partly the product of the mosaicists' experience on the earlier job.<sup>26</sup> These ambitious mosque-building initiatives would have given a boost to the Levantine mosaic business more generally. There was investment in the production of the raw materials; chemical analysis of samples suggests that most of the coloured glass and some of the gold-glass tesserae used at Damascus were newly made in the eighth century.<sup>27</sup> And a generation of mosaicists would have become skilled in producing designs – particularly non-figural ones suitable for mosques – at the level of quality required for caliphal patrons.

### **3. The Abbasid mosaicists**

After the defeat of the Umayyad dynasty by the Abbasids in 750, the centre of power moved from Damascus to Baghdad and Samarra in Iraq. Physical remains of late eighth- and ninth-century mosaic in Bilad al-Sham are scarce, and there are none on the same scale as the grand Umayyad

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<sup>25</sup> Sauvaget 1947, pp.80–81; Guidetti 2017, p.143.

<sup>26</sup> Damluji 1998, pp.42–43; Flood 2001, pp.252-54.

<sup>27</sup> Nadine Schibille, personal communication; Neri, Verità, Biron and Filomena Guerra, 2016.

commissions. As I have discussed elsewhere, however, there are many written records of mosaics from this period in Mecca and Medina, and at least a few in the former heartlands.<sup>28</sup> There is also a small number of surviving mosaics, including the Bayt al-Mal (Treasury) in the courtyard of the Great Mosque of Damascus. This section will again try to identify the sequence and division of production, and draw conclusions about the organisation of mosaicists in the new social context.

The Treasury was probably commissioned in the 760s or 70s by al-Fadl ibn Salih, the governor of Damascus.<sup>29</sup> It is an octagonal structure standing on columns, accessible through a door in the south face which would have been reached by a ladder (fig. 13). All eight sides are covered with mosaic at present, but most of this was added in the 1960s. The original fragments are on the lower halves of the north and northeast sides (figs. 14 and 15), and a tiny section of jewelled border on the south. The north and northeast sides include some restorations from the first half of the twentieth century, in addition to the large areas of mosaic added in the 1960s (which are identifiable by their uniform brightness), but photos taken when the walls were uncovered in the 1920s confirm that the lower halves of both compositions have not been substantially altered.<sup>30</sup> Another composition which survived on the west side of the structure until the late nineteenth century can be partially reconstructed (fig. 16).

Despite different approaches to forms and shading, the colours of tesserae used for the leaves on the north and northeast sides are similar. Houses and shoreline are composed with a wider range of colours, mostly in stone tesserae but also including purple glass. Otherwise it looks as though all the mosaicists had access to the same supply, which suggests that at least some of the materials were provided by the patron. It is not possible to tell whether there was also some coordination of imagery around the eight sides – on the three sides for which there is any evidence of the original mosaic the designs are different: a mass of acanthus scroll on the northeast, a landscape on the north, and a large arch, possibly once framing an inscription, on the west.

As in the windows along the portico, the mosaicists would probably have worked top-to-bottom. There are two large plaster layers on each side, as can be deduced from a horizontal disjunction in the mosaic on the northeast side, filled in with a thin strip of modern mosaic, and the complete loss of original mosaic above the same level on the north. Above the break in the plaster on the northeast side, the style of leaves changes from U-shaped bulbs to blue-and-green scrolls, and the mother of pearl detailing – of which there is less – is on blue rather than red strips. Different mosaicists probably designed the top and bottom panels, therefore.

It would have been physically possible for two people to work on one panel simultaneously, and small differences in details suggest that they did. The methods of composing the scrolls on the left- and right-hand sides of the upper northeast panel are very similar, but with small individual touches, for example in the method of highlighting a fruit. And on the lower northeast panel, the mother-of-pearl inserts in the red discs are circular on the left, but tear-drop shaped on the right (fig. 17). There is no noticeable difference in quality between the hands to suggest that one was an apprentice copying a master. Likewise, the architectural scene is almost symmetrical, and both mosaicists were trained in the same manner, but the left-hand side is slightly more detailed; for example, the shoreline is defined with thin strips and wedges of colour instead of thick bands.

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<sup>28</sup> Leal 2020.

<sup>29</sup> Leal 2020; George forthcoming, chapter 3.

<sup>30</sup> See the photos taken by Eustache de Lorey and Lucien Cavro, published in Van Berchem 1969, figs. 417-18.

The panels are each approximately eight metres square, so each side would have taken 46 person-days in total.<sup>31</sup> If the tesserae were pre-cut, and two people worked on the same side at once, each wall could have been decorated in a bit under a fortnight, and therefore each plaster layer in under a week – a practical length of time for the lime to stay fresh.

So far I have mentioned up to six individuals, maybe four working on the scrolls and two on the buildings. It is possible that the buildings pair were also two of the people responsible for the plants, moving from one wall to the next, but I think this is unlikely, as the buildings mosaicists were more inclined to outline features in black. This detail does not seem enforced by the design, so it was probably down to the artists' preferences. Then, the leaves in the lower border of the northern panel follow the same pattern as the scrolls on the upper northeast side, but they are simpler. So here is a seventh person, who it seems had trained with two of the others, and was probably junior to them, working on framing patterns rather than the main design.<sup>32</sup> An eighth person, either with a lower level of training or trained in a different manner from the rest (or both), must have been responsible for the borders on the north side. Here the leaves are formed approximately like those on the lower northeast side, but the shading is simpler, with no sense of three-dimensionality, and no mother-of-pearl (fig. 18). The borders on each side of the north wall are so similar as to suggest that this individual worked on both.

To summarise, up to eight people worked on the two sections of extant original mosaic. Most had a comparable level of skill, and three of them practiced in so consistent a style that they had probably worked together previously, while one had noticeably different training. Members of the trio who had worked together before did sections on the lower north and upper northeast sides, while the pair responsible for the lower northeast side may also have worked on the west face, to judge from similarities between the mother-of-pearl medallions. The mosaicist responsible for the simpler borders on the north side may have worked with this pair as well, or simply have filled in designs outlined by one of them. This all suggests that – again – the system involved the cooperation of mosaicists from different backgrounds.

There are also some points of difference from the conditions of fifty years earlier. Firstly, there is more of a sense of something like small teams, identifiable by different styles, moving around the monument, rather than a large pool of mosaicists working on the whole structure at once. Obviously, the Treasury is smaller than the west arcade wall, and its decoration involved fewer people overall, but it also seems that fewer people were employed per square metre of mosaic. Secondly, the borders of the north panel show a discrepancy in style or training which is not seen in the Umayyad work.

## Conclusion

Late antique and early Islamic mosaics do not differ sharply in appearance. As others have pointed out, although the treatment of plant scrolls, trees and buildings as main subjects in Damascus is innovative, the motifs themselves are traditional.<sup>33</sup> The same is true for the early Abbasid mosaics;

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<sup>31</sup> The figure of eight meters assumes that the upper cornice was mosaicked, as it is now.

<sup>32</sup> A division of labour with junior mosaicists doing borders is suggested in Becker and Kondoleon 2005, p.39. Zohar 2016, pp.121–24, 157 has shown that the complicated figural scenes in the Church of Lot and Procopius on Mount Nebo were done by one person, while the repetitive flower-buds in the aisles were probably done by three different individuals.

<sup>33</sup> Hillenbrand 2012, pp.173–75, 180–184.

to take one small example, the border motif on the Treasury, of stylised jewels and leaves, also appears on sixth-, seventh- and eighth-century mosaic pavements in Jordan.<sup>34</sup> Similarly, none of the differences in organisation which I have described – between the sixth and early eighth century, or between either of these and the later eighth century – are huge. Despite the social upheavals, in terms of mosaic production the main picture is one of continuity.

The close analysis of the windows in Damascus supports the model of a flexible organisation, in which many individuals might have the opportunity – and the skill – to create complex designs within a broadly outlined programme. The number of sites requiring high quality glass mosaic compositions within a relatively short space of time must have provided an intense learning curve for eighth-century apprentices, and facilitated the sharing of craft knowledge. The main changes between the sixth and the late eighth centuries seems to have been the distances the craftspeople were required to travel for work, and the numbers of people involved in each job. Mosaicists would have been ordered to travel to the Umayyad building sites, whether in Bilad al-Sham or the Arabian Peninsula, just as we know that labourers were conscripted from Egypt to work on other aspects of the mosque in Damascus.<sup>35</sup>

There was still employment for mosaicists in the late eighth and throughout the ninth century, but it was more thinly spread. The majority of Abbasid mosaics known from literary sources are in Mecca and Medina, and inscriptions record some of the origins of the artisans as Jerusalem, Homs and Basra.<sup>36</sup> So mosaicists again had to travel long distances. But although some of the projects they worked on were still substantial, most were not on the scale of the centralised projects of the Umayyad mega-mosques.<sup>37</sup> As the number of church commissions also declined during the ninth century, the trade probably also supported fewer people within one region – so the remaining patrons may have had less choice in who they hired. With fewer opportunities to bring large numbers of craftspeople together at one time, more divergences in style are likely to have developed, as can be seen already in a small way on the Treasury.

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<sup>34</sup> Piccirillo 1993, pp.151, 164–65, figs. 200, 202, 210, 213.

<sup>35</sup> See Bell 1912, p.133, no.1441, for the order in the Aphrodito papyri for a 'sawyer' (a specialist carpenter, or a marble cutter?) to work on the mosque in Damascus for six months.

<sup>36</sup> Bisheh 1979, 207-208; George 2009, 100-101.

<sup>37</sup> The mosaics of the Masjid al-Haram at Mecca and the Prophet's Mosque at Medina were added to or repaired twice in the late eighth or ninth centuries. Smaller commissions included mosaics for five different structures near the Zamzam Well, a house, a pair of columns, and the Ka'ba. For details see Leal 2020.

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