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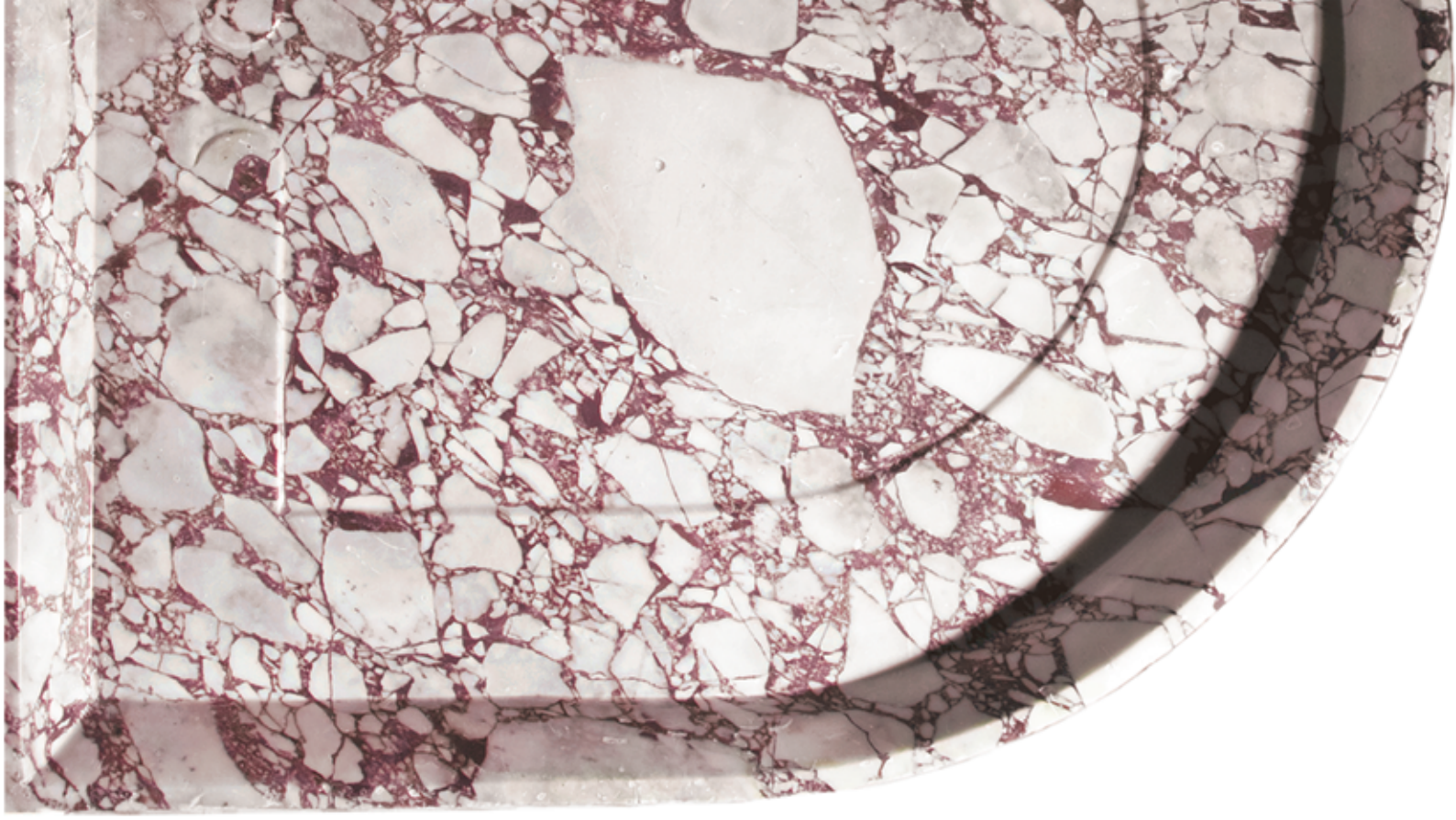

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CONTENT

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POLYCHROMY IN LARISAEAN QUARRIES AND ITS RELATION TO ARCHITECTURAL CONCEPTION

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Abstract

The architectural remains of Larisa (Buruncuk) display a skillful stone carving practice based on predominantly andesite (occasionally also basalt), tuff and limestone. Color scale ranging between bluish-grey and reddish-brown can be observed at ancient local quarries. Larisaean architecture is outstanding in using masonry blocks showing the different colors presented by the site's quarries. Late archaic buildings in particular show a vivid combination of andesite blocks. Only at "Tower I" is it possible to assume that the decorative purpose is in the foreground. At others, with randomly placed colored blocks, the efficient use of quarries must have played the primary role. Colorfully painted architectural terracotta plates once decorated the buildings of Larisa, applied on mud brick walls strengthened with timber. The use of multi-colored andesite blocks (and others inserted), thus perfectly matches this special archaic conception in architecture, which illustrates the taste of archaic Greek art for polychromy.

Keywords
polychromy, andesite quarries, Archaic

The earliest field studies on the settlement known as Larisa, situated on a hill east of Buruncuk-Izmir started in 1902 with a joint German-Swedish undertaking. Johannes Boehlau and Lennart Kjellberg conducted the excavations in Larisa with the aim of shedding light on the early stages of Greek art. The fieldworks terminated after three further campaigns conducted between 1932 and 1934. After these campaigns and further studies in Istanbul Archaeological Museums, "Larisa am Hermos" the major volumes on the results of the Larisa excavations were published by Boehlau and Schefold in 1940-42.

During the excavations many buildings on the acropolis were documented. Besides various architectural stone pieces, painted terracotta plates with reliefs depicting chariot races, symposium and hunting scenes, plates with floral-geometric ornamentation and roofing elements were found. These groups of finds are dated to the timespan from the 7th to the 5th centuries BC. Most of the architectural stone pieces, including Aeolic capitals, small finds and a considerable part of the terracotta plates are preserved in Istanbul Archaeological Museums, whereas other groups of finds are kept in Izmir (as well as in Sweden and Germany).

Since 2010, the Larisa architectural-archaeological survey has been carried out under the direction of Prof. Turgut Saner from Istanbul Technical University with the permission and support of the Turkish Ministry of Culture and Tourism.[1] The studies focus on Larisa West (acropolis and settlement area, including necropolis), the fort settlement of Larisa East, and the monumental building on the Koca Tepe hill on the level of the Hermos plain. The new research focuses intensively on documentation of the settlement patterns and architecture in Larisa.

Fieldworks at Larisa also address ancient quarrying activities.[2] The location of quarries and the stone extraction techniques are being documented by the identification of traces left on the solid bedrock and on building blocks (Fig. 1). The subject matter of color also presents some problems that the research addresses. Several walls in Larisa are constructed with the use of blocks of different colors. The preserved examples on site display surfaces somewhat comparable to patchwork. The question that is introduced here relates to whether this practice is based on a practical or a decorative intention.

On the rock surfaces at the slopes of the hill where Larisa West settlement is founded, the presence of ancient quarries with traces of stone extraction has been identified. Some areas were still actively used in

1 SANER 2016, 61-93.

2 The ancient quarrying activities in Larisa including the remains of quarries and numerous traces of extraction are currently (2018) being studied by Gizem Mater in her doctoral dissertation (ITU Institute of Social Sciences Art History Program). In spite of the accuracy of the observations and the richness of already collected data, the classification of extraction traces according to form, size and the way of placing, which is presented here will surely need to be revised.

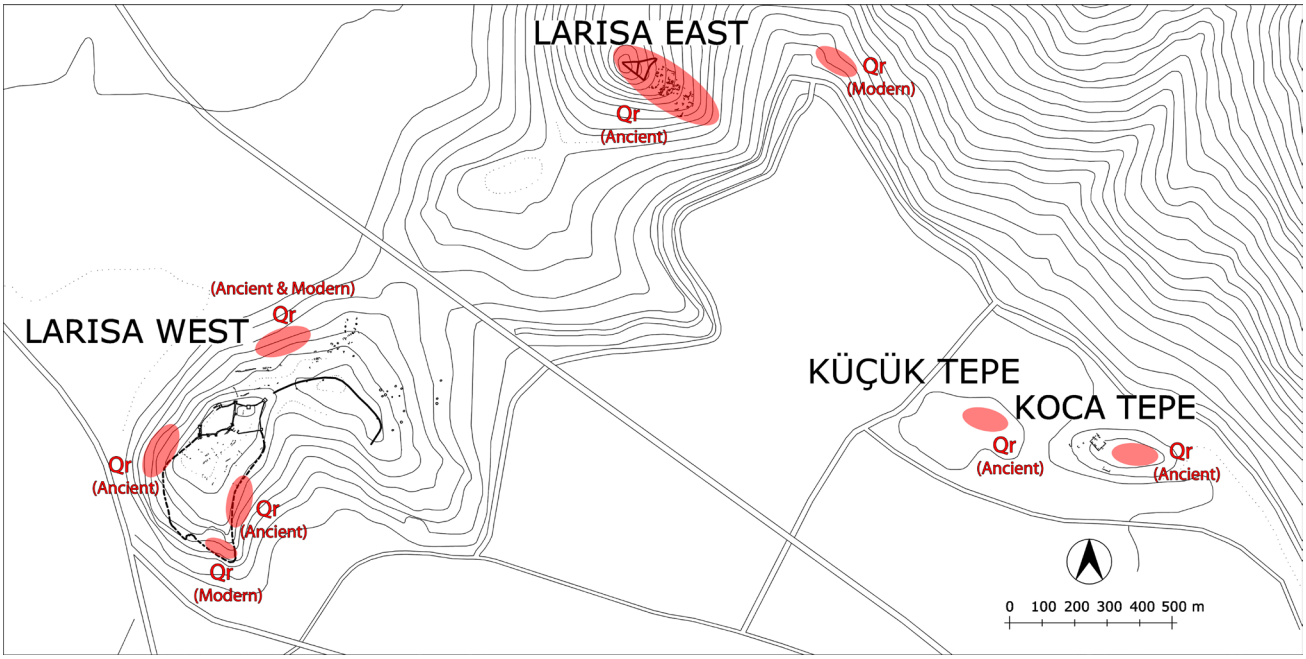

Fig. 1. Location of ancient and modern andesite quarries in Larisa (photo: © Archive of Larisa)

Fig. 2. Main ancient quarry area on the south-eastern slopes of the acropolis in Larisa West (photo: © Archive of Larisa)

contemporary times, that is in the 1970s (or earlier), and these activities unfortunately damaged the ancient traces. The larger quarry, which presents a lot of ancient traces on - the southeast of the hill where the extensive urban area is located, is one of the main quarry areas (Fig. 2). There are also remnants of recent quarrying activities on the north (Fig. 3); but were abandoned forty years ago. Above these northern quarries, on higher levels, there are traces of ancient working still to be identified. There might also be quarries opened in ancient periods on other hillsides, and these areas will be examined in detail in the next surveys. On the site of Larisa East, larger or smaller clusters of natural rock were simply used as quarries for the construction of the fort and dwellings on the terraces. Almost all smaller solid rocks on the surface were used for that purpose. These spots in and around the settlements were obviously considered the most convenient for transportation.

Andesite, which is the local stone of Larisa and the neighboring region, was acquired from these quarries. As it is known, andesite is categorized in the group of igneous rocks and it is a volcanic stone formed in the third geological period. In the Aegean region, where Larisa is situated, this formation is very frequently encountered. Inherently andesite is hard and resistant to deterioration, and thus it is rather difficult to work. Just as in Larisa in some other neighboring ancient settlements as well (for example Kyme, Phokaia and Gryneion) andesite was used in the construction of various edifices, especially of city walls.

There are high amounts of iron and magnesium minerals in andesite. These minerals give andesite its

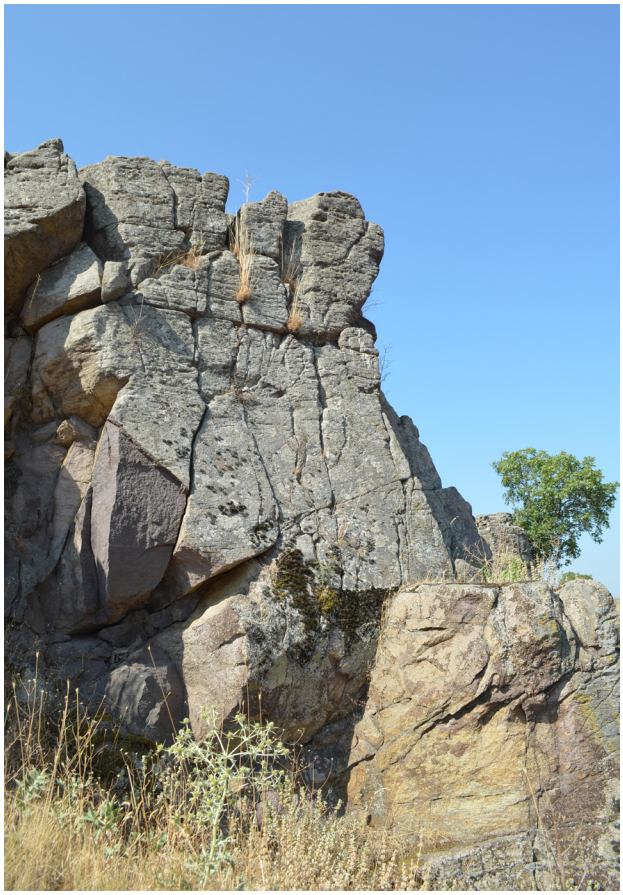

Fig. 3. Main ancient quarry area on the northern slopes of the acropolis in Larisa West (photo: © Archive of Larisa)

color in accordance with their concentrations.[3] While magnesium darkens the color of the stone, making it blacker, iron gives it a red color. Iron minerals give different colors in the same way. Magnetite mineral gives a dark or blackish color; hematite gives red, and limonite imparts a yellowish color.[4] Sometimes, the colors of andesite rocks may diversify with the co-existence of these minerals.

Andesite blocks from Larisa quarries appear in a diversity of colors. The colors of stones vary over a large scale, appearing generally in bluish-grey, reddish-brown, and sometimes even different tones of pink and violet; plus a dark basaltic version. Observations on site have shown that this diversity of colors does not refer to a distinction between quarries; stones with all basic color groups may appear at one and the same quarry (Fig. 4). Even though, in the western city area different colors of andesite are found at one and the same quarry, in the eastern area the reddish brown version can predominantly be seen in quarries and edifices.

3 ZIM, SCHAFFER 1962, 116.

4 ZIM, SCHAFFER 1962, 41.

Fig. 4. Diverse color layers in the same quarry in Larisa West (photo: © Archive of Larisa)

Fig. 5. Wedge-holes on a vertical rock surface before splitting in the south-eastern quarry in Larisa West (photo: © Archive of Larisa)

Generally, two types of splitting holes in terms of quarrying method can be identified on surfaces; narrow strip-like holes and wider-and-regularly carved holes. The narrow ones can be presented in two groups considering the length. In several cases, one single line about 20-30 cm long (or longer), 1-2 cm wide and about 3 cm deep is seen on the surface. These openings obviously served for the splitting of smaller or middle size blocks from the rock. Some of them can be considered a preliminary stage for the opening of smaller holes on the surface. On the other hand, there are hundreds of cases on site where a row of smaller rectangular holes is set into the surface of the rock to enable the splitting. These wedge holes are about 8-12 cm long, 1-2 cm wide and 3-5 cm deep (Fig. 5).

As for the architecture in Larisa: the area that can be defined as the "acropolis" at Larisa West is the residence of a local tyrant housing a palace, a Megaron, a temple, and related buildings. A late archaic defense line, which is dated to the beginning of the 5th century BC, surrounds this area with eight towers and a wide

Fig. 6. The outer wall construction of the bulwark (photo: © Archive of Larisa)

Fig. 7. Tower I of the late archaic circuit on the acropolis (photo: © Archive of Larisa)

bulwark.[5] The late archaic circuit of the acropolis displays one of the remarkable practices of polygonal masonry works in Greek defense architecture. "Lesbian masonry", which consists of polygonal blocks with curvilinear edges, can be observed in the rising parts of the walls. The bases of the defense walls rest on bedrock and their front façades are composed of roughly carved large blocks with no special surface treatment. On the base, a double-shelled reddish-brown wall of andesite blocks with chiseled surface is constructed. Occasionally the walls rise over the blocks, which protrude from the curtain wall slightly. These blocks act like a *euthynteria* as in temple architecture that provides a *toichobat* for the rising parts of the defense wall.[6]

One of the most remarkable characteristics of the walls of buildings and defense structures is that they have multi-colored masonry. This diversity is acquired by using andesite blocks of different colors and tones together within the walls. Within the random arrangement of stones it has been shown that stones in both basic tones of color are used together. These are bluish-grey and reddish-brown. This practice is probably related to practical reasons rather than decorative concerns. In other words, effective usage of quarries with a minimum loss of material was the main concern.

Tower I on the western slope and bulwark are the sectors of late archaic circuit where construction data can be obtained and most striking examples of usage of different colored andesite can be found. The outer wall construction of the bulwark shows close similarities with the other sectors of walls. Elaborately worked "coursed polygonal masonry" resting on the bedrock is constructed with reddish-brown andesite blocks. With this appearance it shows similarities with the curtain walls and towers of the entire defense line. This wall has a horizontal band projecting out slightly from the wall surface. This horizontal band made of reddish-brown andesite and the polygonal blocks have similar surface finishing (Fig. 6). Surroundings of the bulwark and Tower I, horizontal bands of this material are encountered scattered on the field. This observation explains the existence of a horizontal band throughout the whole line of the defense walls.

With its elaborate workmanship and the usage of different colored stones, Tower I is differentiated from curtain walls and other towers, and exhibits a monumental appearance. The walls of the tower rest on solid bedrock, on a base that projects approximately 2 cm. The polygonal masonry of the tower is constructed with bluish-grey andesite blocks and they are set up with obvious horizontal rectangular surfaces (Fig. 7). The horizontal band of 21 cm height, that terminates the rectangular horizontal areas, has a more distinctive reddish color than the average reddish-brown stones used in other buildings in Larisa. These bands are decorated with additional small grooves framing the central surface of the block. Handling bosses are left in the center of frames, which might present a decorative intention as well (Fig. 8). The usage of horizontal bands with different colors in a decorative manner can also be seen in the city walls at Melanpagos and Erythrai in the close neighborhood.

Another late archaic building of the tyrant's residence, the Megaron, has a main space with a squarish plan and two smaller rooms behind it. The masonry of the Megaron with its polygonal blocks shows close similarities to the late archaic defense wall. In particular, its better preserved western wall shows a polygonal pattern

5 The construction techniques of late archaic walls of Larisaean acropolis and their relevance with topography and surrounding buildings are currently (2018) being studied by Ertunç Denktaş in his doctoral dissertation (ITU Institute of Sciences History of Architecture Program).

6 SANER, SAĞ 2012, 428.

Fig. 8. Coursed polygonal masonry and horizontal decorative band at Tower I on the acropolis (photo: © Archive of Larisa)

Fig. 9. Coursed polygonal masonry that includes multicolored andesite blocks near tower VII on the acropolis (photo: © Archive of Larisa)

with the use of four-five edged reddish-brown and bluish-grey andesite blocks together.

In addition to the variety of color tones of andesite blocks, the usage of different materials is also another practice that can be observed in the masonry of the Larisaean acropolis throughout the periods. For instance, white limestone blocks were used in the masonry of the walls of Tower VII, which is likely to be part of an earlier fortification system on the acropolis.[7] The rising wall of the late archaic circuit that lies between Tower VII and the gate displays a patchwork-like masonry from the combination of different color andesite blocks (Fig. 9).

Finally, in the late archaic fort at Larisa East and in the dwellings located on its slopes mainly andesite blocks of reddish-brown tones are used. The reason that the rocks in this place are more "brownish" than the ones in the acropolis is probably because the minerals in the soil here are different than those in the acropolis area of the western settlement.

To sum up; in Larisa there is stonework based on andesite, the local stone of the region, taken from local quarries. This stonework is encountered at the wall bases of the buildings, in the initial layers above the foundations, retaining walls and city walls. Andesite is not affected by weather conditions very much, so the blocks' colors ranging from bluish-grey to reddish-brown and even a brighter tone of red are not related to weather conditions but to the minerals of the soil it was found in.

In Larisa's stonework, practical applications are more important than decorative concerns. Andesite stone blocks taken out from quarries close by are mostly used randomly together regardless of their color differences. This practice, applied to almost all buildings within the field, differs only at Tower I. At Tower I, the usage of red stone of a special brightness and a tone that is not encountered in any other parts of the site attracts particular attention. These stones were particularly chosen and used in the bonding layer of the tower. Decorative grooves are additionally applied on them.

In the lower sections of the buildings in Larisa, except in the defensive walls, one or two rows of andesite blocks were used. These were not plastered and on top of them, mud brick walls with plaster were constructed. The mud brick sections must have been enveloped with wooden beams and coverings, which carried the terracotta plates.[8] In the façade decoration, these terracotta plates, displaying hunting, symposium and chariot race scenes, colored predominantly in red and black, are used in accordance with the taste and wide-spread practice of the polychromy of the period. In the masonry, the application of andesite blocks with different colors can be considered in the same manner. In other words, this practice shows an aesthetic harmony and unity with terracotta plates. In addition, timber column shafts; column capitals and frieze blocks made of tuff were apparently painted as well.[9] Therefore, the randomly made color choices, actually based on the idea of using the quarries as efficiently as possible, also supported the choices concerning decoration within the architectural understanding of the period.

7 BOEHLAU, SCHEFOLD 1940, 50-51.

8 SANER, ALMAÇ 2015, 756.

9 Hardly visible remains of red and blue colour pigments had been seen in one of the pilaster capitals and two geison pieces that were found on the acropolis during the excavations. BOEHLAU, SCHEFOLD 1940, 123-124, 128.

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