

The Research and Conservation Study of the Mosaics of the Roman Bath at Metropolis

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Metropolis kentindeki en geniş alana sahip mozaikler Han yıkığı Roma Hamamı'nun palaestrası çevresinde bulunmuştur. Araştırmalar sonucu doğu portiko dışında tüm galerilerin mozaik döşemeye sahip olduğu anlaşılmıştır. Bu makalenin konusu olan ve 5.74 x 44.28 m. alanı kaplayan güney portiko mozaikleri, her biri farklı motif ve boyuta sahip 13 panelden oluşmaktadır. Paneller, teğetkare, sekizgen ve çemberlerin yanısıra chevron ve çift balta motifleriyle süslüydü. Ana panellerin arasında eşkenar dörtgen şeklinde ara motifler bulunmakta ve bu lozenge motifleri köşede sekiz kollu bir yıldız oluşturmaktadır. Geometrik motifli mozaiklerin yanı sıra hamamın kuzey tarafındaki Nişli Yapı içinde, duvar veya tavan mozaığı olduğu düşünülen figürlü mozaik parçaları bulunmuştur. Tüm mozaik döşemeler yerinde korunmakta ve bu yüzden çevresel etkilere karşı savunmasız kalmaktadır. Bu nedenle, 2009 yılında mozaikleri incelemek, değerlendirmek, acil koruma önlemleri almak ve geçici koruma çatısı yapmak amacıyla Koruma Projesi hazırlanmış ve 2010 yılında ilk aşaması gerçekleştirilmiştir.

Anahtar Kelimeler / Keywords: Mozaik, Konservasyon, Metropolis, Roma Hamamı, Portiko

“Man feels poor if his vaults are not hidden by glass”

Seneca (A.D. 64)

Introduction

The remains of the extensive public areas are exposed in the excavations of east slopes at Metropolis. The most important of these is Hanyıkığı Roman baths and its palaestra (Figure 1-2). The caldarium and tepidarium sections of the bath and the south and west porticoes of the palaestra were uncovered in 2008-2010. According to the inscription on the architrave, the palaestra was dated to the Antonine Period. In the following period, the building was furnished with marble and mosaic pavements. Although marble flooring was only on the edges, the mosaics are well preserved in all sections except the east portico. This paper deals with the mosaic panels of the south portico and the fragments of the Niche Building.

Just a few mosaic floors, though showing a high-quality workmanship, have been found during the research for 40 years at Metropolis. A monochrome figurative mosaic in the garden of the traditional village houses in 1974 (Meriç 1982: 62), polychrome figural mosaics of the reception hall in 1998 (Meriç 1999: 336), inscribed mosaics at the atrium house in 2003 (Meriç 2004: 143) and the geometric mosaics were uncovered in the palaestra of Roman bath in 2008¹. Each of the four mosaics shows differences in technique and style, suggesting different workshops. According to similar examples, reconstruction activities as well as the use of mosaics might have increased by the 3rd and 4th centuries A.D.

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¹ The brief information about all mosaics of Metropolis were presented by author in the 5th International Mosaic Corpus of Türkiye in 17- 20 October 2009 at Bursa (Öz 2012).

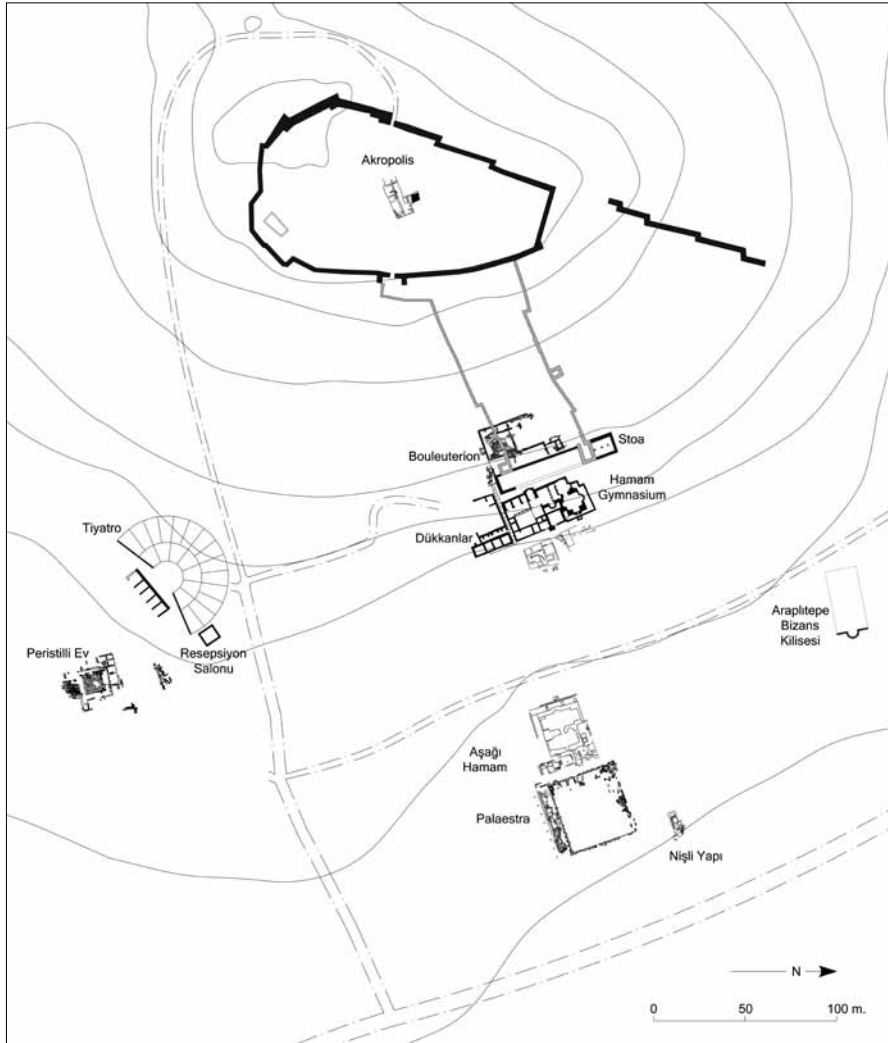


Figure 1
City plan of Metropolis

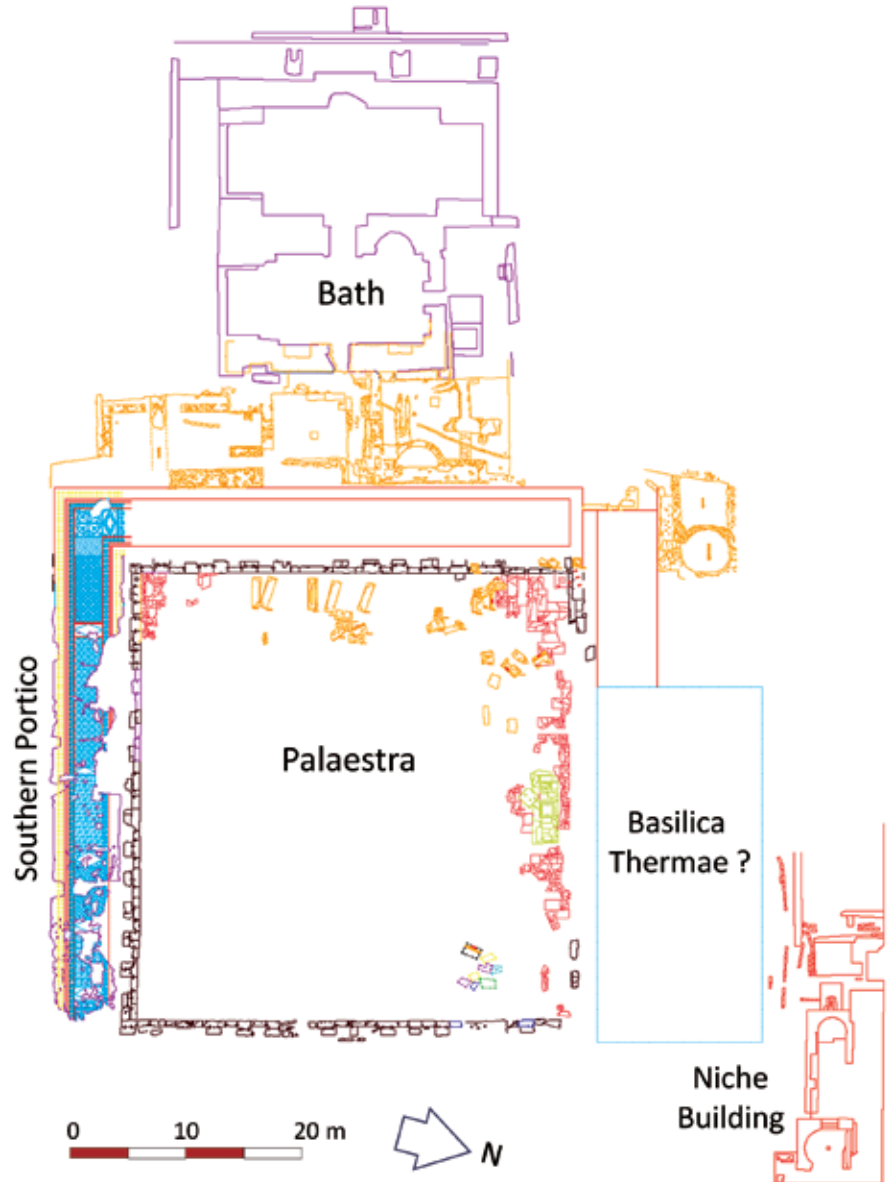
The Mosaics of the South Portico

The eastern part of the palaestra was uncovered only at the level of krepis due to the sloping terrain. Therefore, no information could be gained about the width and content of the east portico. For similar reasons, the eastern part of the south portico is not preserved. The architrave and geison blocks which were found in front of the east portico, indicate that it shares the same superstructure with the other parts of the palaestra. The inscription² on the surface of the fallen architrave blocks of the west portico helps to specify the construction date (Figure 3-4). Accordingly, the palaestra of the Metropolis Roman Bath was erected in the name of emperor Antoninus Pius (A.D. 138-161). However, certain traces and additional structures related to a different phase of building have also been determined.

Revealing the same condition, the floor mosaics continue on all sides of the north portico. In fact, the mosaic pavements of this section are two times wider than those of the other galleries. Therefore, it has been decided that the mosaics would not be unearthed without preparing adequate protection. In addition, three statue bases were found in the middle of the north side of the palaestra

² According to epigraph Assist. Prof. Dr. Burak Takmer from Akdeniz University in Antalya, Turkey, inscription could be [ΘΕΟΙΣ ΚΑΙ ΑΥΤΟΚΡΑΤΟΡΙ ΚΑΙΣΑΡΙ ΤΙΤΟ ΑΙΛΙΟ ΑΔΡΙΑΝΟ ΑΝΤΩ]ΝΕΙ-ΝΟ [ΣΕΒΑΣΤΟΥ] (to the Gods and Emperor Kaiser Titus Aelius Hadrianus Antoninus Pius).

Figure 2
Plan of the Roman Bath and Palaestra



courtyard. For all these reasons, the north portico has a different feature from other galleries. The north portico could be an imperial hall or a *basilica thermae*, like other asymmetric planned baths³.

After the excavation season of 2010, all sides of the palaestra were uncovered; the size was measured as 37.26 m in the southern and as 35.38 m in the western side. The mosaic pavements of the south portico are at +41.90 m above sea level. There are 13 panels each displaying a different geometric pattern (Figure 5). The wave motif as a frame band continues along the entire gallery. Although the length of the first krepis in the south portico was 37.26 m, mosaic pavements with the corners must be about 55 m long. Because of unprotected basement blocks of the east section, the original mosaic floor was uncovered in smaller dimension. The south portico mosaics measured 44.28 m in length and 5.72 m at the widest point. Widths of 13 main panels along portico vary between 2.24 to 2.32 m

³ The baths on asymmetric plan are Milet, Aspendos, Side, Perge ve Sagalassos (Yegül 2006: 256). The South Bath of Perge is the most similar example in terms of plan and mosaics of porticoes (İnan 1985: 323, fig. 1, 19).



Figure 3
The fallen blocks of
architrave in palaestra

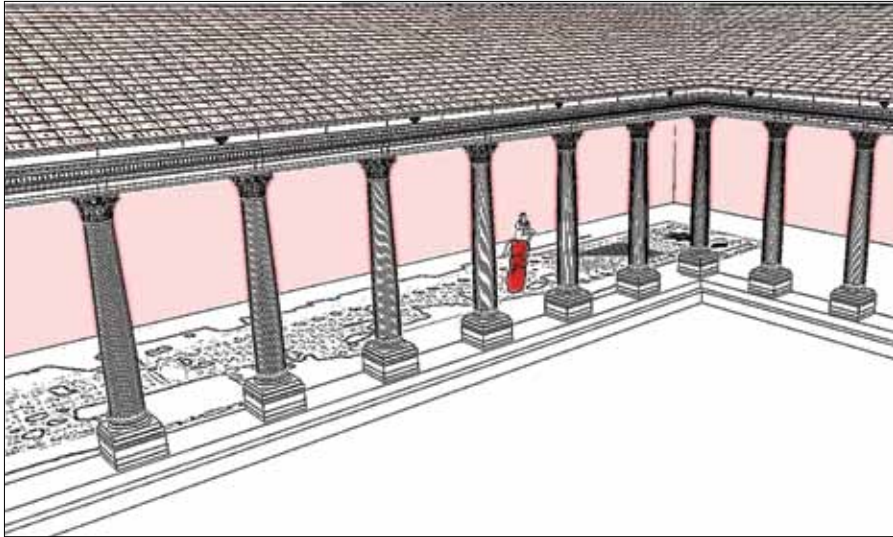


Figure 4
Illustration of south
portico in palaestra

and their lengths are different and irregular. In fact, eight main panels contain motifs (Figure 6) and other five mid-panels display lozenge motifs. Generally, bichrome patterns of panels have dark blue and white tesserae, some of which were diversified with dark yellow and red. The condition mosaic is increasing to the west and especially south-west corner almost completely uncovered.

The south portico mosaics of the Metropolis palaestra are similar to the Large Bath of Anemurium (Campbell 1998: 30, pl. 139, fig. 29). As a different feature, both the courtyard and the corridors at Anemurium are covered by mosaics. However, just as the south corridor, the mosaics were almost completely raised. Although Anemurium mosaics are almost of the same length (31.50 m) as Metropolis, the width of corridor is too short (0.75 m). The 11 main panels and lozenge panels are made of rough workmanship and bear basic motifs. Another similar example is the pavement of the Hermaphrodite Colonnades in the House of Psyche at Antioch (Levi 1947: 183, pl. 39). The Antioch mosaic, which has four geometric main panels, is shorter and narrower than the Metropolis portico mosaics. Both examples are formed with a circular rosette in the middle of some

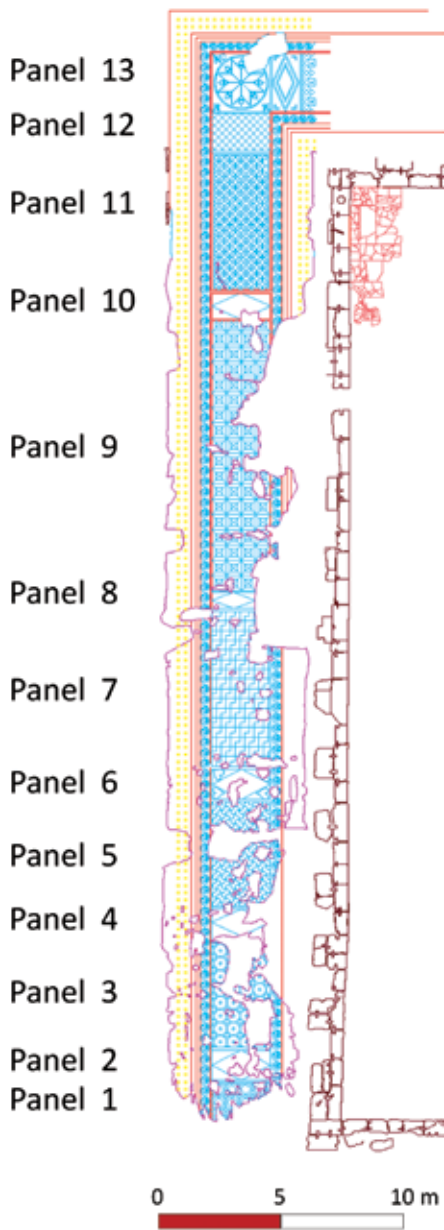


Figure 5
Plan of mosaic floor in the South Portico

Figure 6
The mosaic patterns of South Portico

lozenges. The most important difference in both cases is a welcome message of the corridor entrances⁴.

The Border

A simple border lined up along 1.60-1.70 m surrounds both sides of 13 different panels on the south portico. After removing borderparts of the mosaic, panel width varies between 2.24 and 2.32 m. The outer border (0.92 m) is formed by dark blue squares in binary on a white background. Dark blue squares (0.09x 0.09 m) are decorated with white dots and set in twin groups every 0.20 m. This border type is largely used in the mosaics of the Terrace House 2 in Ephesus (Scheibelreiter 2010). Following a narrow white band (0.04 m), blue and white bands are laid 0.16 m wide.

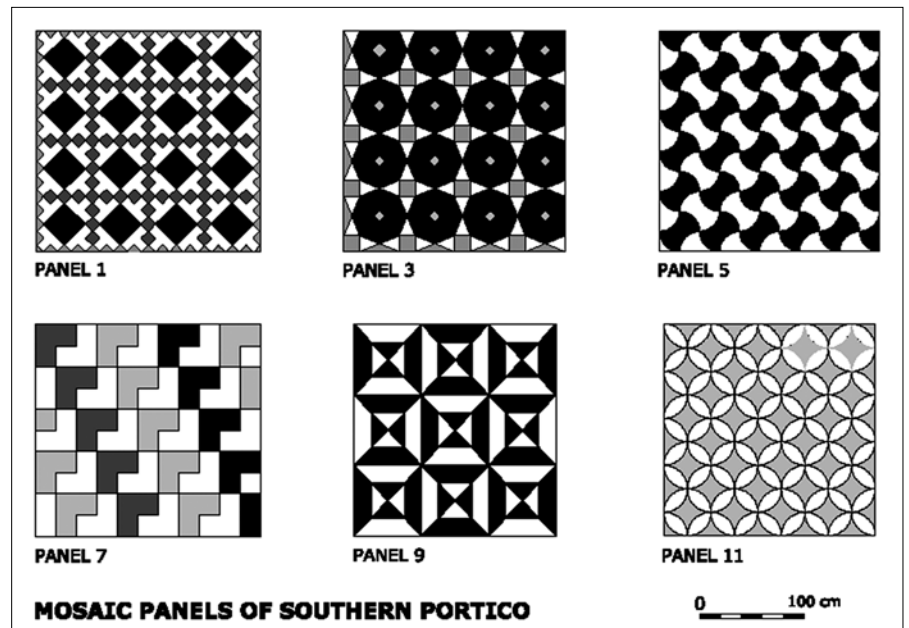
The main decoration of border is the wave motif with dark blue and white tesserae (Décor I: 101b). The wave's width is 0.41 m and one lap races inward. The same motif continues towards outside of the west portico. Next to the wave motif, a blue band (0.08 m wide) circulates in all panels. While the border has a density between 40-50 tesserae/sq dm, the density of panels achieves to 50-60 tesserae/sq dm.

Panel 1

Size: 2.24 x 1.68 m (measured length).

Description: Although there are series of red triangle bands (saw tooth) on the outer side, the main motif is composed by dark blue diagonal squares. Small and large squares create a grid of rows of tangent poised squares (Décor I: 133c). The larger squares are 0.28 m wide in edges and 0.40 m in diagonal. The smaller squares are formed with 0.09 m width in the edges and 0.16 m in the diagonal points.

Preservation: All of the mosaic panels in the east are not well preserved, since they remained close to the field surface. So, most of this section is missing.



⁴ Little mosaic panels inscribed KALOS (good wishes) or KAIXΨ (welcome) decorated in the entrances of buildings. Similar inscribed mosaic have been found in Atrium House of Metropolis in 2001 (Öz 2012).

Comparisons: This panel is the single motif which repeats in the other parts of the palaestra at Metropolis. The mosaic in the northwest part that was uncovered in 2009 is composed by tangent squares as the main motif (Öz 2009:38, fig. 4-5). The best-known example of this motif has been found in the synagogue mosaic at Sardis. The mosaic floors that are placed symmetrically in the side aisles date to the second half of the 4th century A.D. as supported by many coins in the mortar (Scheibelreiter 2007: 69). Although similar size and colors used in both mosaic examples, the Solomon's knot motif in the middle of the squares at Sardis presents diversity. Among other examples of this motif are the mosaic floors in the Coemeterium of Seven Sleepers (Jobst 1977: 47, fig. 82) and the Alytarkhes Stoa on the Street of Curetes (Jobst 1977: 32, fig. 43-44) at Ephesus. An interesting example can be seen in the Bath of Hadrianus at Aphrodisias (Campbell 1991: 27, pl. 97). The marble coatings as an *opus sectile* style were arranged in tangent motif of squares. Thus, it is understood that this motif was applied as the art of ornamentation with different materials and in different regions.

Panel 2

Size: 2.24x1.18 m.

Description: The first mid-panel motif was uncovered during a sondage in 2007. A white contoured lozenge encloses a circular rosette 0.56 m in width (Décor II: 300a). While the frame bands are white, the inner surface of the panel is filled by dark blue tesserae and a red background in rosette. Similarly, remaining background of the lozenge was applied as gradient from yellow to red. Furthermore, another four mid-lozenge panels were found along the south portico.

Preservation: The rosette in the middle and the north part of the panel are half preserved.

Comparisons: As noted above, lozenges as mid-shaped panels are located at the most famous porticoes of Antioch Psyche mosaics and the Anemurium Bath. Similar comparisons can also be made for the panels 2, 4, 6, 8 and 10 of the mosaics in the Metropolis Palaestra.

Panel 3

Size: 2.26 x 4.30 m.

Description: Dark blue octagons tangent to each other in the main motif (Décor I: 209a). Small dark yellow squares are located in the middle of octagons. Other spaces between octagons are filled with the white triangles. The maximum width of the octagons is 0.48 m and that of the squares is 0.18 m.

Preservation: This is one of the most damaged panels. A large part is missing or corrupted so heavily that its design can not be followed. Full episodes can only be traced in the east section of about 2.60 m.

Comparisons: A similar example has been found in the peristyle of the Terrace House 2 at Ephesus (Jobst 1977: 45, fig. 79). There, the maximum size of the octagons is 0.46 m and 0.16 m of the squares. But in the case of Metropolis, the octagons are filled by dark blue, dark yellow and white color tesserae. Nevertheless, the mosaics of Ephesus are the closest examples in terms of both size and color choice. Another example is the floor mosaic in the Grave 16A at Anemurium (Campbell 1998: 57, pl. 233). Here, although similar size and color were used, multi-colored birds are applied into the octagonal rosettes in accordance with the purpose. In addition, a different variation has also been applied in the Odeon Building at Anemurium.

Panel 4

Size: 2.27 x 1.19 m.

Description: A lozenge with dark blue contours in a 1.19 m frame encloses a circular rosette of 0.56 m wide. Frame band and background of panel is filled by dark blue tesserae; the background of the rosette is red. The remaining triangle area outside the lozenge was treated in yellow and red colors.

Preservation: This panel is almost completely preserved.

Panel 5

Size: 2.28 x 3.34 m.

Description: The main motif of the panel is double axe that is shaped with dark blue and white tesserae. Double axes are placed diagonally in an average length of 0.35 m and a width of 0.18 m.

Preservation: One of the geison blocks that has fallen down from the superstructure of palaestra facade can still be seen on mosaic panel. There are traces of extreme destruction and large gaps around the block. The geison blocks has not been removed in order to show the demolition phase of the palaestra.

Comparisons: The double axe motif was generally used in Egyptian and Minoan art. The earliest instance of motif is commonly seen in the Bath of Cladeus at Olympia dated to the period of Nero (O'Connor - Morey 1920: 151). A sample in general mosaic catalogue belongs to the Bath of Ostia (Décor I: 221a).

Panel 6

Size: 2.28 x 1.20 m.

Description: This panel displays one of the most colorful applications of lozenge. Three nested lozenges within 1.26 m wide dark blue band are composed of changing colors. The outermost large lozenge is of dark blue tone, the other one is red and the innermost made by dark yellow tesserae. The most important difference of this panel is the heart-shaped ivy leaves in corners. It is seen that the hearts about 0.50 m long do not show a proper order for placement. They are filled with dark blue tessera framed by white hue.

Preservation: This panel is very well preserved. Only small gaps are found in the middle and north-west eart.

Panel 7

Size: 2.28 x 6.07 m.

Description: Straight and reverse chevron motifs are placed in diagonal patterns. The panel contains dark blue and red chevron motifs orderly on white background. Seven chevrons in 0.32 m in wide fill the whole area. The irregularities stand out in some parts of the panel. Especially in the middle of the north edge, chevron shapes disorganized by dark yellow rectangular pattern (Figure 7). This is an indication that there have been some repairs in this part of the panel. However, the possibility of a second phase of use is not likely, because the original patterns and the repaired part are on the same level and there are no remarkable differences of practice between them.

Preservation: A rough wall without mortar has been unearthed on the mosaic during excavations. Therefore there might be a latter building here in size of 3.46 and 2.77 m. No mosaic pavement was found in below on this area. Therefore, the northwest corner about 4 sq m area of panel is under destruction.

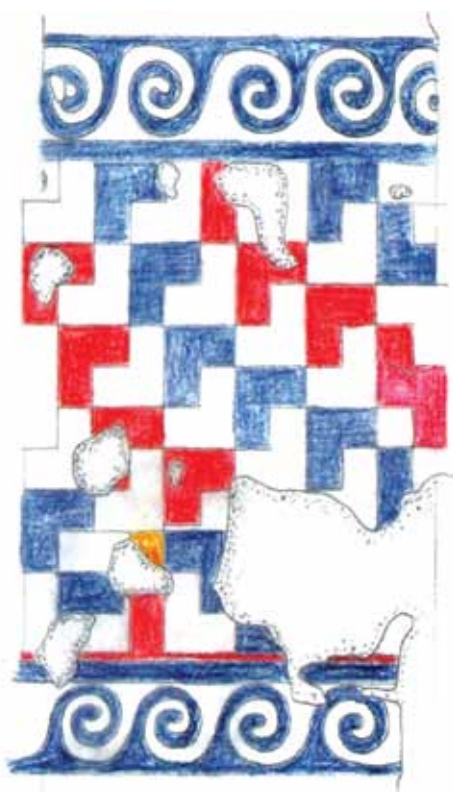


Figure 7
Irregular pattern of Panel 7



Figure 8
The chessboard pattern
of Panel 9

Comparisons: The chevron patterns that create a grid are not too commonly used as a decoration motif on mosaic. In the general mosaic catalogue, the mosaic floor of Emeuville in Belgium is noticed as the closest example (Décor I: 116c).

Panel 8

Size: 2.28 x 0.90 m.

Description: Since the north part of the panel is missing, the scheme can not be fully recognized and the visible area that is measured as 1.65 x 0.65 m has been identified of a small size lozenge. The lozenge with dark blue band is filled with dark yellow tesserae.

Preservation: Despite missing almost half of the panel, a lozenge was fully recovered. This interesting situation indicates the presence of another shape or text. Indeed, a similar inscribed mosaic has been found at Anemurium.

Panel 9

Size: 2.30 x 11.10 m.

Description: This panel is the longest carpet of south portico. In the chessboard pattern, squares are formed by four trapezes adjacent to a central square which is diagonally quartered (Décor I: 128b). The colors are counterchanged in order to create an effect of coffers (Figure 8). The nested squares consisting of dark blue and white colors were applied on the entire surface of the panel. Diagonal lines of squares, 0.56 m wide in edge, are specified trapezoids and triangles are filled as alternating manner.

Preservation: Half of the north edge of the long panel suffered damage. Probably the later building phase continued throughout 10.00 m, from Panel 7 to Panel 9.

Comparisons: This motif, one of the most common Italian types, was also used in the Terrace Houses of Ephesus. The sample of Domus II is located in the corridor around peristyle and dated to the end of the 3rd century A.D. according to W. Jobst (1977: 48). The mosaic of Ephesus is the nearest application considering Metropolis, in terms of color, shape and size.

Panel 10

Size: 2.32 x 0.90 m.

Description: This is used as the last panel of lozenges. The dark yellow tesserae were applied to inside of border which is 0.06 m wide and of dark blue color.

Preservation: Eastern side of the panel, except for a small area, was fully recovered.

Panel 11

Size: 2.32 x 5.57 m.

Description: The intersecting tangent circles measured in 0.46 m have yellow and white color tesserae (D cor I: 239c). The white spindle shapes are remaining areas of intersection of circles. The remaining concave squares processed with dark yellow tesserae. While a main dark blue border (0.08 m) surrounds all panels, only in this panel, another secondary white band followed it.

Preservation: This panel is in a very good state of preservation, except for small gaps and lacunas. However, the surfaces of dark yellow tesserae made with sandstone are eroded.

Comparisons: The common characteristic of the tangent circles may be used either as a panel or band motif. This pattern is also seen in the west portico of the palaestra as well as in the reception hall and atrium house of Metropolis as a single band (Meri  2004: 143). Unlike the others, the north portico mosaics are composed with diagonally laid dark blue and red tesserae ( z 2012: 707). The Amphitrite Mosaic of the Terrace House 2 (Jobst 1977: 59, fig. 98, 100) and the Vedius Gymnasium (Miltner 1958: 98) in Ephesus have a similar expression. It is understood that these patterns were used as a popular form in the most important structures of Ephesus in the 3rd and 4th century A.D. Thus, the Metropolis palaestra mosaics could be dated to the same period.

Panel 12

Size: 2.32 x 1.49 m.

Description: After lozenges motifs, the diagonal lines which created the grid are used as a different motif of the mid-panel. The single row of diagonally set dark blue lines on a white background creates a square like network. Squares have 0.22 m size in edge and 0.30 m in diagonal length. According to the excavation season in 2010, these panels repeat as a central motif along the west portico.

Preservation: This panel is well preserved, except for small gaps and lacunas. Despite the calcification on the surface of tesserae provide to consolidate, it creates difficulty, preventing cleaning and visualization of the image.

Comparison: The diagonal grid which is frequently used in opus signinum-style mosaics is a simple motif of geometric decoration. The grid motif can be found in almost every structure and dimension. Angles formed by lines make the difference according to whether fields with square or lozenge. In this case, diagonal lines cut each other in perpendicular and create mid-square grids (D cor I: 124e). There are five tessera saltire motifs in the central point of the squares like in the Ephesian terrace houses (Scheibelreiter 2010: 139, pl. 418).

Panel 13

Size: 2.32 x 2.32 m.

Description: This panel is on the intersecting corner of the south and west porticoes (Figure 9). A circular border with 2.14 m. width places inside of the



Figure 9
The Lozenge star of
Panel 13

corner square. In fact, the panel's main motif consists of eight-armed star of lozenge in the circle (Décor II: 289b). Lozenges have measured of the average lengths of 1.00 and width of 0.40 m. The inner corners of the square are decorated with three-spoke floral figures. The heart shaped leaves of ivy (*hedera helix*) motifs are located between each two lozenges of star. The size of the heart is measured in 0.26 x 0.39 m.

Preservation: The mosaic floor is very well preserved, except for the damage caused by the block that was fallen down on the pavement. We decided to leave the block in-situ, because it is directly related to the demolition phase of the structure and thick layer of soil below. Another destruction problem in this area is a layer of char that began just on the mosaic floor. For this reason, burning marks composed on the floor and tesserae. Furthermore, the calcification layers of limestone tesserae have also concentrated in this section.

Comparisons: The eight-armed star lozenge is usually used in large scale modular floor decorations. The earliest lozenges star were used in Pompeii in 1st century B.C. (Ovadia 1980: 138). It was especially used in Cilicia and Syria as a mid motif. An example of a star used as a single motif in the corner can be found in the mosaic of Three Graces at Narlıkuyu dated to the last quarter of the 4th century A.D. (Budde 1972: 101, fig. 91). But the Solomon's knot in the corners and the circular rosettes of lozenges display a variety. An example of a circular mosaic is also presented in the Adana Archaeological Museum (Budde 1972: 30, fig. 51). The polychrome mosaic dating from the middle of the 3rd century A.D. differs in terms of form and style. The example of Pievedi Cadore in Padua (Donderer 1986: 172, pl. 54) located with meander borders are also close to Metropolis. Another example found in the East Basilica of Xanthos is dated to the Late Antique period (Raynaud 2009: 95, fig. 100). The lozenge star mosaic in the central nave, decorated with 18 panels, reflects the style of late period being used in too many shapes and colors. Floral motifs which come out from a krater represent the most similar example related to Metropolis. Examples of heart and floral motifs in the corners are close to the Ephesus Terrace Houses 2, SR 18 Room (Scheibelreiter 2010: 137, pl. 413) and to a building floor mosaics near the Scholastica Bath (Jobst 1977: fig. 135-136).

Wall or Vault Mosaic

In 2009, some mosaic fragments have been recovered in the so-called Niche Building related to the northeast area of the bath (Figure 1). Approximately 150 pieces of mosaic have been found in the pool of the south niche that was of

3.09 x 1.37 m size (Figure 10). These figured mosaics (Figure 11) are different from other floor mosaics: Firstly, all tesserae were made of different material, size and density. While geometric panels have a density ranging from 45-55 tesserae/sq dm, these pieces show a density nearly 100 tesserae/sq dm. Materials such as stone, marble and glass chosen for the tesserae, their extreme small size (5-8 mm) and finely adjusted thin joints increase the quality of the mosaic work.

In addition, some bright blue and green colored pieces are formed by smalti technique with glass tesserae. Glass tesserae are lighter and show more color on figures. Therefore, their application is preferred for wall and vault mosaics (Dunbabin 1999: 280). In a flat border band, four tones of gray-black stones show different shades and composition on the mosaic. The polychromy of wall mosaic emphasises affinity to the Pompeian fourth style wall paintings (Ling 1998: 103). On the other hand, glass mosaic is more carefree than wall paintings. The vivid surface could be easily cleaned and reflective qualities of glass used to display an attractive look. However, the aesthetic appeal of vault mosaic was based on irregular surface and multiple reflections of glass tesserae (Ling 1998: 16). Thus, glass mosaics were mostly used in baths or fountains where they would reflect light from the water.

The most important aspect related to the spherical surfaces of vaults or half-domes is the style of implementation of tesserae. The section of the mosaic reveals a large layer of nucleus and a black binder under each tessera on the bed mortar. The black joint in strong adhesive might be bitumen as a mid-material used for the vault mosaics. It is known that the bitumen glue was used for cementing the mosaics from the Ur period (approximately 2500 B.C.) onwards (Zettler 1998: 45). In Greek and Roman periods, bitumen was also used for the purpose of binding, water-proofing and insulating (Forbes 1955: 89).

As another distinctive feature, the surfaces of all stone and glass tesserae remained just as they were cut and the edges are sharply formed. For this reason, it can be stated that the floor mosaics were not meant to be used to walk on. In addition, although the mosaic fragments are too small in size (approximately 0.25 m), the surface has a slightly concave shape. Owing to feature of this mosaic, it is possible to say that these might belonged to a half dome above the niche.

Figure 10
The Niche Building



Wall or vault mosaics which were made by the technique of *opus musivum* represent a most difficult construction. Therefore, this type was applied only in small numbers around the entire ancient world. Initially, *opus musivum* was applied onto the surface of the ceiling of nymphaeum buildings and grottoes of Roman villas, later started being used for baths in Rome, Ostia, Carthage, Samos and Salamis. The most glorious examples of wall, vault and dome mosaics can be seen in the Baths of Caracalla in Rome (Dunbabin 1999: 246). The use of glass mosaic increased with church domes in the Early Christian Era. Only a limited number of the important structures in major ancient cities date to the Roman Period. Rome, Herculaneum and Pompeii have the earliest examples along with the wall and vault mosaics (Dunbabin 1999: 243).

The niche mosaic at Ephesus, the capital city of Asia, bears many similarities with Metropolis in terms of spatial, structural and material features. The triclinium niche of the Terrace House 2 - SR 24 depicted a figure in the dome mosaics dated to 400 A.D. according to W. Jobst (1977: 87). The domes covering the half cylindrical space of the niches are placed symmetrically and figures are applied so as to face each other. While the figure of the west niche is a partial torso, the east part has only head and shoulders of the figure. Despite using larger stone and glass tesserae on the figure's face, it is a reminiscent of the example of Metropolis in terms of style and color. In addition, lopsided figures are similar to the mosaics of the reception hall in Metropolis. But this place is covered with marble and the 0.70 m wide niches of triclinium show different characteristics compared to Metropolis. Therefore, the larger niche in Metropolis is the most important example in detailing of figures and comfort in composition.

Ceramics, coins and sculptures found during excavations in the Niche Building, support the suggestions for dating the mosaics. Ceramic pieces, as well as the density of the coins dating from the Late Roman Period (esp. the 4th century A.D.) show, that extensive construction activities were undertaken in the bath. In addition, two heads of statues unearthed in the same place date back to the 3rd and 6th centuries A.D. (Aybek 2010: 56).

Condition of Mosaics

Damage and weathering occurred on the mosaic floor covering the area of the south portico are to a great extent the result of physical effects. For this reason, it is decided to preserve the mosaic floor in-situ using the method of consolidation. Especially, the bedding layer of the pavement is well preserved, whereas lacunas came about by the later usage and due to the falling architrave blocks. The raising of ground water table and of humidity has been hindered due to the lower height of foundation walls at both sides of the mosaic floor.

We can see that the surface of the mosaic in general is somewhat worn out, even though the bedding mortar and layer are in a good condition. Especially, the dark yellow tesserae of sandstone are more eroded and exfoliated. In the Panel 12 and Panel 13, it has been also observed that a layer of calcit occurred due to salt crystallisation and calcification. Otherwise, yellow staining appears on the sandstone and white marble tesserae. In the same part of the pavement, light colors of tesserae are counter changed to grey due to the fire.

In the later period, two walls were built on the gallery and three marble blocks of the superstructure had fallen down on the mosaic causing some depressions. The rooms belonging to the Late Byzantine or Early Ottoman Period are built in mortarless wall technique. Despite cracking and collapse, the pavement is



Figure 11
A figure of mosaic from
Niche Building

almost entirely preserved under the walls. But, no evidence of mosaic was found inside of the rooms. Therefore, it is assumed that, mosaic pavement was not preferred for interior space of the later room.

Despite the existence of a protection shelter on the mosaic floor, plantations have grown in the area around it. The seeds of plants winnowed by the wind are settled down on the mosaic pavement and deeply rooted. Some measures must be taken to remove these roots which are the most important factor of corruption. An easily method would be uprooting by groping in early summer. But, if this method is not properly applied, it could be more harmful for tesserae. Therefore, a biological cleaning using microorganisms (mosses and algae) must be carried out in the closest environment of the mosaic and surface of floor. In the context of biological research (Capriotti - D'Alessandro1991), solutions of anti-bacterial biocides like Desogen and Metatin can be put into practice. However, these applications are preliminary and particularly with regard to seasonal cycles. A program of periodic maintenance could be designed for the conservation of the exposed sites.

There is no general plan of the conservation and maintenance in the palaestra at Metropolis. The conservation program in a large scale must be prepared by survey, analysis and stabilization of all mosaics. In general, conservation studies are classified in five stages; cleaning and sifting, consolidation, reconstruction or reinstallation, maintenance and aesthetic presentation. Emergency conservation measures were just carried out in a ten percent area of mosaics in order to clean and consolidate them under the supervision of Assoc. Prof. Selçuk Şener and conservator Mine Yar.

Emergency Conservation Measures

The mosaics of the Metropolis palaestra are damaged by physical effects, although the ground remained structurally intact. Cracks, depressions and gaps seen on the floors occurred due to the demolition of the marble superstructure or to change during the later construction phases. Therefore, border consolidation and simple cleaning were first applied for uncovering the mosaic floor (Figure 12). Light-hardened surface layer of soil on the mosaic was removed by using tools such as brush and small spatula. The mosaic surface has been erased with water and sponge to make the motifs clearly visible.

In 2009, emergency conservation procedure was applied on a section of the mosaics and a temporary protection shelter (Figures 13-14) was built by permission of the Turkish Cultural and Natural Heritage Conservation Board. The concrete pillars of the steel roof are designed in such a way that they would not create any damage on the floors. The shelter defines an area of about 10.00 x 40.00 m. The size of concrete pillars is 0.40 x 0.40 m and their height varies between 0.80 to 1.20 m. No pillars were set up on the stylobate or mosaic panels. Wooden blocks (0.10 m) and rubber sheets (0.02 m) were set on under the concrete pillars, in order to prevent any damage of original marble and floor. The upper cover of the shelter is roofed by solid-but-light slabs of bituminous plates. This material that looks like red brick is designed to provide natural light through transparent areas in every 5.00 m distance. Thus, the uncovered mosaics are protected from environmental factors and a comfortable working area would be created. In the remaining sections on the roof, a simple method of protection is applied with the material such as geotextile, sand and volcanic tuff.



Tesserae of mosaics are unearthed, cleaned and filled in around with the original material, as a method of emergency conservation measures. In coming years, after occurring the entire portico's mosaics, an extensive conservation project based on modern materials is planned. After a carefully dry cleaning of tesserae, the soil that remains between cracks and lacunae are issued by dental instruments, whereas remains and dust on the surface are cleaned by vacuum. The Primal AC 33 solution was applied for consolidation of mosaic pavement where the original mortar is weak. An inclined border is filled to the edges of the original floor mosaic for supporting the mortar. After calcification and impurity encrusted over tesserae, mechanical cleaning procedure was applied with lancet and soft brush.

The liquid original based mortar has been prepared to fill and strengthen the surface as a trial basis in approximately 6 sq m area. Then the mortars are cleaned by wiping with wet sponges so that no residues would remain on the surface of the floor. Although this method creates a solid ground, it was applied to a small area due to the difficulties in cleaning stage. These applications will be evaluated again, after a general conservation project for all mosaics will be prepared by experts.

Dating and Conclusion

The porticoes of the palaestra in the Roman Bath at Metropolis are completely covered by means of mosaics with geometric patterns. Besides using other colors, there are basic black-and-white type mosaics in Italian style. This style was preferred in western Anatolia, especially in Pergamum, Ephesus and

Figure 12
Basic conservation
of mosaic in Panel 1

Figure 13
Section of protection shelter
in the south portico

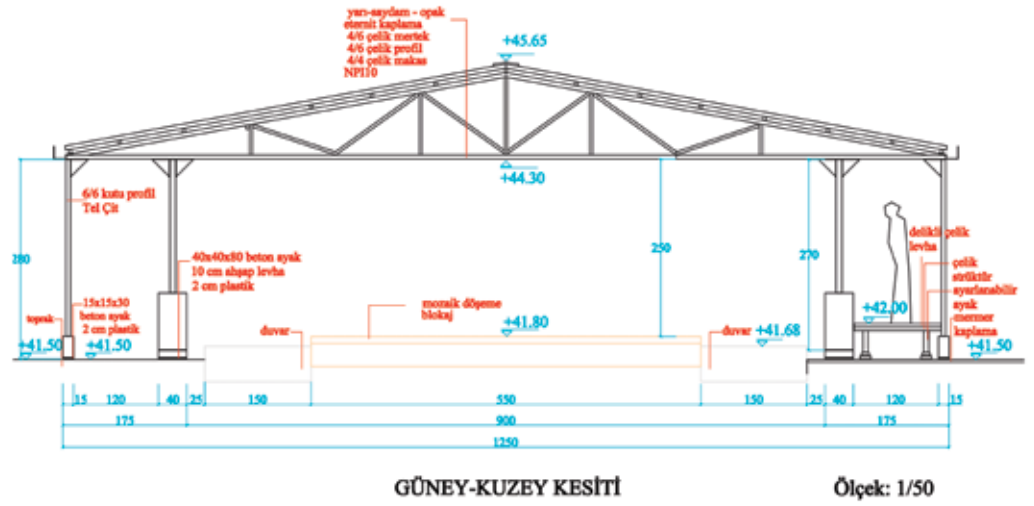


Figure 14
View of protection shelter
in the south portico

Miletus from the 1st century A.D. onwards. The mosaics of the Terrace Houses at Ephesus (Scheibelreiter 2007: 68) and the peristyle at Miletus (Knackfuss 1924: pl. VII, fig. 53) show great similarities with the examples of Metropolis.

Above the mosaic floor, following coins were found to determine the date:

Roman Imperial period (27 B.C. – A.D. 284), 6 coins,

Late Roman period (A.D. 284 – 491), 19 coins,

Byzantine period (A.D. 491 – 1453), 2 coins,

Islamic period, 1 coin.

Most of the coins range from the beginning of the Constantinian Period until the time of Arcadius, but the majority belongs to the period of Constantine II (A.D. 337-361). Few coins dating to the reign of Trajan may indicate to an early building phase in this area. In addition, the masonry type of the wall in the niche hall has actually a different character than the rest of the structure. Although, *opus incertum* (rubble wall) masonry was generally used in other rooms of the bath, here, the *opus vittatum* (stone wall) type of masonry of earlier date can be seen. In addition, an inscription of the Flavian Period which was found in the caldarium also supports this suggestion. Thus, it is understood that the palaestra was built nearly one hundred years after the construction of the bath and the mosaics were laid on the porticoes in the following century. A Byzantine bronze oil lamp and a coin of Justinus II (A.D. 565-578) which were found in a later wall, define the last used phase of the bath.

As a result, the ancient city of Metropolis shows a significant development in the Roman Imperial Period. The city expanded and large public buildings appeared in the Cayster Valley. The Roman Bath displays several building phases, repairs and modifications as an impressive building. Apparently, other large cities like Ephesus and Miletus served as a model for planning the Bath at Metropolis as seen by the similarities between them. It is evident that Metropolis was not only influenced by large cities in terms of architecture but also concerning sculpture, pottery and other branches of art. Finally, the construction date of the mosaics in the palaestra is assigned to the end of the 3rd and the beginning of the 4th century A.D. based on typological comparisons with other mosaics and uncovered pottery, coins and plastic finds.

In general, the central part of the bath was built at the end of the 1st century, the remaining parts and the palaestra were built in the middle of the 2nd century, mosaics were laid on the porticoes at the end of the 3rd century, and finally, the use and function of building terminated at the end of the 6th century A.D. Thus, the Roman baths and the palaestra seem to have had at least four different phases within nearly five hundred years. Palaestra was built during the second phase and after about 150 years, the mosaic pavement was laid down in the third phase. The future studies will aim to clarify, if there was a different phase between the construction period of the palaestra and the laying of the mosaics.

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