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## The architecture of the 4th century B.C. monumental tomb at Starosel

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## ABSTRACT

### The Architecture of the 4<sup>th</sup> Century B.C. Monumental Tomb at Starosel

Chavdar Tzochev

The article presents a reconstruction and a first architectural analysis of the largest and most elaborate monumental tomb in ancient Thrace. Discovered in 2000, the tomb at Starosel, central Bulgaria, comprises an array of diverse plan components, structures, and decorative elements, masterfully blended into a unified composition. The outstanding craftsmanship and skilful engineering indicate that it was the work of an experienced architect and stone-carvers of mixed backgrounds, with extensive knowledge of monumental architecture from across the Aegean. The analysis of the architecture, archaeological evidence, and historical context shows that the tomb was built between 350 and 330 B.C., most likely as a heroon for one of the last Odryian rulers before Philip II of Macedon's conquest of Thrace in 341 B.C. The article offers a new explanation of how tholos tombs appeared in Thrace: not through gradual local development, or import of a ready prototype, but as a fusion of architectural forms conceived by an itinerant architect for the needs of an Odryian patron. Besides its significance for understanding the development of monumental architecture in Thrace, the Starosel tomb is particularly important for providing new insight into the process of hybridization of building traditions that came to define Hellenistic architecture.

## KEYWORDS

Thrace, Odryian, tholos, Doric, polychromy

# The Architecture of the 4<sup>th</sup> Century B.C. Monumental Tomb at Starosel

1 One of the most significant developments in the architecture of the 4<sup>th</sup> century B.C. eastern Mediterranean was the proliferation of monumental private tombs, and the attendant hybridization of architectural forms. The best-known expressions of this phenomenon are in Asia Minor, where the Mausoleum at Halicarnassus became the proverbial archetype of funeral megalomania, and in Macedonia, where tombs at Vergina and Amphipolis have captured public attention for their possible connection to the family of Alexander the Great. Ancient Thrace has drawn relatively little attention<sup>1</sup>, despite the fact that over a hundred tombs from the 4<sup>th</sup> and 3<sup>rd</sup> century B.C. have been recorded in this region, mostly in Bulgaria, but also in Greece and Turkey. This article offers the first focused architectural analysis of a tomb near Starosel<sup>2</sup> (Bulgaria), excavated in 2000, which is both a game-changing discovery for our understanding of monumental architecture in Thrace, and a crucial new example for the fusion of architectural traditions in the late Classical and early Hellenistic Aegean.

2 Tomb architecture in Thrace shows remarkable diversity of plans, structural systems for roofing tomb chambers, and construction technology – a diversity that makes the contemporaneous Macedonian tombs appear standardized<sup>3</sup>. Still, Thracian tombs share several common traits. They are stone-built structures, begun on natural ground level and then covered by an earthen mound. Typically, they are composed of circular or rectangular chambers – often in combination – arranged in an axial sequence along a dromos entranceway. Chambers are most often covered with corbel vaults and corbel domes, but flat and pitched roofs, barrel vaults, and ›lantern‹ domes are also known. Architecturally articulated façades and inner walls are rare, but when present, are marked by an eclectic use of elements of Greek orders.

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1 For example, Janos Fedak's seminal work on Hellenistic monumental tombs (Fedak 1990) includes only a cursory mention of Thrace.

2 For brevity, this tomb will be referred to as the ›Starosel tomb‹ – after the nearby village. The local name of the mound covering the tomb is Chetinyova Mogila. It is the largest of a number of burial mounds dispersed in the area north of Starosel.

3 For an overview of tomb architecture in Thrace, see Stoyanova 2015.

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1

Fig. 1: Location of Chetinyova Mogila, Starosel

3 In these general terms of plans and structural categories, the Starosel tomb fits the quintessence of monumental tombs in Thrace. But beyond the basic similarities, it stands head and shoulders above other Thracian tombs for the complexity of its design, the ambition of its scale, the skill of its engineering, and the craftsmanship of its execution. This tomb, located at the foot of the Sredna Gora mountains, some 200 km north of the Aegean coast (Fig. 1), recasts 4<sup>th</sup> century Thrace from a ›Hellenized‹ appendix to the history of Greek architecture into a melting pot, in which different building traditions were alloyed.

4 The Starosel tomb's discovery, excavation, and preservation, are an all too familiar story of archaeological mishap in post-communist Bulgaria. In the winter of 1999/2000, news emerged that looters had exposed the entrance on the south side of the mound<sup>4</sup>. They broke into the antechamber, and reached the main, circular chamber (hereafter the tholos), which was filled in with blocks from the collapsed dome. News of the looting prompted immediate excavation: in the summers of 2000 and 2001, the archaeologist Georgi Kitov used heavy machinery to expose the entrance and the retaining wall encompassing the mound<sup>5</sup>. In the course of these works, Kitov's team collected most of the collapsed architectural members, and reburied them in the ground immediately south of the tomb's entrance. In 2009, a tunnel was dug from the west side of the mound, to hollow out a cavity in the tumulus, above the tholos chamber. The space above the tholos was freed from earth and propped up with steel arches. Within this cavity, the stones of the corbelled dome were reassembled in 2013. Soon after the anastylosis, the metal shelter over the tomb began to collapse under the weight of the earth embankment. In response to this danger, the embankment above the chambers was fully removed, and the metal supports were replaced with a massive concrete shell in 2015. Some may quibble with the aesthetic effect of this incongruous and heavy-handed intervention, but more importantly there are signs that it is damaging and further endangering the monument. The heavy concrete structure is founded high in the em-

4 Information about these events and other activities related to the monument are kept in the archive of the Bulgarian National Institute for Immovable Cultural Heritage.

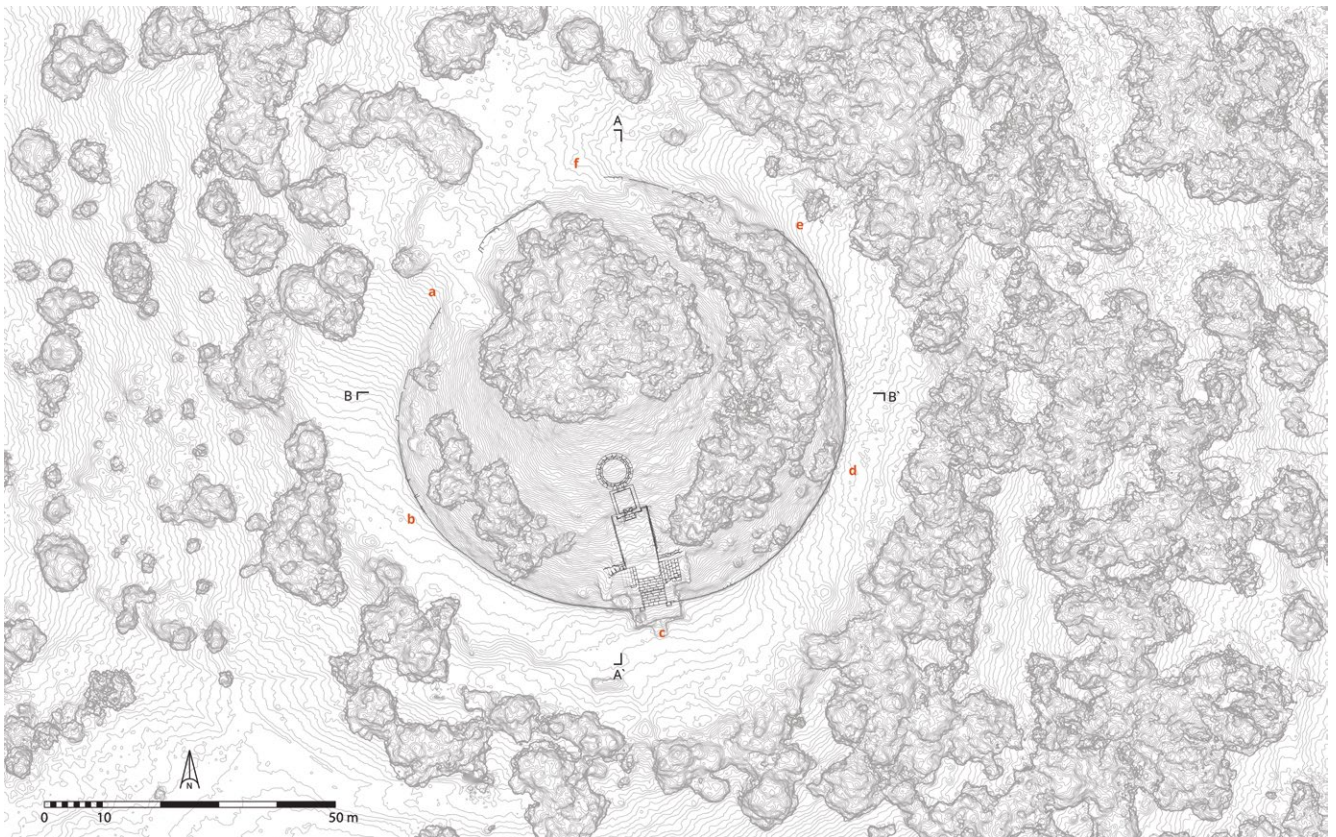
5 The results of these excavations have been published only as brief reports and popular pamphlets, e. g., Kitov 2003.



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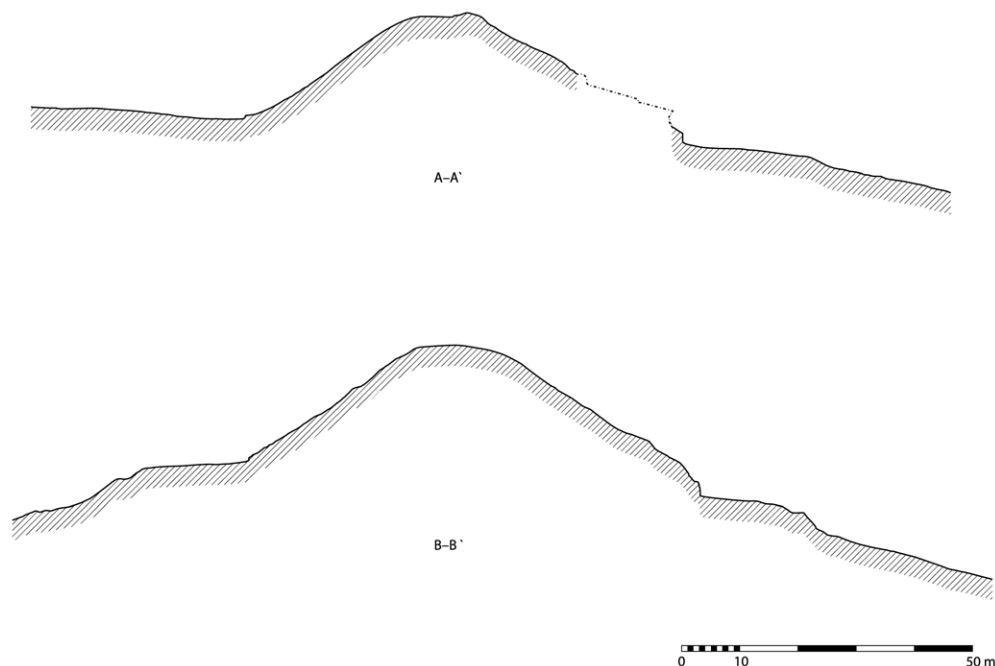
bankment, just a few centimetres away from the stone walls of the chambers, and the resulting thrust is crushing the surviving architecture.

5 Prompted by the rapidly deteriorating condition of the monument, in 2016 the author of this article started recording structures visible on the ground and disiecta membra preserved at the site and in museum collections. As a part of this project, the architectural elements buried south of the tomb were re-excavated and documented in 2018. During a brief excavation campaign in 2019, two trenches were opened on the east and west sides of the mound, in order to clarify the structure and building techniques of the retaining wall.

6 The first part of this article presents the data collected between 2016 and 2020, and offers a preliminary reconstruction of the tomb. The second and the third parts

Fig. 2: 3: Aerial views of Chetinyova Mogila, Starosel (February 2017)

Fig. 4: Plan of Chetinyova Mogila (scale 1 : 1300)



5

Fig. 5: Sections of Chetinyova Mogila (scale 1 : 1300)

discuss the architectural design of the monument, and its historical context. Photogrammetric models of architectural elements are presented in a digital supplement, available via <https://doi.org/10.34780/d5bi-h53t>.

## Evidence and Reconstruction

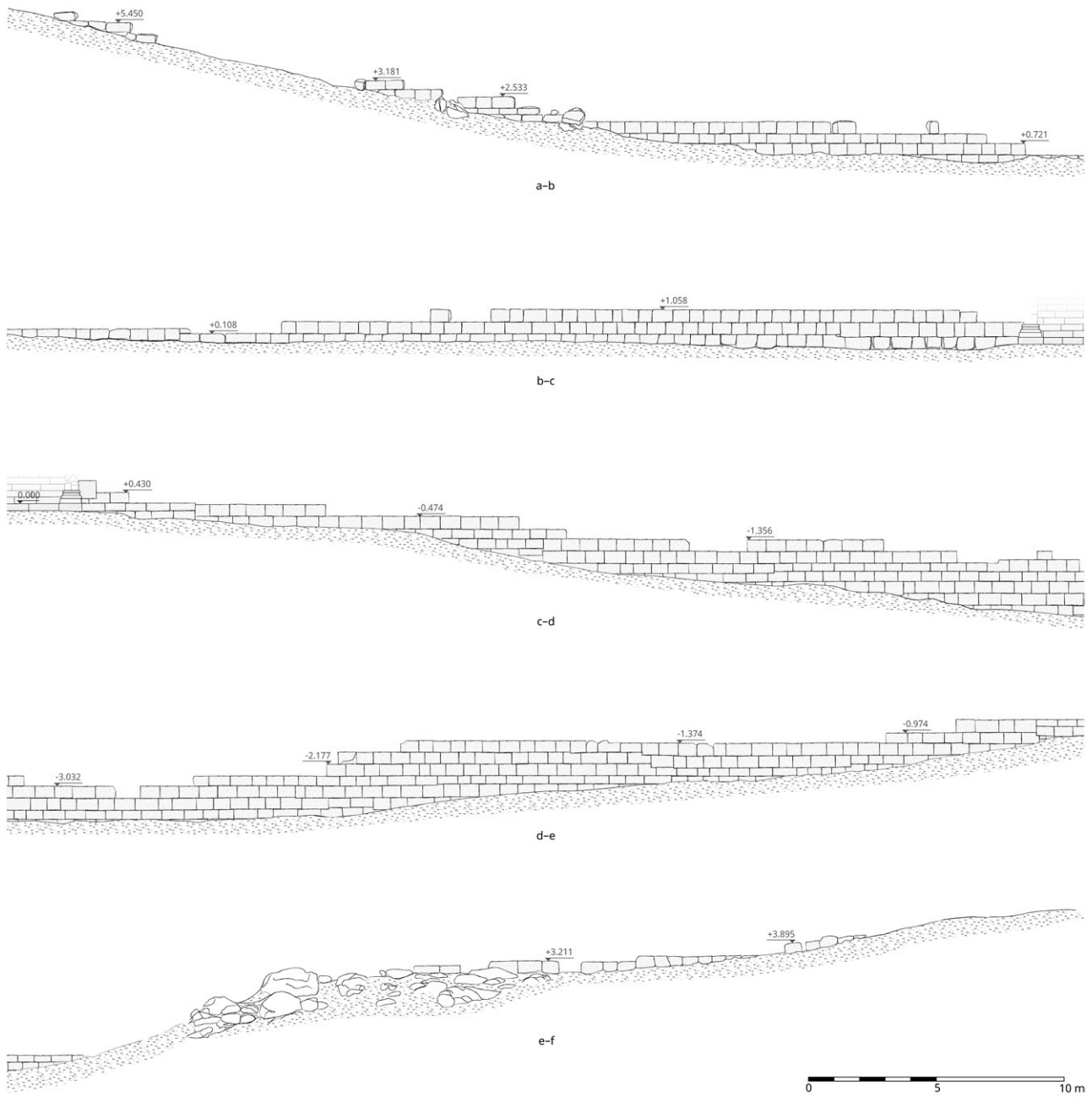
### Mound and Retaining Wall

7 Chetinyova Mogila was built ca. 500 m above sea level, on a south-sloping ridge descending from the Sredna Gora mountain. The mound, with an irregular elliptical plan and a diameter of 73–79 m, is raised upon fairly uneven terrain (Fig. 2. 3. 4. 5). It reaches 25.5 m in height, measured from the lowest point in its east periphery, and its original height may have been above 30 m<sup>6</sup>.

8 A massive wall of granite blocks encompasses the mound from the west, south, and east. The wall was an imposing part of the monument's appearance, but also a practical necessity to retain the tumulus fill on the sloping ridge, especially from the east. Along most of its length, the wall is preserved between one and seven courses high (Fig. 6). The digging of the tunnel to the tholos in 2009 has completely destroyed a section of it at the north-west; and there is a gap in a steep stretch from the north-east side, where the wall probably continued over a rocky outcrop. It is uncertain if the wall completed a full circle in the north of the mound, where the terrain reaches its highest level and the embankment did not require reinforcement. At least some of the blocks in this section have been moved in Late Antiquity or later periods, in order to construct a water basin, and probably other structures linked to it.

9 The face of the wall is built of pseudoisodomic ashlar. Behind it, there is an inner layer of roughly hewn granite blocks, followed in depth by a layer of unworked

6 The current shape and height of the mound reflect the erosion of the fill over time, and recent digs with heavy machinery. Its estimated original height is between ca. 30 and ca. 40 m, based respectively on the current slope, ca. 30°, and the maximum potential angle of repose, ca. 40–45°.



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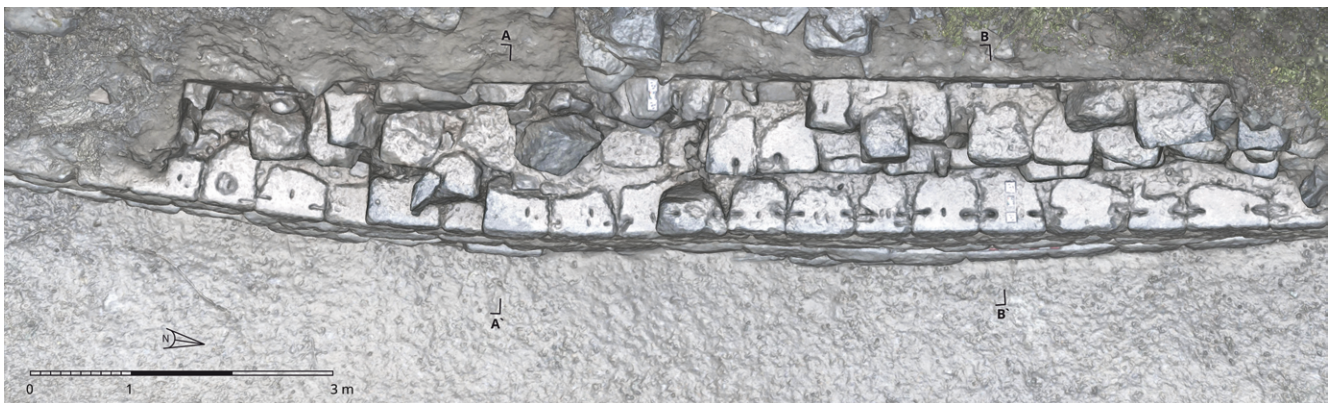
stone. These internal layers of masonry are now exposed and most visible in areas on the east side of the mound, above the currently preserved face (Fig. 7). The wall may be thicker here to compensate for greater outward thrust on the steeper slope, but only further investigation would show if the inner layers are less robust or entirely omitted elsewhere. Surface clearing of the preserved wall in the east revealed that the roughly hewn blocks of the second layer are set in courses corresponding to the courses of the outer face (Fig. 8). However, the two layers do not bond. The gaps between them are packed with earth and rubble.

10 Within the face of the wall, the height of the different courses varies between 0.23 and 0.57 m, and occasionally changes within the same course. Such changes were achieved through rectangular beds cut in the upper edges of the blocks (Fig. 9). The purpose of these offsets may be to add strength by increasing the joint surface and to reduce possible horizontal shifts between courses. Or, the variations in the height of the courses may be the result of multiple teams of masons working in parallel in different

Fig. 6: Starosel. Retaining wall, unfolded elevation of preserved face (scale 1 : 250)



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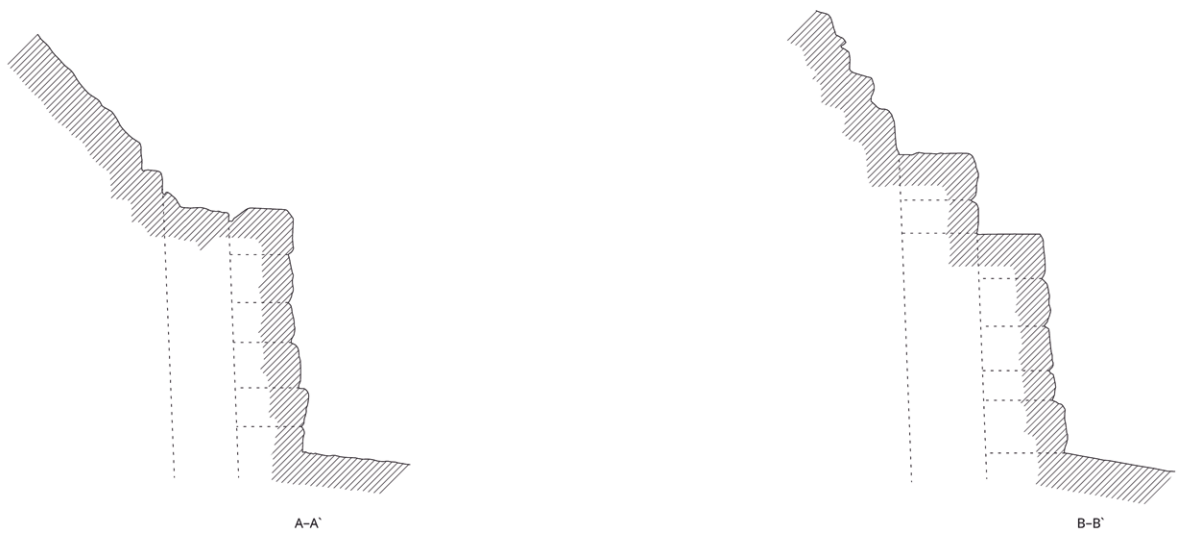


Fig. 7: Starosel. The retaining wall from the east before excavation in 2019

Fig. 8: Starosel. Surface-cleaning trench on the top of the retaining wall, orthographic view from above and sections (scale 1 : 75)



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11



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Fig. 9–12: Starosel. Details of the retaining wall

stretches of the wall. The cuttings that negotiate the changes are not distributed in regular intervals and do not show any clear pattern as one would expect in such a case, but this may be because in most of its length the wall is preserved only in its lower courses.

11 The length of the blocks varies significantly, from 0.36 to 1.40 m. Thickness, where it can be measured, is between ca. 0.60 m and 0.90 m. Most blocks are placed as stretchers, with their long side parallel to the course. A trench made in 2019 proved that at least some of the blocks with narrow faces seen in the wall were placed as headers, linking the face and the inner masonry. Such blocks are relatively rare and their distribution within the preserved part of the wall does not seem to form a regular pattern. The occasional headers may have been placed in order to strengthen the construction at particular spots. The inclination of the wall towards the slope, achieved by a slight inset of the face courses, added further stability<sup>7</sup>.

12 The blocks of the wall have quarry faces. Protrusions on split surface were cut down using a point chisel in line. Occasionally, faces preserve cuttings from wedges used for stone extraction – a sequence of ca. 0.11-m-long openings, oriented lengthwise or across the face (Fig. 10). The edges along the faces are bevelled at ca. 45° (Fig. 11). The backs and lateral sides are left unworked apart from narrow bands of smoothed contact surface along the front edges. The tops and bottoms are well smoothed. Nearly all observable blocks from the face have pry holes and clamp cuttings. The clamps and

7 The inclination is not consistent, which is partly due to secondary deformations. For inclination of retaining walls, see Orlandos 1966, 125 f.

their lead sealing have been thoroughly removed. II-clamps, 0.26–0.30 m long, are most common (Fig. 12) but one can also find beds for bird-tail clamps with dowels. Multiple blocks in the east trench show traces of having been reworked: material was removed from their top surface, to reduce the height, and this partially obliterated the existing clamp cuttings. Most probably, such blocks were initially placed elsewhere in the wall, where they were clamped or prepared for clamping. Then for some reason they were taken off the course, reworked, and placed in a shorter course.

### The Propylon

13 The tomb was entered from the south through a 4.05-m-wide stair passage in the retaining wall, flanked by antae (Fig. 13. 14). The architectural configuration of the propylon is particularly difficult to reconstruct because of the state of preservation, and lack of information recorded during Kitov's excavations. When excavated, this entrance was blocked by a wall, built upon the lowest step of the stairway (Fig. 15. 16). This wall sealing up the stair was a continuation of the peripheral retaining wall, even continuing the appearance of its masonry. It was built with care, with precisely-cut and well-joined blocks, adjusted with a pry, as the cuttings on the step's surface show. To bond this blocking wall with the retaining wall and seal the passage, the antae were dismantled. The bases of the antae, which are of Attic form, and one capital, all made of volcanic tuff, were found on the stairs behind the wall (Fig. 17. 18). Given the effort required to rework the propylon this way, one might think that the purpose of the wall was not simply to block the entrance – which could have been done much more easily – but also to conceal it. Against this interpretation is the fact that the plinths below the anta bases were left in situ, in front of the wall.

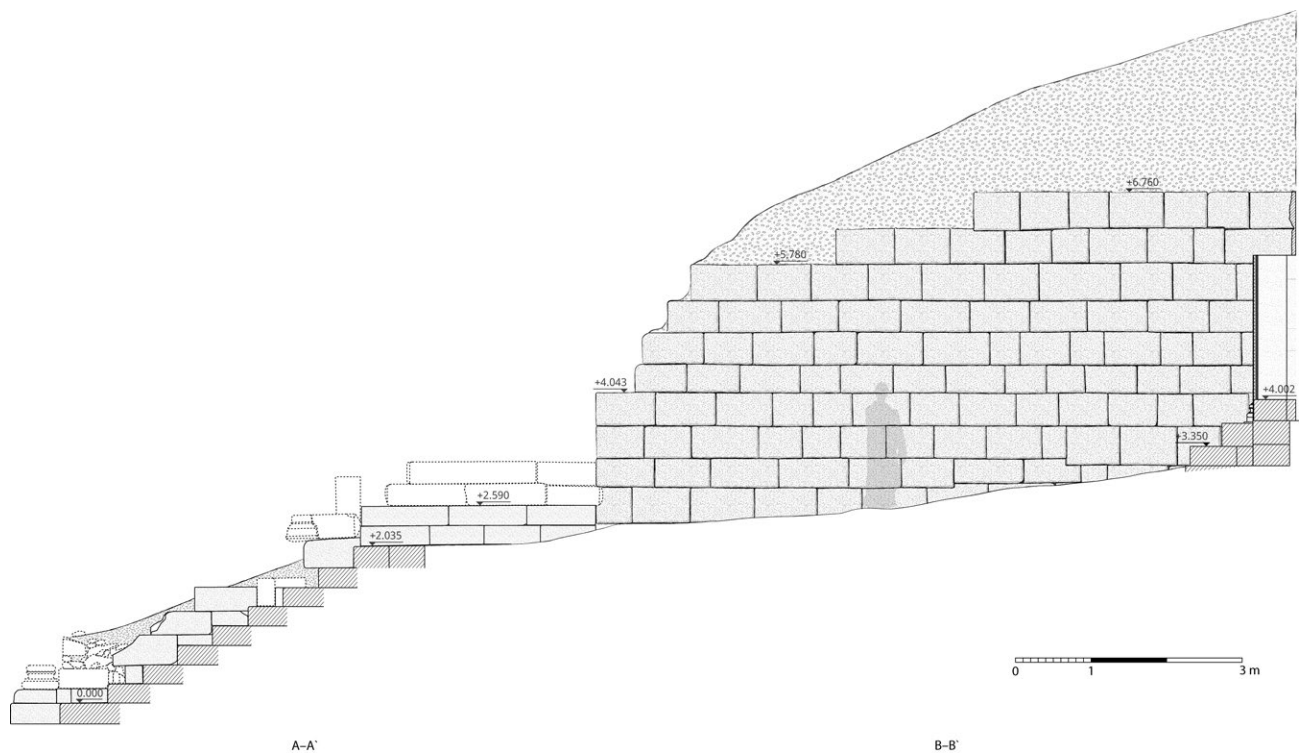
14 A flight of nine stairs with a total rise of 2.32 m climbs up from the entrance of the propylon to a platform in front of the dromos of the tomb. The sides of the stairway were lined with walls made of granite ashlars that hid the embankment behind. Only a few blocks from the lower courses of the side walls are preserved in their original places, while others, apparently not belonging there, were placed after the 2000 excavation.

15 The platform above the main stairway has a rectangular plan (ca. 3.15 m × 4.18 m). To the north, it leads into the dromos of the tomb, while to the east and west it abuts two symmetrical stairways. The east stairway, which is fully preserved, has five steps rising 1.24 m. Of the west stairway only the lower two steps are original; the upper two have been added after the 2000 excavation. A cutting in the wall from the north made to accommodate the fifth, uppermost step, shows that the west stairway terminated at about the same height as the east one. The two branching stairways end unexpectedly with small platforms in the embankment, at 3.25 m above the base level (the top surface of the lower step of the propylon), in front of the foot of the retaining walls of the dromos.

16 Because it was intentionally disassembled and reworked in antiquity, reconstructing the original appearance of the propylon is conjectural. Was this part of the monument actually completed? While I assume the propylon was finished and then dismantled in order to block the entrance with a wall, it is conceivable that blocks for this area were merely stockpiled and abandoned on the stairs, and the entrance was closed before completing the project. In support of the latter interpretation, it should be noted that only one anta capital was found, and it looks unfinished (Fig. 17). Its top surface was left very rough, and there is also an unworked lump protruding from its back, which would have prevented the adjacent wall block to the north from being set. No fragments of columns were identified, nor an entablature that could belong to the propylon. Rather than a part of a colonnade that supports an entablature, the antae were meant as free-standing decoration of the walls flanking the stairway, as shown on the hypothetical reconstruction (Fig. 19). The prototype for the design of stairs flanked



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Fig. 13. 14: Starosel. Plan and section of the propylon and the dromos, state in 2016. Dotted lines show elements moved to their present locations after the discovery of the tomb in 2000 (scale 1 : 100)



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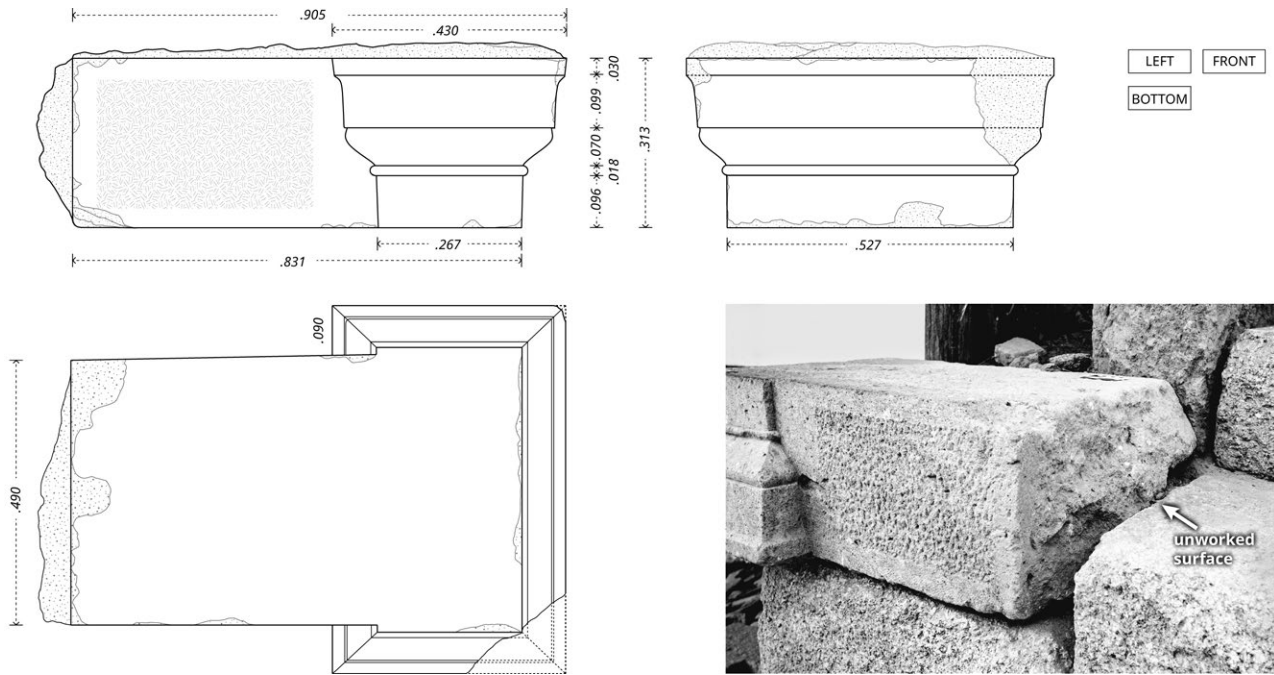
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Fig. 15. 16: Starosel. The propylon during the 2000 excavations, before and after removing the walls that block the stairway and the dromos

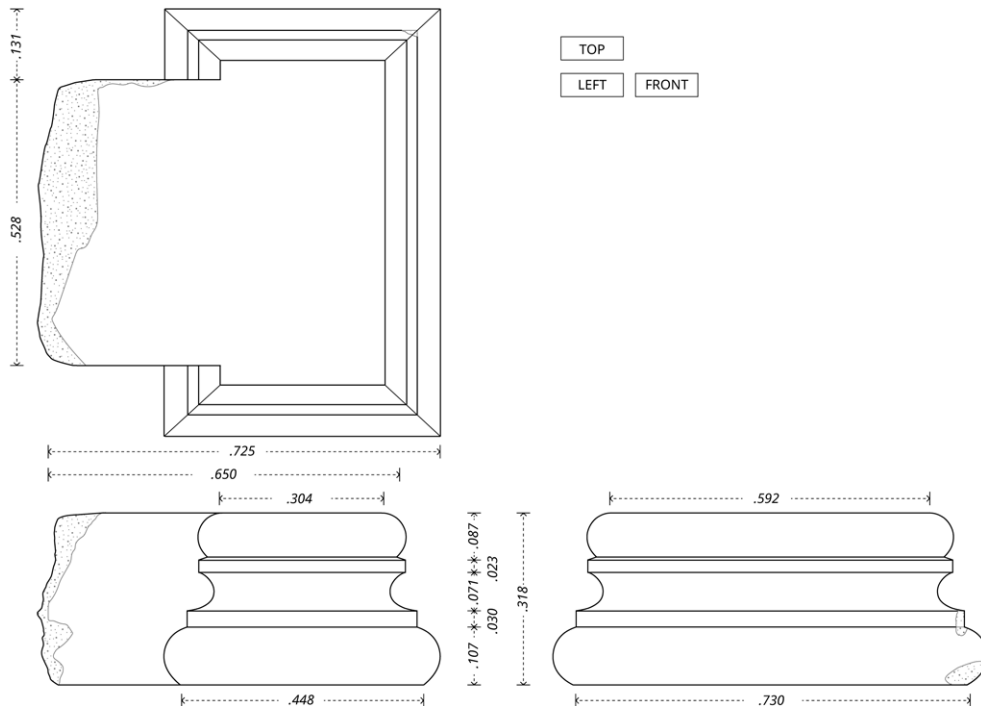
by antae seems to derive not from buildings, but altars, where an in-antis design was prevalent long before temples were built on podia with spur walls<sup>8</sup>.

17 The branching stairways pose further difficulties to the reconstruction. Currently they terminate in the embankment above the destructions of the retaining wall. It is hard to imagine that any substantial structures could have been planted here at the edge of the mound. The most likely purpose of these stairways is to connect the propylon with a terrace, supported by the retaining wall. This terrace could have encircled the mound, forming an elevated pathway around the tomb. Were the terrace and the branching stairs designed for processions that surrounded the mound and united in the open space in front of the tomb?

8 Cf. Ohnesorg 2005, 197 fig. 103.



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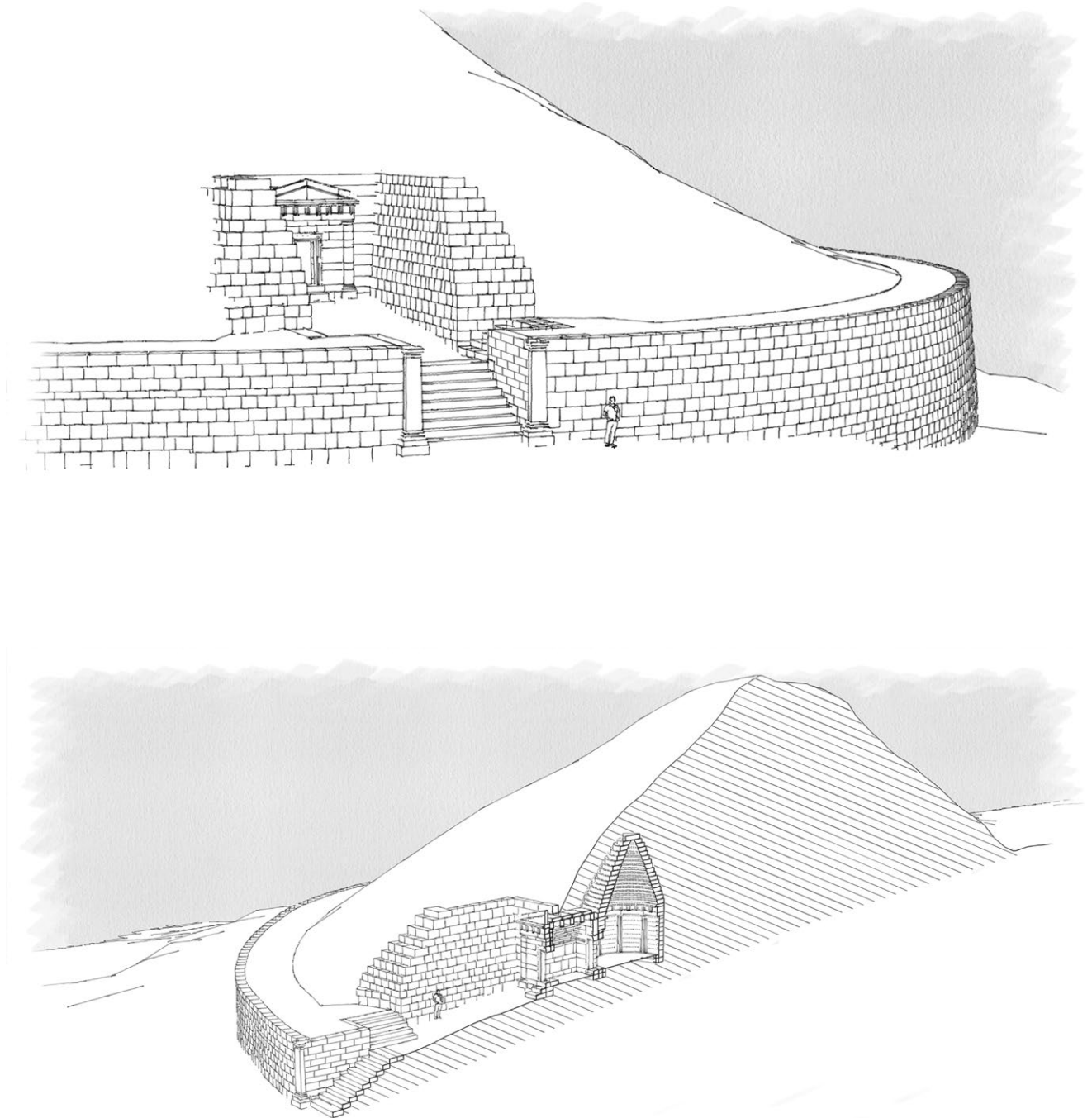
### The Dromos

18 Two retaining walls form an open corridor, leading from the propylon north to the antechamber's façade (Fig. 20). The material and technique of the dromos walls are very similar to those of the retaining wall of the mound. Here, however, the walls have a pronounced backward inclination, starting from the fifth visible course. The inclination is achieved by using wedge-shaped blocks, tapering towards the back.

19 The dromos is 9/9.60 m long (west/east) and 5.60/6.07 m wide (north/south). It is asymmetrically positioned in relation to the propylon: on the east side the dromos wall and the lower step of the lateral stairway are aligned, and on the west side the stairway projects 1.5 m (approximately three steps) in front of the wall. This asymmetry

Fig. 17: Starosel. Anta capital from the propylon (scale 1 : 14)

Fig. 18: Starosel. Anta base from the propylon (scale 1 : 14)



19

Fig. 19: Starosel. Hypothetical reconstruction of the retaining wall and the propylon

is further emphasized by the fact that the walls of the dromos are not parallel. Avoiding perfect symmetry seems to have been a deliberate effort in the planning of the tomb: this is particularly clear by the fact that starting from the tholos, the axis of every successive element – the antechamber, dromos, and propylon – is rotated by 2–4° clockwise in relation to the previous element.

20 The dromos was found filled with earth and stones. The excavators removed this fill down to the current floor level, which in places may be lower than the original floor level. The current floor of the dromos is an uneven ramp of packed dirt, rising about 1 m from the central platform of the propylon to the foot of the tomb façade.



20

### The Tomb Façade

21 The current state of the tomb façade is nearly the same as at the time of its discovery: it is preserved up to the seventh course, at the height of the door jambs, below the lintel (Fig. 20, 21). Many of the missing architectural elements were rediscovered in 2018 south of the tomb, where Kitov's expedition had buried them 18 years earlier. A few further fragments from a lintel, pediment, and geison, were identified among the materials stored in the community centre at Starosel, and in the National Archaeological Museum in Sofia.

22 The façade is built of tuff ashlars and its lower portion is a constructive part of the antechamber (Fig. 22, 67). It is framed on either side by narrow granite walls, built in the same style as the long retaining walls of the dromos. Also made of granite is the lowest currently visible course of the façade, which is part of the foundations of the antechamber. The height (0.88 m) from the bottom of this course to the door-sill is spanned with two steps made of five tuff blocks, placed against the façade wall. The door-sill, a part of the third course of the façade, works as a third step. On both sides of the door-sill the wall is composed of two large blocks ending with Ionic pilaster-bases of the Attic type (Fig. 23).

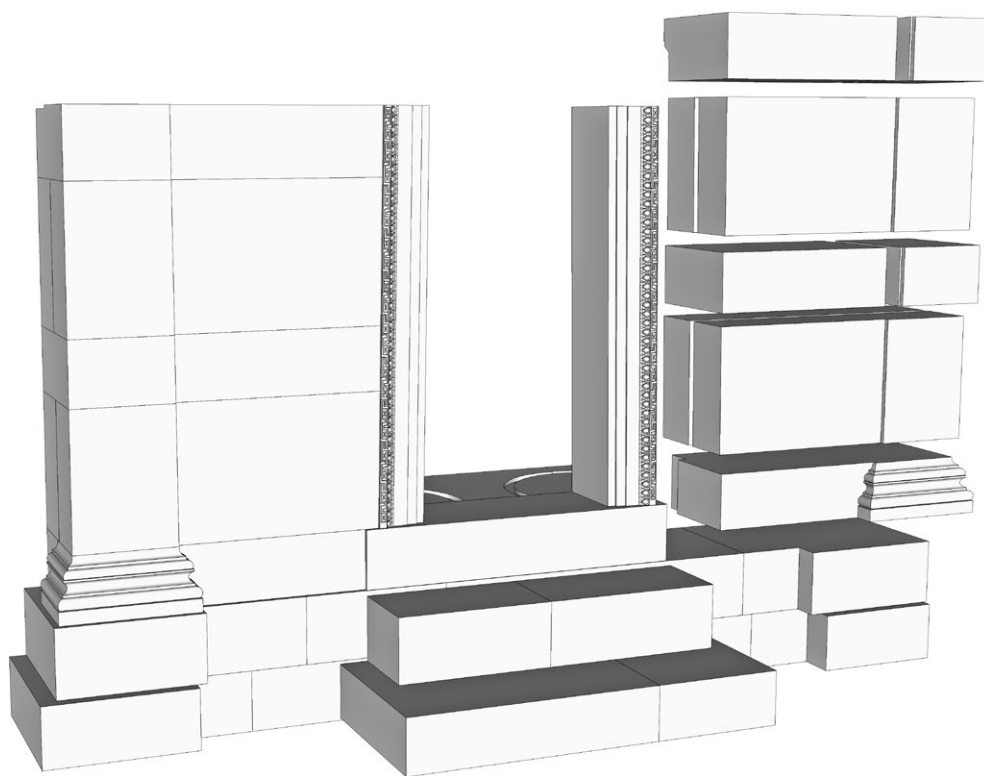
23 It is unclear at what height the dromos ramp met the façade originally but it is likely that this level was only slightly above the one currently exposed. The two steps, the lower of which is on the same level as the granite course, are carefully finished, with drafted margins along the edges, which would be unnecessary if they were not visible.

24 Above the third course, up to the preserved height, the façade wall consists of four alternating orthostate and binder courses in height proportion 2.1–2.2 : 1. The orthostates are placed in a double row, facing each other with unfinished surfaces. A single orthostate slab forms the entire length of the wall on each side of the entrance (1.42 m), including the pilasters. In the binder courses that top the orthostates, the pilasters are made of separate blocks. The thickness of the façade wall is 0.556 m. The pilasters project only 0.025 m from the wall and are decorative in function.

Fig. 20: Starosel. The dromos and the façade during the 2000 excavations



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Fig. 21: Starosel. The façade, November 2016

Fig. 22: Starosel. Exploded elevation of the façade, preserved courses

### Door

25 The façade had an Ionic doorframe, of which the left jamb is the only element found in situ. The right jamb, found fallen on its back towards the interior of the chamber, has been put back on its place and propped up with metal spits. The clear height of the doorframe was 1.91 m, and the inclination of the intact left jamb is 0.55°. If one fits the restored right jamb tightly to the side of the wall, the clear width would be ca. 0.91 m at the top and ca. 0.96 m at the bottom. The jambs' faces have three plain

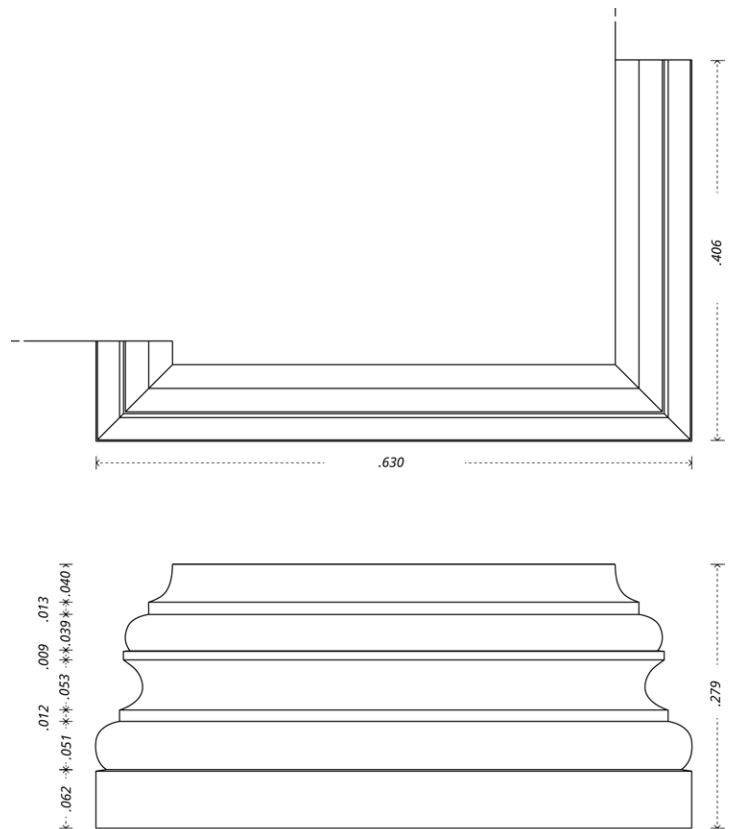
fasciae, astragal and ovolo mouldings with carved bead-and-reel and egg-and-darts, and a crown fascia with a painted meander (Fig. 24).

26 The lintel was composed of two parts – a richly decorated fronter, and a backer, which held the pivots of a two-leaved door. The fronter can be reconstructed almost entirely from six fragments (Fig. 25, 26; <https://arachne.dainst.org/entity/7075300>). The decoration on its face reflects the mouldings of the jambs. Above these mouldings is a hyperthyron with a slightly larger astragal-ovolo profile, crowned accordingly, and crowned by a geison with a plain face. On either side the geison was crowned with horn finials (only the left horn is preserved). Reserved in relief on the top of the geison are four sculptured protrusions. Two of them have their faces carved in the shape of felines crouching on the right (Fig. 27). The other two are completely destroyed. But the decoration can still be reconstructed with the help of the nearly identical and better-preserved lintel of the tholos door (cf. Fig. 78, 79, 80). Four crouching lions decorate the top of this lintel, organized in antithetical pairs, each pair facing a small spool.

27 The front block of the lintel rested on the jambs only, without extending above the adjacent wall blocks. Its lower surface preserves traces of the jambs, which give us the exact width of the clear opening at the top of the doorframe, 0.906 m. The back side of the top has been cut out, probably to reduce the weight of the block. Two cuttings on the top with traces of iron indicate that the block was fastened with  $\Pi$ -clamps to the lintel backer. This must have been done in order to secure the backer in place because the latter bore additional thrust from holding the upper pivots of the door leaves. Due to the cutout at the back of the lintel, clamping the two blocks together required a peculiar solution. The clamps must have been about 0.40 m long, 0.10–0.15 m longer than the usual for the monument, and they had to span a hollow in the wall formed by the recessed back edge of the lintel.

28 Two fragments of the lintel backer are identifiable because they preserve the circular sockets for the pivots of the door leaves (Fig. 28; <https://arachne.dainst.org/entity/7075301>). The backer was longer than the fronter, extending beyond the jambs, bonding more completely with the wall coursing. Its total length can be estimated to 1.87 m based on the positions of the pivot sockets.

29 The fragmented remains of the stone door were recorded as photogrammetric models and assembled digitally. The left leaf is largely preserved in 12 pieces (Fig. 29;



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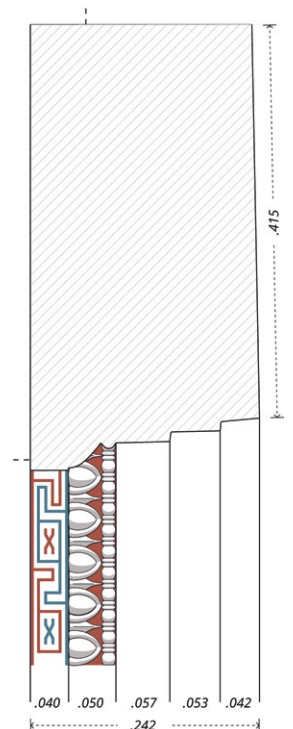
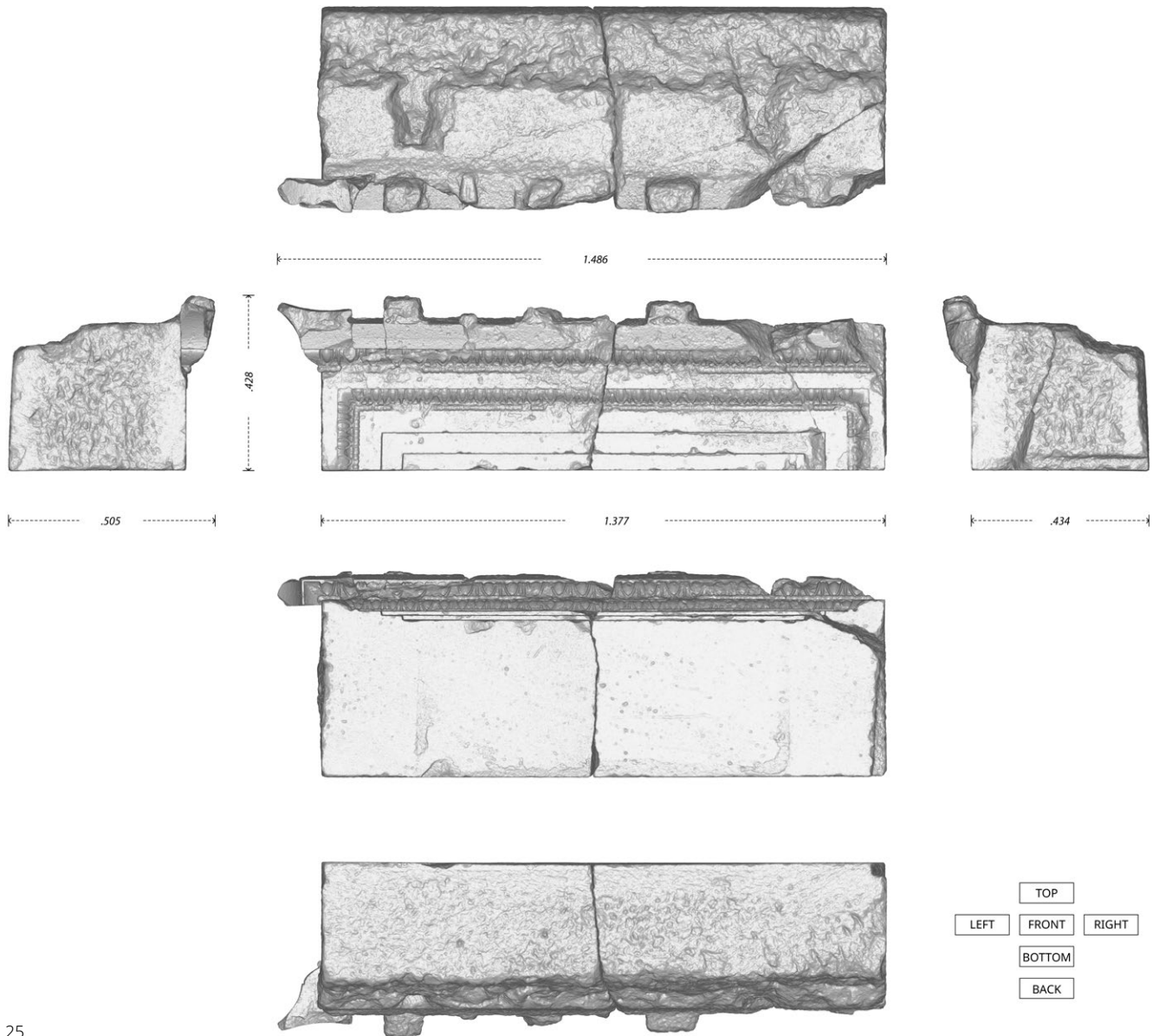
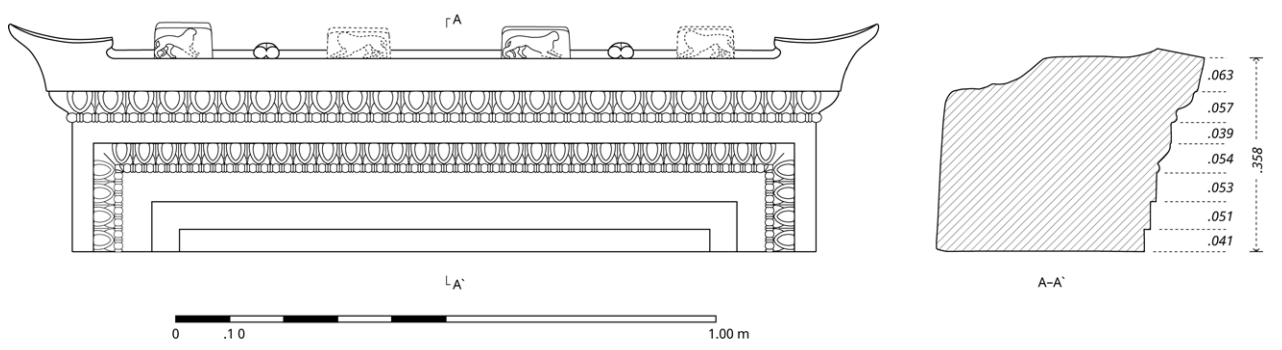


Fig. 23: Starosel. Pilaster base of the façade (scale 1 : 8)

Fig. 24: Starosel. Left door-jamb of the façade (drawing scale 1 : 8)



25



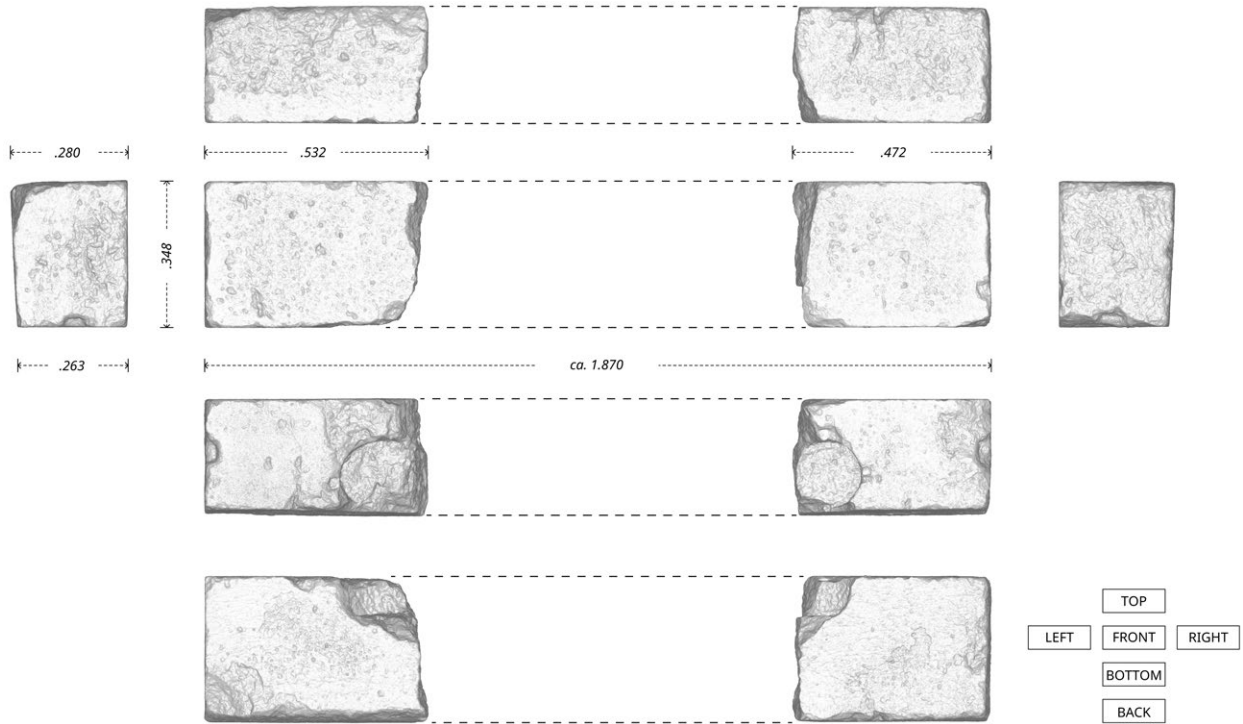
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Fig. 25: Starosel. Lintel from the façade, orthographic views (scale 1 : 16)

Fig. 26: Starosel. Lintel from the façade, reconstruction (scale 1 : 14)



27



28

<https://arachne.dainst.org/entity/7075288>). Only two small fragments can be attributed to the right leaf, and a handful of small fragments from the doors cannot be attributed specifically to the left or right leaf.

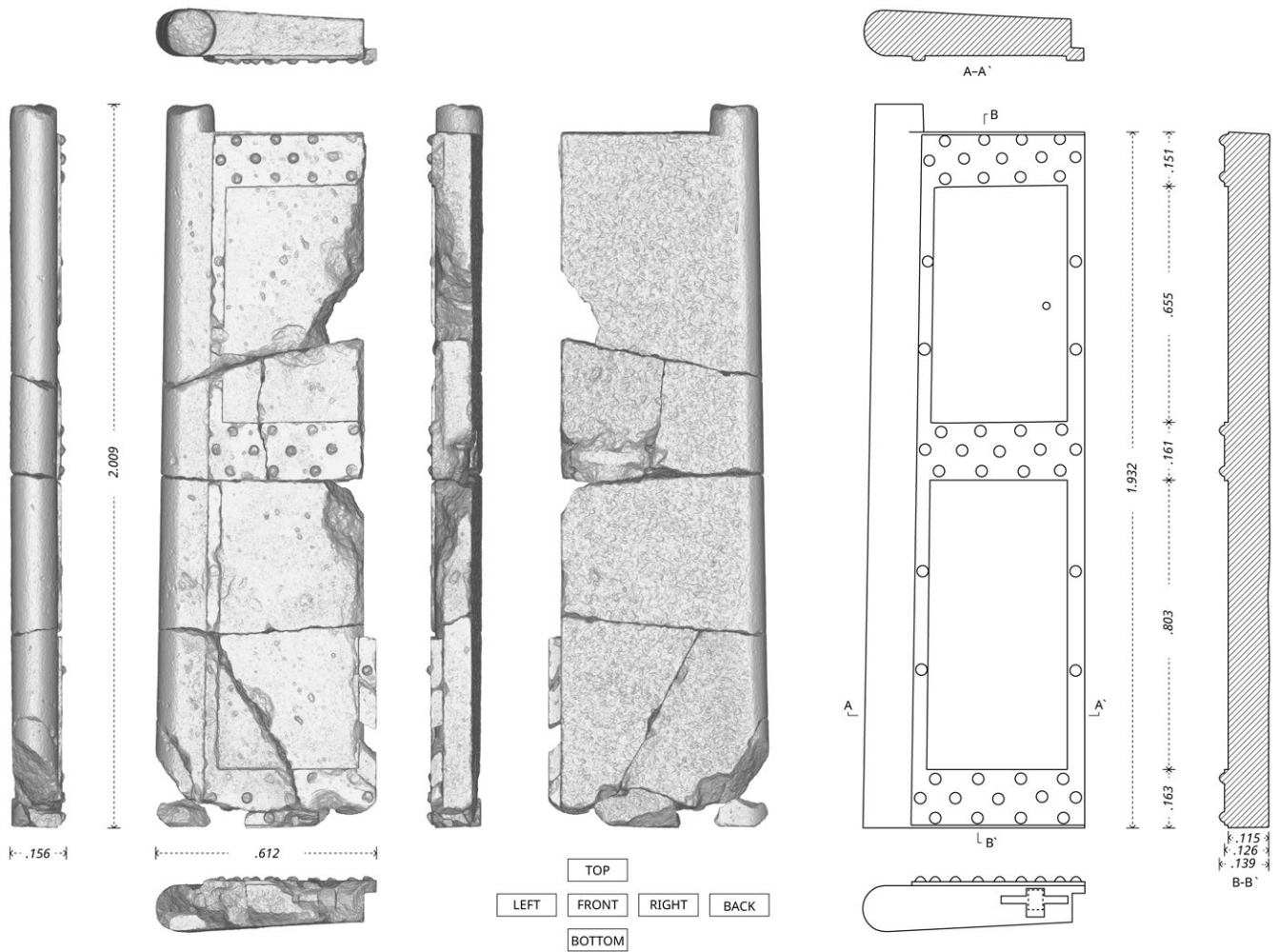
30 The door leaves were made of the same volcanic tuff as the rest of the façade. The face of the restored leaf is sculptured and its surface is polished. The back is plain and more simply worked. It is oblique to the front, and hence, in section, the door leaf tapers from ca. 0.126 m at the pivot to ca. 0.103 m at the edge. This tapering is known in other stone tomb doors from Caria, Thrace, and Macedonia<sup>9</sup>, and was no doubt intended to reduce the weight cantilevered from the pivot. The left leaf has the door astragal, indicating that the right leaf was the ›active‹ leaf, which opened and closed the door.

31 The door's external design is a skeuomorph of a wooden door. The leaves are carved in relief to represent a door with a top, mid, and bottom rail, each with 13 bosses, calling to mind nail heads. The vertical proportions of this decoration are based on the division of the total height of the leaf in twelve equal parts. Thus, the height of the lower panel is five twelfths and the height of the upper panel is four twelfths of the total height; and each of the three horizontal rails is high as one twelfth, if we include the ca. 0.7 mm ledges at the top and the bottom.

Fig. 27: Starosel. Preserved feline figures on the top of the façade lintel

Fig. 28: Starosel. Lintel backer, orthographic views (scale 1 : 18)

9 Heuzey – Daumier 1876, pl. 21; Jeppesen 2000, fig. 28, 3. 4. 11; Rusev – Stoyanova 2012, 123 fig. 80.



29

Fig. 29: Starosel. Left door leaf, antechamber. Orthographic views and reconstruction (scale 1 : 20)

32 At the top, the door leaves rotated on stone pivots (d. 0.13 m, left leaf), set into sockets (d. 0.16 m) in the lintel backer. Cuttings at the edges of the sockets show that a soft metal sleeve was inserted to reduce friction between the two stone elements. Lead preserved in one of the cuttings proves the original material (Fig. 30). At the bottom, the door leaf has a flat ›heel‹ with traces of rust, suggesting it stepped on an iron axle. The axles were fixed, or revolved in sockets (max d. left 0.172 m, max d. right 0.168 m, depth 0.087 m) cut in the threshold (Fig. 31). The exact type of mechanism used for the movement of the axles remains unclear but a number of documented examples from Macedonian tombs provide options<sup>10</sup>.



30

Fig. 30: Starosel. Remains of a lead sleeve in the right socket of the lintel backer

33 Wheels were attached to the bottoms of the door leaves to relieve weight cantilevered from the pivot. These wheels and their axles have been lost but a fragment from the left leaf partially preserves the socket in which the wheel revolved, and a cutting for the iron clamp, which served as an axle (Fig. 32, 33). The wheels moved in two arc-shaped tracks (depth 0.036 m) cut in the threshold. Although currently there are no traces of metal in these slots, they were likely also inlaid with lead to provide a smooth surface for the wheels. Doors supported with wheels on tracks were primarily a feature of colossal temple doors. Such mechanisms appear in no other tombs in Thrace, where doors are generally smaller. In Macedonia, where marble tomb doors reached monumental sizes, rolling mechanisms are known but still not common. In the tombs

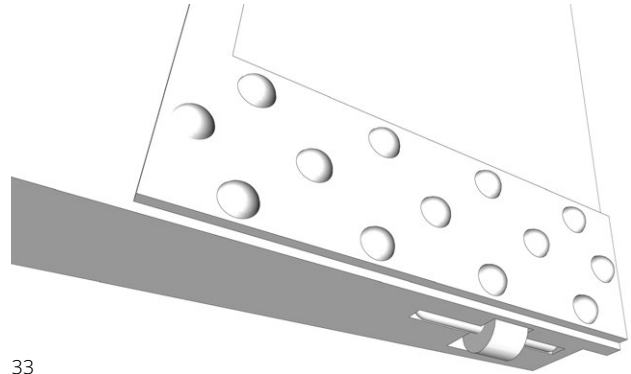


31

Fig. 31: Starosel. The threshold of the antechamber



32



33

Fig. 32: Starosel. Fragment of the antechamber door preserving a socket for a wheel and a cutting for an iron clamp for its attachment

Fig. 33: Starosel. Reconstruction of the rolling mechanism of the antechamber door

at Langaza<sup>11</sup> and *Agia Paraskevi*<sup>12</sup> marble doors were equipped with bronze wheels on iron axles, moving on lead rails embedded in the threshold.

34 The antechamber door had a simple locking mechanism, consisting of a latch mounted on the back of the left leaf, and a keyhole above the latch. The metal mechanism is lost but the stone leaf preserves the cuttings where it was attached (Fig. 34. 35). A flat bedding, cut into the stone surface, and covered with rust, shows that the door was locked with an iron bolt, ca. 0.237 m long and ca. 0.038 m wide, that slid horizontally. The bolt was held into its bedding by a plate, fastened to the stone with four dowels. The keyhole (diam. 0.02 m) is partially preserved, located above the bedding for the latch. To move the bolt in order to lock or unlock the door, one had to insert a crank-shaped key with a ca. 0.40-m-long shaft, and to reach the latch. Similar types of locks, known as ›Homeric‹ locks, have been attested in Macedonian tombs<sup>13</sup>.

35 The left door-leaf also had a simple stopper at the bottom. The evidence for this is a rectangular cutting (0.024 m × 0.055 m, depth 0.036 m) in the threshold, located at 0.08 m from the southern edge of the threshold, on the left of the arch-shaped slot for the wheel (Fig. 36). When the left leaf was fully closed, a bolt or a peg could have been

11 Macridy 1911, 205. 208 fig. 20 a.

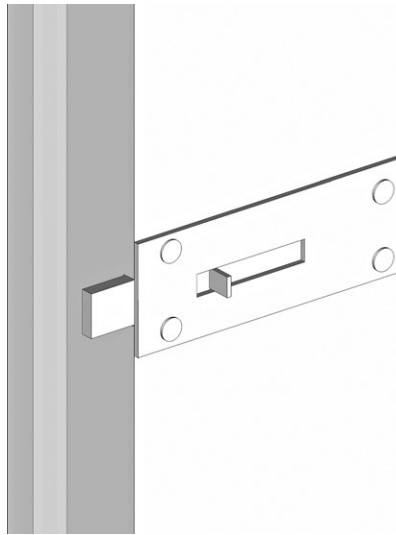
12 Sismanides 1990, 84 f. fig. 19 pl. 20.

13 Haddad 2016, 56–60, including an explanation and illustrations of the ›Homeric‹ lock.



34

Fig. 34: Starosel. Cuttings for attaching a latch on a fragment from the left leaf of the antechamber door



35

Fig. 35: Starosel. Reconstruction of the locking mechanism of the antechamber door



36

Fig. 36: Starosel. Detail of the threshold, showing the track for the wheel and the cutting for fastener of the left door leaf

inserted into this cutting, thus blocking the leaf. Due to the fragmented state of the leaf, it remains unclear how the bolt was attached to it, or whether it was attached at all, or simply inserted into the cutting. In some of the *Vergina* tombs, a floor bolt mounted with a bracket to one of the door leaves, could have been raised and dropped by a rope that passed through a hole in the door<sup>14</sup>. An opening for a rope is absent on the left door leaf from Starosel, meaning that the bolt of the ›passive‹ door could only be operated from the inside, as on many modern doors<sup>15</sup>.

### Upper Façade Wall and Entablature

<sup>36</sup> The eighth façade course, to which the lintel belonged, was ca. 0.35 m high. This figure is obtained from the heights of the two lintel blocks and two blocks from the interior façade wall, preserved in place at the corners with the antechamber walls. The ninth course, 0.27 m in height, is reconstructed based on a fragmentary block, preserving a face with projection of the pilaster. This block stood on the left side of the façade, clamped to a block of the second course of the corbel vault behind it. The pilaster-capitals (Fig. 37. 61; <https://arachne.dainst.org/entity/7075304>; <https://arachne.dainst.org/entity/7075305>) belong to the next course above, 0.22 m in height. They were clamped to both the adjacent wall blocks and to the corbels of the antechamber vault behind them.

<sup>37</sup> A single block of the architrave has survived (Fig. 38, block FA-1; <https://arachne.dainst.org/entity/7075290>). The block, reconstructed from two parts, is badly damaged. It was 1.495 m long, 0.295 m high, and 0.426 m thick, and stood in the right corner, as seen by a partially preserved taenia on its right face. The whole architrave must have been composed of three such blocks with total length ca. 4.25 m – a figure based on the length of the frieze course above. The taenia is 0.030 m high, and projects 0.025 m from the face. The block had three full regulae on the face, and another full regula on the right side, now only partially preserved. The regulae were 0.018 m high at the front, and 0.019 m at the back. Their bottom surface slopes down slightly and their front face is inclined backward. No guttae fragments can be certainly identified for this

14 Haddad 1995, 213 pl. 108; Haddad 2016, 56 fig. 2.

15 Similarly, the Yokuşbaşı tomb has a cutting for a stopper on the threshold, behind the left leaf, which was accessible only from the inside, see Jeppesen 2000, 170 f. fig. 28, 3. Stinson proposes the same for the Lale Tepe tomb (Stinson 2008, 40).

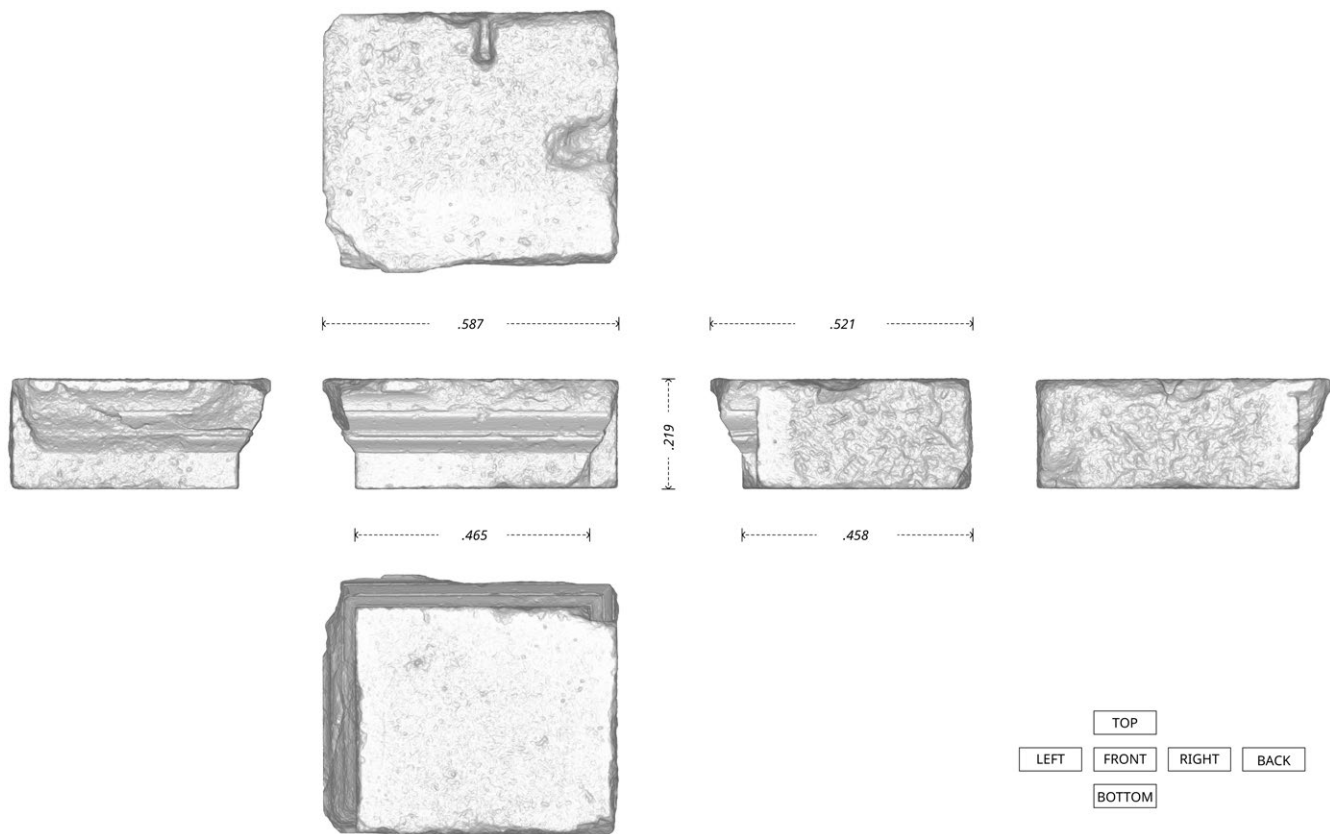


Fig. 37: Starosel. Pilaster capital from the façade, orthographic views (scale 1 : 15)

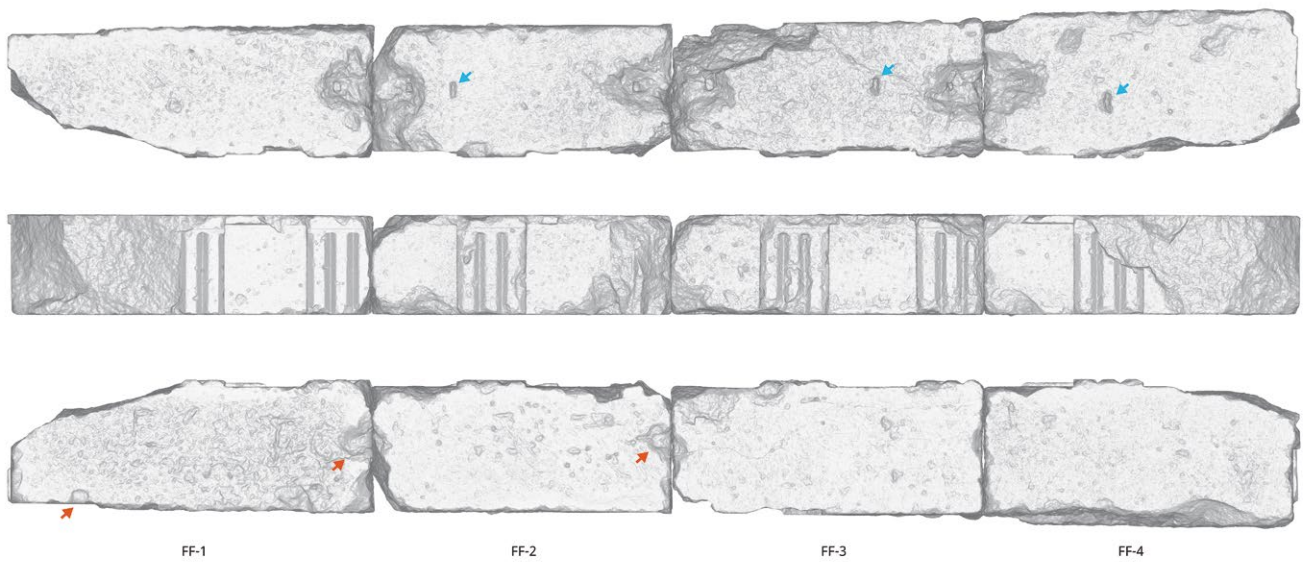
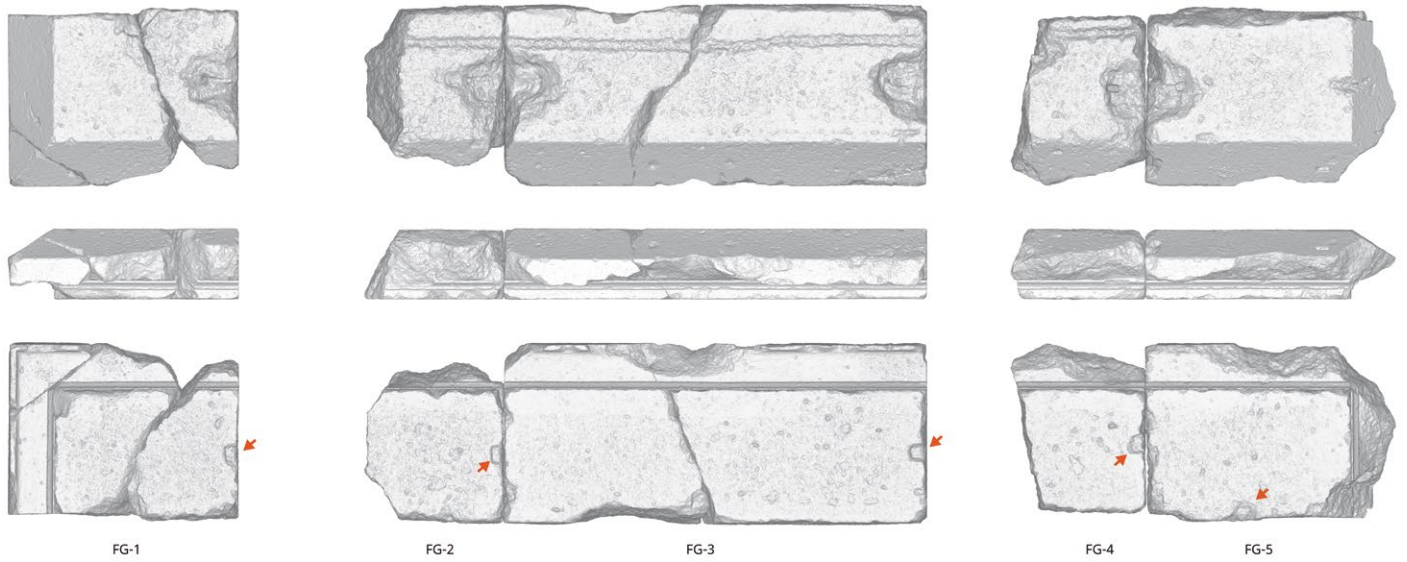
37

architrave block, but the customary pattern of six guttae below each regula was surely observed as in the tholos.

38 The frieze can be reconstructed entirely from four blocks with total length ca. 4.26 m and height 0.326 m (Fig. 38, blocks FF-1–4; 61). The exact arrangement of the blocks follows from the partially preserved sides of the two corner blocks, and the places of the clamp cuttings. The block in the left corner had three triglyphs and two metopes on its face, while each of the remaining three blocks on the right had a metope-triglyph-metope-triglyph arrangement. Both corner blocks had a corner triglyph and metope on the short sides. Thus, the whole frieze had ten metopes (0.27–0.28 m wide) and nine triglyphs (ca. 0.23 m wide), including the corner ones. The frieze blocks have a triglyph at right with a ca. 0.015 m lap, which concealed the joint with the metope to the right.

39 Parts of the corner triglyph survive only at the right corner (Fig. 39; <https://arachne.dainst.org/entity/7075299>). This detail, coupled with the preserved part of a regula on the right side of the architrave block, allows us to reconstruct the corners. Since the corner triglyphs did not differ in width, aligning the right edge of the side regula with the edge of the triglyph above brings the triglyphs on the same line with the taenia of the architrave – unlike the usual practice in Doric buildings, where the triglyph is inset from the taenia. Such an alignment requires that the regulae below the corner share a common sixth gutta (Fig. 40).

40 The bottom surface of the leftmost frieze block of the façade is inscribed with three letters – the only inscription found so far at the site (Fig. 38, block FF-1; <https://arachne.dainst.org/entity/7075296>). These are an epsilon, tau, and omicron. The letters are fairly large, 0.11–0.14 m high, carved in a roughly chiselled surface. The epsilon is offset from the letters on the right by a space roughly the length of two letters, and could be preceded by another letter; the inscription does not continue on the adjacent



TOP  
FRONT  
BOTTOM

0 1 2 m

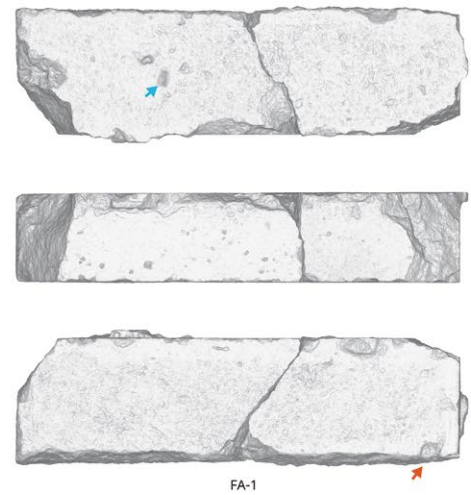
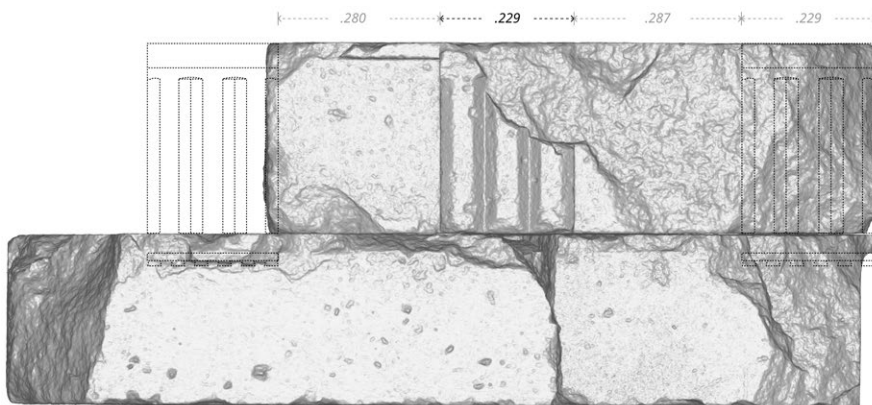


Fig. 38: Starosel. Elements of the façade entablature aligned. Arrows indicate pry cuttings on top (blue arrows) and bottom (red arrows) surfaces. Orthographic views (scale 1 : 25)

38



39

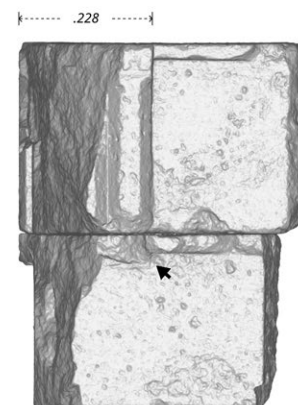


Fig. 39: Starosel. Right corner of the architrave and the frieze of the façade, the arrow indicates the preserved edge of the regula. Orthographic views (scale 1 : 13)

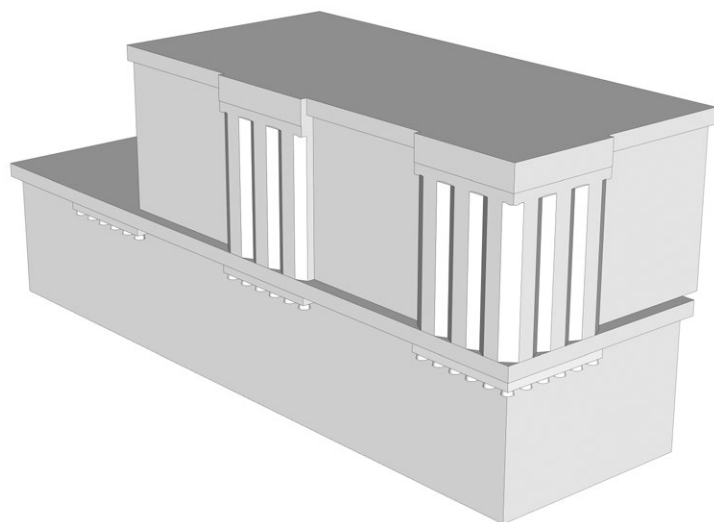


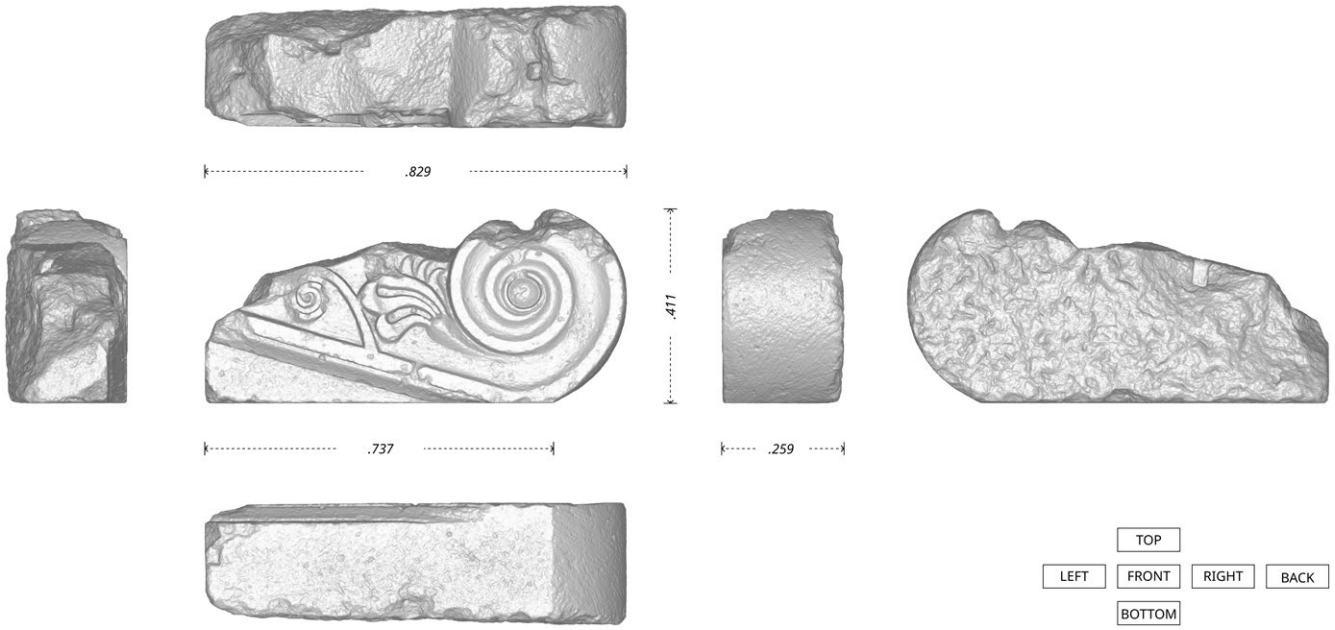
Fig. 40: Starosel. Right corner of the architrave and the frieze of the façade, reconstruction

40

frieze block to the right. Hence, the letters look like two separate notations, which are not part of a larger inscription, and – given their location – were meant to be seen only during the construction of the tomb. They are most likely connected to the work of the stone-carvers, but their exact purpose is unclear. The absence of marks on the neighbouring blocks makes it unlikely that the aim was to indicate the position of the block within the façade.

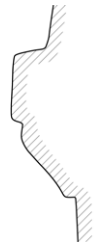
41 The geison (height 0.234 m) consisted of five blocks, fragments of all of which were found (Fig. 38, blocks FG-1–5). Its length can be estimated to ca. 4.61 m, based on the length of the frieze, and assuming that the geison bed was aligned to the edge of the triglyphs. The exact arrangement of the blocks can be deduced from the position of the pry-holes<sup>16</sup> and the clamp cuttings on their top surfaces, and the shallow channel that was roughly cut along the back edge of the geison top. The function of the latter channel is uncertain. It is present on the three geison blocks in the middle but absent on those in the corners. Similar cuttings exist on the five ceiling-beams of the antechamber, which were parallel to the geison, and whose upper surfaces were nearly on the same level as the surface of the geison. The geison has a slightly backward inclined base fascia

16 Apart from pry holes on the tops, most blocks of the façade have cuttings on the edges of the bottom, which resemble cuttings for vertical dowels. However, none of these blocks have dowel holes on the tops. The cuttings were used to insert the edge of a pry in order to slightly raise one side of the block and adjust its position.



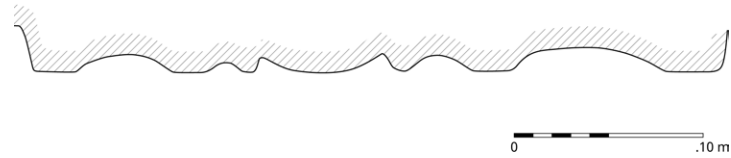
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Fig. 41: Starosel. Corner block from the pediment of the façade, orthographic views (scale 1 : 16)



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Fig. 42: Starosel. Corner block from the pediment of the façade, profile of the tympanum crown (scale 1 : 4)



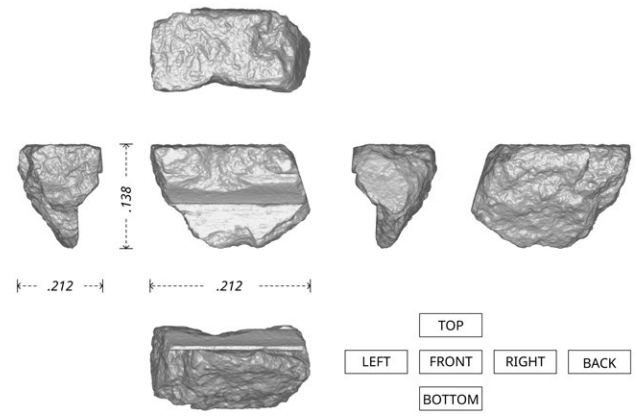
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Fig. 43: Starosel. Corner block from the pediment of the façade, profile of the volute (scale 1 : 4)



44

Fig. 44: Starosel. Pediment block from the façade photographed in 2000, now lost



45

Fig. 45: Starosel. Fragment from the right edge of the pediment block in Fig. 44, orthographic views (scale 1 : 10)



46

(h. 0.03 m, inclination 4°), a cyma reversa profile above, and nearly horizontal soffit. The front face is 0.086 m high, has a forward inclination of ca. 6°, and no crown.

Fig. 46: Starosel. Arrangement of the recovered blocks from the façade (scale 1 : 25)

### Pediment

42 The fragmentary remains of the pediment pose the most problems for reconstructing the façade. The main piece of evidence is a block preserving the right corner of the tympanum, crowned by an ovolo-fascia moulding<sup>17</sup>, with a volute-shaped acroterion at the corner (Fig. 41. 42. 43; <https://arachne.dainst.org/entity/7075302>). Two cuttings for vertical dowels – one on the top of the volute and another further left – show that a second, now missing, block surmounted the corner acroterion. The upper left corner is broken, casting further uncertainty in the reconstruction. Cutting for a Π-clamp shows that the acroterion block was bound to the pediment on the left. The block was found in the upper levels of the fill in the dromos, 8.70 m south of the façade.

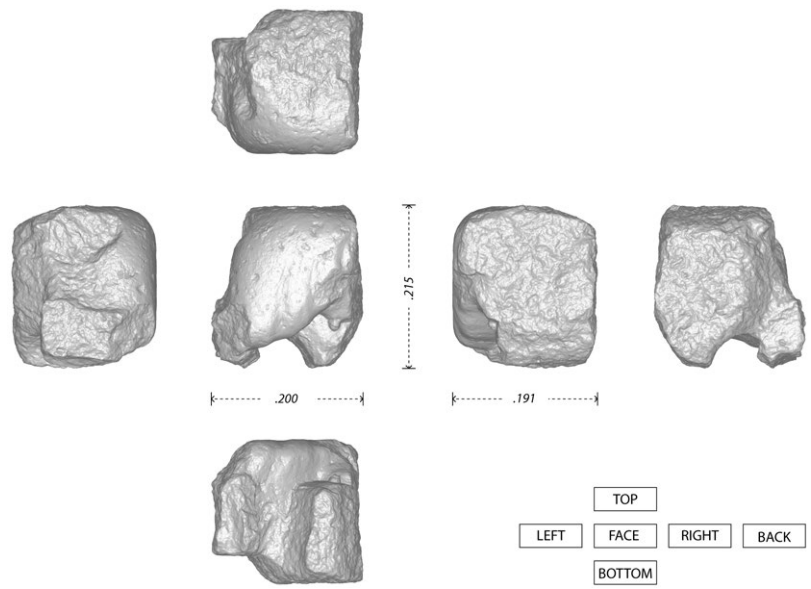
43 Another piece of the pediment tympanum was photographed among the dislodged blocks in 2000, before Kitov's excavations began (Fig. 44). The block is now lost but the photographs clearly show the raking edge of the tympanum crowned by the same moulding as the acroterion block, with traces of red paint. This block belonged to the right side of the pediment, immediately to the left of the block with the acroterion. A small surviving fragment of the crowning moulding of the tympanum adds to the overall reconstruction: it preserves a painted egg-and-darts pattern on the ovolo moulding now weathered off the acroterion block (Fig. 45. 58; <https://arachne.dainst.org/entity/7075303>).

17 A gentle curve in the lower part of the profile makes it uncertain whether it should be classified as an ovolo or cyma reversa. Cyma reversa would be unusual on a tympanum crown, and ovolo is suggested by the painted ornament (Fig. 60).



0 .10 m

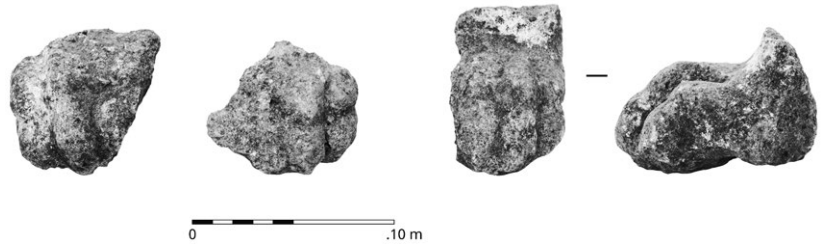
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48

Fig. 47, 48: Starosel. Rear part of a sculptured feline figure, photo and orthographic views (scale 1 : 10)

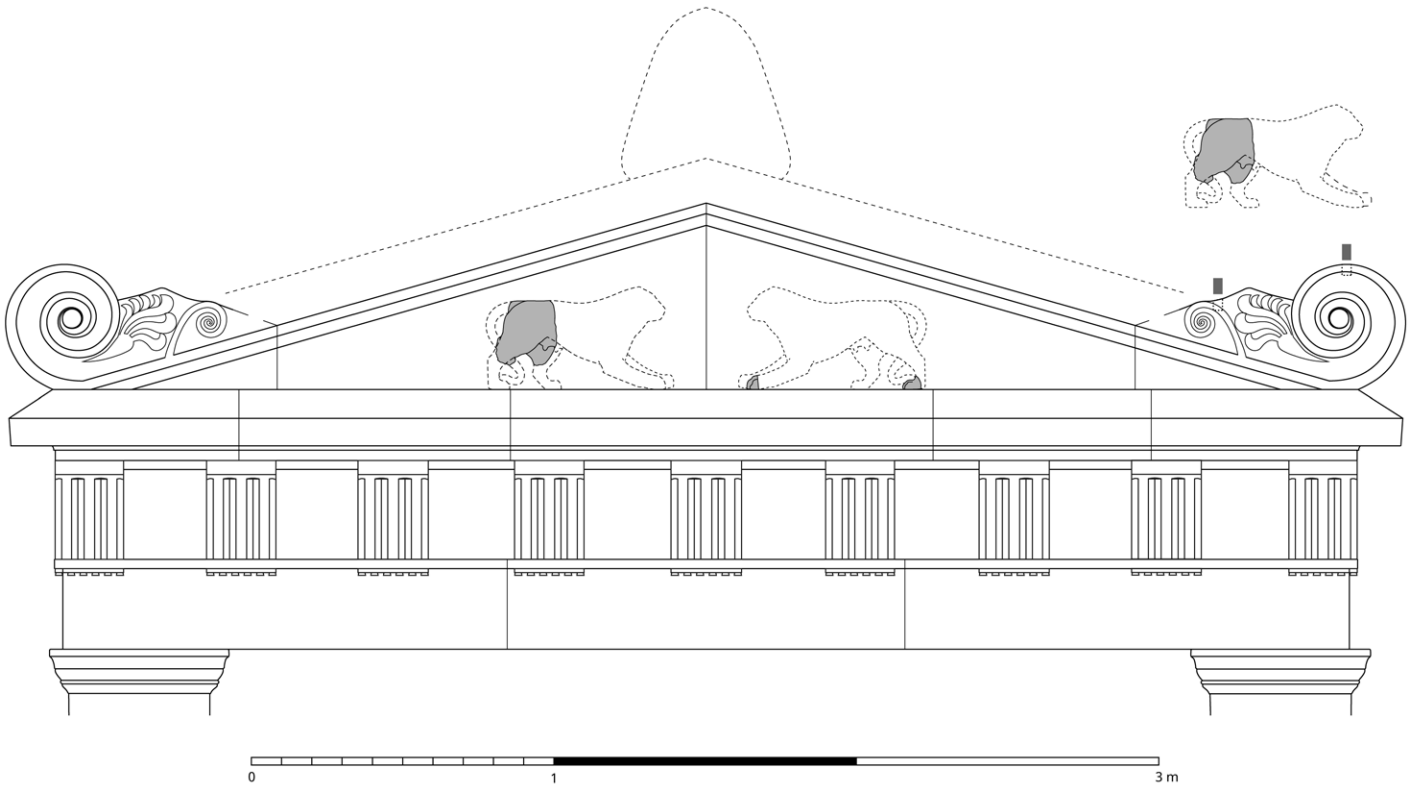
Fig. 49: Starosel. Paws from feline figures



0 .10 m

49

Fig. 50: Starosel. Possible locations of the feline figures within the façade (scale 1 : 25)



50

The preserved surfaces indicate that the piece was part of a block on the right side of the pediment, namely the upper right edge of the block in Fig. 44.

44 The extant data already allow us to reconstruct most of the pediment (Fig. 46). The right-corner block indicates a gable pitch of 16° for the tympanum. Aligning this block to the edge of the geison gives us a tympanum with total length of the base ca. 4.32 m and height at the apex ca. 0.615 m. The space of ca. 1.423 m between the corner block and the pediment centre was spanned with a single trapezoidal block – the one shown in Fig. 44.

45 The tympanum appears plain, without traces of painted or sculptured decoration. Yet several fragments of three-quarters relief sculptures carved out of the same stone as that used in the façade have been found at the site. These comprise the hind part of a lioness, facing right, and three paws of a matching size<sup>18</sup> (Fig. 47. 48. 49; <https://arachne.dainst.org/entity/7075306>). At least two of the paws belong to a left-facing animal, confirming that there were two felines. The better-preserved figure was ca. 0.60 m long, ca. 0.35 m tall, and 0.191 m thick. It is possible that the felines were part of a pedimental group: one can imagine an antithetical pair, as a continuation at larger scale of the motif that decorates the façade lintel (Fig. 50. 53). The flat top surface of the geison was deep enough (0.42–0.43 m) to accommodate both the tympanum (0.214 m thick) and the relief figures. This reconstruction remains tentative, as neither the top of the geison, nor the front of the tympanum show traces of dowels for attaching sculptures. The two openings for vertical dowels cut 0.42 m apart on the top of the corner acroterion block prompt another possibility: that a pair of lionesses surmounted the façade as lateral acroteria. The problem with this reconstruction is that the 0.12 m difference in the height between the dowel holes requires imagining the animals in an unusual posture or as if prepared to pounce off the gables of the façade.

### Polychrome Decoration

46 Traces of colour can be observed on the doorframe, the geison, the acroterion, and the tympanum crown. Paint was applied directly on the stone surface, using an organic binder including gum arabic<sup>19</sup>. The palette includes blue, at least two shades of red, and possibly, yellow. Reconstructing the painted ornaments is challenging because in most cases only faint traces of colours have remained. The task is to some extent facilitated by the presence of identical or similar architectural elements in the interior of the chambers, where colours had better chances of surviving.

47 On the doorframe, the carved ovolo moulding that decorates the jambs and continues on the lintel had a red background. The background of the larger ovolo on the hyperthyron of the lintel was painted blue. In both cases only tiny specs of paint have survived but the same colour scheme is better preserved on the nearly identical doorframe between the antechamber and the tholos (Fig. 51; cf. Fig. 77). The ovolo profiles on either end of the hyperthyron were painted red, with traces of blue suggesting a blue stripe around the outer edges (Fig. 52).



51



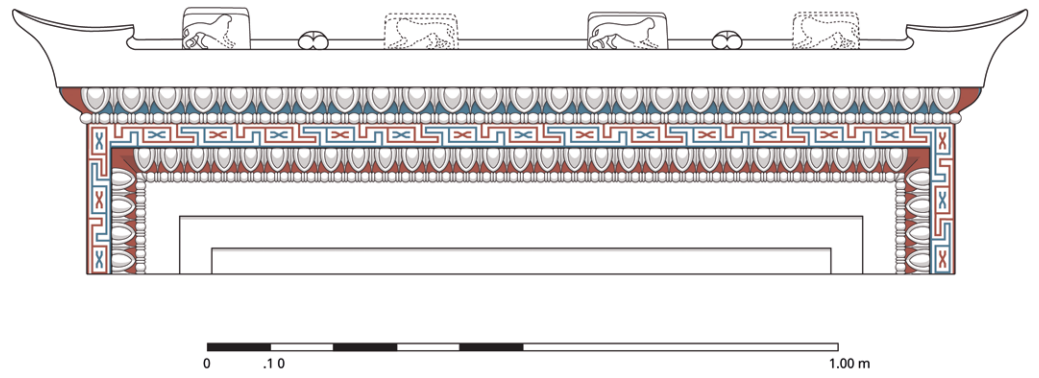
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Fig. 51: Starosel. Traces of colour on fragments from the façade lintel

Fig. 52: Starosel. Traces of colour on fragments from the façade lintel

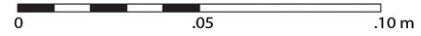
18 The paws were found in the antechamber, close to its entrance. The hind part was found in 2018 in a heap of stone fragments discarded by Kitov's team south of the mound.

19 Preliminary results of an ongoing study of the painting technique by Dorotea Guirdjijska-Ivanova and Denitsa Pantaleeva.



53

Fig. 53: Starosel. Colour reconstruction of the façade lintel (scale 1 : 12)



54

Fig. 54: Starosel. Painted fragments from architrave and frieze found in the fill of the dromos, in front of the façade

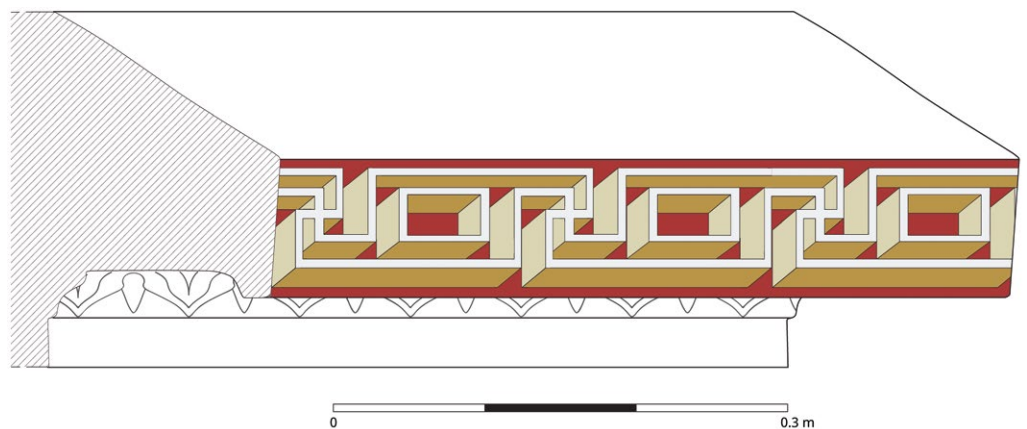


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Fig. 55, 56: Starosel. Fragments of the façade geison preserving traces of paint



57

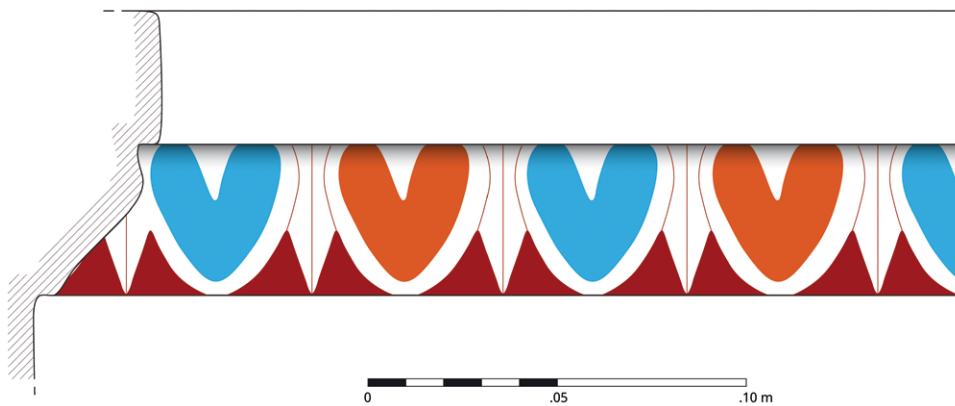
Fig. 57: Starosel. Reconstruction of the painted decoration on the façade geison (scale 1 : 5)



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59



60

48 The left jamb in the antechamber façade has a meander painted with red and blue lines on the crowning fascia (Fig. 24). From the jambs, this motif continues on the lintel, where pale traces of it are visible in the partially preserved right corner (Fig. 51. 53). The exact arrangement of the meander on the lintel remains uncertain, and cannot be helped by the tholos doorframe, where the same ornament left ghost traces only. The meander itself is peculiar, different from the common meander types used in architecture and art of the Classical and Hellenistic periods.

49 The weathered surfaces of the architrave and frieze blocks have lost their polychrome decoration almost completely. Only the metope fascia on the short side of the left-corner frieze block preserve traces of red pigment. Fragments found in the fill in front of the façade add to this information, suggesting that the frieze and the architrave were painted similarly to those in the tholos (cf. Fig. 54. 99). It cannot be excluded that some of these fragments come from the tholos – the taenia pieces are too small to detect a curve – but given the findspot, it is more likely that they are debris from the entablature of the façade.

50 The geison was richly painted, with a meander on its face, and a Lesbian cymation on its bed moulding. The current condition of the fragments allows only for a partial reconstruction. When the buried architectural elements were re-excavated in 2018, the cymation was visible on one of the geison blocks as a ghost motif (Fig. 55). The leaves alternate with darts and seem to have dark outlines, but the colours and details are gone. The same block preserves the meander on the front of the geison as dark

Fig. 58. 59: Starosel. Fragments from the tympanum crown preserving paint

Fig. 60: Starosel. Reconstruction of the painted ornament on the tympanum crown (scale 1 : 2)

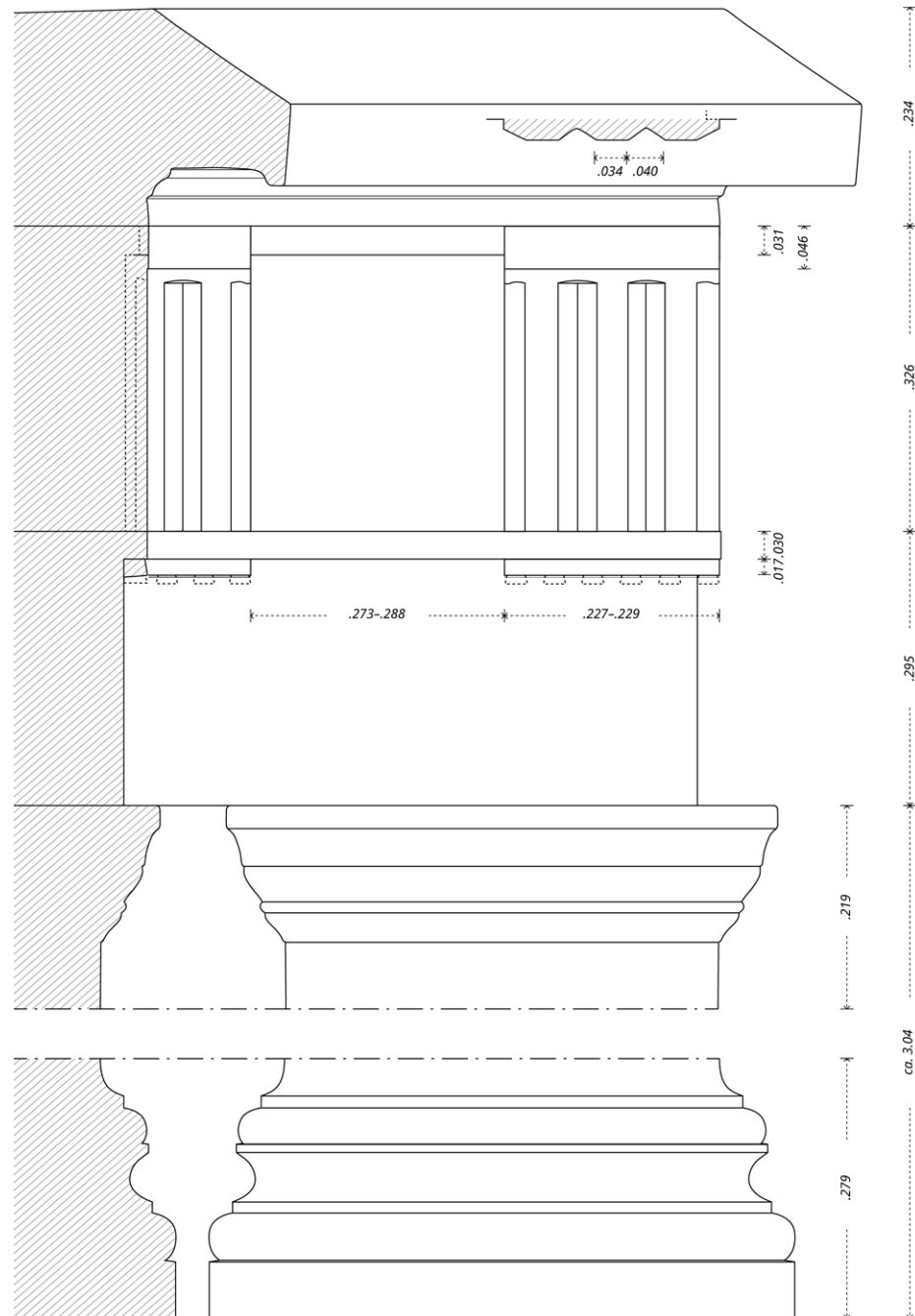
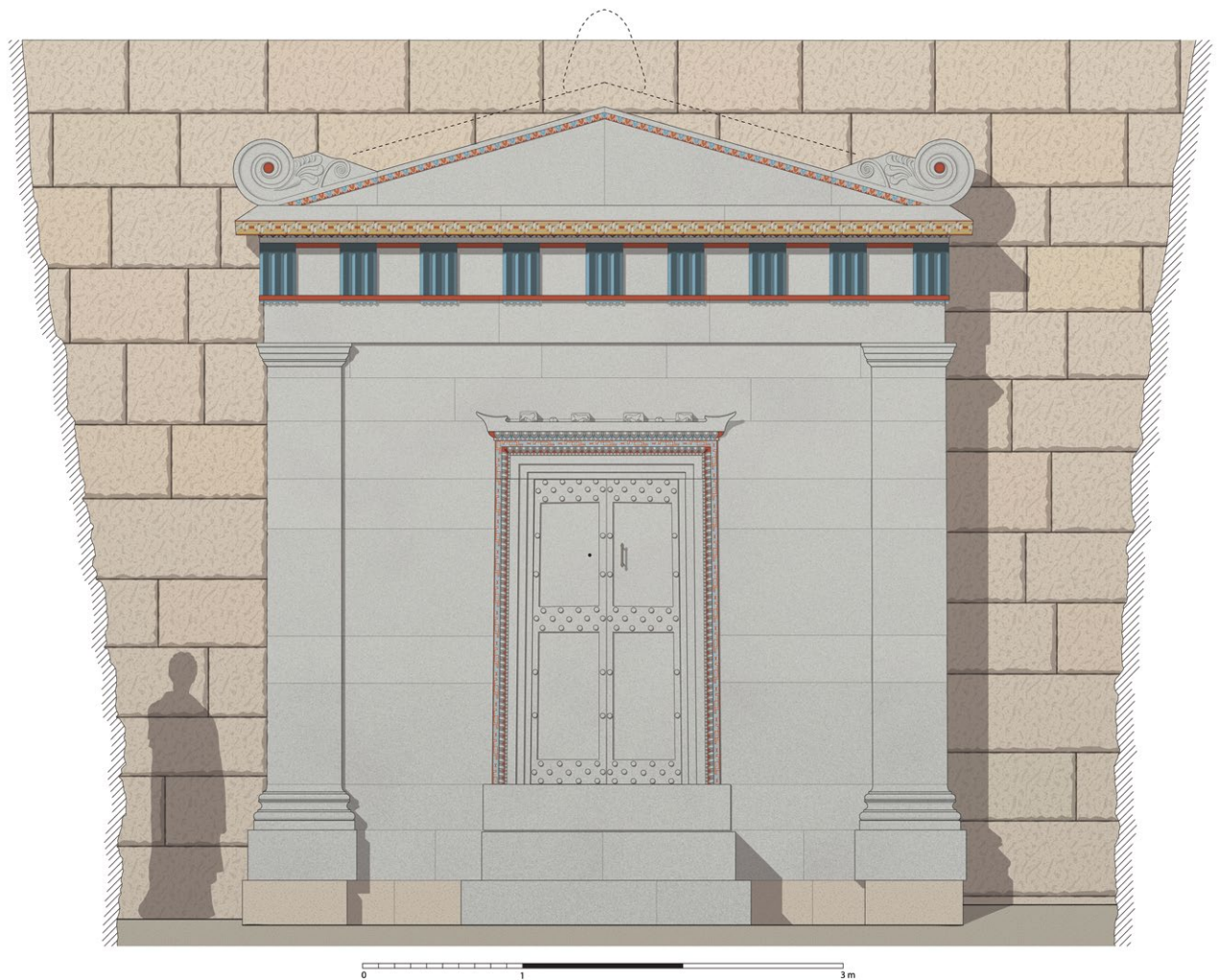


Fig. 61: Starosel. Details of the order of the façade (scale 1 : 8)

61

outlines, enough to deduce the general pattern of alternating rectangles and swastikas. Luckily, the edge of the left corner-block was not buried with the rest of the stones after Kitov's excavations, but was kept in dry conditions, and thus has preserved patches of colour (Fig. 56). Red lines can be seen above and below the meander; an inscribed red rectangle in the lower left corner of the rectangular frame; red triangles around the corners of both the swastikas and the rectangles. Within the dark contours, the line of the meander is filled with white, and it is surrounded with dark yellow. To make sense of all this, one has to imagine that the meander is a three-dimensional structure shown in perspective. It has yellowish walls, and the red areas are the visible parts of the background (Fig. 57). Similar three-dimensional meanders are known from several late



62

Fig. 62: Starosel. Reconstructed elevation of the façade (scale 1 : 45)

4<sup>th</sup> – early 3<sup>rd</sup> century B.C. tombs in Etruria, Macedonia, and Thrace<sup>20</sup>. In all these cases a light-and-shadow effect was achieved by using two different colours for the walls of the meander. Further depth was added by the bright upper surface of the meander, looking as »if lit by raking light, thus making it stand out against the remaining parts of the motif, which appear to recede into the background.<sup>21</sup>«

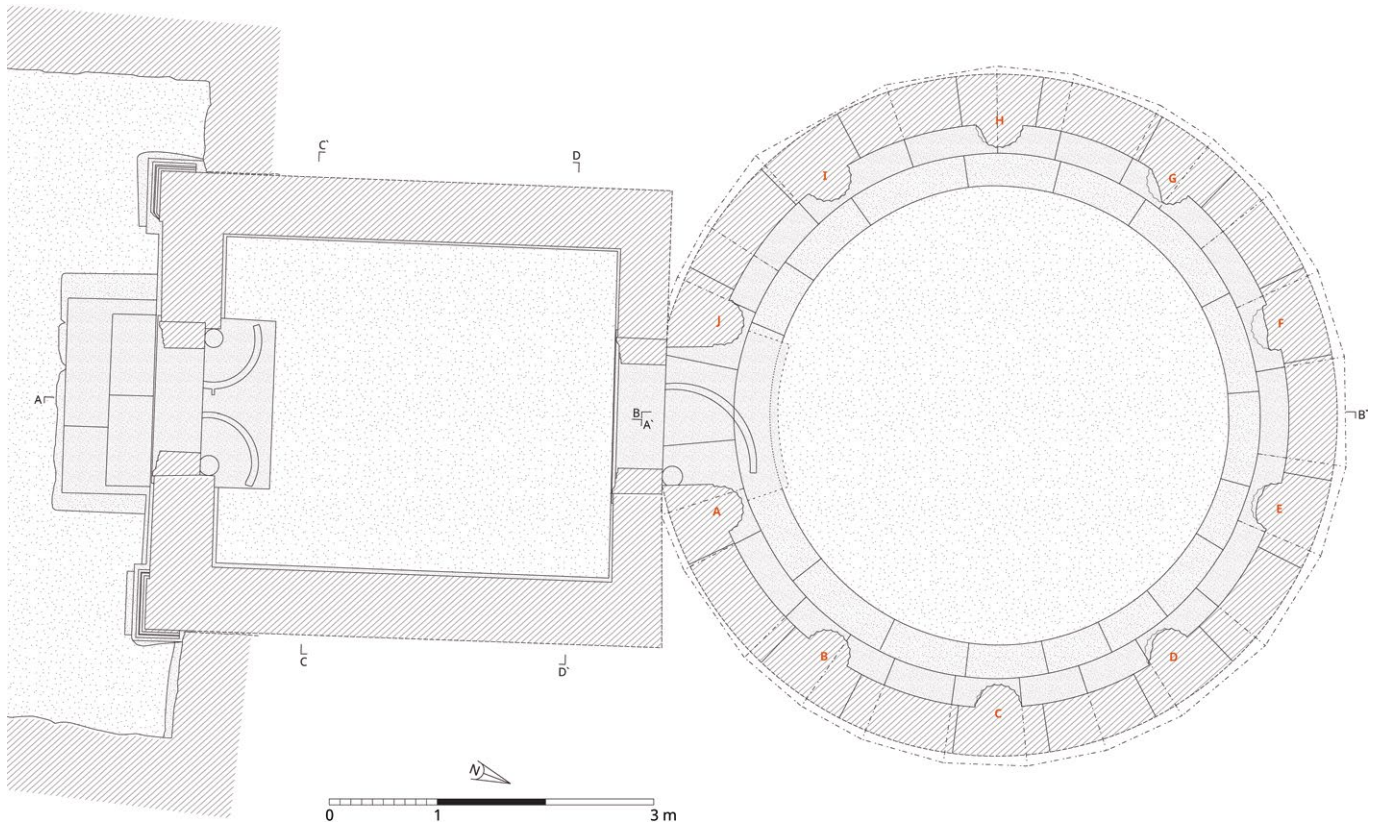
51 The right-corner pediment block preserves red colour on the circular eye in the centre of the volute. Other elements on the face of this block were probably also painted. There was certainly a painted egg-and-dart pattern on the crown moulding of the tympanum. This ornament is partially preserved on two small fragments (Fig. 58. 59. 60). Light red and blue leaves alternate with reserved (?) darts on dark red background. Only faint contours marking the edges of the darts can be seen now.

### Reconstruction

52 The evidence presented above allows for a nearly complete reconstruction of the antechamber façade (Fig. 61. 62; <https://arachne.dainst.org/entity/7075281>). Missing and uncertain elements in this reconstruction include: the exact level at which the floor of the dromos met the façade originally; the height of the granite wall behind the tuff façade; the pediment's relief sculpture, raking sima, and central acroterion; and painted decoration which is reconstructed only partially, based on visible traces.

20 Etruria: the François tomb. Macedonia: tomb A at Katerini, Korinos, and Phoinikas. Thrace: Aleksandrovo. On the dates of these tombs, see note 88.

21 Plantzos 2018, 217.



63

Fig. 63: Starosel. Reconstructed plan of the chambers (scale 1 : 70)

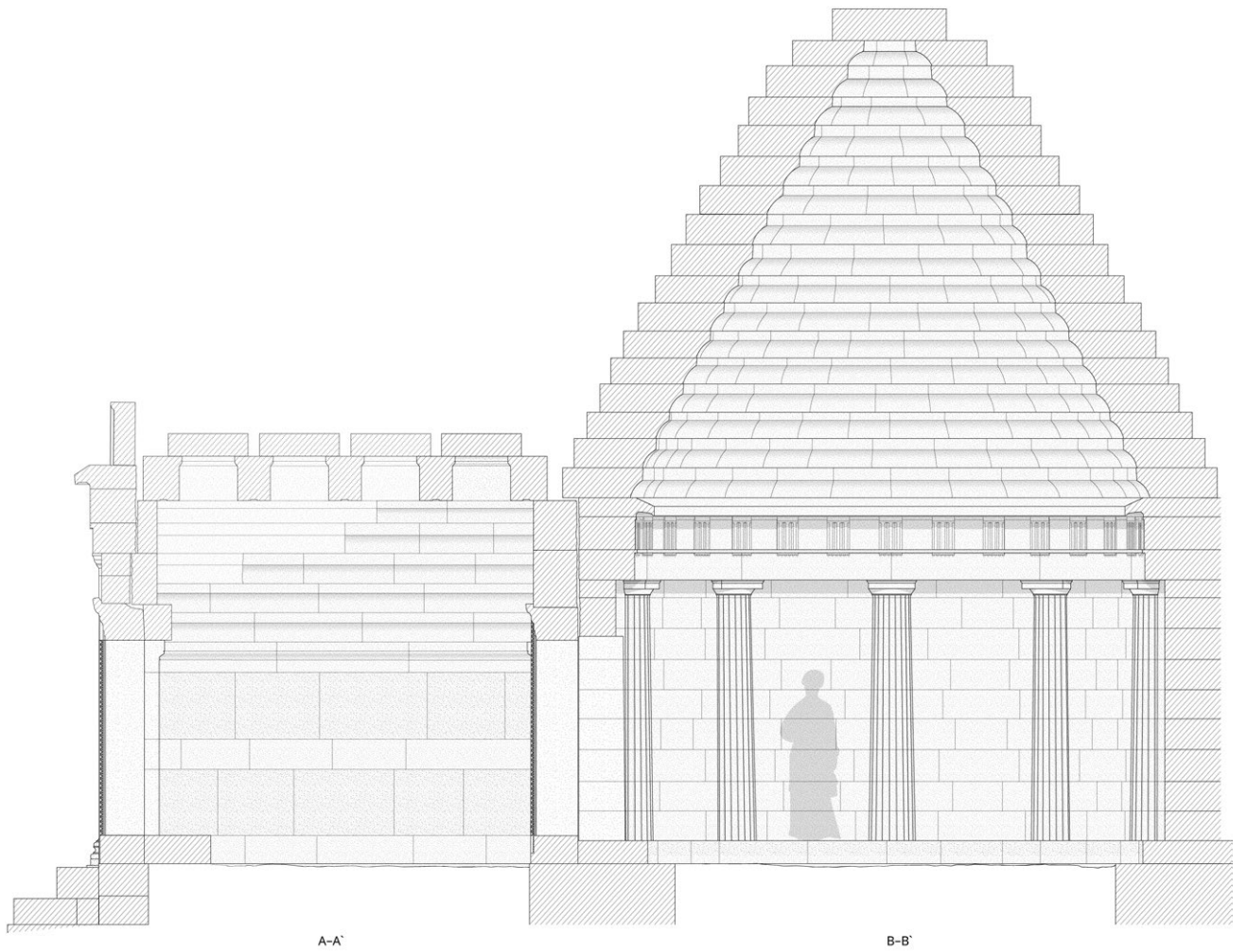
## The Antechamber

### Foundations and Walls

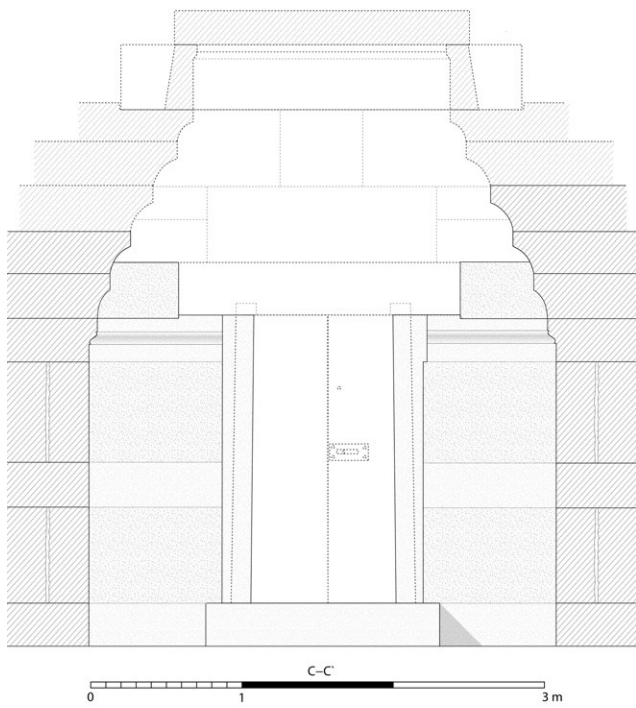
53 The antechamber is nearly rectangular in plan (3.66 m long and 3.10/3.09 m wide at the north and south walls respectively), built of volcanic tuff except for the lower foundation courses (Fig. 63. 64. 65. 66). The latter are probably made of granite blocks, as suggested by the lowest visible course of the façade. Inside the chamber, the first tuff course projects 0.04 m forward from the walls above, and its upper edge most likely marks the original floor level. The current dirt floor is a few centimetres below this edge. There is no evidence of stone slabs and it seems that the floor was made of trampled earth, possibly plastered with clay.

54 Apart from the partially destroyed façade wall, the walls of the antechamber are preserved almost entirely. The walls rise vertically to a height of 2.16 m in five courses of alternating binders and orthostates. The fifth binder course is modelled with a simple epicranitis of a cyma reversa and fascia. On the side walls, the projecting part of this moulding serves as the spring for the corbel vault. The arrangement of the courses above the epicranitis on the north wall is shown in Fig. 66. The blocks at both ends of these courses are cut to accommodate the moulded projections of the corbels. On the opposite side, the back wall of the antechamber façade preserves only two blocks above the epicranitis, but it probably had a similar structure as the north wall.

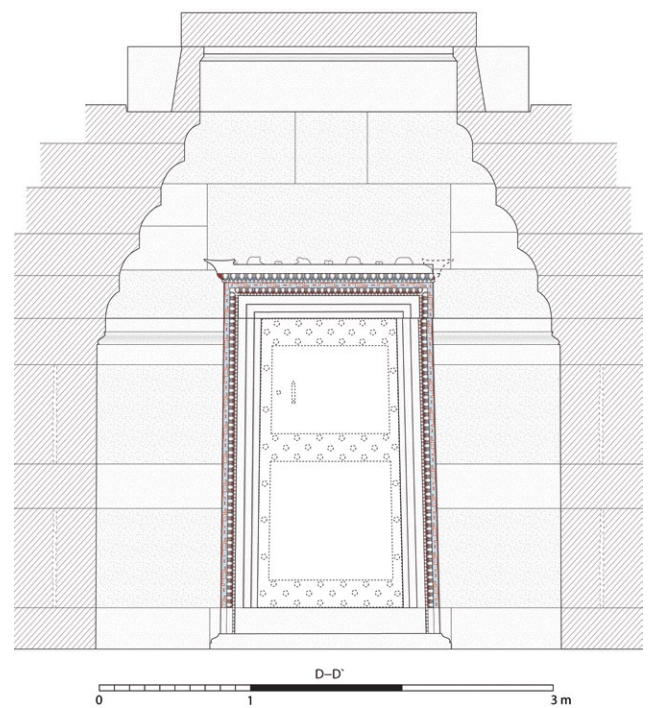
55 The surface treatment of the antechamber walls is the same as that of the façade: carefully smoothed faces, tight joints, and no decorative margins. The side walls are ca. 0.540 m thick, measured behind the façade pilasters. They meet the façade walls as shown in Fig. 67: this pattern repeats in all corners of the antechamber but only in the southwest corner the binders of the third course join with L-shaped cuttings, as shown in the figure. The projecting profile of the epicranitis course is cut at 45° at all sides to form a mitre joint. The back wall, including the frame of the tholos door, is inclined



64



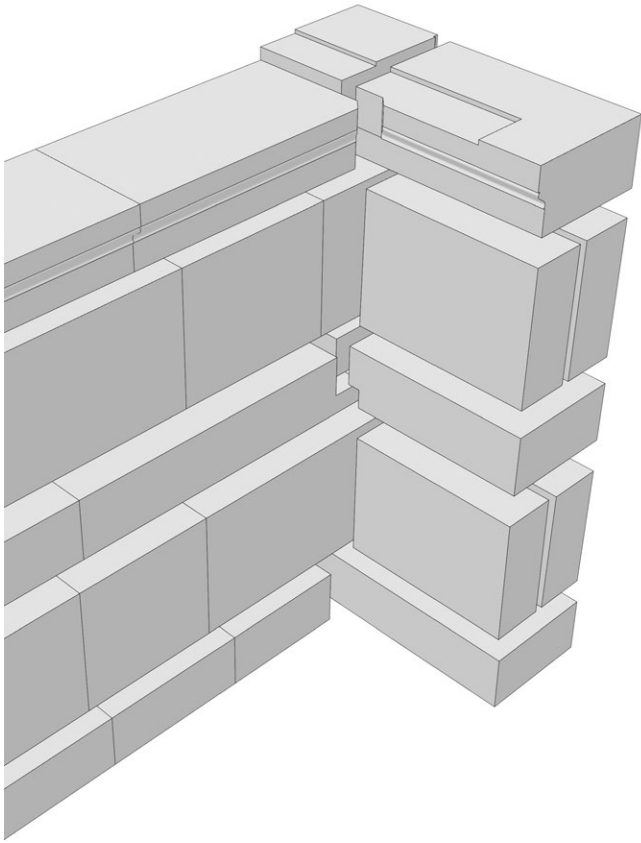
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66

Fig. 64: Starosel. Longitudinal section of the chambers (scale 1 : 70)

Fig. 65. 66: Starosel. Transversal sections of the antechamber (scale 1 : 50)



67

Fig. 67: Starosel. Exploded view of the southwest corner of the antechamber showing the joints between façade and side wall



68

Fig. 68: Starosel. The preserved roofing of the antechamber viewed from the interior



69

Fig. 69: Starosel. The preserved roofing of the antechamber viewed from the top

forward (to the south) at an angle of  $0.7^{\circ}$ – $1^{\circ}$ . This inclination is due to deformation of the geometry of the tholos chamber, described in more detail below.

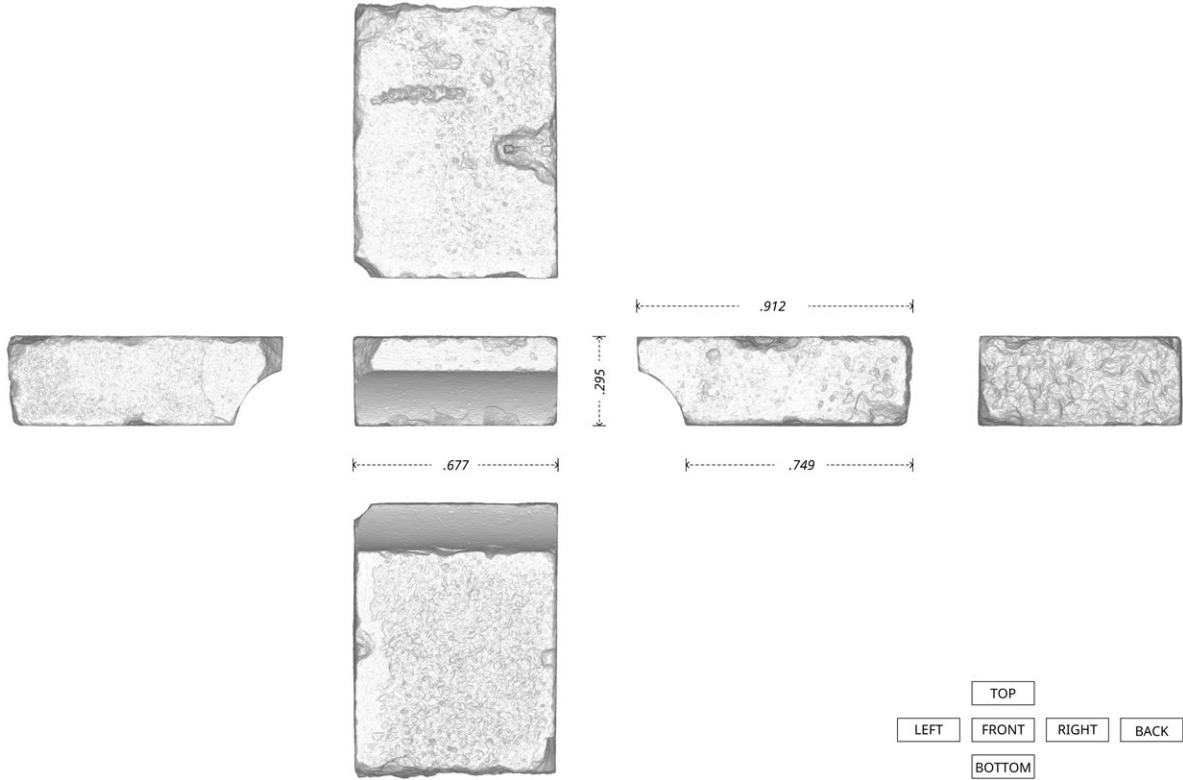
### Vault and Ceiling

56 The antechamber was spanned with an exceptional roofing structure, composed of five courses of cantilevered blocks in a partial corbel vault, topped with lateral beams and slabs. At the time of discovery, the roofing was badly damaged, especially from the side of the destroyed façade. Most of its members were found collapsed inside the chamber and were subsequently taken out and buried by Kitov's team. A wooden structure was installed to support the remains of the roofing (Fig. 68), of which the following have remained in place (blocks in each vault course are numbered from north to south):

- The first two courses of corbels are fully preserved on both sides. The first course is composed of three, and the second of four blocks.
- Third course: on the west side blocks 1–3 are complete and block 4 is partially preserved; the east side preserves the first two blocks.
- Fourth course: blocks 1–3 are preserved on the west side; blocks 1 and 2 are preserved on the east side.
- Fifth course: both sides preserve the first two blocks.
- Ceiling beams and slabs: only the two northernmost beams and their slabs remain in place, fragmented (Fig. 69).

57 The stones re-excavated in 2018 include 11 corbel blocks, three ceiling beams, five side slabs, and three cover slabs in different states of fragmentation. This accounts

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71

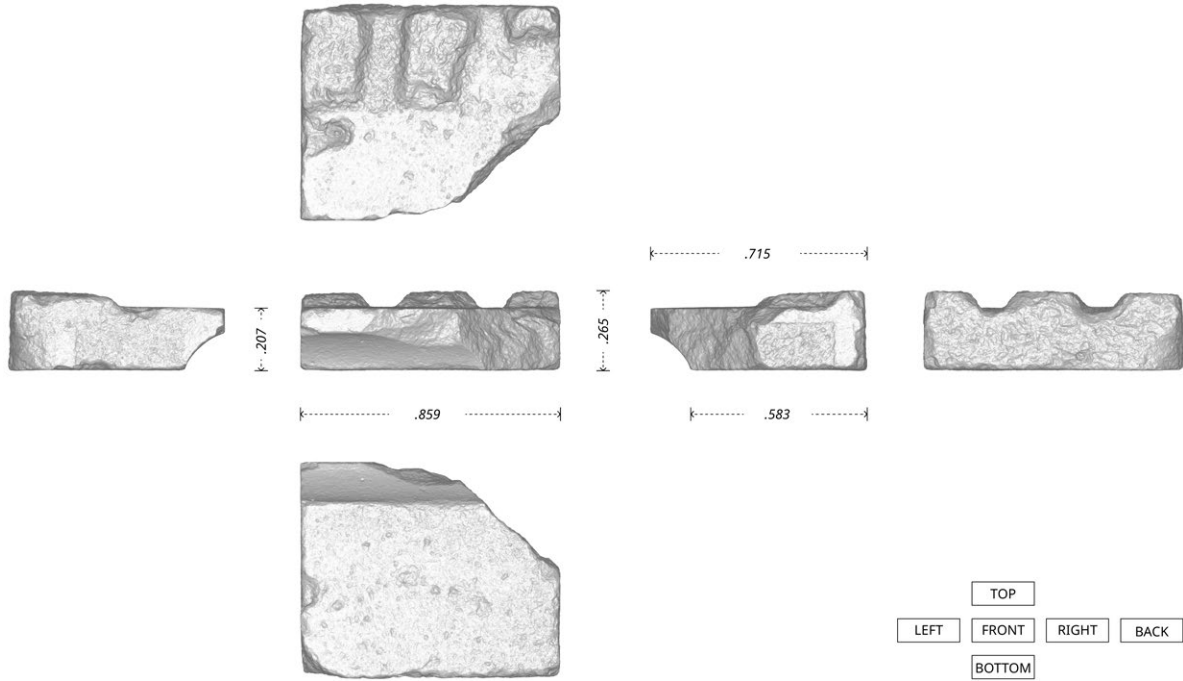
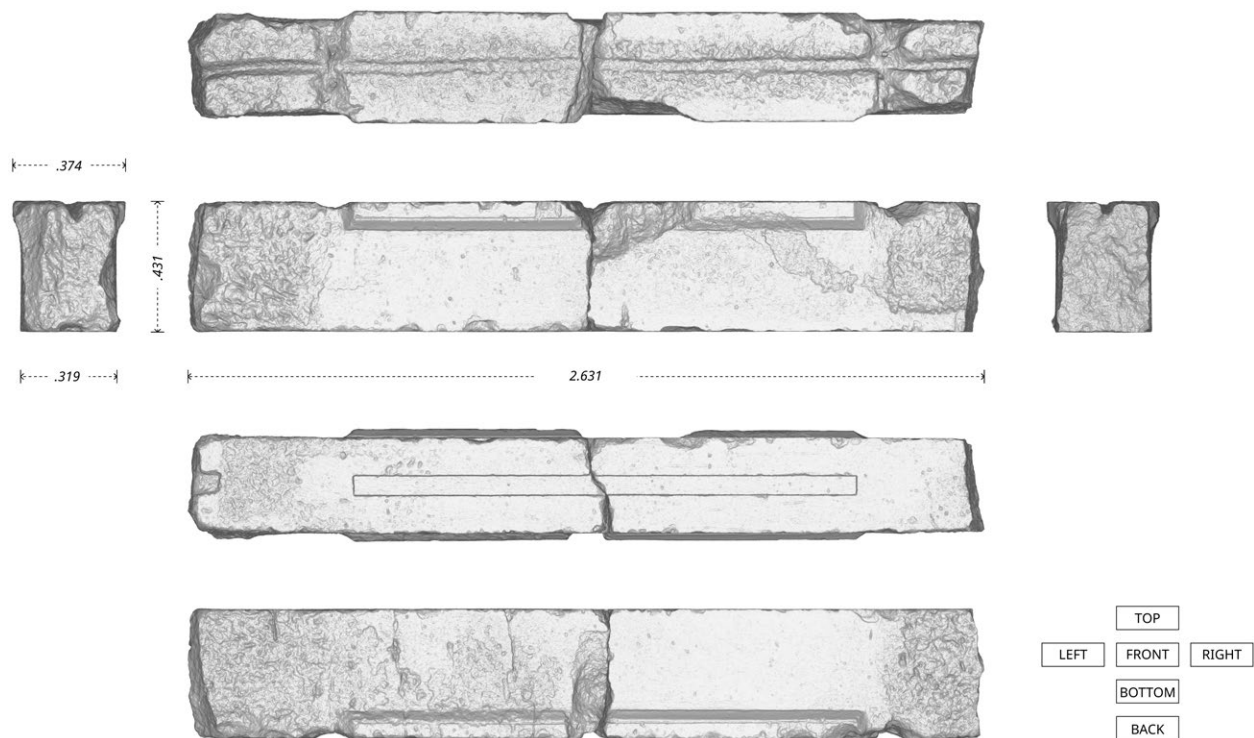
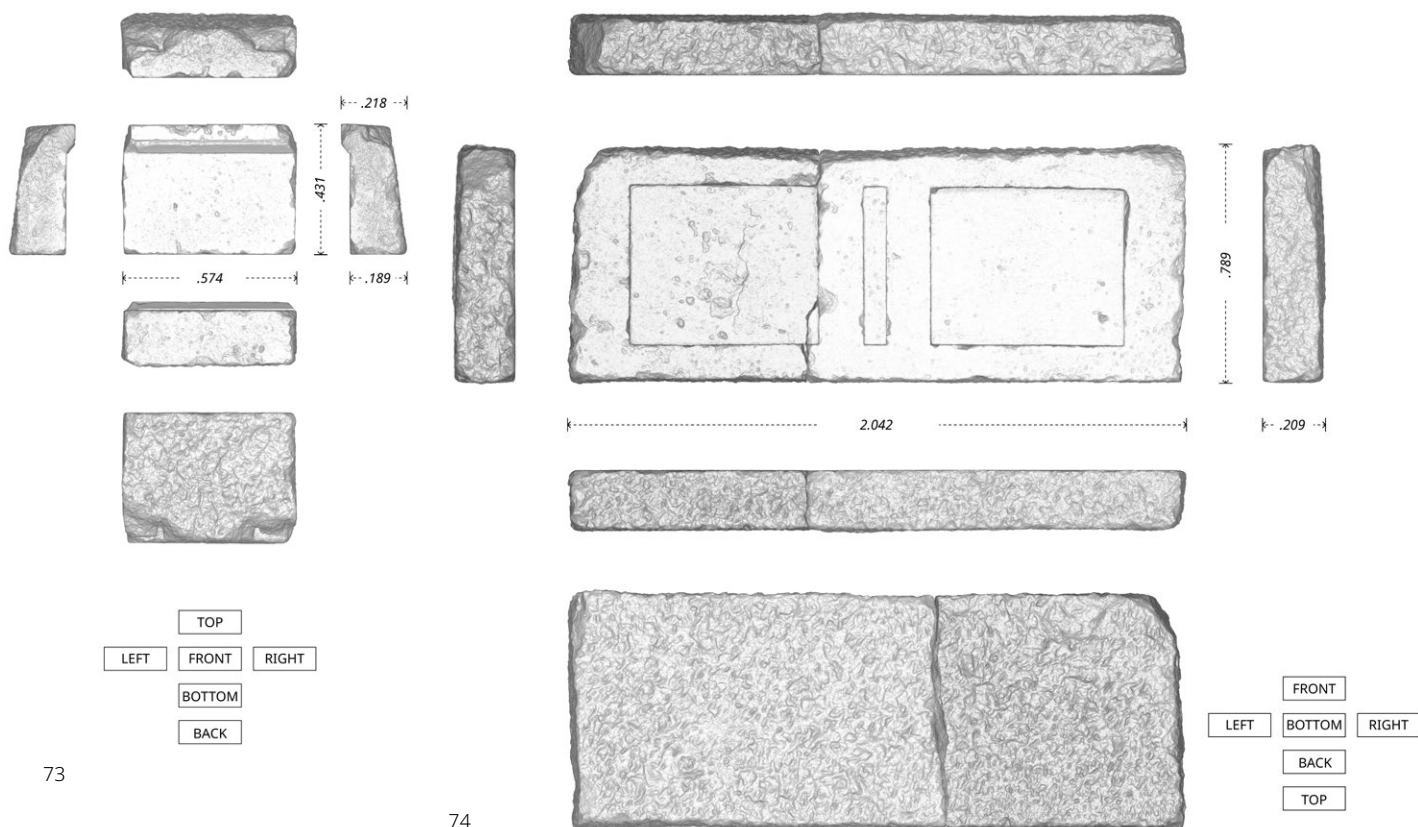


Fig. 70: Starosel. Block from one of the lower four courses of the corbel vault, orthographic views (scale 1 : 25)

Fig. 71: Starosel. Block from the fifth, top course of the corbel vault, orthographic views (scale 1 : 25)



72



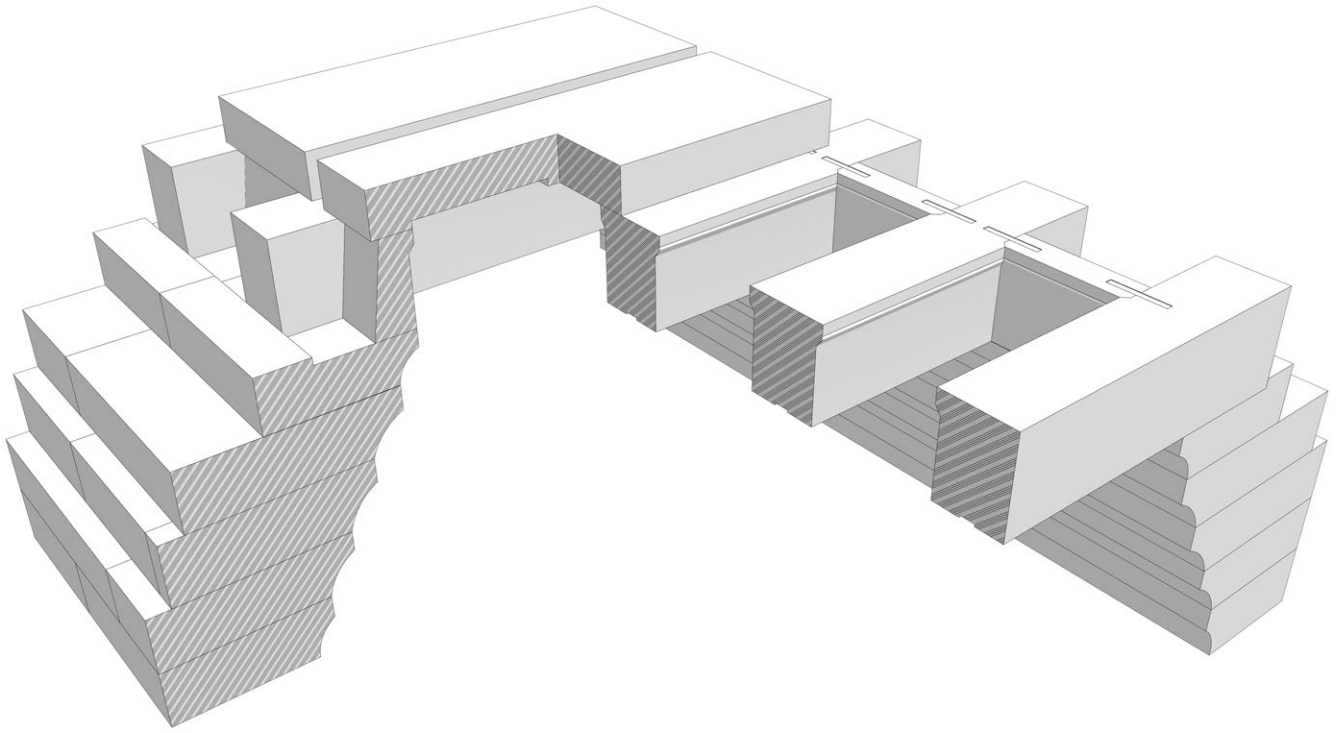
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Fig. 72: Starosel. Ceiling beam from the roofing of the antechamber, orthographic views (scale 1 : 25)

Fig. 73: Starosel. Side slab (thranos) from the roofing of the antechamber, orthographic views (scale 1 : 25)

Fig. 74: Starosel. Cover slab from the roofing of the antechamber, orthographic views (scale 1 : 25)



75

for most of the missing elements in the roofing structure, and allows for its complete reconstruction.

58 The vault of the antechamber was built with tuff ashlars, whose faces are shaped as a cavetto topped by a forward-inclined (ca. 8°) fascia (Fig. 70). The base of the cavetto of each course is set at the top edge of the course below, thus achieving a projection of 0.09–0.16 m per course (the projection increases gradually from the first to the fourth course). The lower four corbel courses have the same height, ca. 0.293 m, which makes it difficult to determine the original arrangement of the nine recovered corbel blocks with height between 0.291 and 0.295 m. Doing so would require removing the embankment above the corbels that remain in place in order to match their thickness and the location of the clamp and pry cuttings to those of the stray blocks. Still, these nine blocks certainly belong to the first four courses, and they account for all missing corbels in these courses. The fifth, topmost course of the vault differs from the lower ones. It is composed of blocks that are ca. 0.207 m high in their front part, and have one or several raised bumps left on the roughly worked rear part of their top surface (Fig. 71). Only two blocks of this course were found in addition to the four preserved in place, meaning that five or six are missing. All recovered corbels have cuttings for  $\Pi$ -clamps and many of these cuttings preserve pieces of iron and lead.

59 The corbel vault had 2.25 : 1 rise : run inclination and covered 45% of the total span of the antechamber. Above the top corbel course, the distance of ca. 1.72 m between the two sides of the vault was spanned with five stone beams, each about 2.7 m long, 0.43 m high, and 0.32 m wide (Fig. 72). The northernmost two of these beams are found in place and the remaining three were recovered in a fragmented state. The beams were set into the recessed beds on the top of the final corbel course, which prevented them from moving. All visible faces of the beams are finely worked. The soffits have a plain rectangular recess, and ovolo-fascia mouldings crown the vertical faces.

60 The lateral spaces between the beams were closed with slabs (the equivalent of *thranos* blocks in Greek temples) set vertically at the edges of the corbels (Fig. 73). Two of these slabs remain in situ, five have been recovered, and one is missing. The identical

Fig. 75: Starosel. Restored axonometric section drawing of the reconstructed antechamber roofing



76

Fig. 76: Starosel. Reconstructed model of the antechamber ceiling

lengths of the extant slabs show that the beams were spaced ca. 0.57 m apart. The slabs are trapezoidal in section, with their backs tapering (8°) towards the top, presumably to reduce weight. They continue the ovolo-fascia profile of the ceiling beams, with the mouldings meeting at a mitred joint.

61 The side slabs and the beams were bound together with  $\Pi$ -clamps. To further strengthen the structure, the vertical faces of the beams were made slightly concave and tapering towards the top (ca. 0.005 m reduction from the base to the moulding), and the lateral sides of the slabs – slightly convex and widening. The curved surfaces fit together and prevent vertical displacement between beams and slabs. The combined effect of this feature, the metal clamps, and the ›stoppers‹ on the top corbels, was that the elements of the upper part of the roofing were immobilized in all directions.

62 The four rectangular bays formed by the beams were topped with cover slabs (Fig. 74), one of which still rests broken in situ. The remaining three slabs have been recovered from fragments. These slabs (length ca. 1.95 m, width ca. 0.77 m, height ca. 0.20 m) are roughly dressed, except for their finished bottom surfaces, which formed the antechamber ceiling. Each slab has two recessed coffers, each nearly square (0.58 m × 0.52 m), and a narrow recessed band in the middle (0.073 m × 0.52 m). The coffers are shallowly cut (0.02–0.025 m) and their surfaces are plain, without traces of painted decoration. The maximum height reconstructed for the antechamber is ca. 4.00 m, calculated from the assumed floor level up to the sunken surface of the ceiling. Fig. 75 and 76 show the structure of the roofing and the original appearance of the antechamber from below.

### The Tholos Door

63 The doorframe in the back of the antechamber is nearly identical with that in its façade. It is well preserved, apart from the broken right horn of the lintel, some damage on the decoration, and a possible minor displacement of the right jamb, whose upper edges are offset by 0.006 m to the left of the corresponding edges of the lintel. Adding these 0.006 m at the top, the clear opening would match exactly that of the doorframe in the façade (height 1.91 m, width 0.906/0.960 m). The sculptured figures on top of the lintel geison and the colours on the background of the ovolo mouldings



77



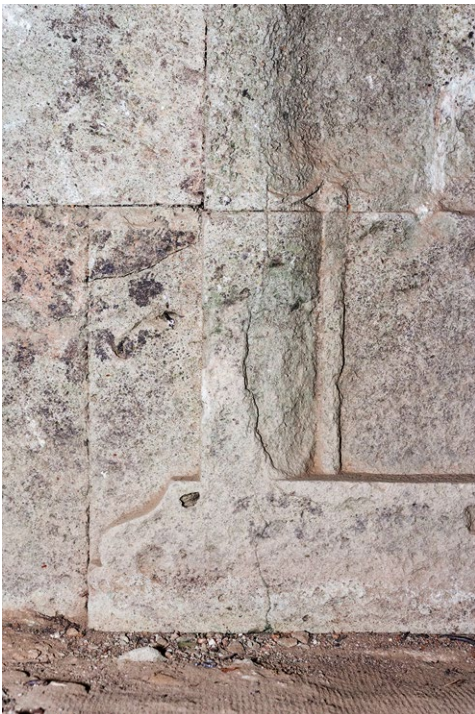
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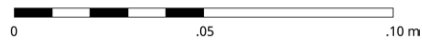
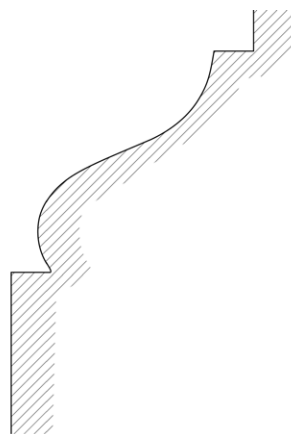
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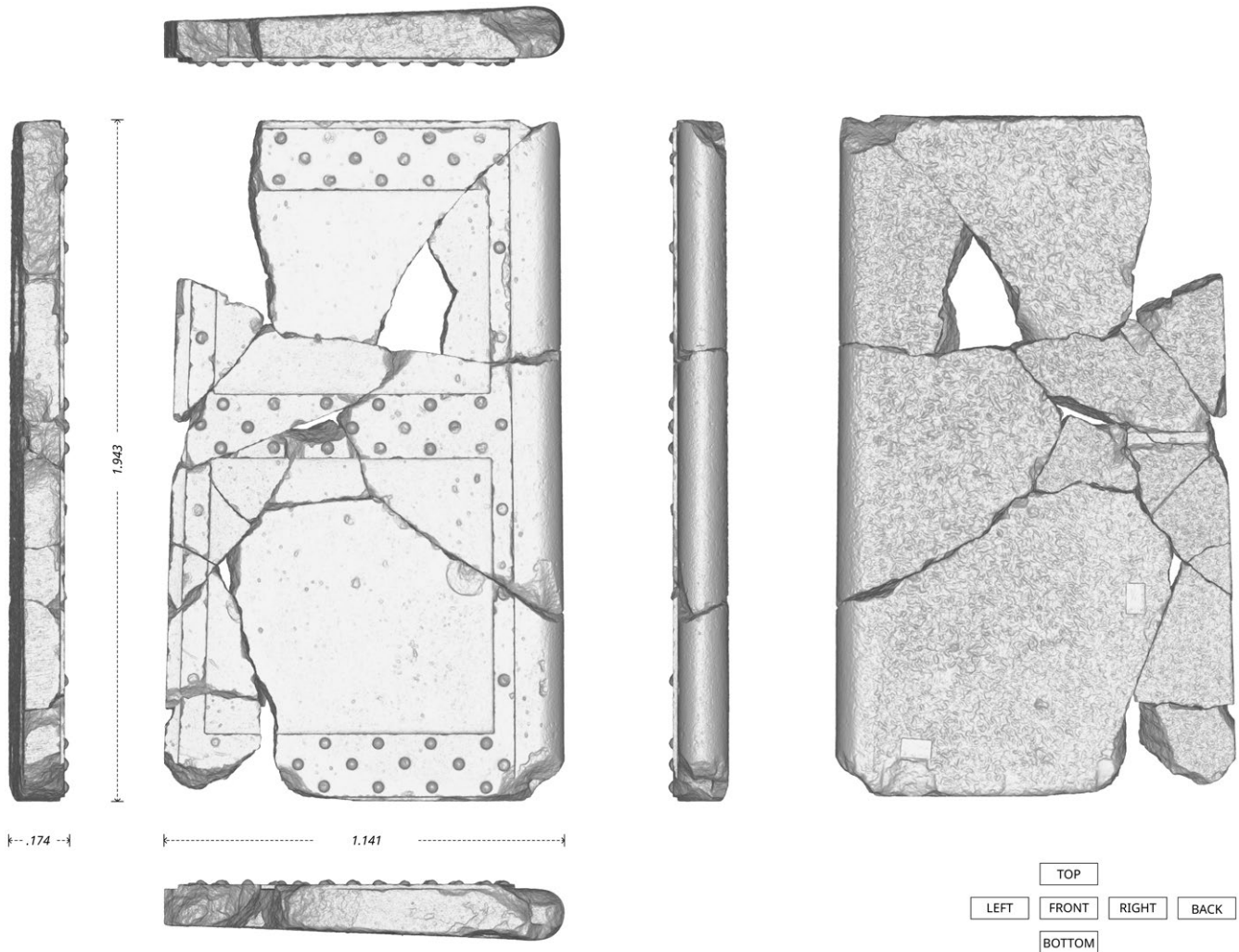
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Fig. 77–80: Starosel. Details of the decoration of the lintel in the back wall of the antechamber

Fig. 81. 82: Starosel. Details of the door sill in the back wall of the antechamber (drawing scale 1 : 2)



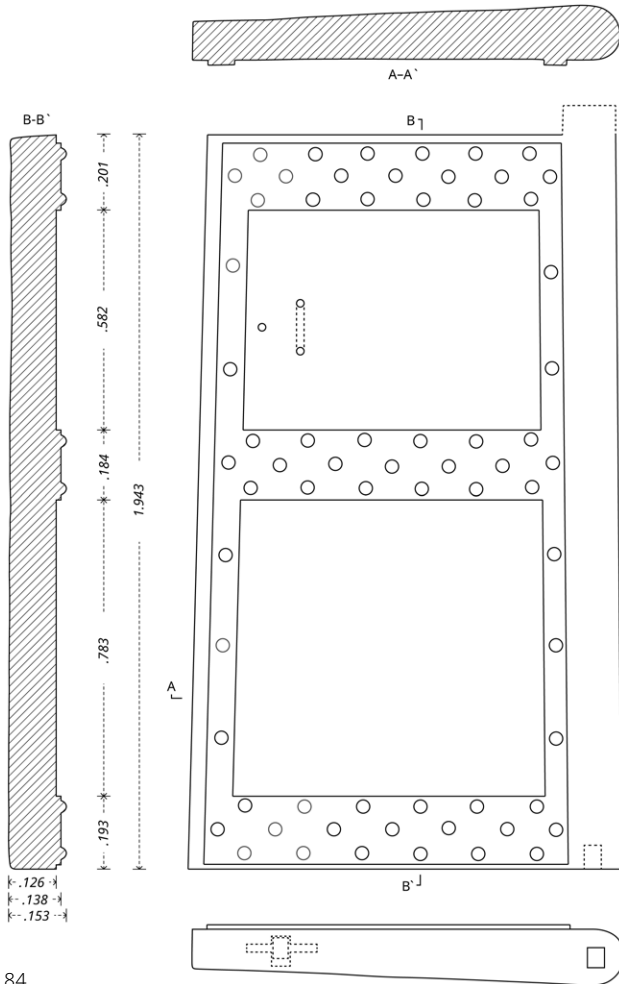
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Fig. 83: Starosel. Tholos door leaf, orthographic views (scale 1 : 20)

are better preserved here (Fig. 77. 78. 79. 80). The only significant difference between the two doorframes is the decoration of the door sill. While the sill in the antechamber façade is plain, here the astragal-ovolo mouldings extend from the jambs to its face (Fig. 81). The surface is poorly preserved but it seems that on the threshold only the astragal is carved, while the ovolo is left plain. At the bottom, the sill has a plinth, which projects 0.03 m from the face, and terminates on both sides with the profile of a base fascia and cyma reversa (Fig. 82). This moulding profile appears designed to receive a moulded step block placed against the sill.

64 The entrance to the tholos was closed with a single-leaf stone door, which opened towards the interior, with the axis on the right. The leaf can be reconstructed partially from 12 fragments, discovered in the area around the entrance (Fig. 83. 84). It is made of volcanic tuff and measures 1.943 m × 1.141 m. Like the antechamber door, it has a trapezoidal section, tapering from the axis (0.144 m) towards the inner edge (0.103 m). The estimated weight of the complete leaf is ca. 580 kg<sup>22</sup>. The treatment of the surfaces and the decoration of the face are the same as on the antechamber door, with the only difference being the vertical proportions of the panels. Here the heights of the lower and the upper panels are respectively four and three tenths of the total height of the leaf.

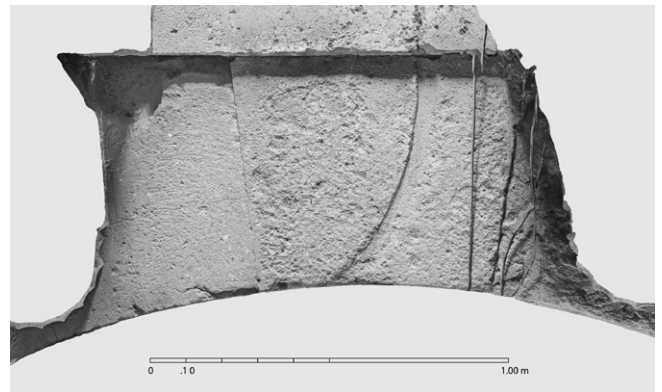
22 Based on a reconstructed 3D model with volume 273,155 cm<sup>3</sup>, and density of the tuff 2.12963 gr/cm<sup>3</sup>.



84



85



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65 The leaf was attached to the doorframe in a similar way as in the antechamber door: with a pivot, carved as part of the leaf at the top, and a metal axle, attached to a flat heel at the bottom. The block behind the lintel preserves a cylindrical socket of similar size as the sockets for the antechamber doors (d. 0.155 m, h. 0.10 m) (Fig. 85). However, here the cuttings for securing the metal fitting in the socket are larger and shaped as bird-tail clamps. Whether the metal parts were ever installed is questionable, because there are no visible traces of metal in the socket. Furthermore, one of the three clamp cuttings is buried within the in situ coursing of the wall, making it impossible to remove a clamp without either breaking the socket or leaving a piece of the clamp inside. At the bottom, the leaf rotated on a metal axle, installed in a circular socket (diameter 0.19 m, depth 0.05 m) in the threshold (Fig. 86). The axle was attached to the leaf with an iron dowel. The exact type of rotation mechanism is uncertain.

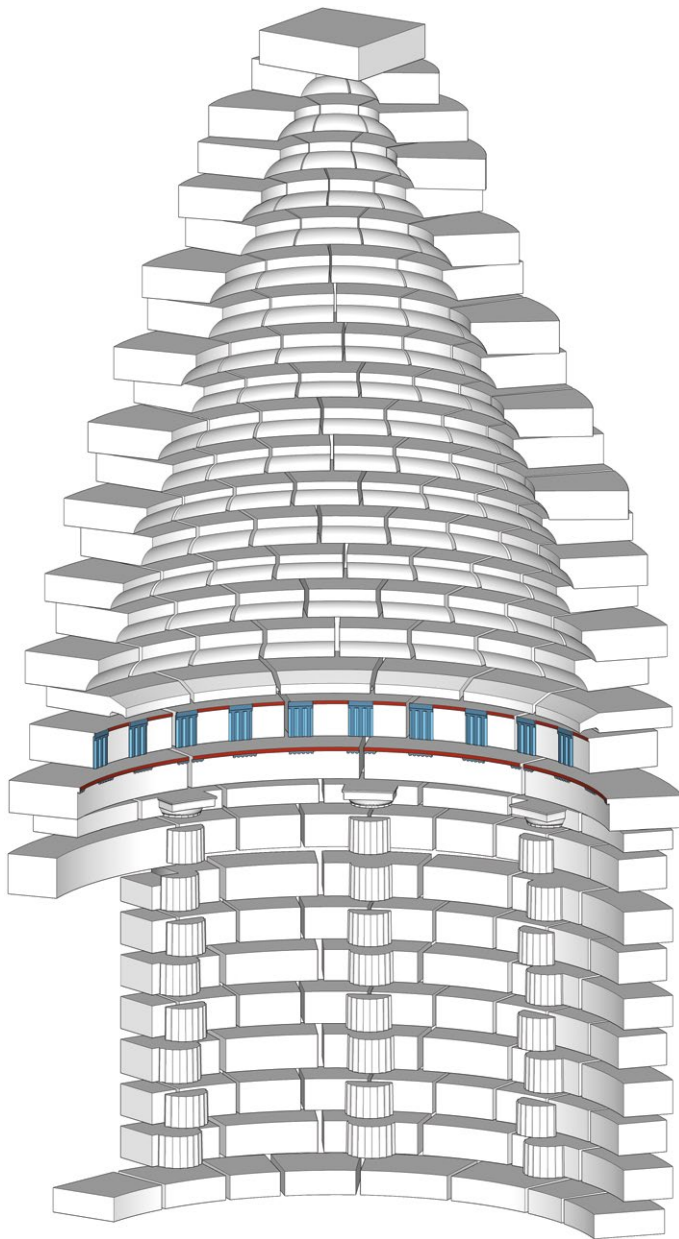
Fig. 84: Starosel. Reconstruction of the tholos door leaf (scale 1 : 20)

Fig. 85: Starosel. Socket for pivot for the tholos door in the block behind the lintel

Fig. 86: Starosel. Socket and track in the threshold of the tholos door, orthographic view from above (scale 1 : 20)

66 An arcing track cut in the threshold block in the tholos (Fig. 86) suggests that the tholos door had a wheel at the bottom. The position of the slot in the threshold allows us to estimate that the wheel was attached at ca. 0.813 m from the rotation axis, in a part of the leaf that is now broken and missing. The width of the slot, ca. 0.06 m, indicates that the wheel was similar in size to the one in the antechamber door.

67 The tholos door was fitted with a locking mechanism similar to that of the antechamber door, only slightly larger. The length and width of the locking bolt were 0.28 and 0.035 m, respectively, estimated based on the preserved cuttings. The distance between the keyhole and the bolt is the same as on the antechamber door, around 0.40 m, meaning that the same key could have unlocked both doors. Traces of rust attest to an iron bolt and frame. But it seems that the mechanism was not functional because



87

Fig. 87: Starosel. Exploded axonometric section of the tholos

the opposite wall block lacks a cutting to accommodate the bolt while locked.

68 Apart from the keyhole, the door leaf has two additional piercings, vertically aligned, set 0.103 m apart. They probably served to attach a handle, needed for closing the door.

### The Tholos Chamber

#### Foundations and Wall

69 The tholos foundations were not excavated and their full structure and depth are unknown. The chamber wall is built upon a ring-like platform of at least two courses of wedge-shaped blocks (Fig. 64, 87). The lower of these two courses has an internal diameter of 4.25–4.30 m, and is made of 18 granite blocks of which only the upper surfaces are visible. The stylobate course above is made of 25 volcanic tuff blocks, cut and assembled with remarkable precision. It is 0.223–0.225 m high and has an internal diameter of 4.85–4.86 m, inset with ca. 0.27–0.30 m from the granite course below. The blocks' vertical faces are dressed with a point, except a 0.045–0.050 m wide horizontal band at the bottom, which was smoothed with a flat chisel before putting the blocks together (Fig. 88)<sup>23</sup>. The top surface of the stylobate preserves incised lines that served as guidelines for the builders, and provide valuable insight about the process of planning of the tholos<sup>24</sup>.

70 The original floor level in the tholos was higher than currently exposed. As in the antechamber, the absence of floor pavers is puzzling. Given the attention to details and the efforts invested elsewhere in the tomb, it would be surprising if the chambers were left with simple earth floors. If stone slabs were used for pavement, then they have been thoroughly removed. Another possibility is that the installation of the floor was planned as a final stage of the construction, but was never completed. It is also possible that the floor was made of packed earth plastered with clay. In this case the original floor surface would have been heavily damaged by the collapsed blocks of the dome. An indirect indication of the floor level is a cutting in the vertical face of the stylobate, intended for the stone slab that adjoined the door threshold (Fig. 89). This slab is now broken and displaced but judging by its bedding, it originally stood at ca. 0.08 m above the bottom of the stylobate, and most probably rested directly on the ancient floor.

71 The tholos wall is inset 0.275 m from the edge of the stylobate to form a cylindrical volume with a diameter of 5.38–5.39 m<sup>25</sup>. The wall is built of finely dressed and

71 The tholos wall is inset 0.275 m from the edge of the stylobate to form a cylindrical volume with a diameter of 5.38–5.39 m<sup>25</sup>. The wall is built of finely dressed and

23 Rather than a contact surface or decoration, this band was part of the masons' routine: smoothing out only the bottom part of the face, which is hard to access after assemblage, and can serve as a guideline for finishing the entire face later.

24 Tzochev in press.

25 Measured at the bottom, in the centre of each intercolumniation.

tightly fitted tuff blocks, set in nine regular courses with total height 2.55 m. The lower eight courses are similar in height (0.286–0.310 m), while the top course is shorter (0.172 m). The thickness of the wall is 0.43–0.47 m at the sides of the entrance.

### Columns

72 Ten engaged Doric columns divide the interior face of the tholos wall (labelled A–J, counter-clockwise, Fig. 90. 91). In 2017, only column J (flanking the door from the west) was complete, albeit severely cracked. The columns are more or less evenly spaced, except those flanking the door, which have a larger interaxial distance (Fig. 92). Each column shaft is composed of eight drums, matching the height of the corresponding wall courses, 2.38 m in total. Drums in the odd courses are carved with the wall block behind, while those in even courses are carved as separate half-drums, and tied to the wall block with one or two  $\Pi$ -clamps (Fig. 93. 94. 95). The column capitals are carved from the blocks of the shorter ninth wall course. The resting surface of the drums is either entirely smoothed with a flat chisel, or, in some cases, only 0.06–0.07 m wide anathyrosis band was made with a tooth chisel along the edge (Fig. 96).

73 The columns have nine full flutes and two partial flutes at the junction with the wall, which is consistent with a canonical 20-flute full Doric column. Setting lines carved in the central flutes at the bottom of each lower drum indicate that at the time of placing the first wall-course, the lower parts of the drums were already fluted. The process most likely followed a common practice in ancient Greek buildings, in which only the bottom of the lower drum was fluted in advance, and that served as a guideline for carving the assembled columns at a later stage<sup>26</sup>.

74 The central axis of a column lies on the surface of the wall, but because this surface is curved, the two partial flutes are smaller than half-flutes, and the shaft section is slightly less than a half-circle. The diameter of the drums cannot be measured conventionally, but it can be calculated as a circumference, using the distances between at least three preserved arrises in the same plane (Fig. 97). The calculations show that the column shaft has a noticeable entasis with a maximal deflection in the middle of the shaft height (Fig. 98).

75 Of the 10 column capitals only the one on column E is preserved intact. The capitals are carved as part of the wall blocks and their total height, 0.172 m, corresponds to the height of the ninth wall course. The necking of the capitals terminates with three rounded annulets separated with simple grooves (Fig. 99). The echinus rises at 54° and has a very slight curve. It meets the bottom of the abacus at an obtuse angle, at least in one case (capital G) delineated by an incised groove. The front of the abacus is concave, an anomalous feature for a Doric capital, but here perfectly suited to the curving volume of the chamber. A cyma reversa-fascia moulding crowns the abacus plate.



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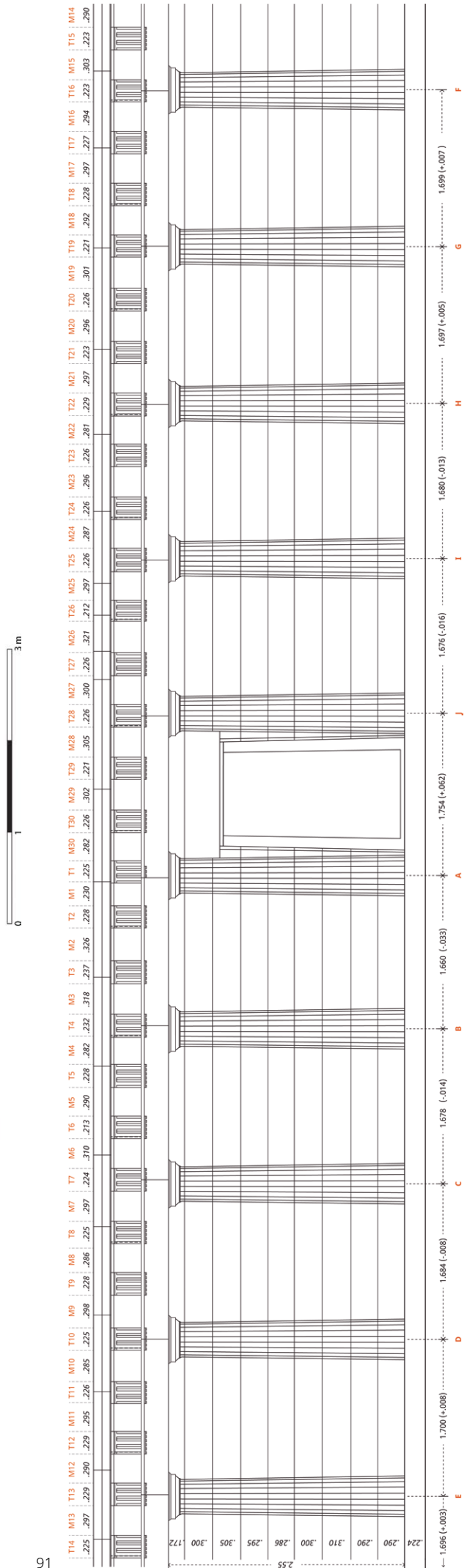
Fig. 88. 89: Starosel. Details of the stylobate course inside the tholos

26 Orlandos 1966, 75–77.

Fig. 90: Starosel. Unfolded photogrammetric model of the tholos interior. Discrepancies in horizontal scale are due to ›flattening‹ of elements in different planes

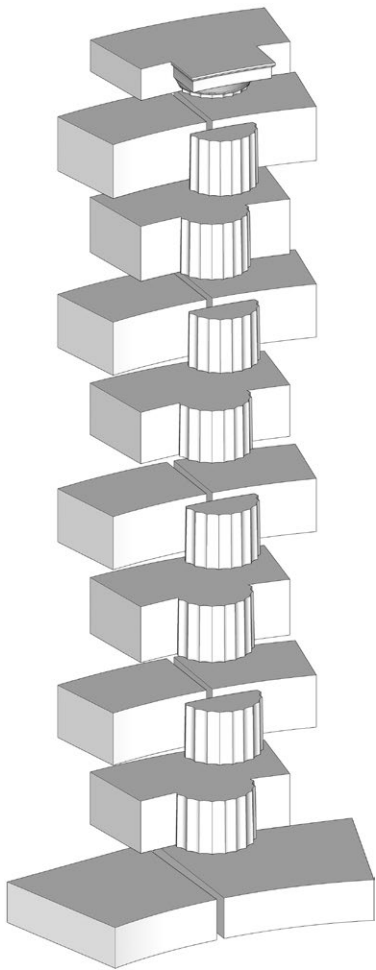


Fig. 91: Starosel. Unfolded elevation of the tholos interior. Discrepancies in horizontal scale are due to ›flattening‹ of elements in different planes



Intercolumniation	Angle between radii (°)		Linear space (wall curve, m)		Linear space (wall chord, m)	
	Value	Standard deviation (mean 36°)	Value	Standard deviation (mean 1.692 m)	Value	Standard deviation (mean 1.665 m)
A-B	35.292	-0.708	1.660	-0.033	1.633	-0.032
B-C	35.725	-0.275	1.678	-0.014	1.652	-0.013
C-D	35.859	-0.141	1.684	-0.008	1.658	-0.007
D-E	36.132	0.132	1.700	0.008	1.671	0.006
E-F	36.070	0.070	1.696	0.003	1.668	0.003
F-G	36.132	0.132	1.699	0.007	1.671	0.006
G-H	36.125	0.125	1.697	0.005	1.670	0.005
H-I	35.753	-0.247	1.680	-0.013	1.654	-0.011
I-J	35.616	-0.384	1.676	-0.016	1.647	-0.018
J-A (entrance)	37.317	1.317	1.754	0.062	1.723	0.058

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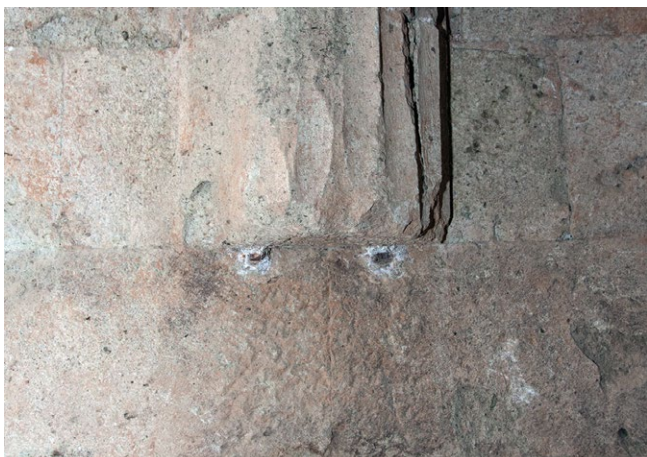
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Fig. 92: Starosel. Interaxial spaces in the tholos. Note that in a circle the mean space corresponds to evenly distributed axes

Fig. 93: Starosel. Exploded model of a tholos column

Fig. 94, 95: Starosel. Clamping of drums to the tholos wall

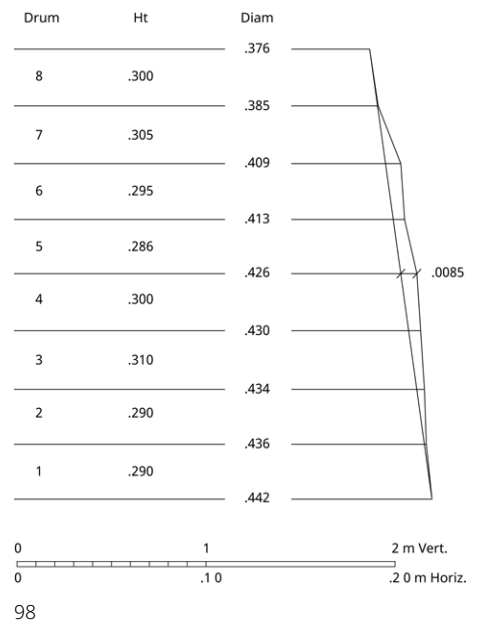
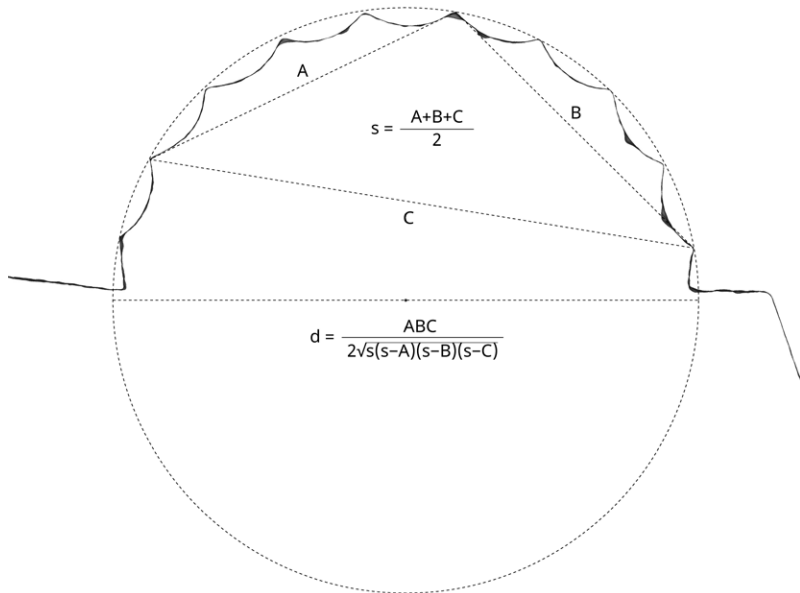
Fig. 96: Starosel. Anathyrosis band on the top surface of a drum in the tholos



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Fig. 97: Starosel. Section of a drum of column J (photogrammetric model) and method of diameter calculation

Fig. 98: Starosel. Diagram of shaft entasis of column J (horizontal scale 1 : 4; vertical scale 1 : 40)

## Entablature

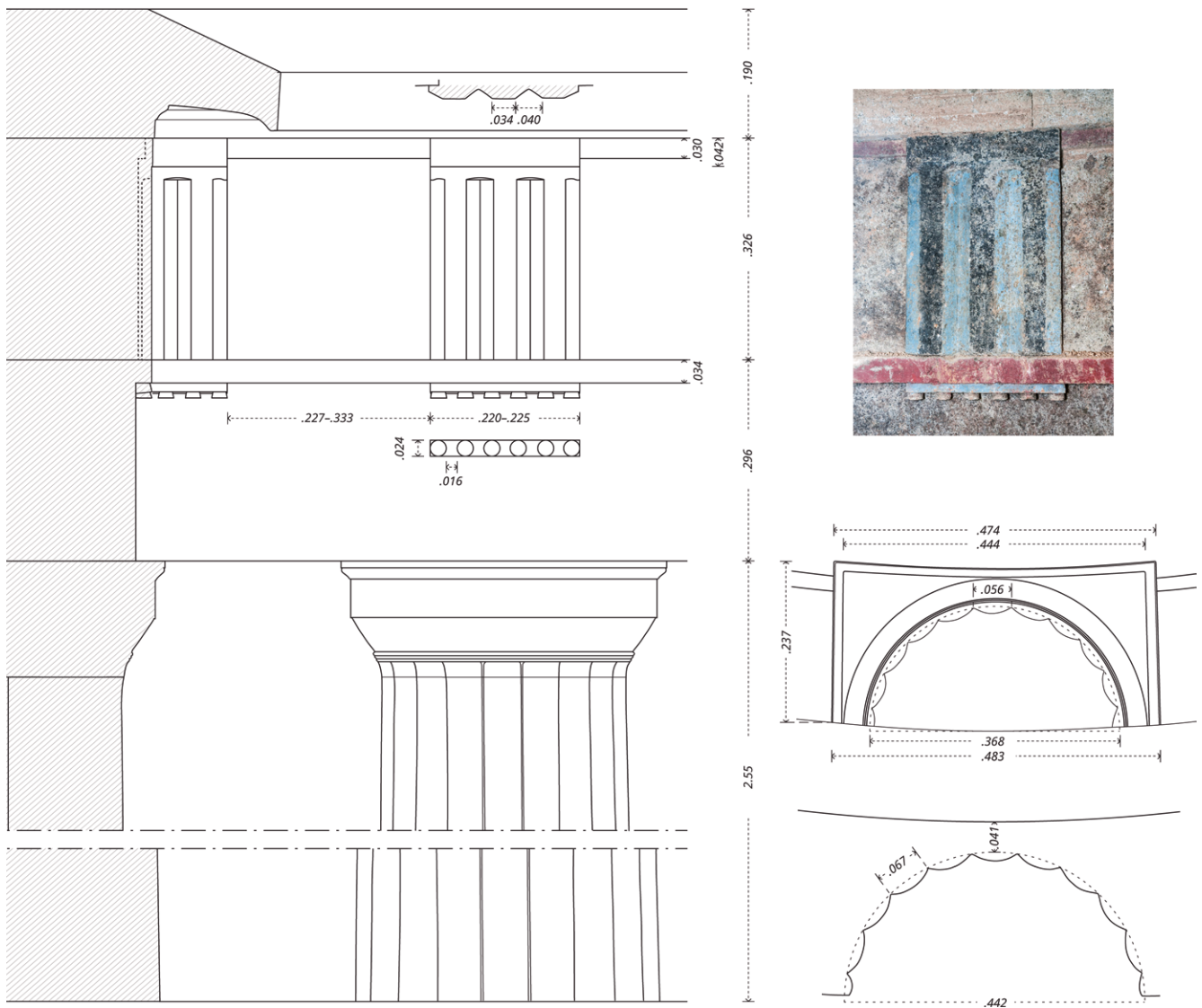
76 The entablature of the tholos consists of Doric architrave and frieze, and an Ionic geison. The architrave rests on the ninth wall course and is built of ten blocks, which are mostly preserved<sup>27</sup>. It is 0.296 m high and projects 0.193 m from the wall, thus forming a ring with an internal diameter of 4.982–4.990 m<sup>28</sup>. The taenia of the architrave (height 0.034 m, projecting 0.024 m) is painted red on its vertical face. Each block has two complete regulae in the middle, and two half-regulae at the ends, except for the block spanning columns A and B, on which the right half-regula is absent. The regulae are 0.015 m high at the front and 0.017 m at the back, with bottom surface slightly downslope towards the architrave face. Their front face, painted light blue, is inclined backwards, and curved to match the arc of the taenia. A full regula is 0.220–0.225 m long, and has six guttae shaped as truncated cones with backs connected to the architrave face. The guttae (height 0.009 m, width at the base 0.024 m) are left unpainted.

77 The frieze is 0.326 m high, and its face (at a metope) projects only 0.004 m in front of the architrave face. It is composed of 15 blocks, each block having, from left to right, a triglyph, metope, triglyph, metope. Thus, the entire frieze comprises 30 metopes and 30 triglyphs with average width 0.296 and 0.225 m, respectively. The triglyphs are painted light blue, and charcoal was applied to their front surfaces and sides to achieve a dark-blue shade. The grooves have slightly rounded tops. On the front, this rounding is emphasized by the darker blue shade, which makes a deeper curve above the groove. The triglyph at the left end of each frieze block projects about 0.02 m from the side of the block in order to hide the joint with the next block on the right. The fascia crowning the metope (height 0.030 m, projecting 0.010 m from the metope) is painted red.

78 The geison course is built of 19 radially joined blocks (height 0.190 m, length varies considerably), whose projecting parts have been heavily damaged. At present, no section of the geison has survived in full profile, and its shape is restored somewhat tentatively based on fragments. As in the antechamber façade, it is of an Ionic type, with a cyma reversa base profile, and no crown on the top. No traces of colour are visible on the front and the moulding.

27 Apart from a large chunk broken off the face in the area between columns I–J. The broken part was found in two fragments among the stones re-excavated in 2018.

28 Measured on the plain vertical face in the centre of each intercolumniation.



99

79 A number of irregularities in the structure of the entablature deserve special attention. The length of the individual architrave blocks varies in a way that most of the joints between them do not coincide with the geometrical centres of the capitals nor the column axes but are offset by up to 0.04 m from them. Furthermore, the architrave block spanning columns A and B lacks a half-regula on the right (Fig. 100) and has unusually wide spaces between the rest of the regulae (ca. 0.03 m wider than the average). It seems that initially the block was carved longer and was then shortened from the right, which led to the removal of the half-regula. Reworking the block this way was a simple but shortsighted solution, as it caused discrepancy in the frieze above. As Fig. 101 shows, the width of the triglyphs is relatively consistent, while the width of the metopes varies significantly. These variations were dictated by the positions of the regulae on the architrave blocks because a triglyph has to be aligned above a regula. Hence the abnormal architrave block A–B caused a problem: the frieze above has two unusually wide metopes, followed by two disproportionately narrow ones on the right. To avoid cramming triglyph T1 even closer to T2, the first was centred above the single half-regula. The result is a break in the Doric frieze system. Perhaps, working under time pressure, the builders sought to conceal their mistake, leaving triglyphs T1 and T2 unpainted (Fig. 100). All these discrepancies represent miscalculation rooted in the uneven distribution of columns in the circular space. The examination of the setting lines on the stylobate shows that this

Fig. 99: Starosel. Details of the tholos order (drawings scale 1 : 10)



Fig. 100: Starosel. Detail of the entablature above column A, showing an omitted half-regula, and a heavily contracted metope between two unpainted triglyphs

100

Fig. 101: Starosel. Widths of triglyphs and metopes in the tholos

	Triglyph		Metope	
	Width (m)	Standard deviation (mean 0.225 m)	Width (m)	Standard deviation (mean 0.296 m)
1	0.225	0	0.230	-0.066
2	0.228	0.003	0.328	0.032
3	0.237	0.012	0.318	0.022
4	0.232	0.007	0.283	-0.013
5	0.228	0.003	0.290	-0.006
6	0.213	-0.012	0.310	0.014
7	0.224	-0.001	0.300	0.004
8	0.225	0	0.286	-0.010
9	0.228	0.003	0.298	0.002
10	0.225	0	0.288	-0.008
11	0.226	0.001	0.295	-0.001
12	0.229	0.004	0.295	-0.001
13	0.229	0.004	0.298	0.002
14	0.225	0	0.290	-0.006
15	0.223	-0.002	0.303	0.007
16	0.223	-0.002	0.294	-0.002
17	0.227	0.002	0.297	0.001
18	0.228	0.003	0.292	-0.004
19	0.221	-0.004	0.301	0.005
20	0.226	0.001	0.296	0
21	0.223	-0.002	0.298	0.002
22	0.229	0.004	0.283	-0.013
23	0.226	0.001	0.296	0
24	0.226	0.001	0.289	-0.007
25	0.226	0.001	0.297	0.001
26	0.212	-0.013	0.321	0.025
27	0.226	0.001	0.300	0.004
28	0.226	0.001	0.305	0.009
29	0.221	-0.004	0.302	0.006
30	0.226	0.001	0.282	-0.014

101

irregular layout was not planned but calculated only after the stylobate was set<sup>29</sup>. At that time some of the architrave blocks may have already been carved based on the initial layout.

### Dome

80 The corbel dome of the tholos starts above the geison course, at 3.35 m above the stylobate. At the time of discovery only the lower three dome courses stood in place – the first two entirely, and the third partially preserved. Most of the remaining corbels were found collapsed inside the tholos chamber, from where they were taken out and buried alongside the rest of the architectural elements in 2000. The blocks were later unearthed and studied by architect Petar Petrov, whose anastylosis project was implemented in 2013<sup>30</sup>. The reconstructed dome consists of 16 corbel courses and a covering slab on the top (Fig. 64. 87. 102. 103). It includes 268 blocks, of which 238 original, distributed by courses as shown in Fig. 104. The interior height of the dome is 4.48 m, its rise : run ratio is 1.96 : 1, and the total interior height of the chamber, measured from the stylobate level, is 7.83 m.

81 The corbels used for the dome are wedge-shaped segment blocks of volcanic tuff (Fig. 87). Their faces are modelled as an overhung cavetto-fascia, similar in section to that of the corbels in the vault of the antechamber. The covering block is a quadrangular slab (1.11 m × 1.15 m, height 0.30 m). Some of the corbel blocks were clamped to their neighbours with II-clamps, and some have pry cuttings on their top surfaces. Petrov reports also cuttings for bird-tail clamps on the second corbel course, which however, were found empty<sup>31</sup>.

82 Reconstructing the dome was complicated by the fact that the original corbel courses were composed of different-sized blocks, the joints between which were not strictly radial. Hence the angle between the sides of the blocks and the lengths of



102



103

Fig. 102: Starosel. The reconstructed dome viewed from outside

Fig. 103: Starosel. Orthographic view of the interior of the reconstructed dome (scale 1 : 50)

29 Tzochev in press.

30 I did not have an opportunity to see the blocks of the dome before the anastylosis in 2013. The description and measurements published here are based on my study of the reconstructed dome, and Petrov's documentation (Petrov 2004; Petrov 2010).

31 Petrov 2010, 1 f.

Course (bottom to top)	Number of blocks		Diameter (m)	Diameter (m)	Diameter (m)	Height-average (m)
	Total	Original	Project	Actual, south-north	Actual, west-east	
1	27	27	–	4.859	4.843	0.29
2	25	25	4.575	4.587	4.563	0.29
3	24	20	4.315	4.316	4.307	0.25
4	23	21	4.045	4.061	4.055	0.28
5	23	17	3.781	3.797	3.780	0.27
6	21	19	3.513	3.531	3.519	0.23
7	19	17	3.247	3.231	3.245	0.27
8	19	16	2.961	2.956	2.978	0.28
9	15	15	2.685	2.646	2.690	0.30
10	14	12	2.405	2.323	2.379	0.29
11	12	11	2.088	1.997	2.042	0.29
12	12	9	1.768	1.684	1.695	0.29
13	11	7	1.475	1.375	1.346	0.30
14	9	9	1.127	1.094	0.974	0.27
15	7	6	0.828	0.751	0.643	0.29
16	6	6	0.512	0.444	0.410	0.28
17	1	1	–	–	–	0.30

104

Fig. 104: Starosel. Distribution of blocks in the dome by courses. The figures for the anastylosis project are after Petrov 2010. Actual values are calculated from a photogrammetric model made in 2016 and reflect possible shifts in the structure after 2013. Diameters are measured from the top edge of the fascia

their faces cannot be used to determine the diameter of the course to which they belong. To overcome this problem, and in order to group the blocks in individual courses, Petrov classified them based on their height, the diameter estimated from the curve of the front fascia, and the projection of the face. He emphasized the significant variations in these measurements, and hence, the difficulty of reconstructing the original arrangement of the courses<sup>32</sup>. Furthermore, it seems like there were practical problems with implementing the theoretical arrangement, which is seen in the discrepancies between the number of blocks per individual course in the anastylosis project and the reconstructed dome. The reconstruction clearly shows these difficulties, especially in the top eight corbel courses, where one can observe apparently mismatched curves and joints (Fig. 103). Therefore, some doubt remains about whether the dome had exactly 16 corbel courses as reconstructed, but the original number cannot be much different.

### Deformation

<sup>83</sup> The courses of the tholos wall and entablature have shifted southwards, in a way that the joints between them have remained horizontal. The shift amounts to only a few millimetres per course, and is unnoticeable, moreover, the geometry of the individual courses seems to have remained unaffected. However, the overall geometry of the tholos wall was deformed into an oblique cylinder, as shown exaggeratedly in Fig. 105. The inclination of the interior face of the wall reaches up to 2° (measured between columns E and F). The resulting shift of the architrave in relation to the stylobate along the north-south axis is ca. 0.07 m. The north wall of the antechamber, together with its door-frame, also inclined under the pressure of the tholos wall. The deformation can be explained with the fact that the tomb is located in the southern periphery of

<sup>32</sup> Petrov 2010, 3–5.

the burial mound, and hence the tholos was not symmetrically loaded. The earthen fill produced additional lateral thrust from the north as it settled. This, coupled with seismic activity, and the absence of vertical dowels to prevent sliding between the courses<sup>33</sup>, is the most likely reason for the distortion of the walls as well as for the collapse of the tholos dome.

### Archaeological Evidence of Date

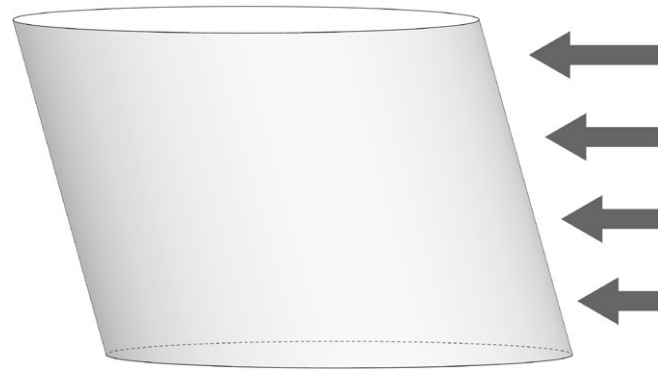
84 The excavators found the tomb thoroughly looted. Only small pieces of pots, weaponry, and gold jewellery remained scattered in the chambers and the dromos. A closer look at some of these objects can help establish the period of use of the tomb, and hence – the latest possible date for its construction. The following review presents the objects that can be identified, dated, and are certainly related to burial(s) in the tomb.

85 A fragment of a red-figure type-A Attic skyphos was found in the antechamber (Fig. 106). The reserved area on the left side of the exterior surface represents the himation of a human figure, with four dark lines rendering folds of the cloth. Another reserved area in the lower right corner is a leaf of the palmette that usually decorates the area below the handles. The preserved part is too small to be dated based on painting style. But the profile of the vessel body, markedly contracting towards the foot, is typical for the later skyphoi of the Fat Boy group, from the second and the third quarter of the 4<sup>th</sup> century B.C.<sup>34</sup>. In any case, such skyphoi went out of fashion after ca. 330 B.C.

86 A group of fragments, also from the antechamber, belongs to a black-glazed squat lekythos (Fig. 107). The profile of the vessel can be reconstructed almost entirely. The exterior surface was covered by uneven black glaze, and the body was decorated with a reserved palmette, of which a small edge of a leaf has survived. This type of small squat lekythoi was used since the late 5<sup>th</sup> century B.C., the general development being towards taller and slimmer proportions, smaller foot, and more flaring rim<sup>35</sup>. Excavations at Olynthos have yielded a sizable collection of squat lekythoi with palmette decoration, some of which have very similar profiles to the one from Starosel<sup>36</sup>. The Olynthian examples must pre-date the city's destruction in 348 B.C. Among the many grave deposits with palmette lekythoi, of particular interest as a parallel to Starosel is a grave from Aineia, where one such lekythos was placed alongside a red-figure skyphos similar to the one described above<sup>37</sup>. The excavator considers that at least some of the vessels in the grave are made in Olynthian workshops, hence before 348 B.C. The use of squat lekythoi seems to have continued for some time after the destruction of Olynthos but certainly not for long. By ca. 325 B.C. they were already out of fashion, replaced by unguentaria<sup>38</sup>.

87 Although the fragments of both the skyphos and the lekythos are recorded as found in the antechamber, without specifying the exact findspot, this information is sufficient to conclude that the two vessels were originally located inside the tomb.

88 Further information comes from two fragmented transport amphoras, found in front of the antechamber façade. One of them, produced on Chios, can be restored to a nearly complete profile (Fig. 108). This type of Chian amphora – with a tall straight



105

Fig. 105: Starosel. Schematic representation of the deformation of the tholos wall

33 Vertical dowels are not attested in any part of the tomb and presumably were also not used in the tholos wall.

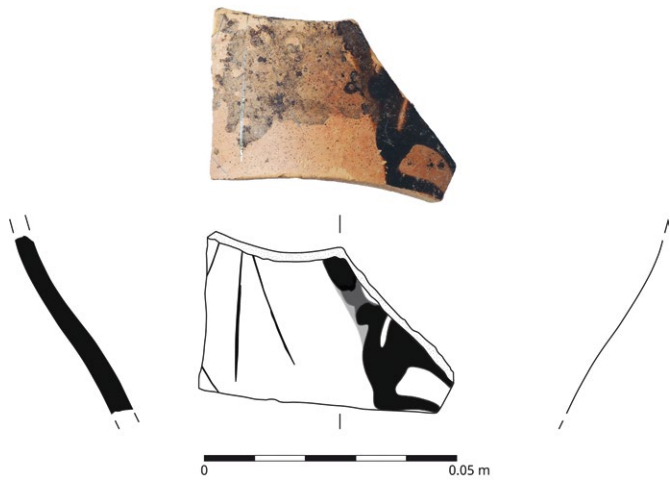
34 On the chronology of the F.B. group, see Sabbatini 2000.

35 Sparkes – Talcott 1970, 154.

36 Robinson 1950, 141–167 pls. 101–112.

37 Vokotopoulou 1990, 86–91 pl. 55.

38 Rotroff 1997, 177 f; Mallwitz 1980, 125; Drougou 2005, 153 f.



106



107

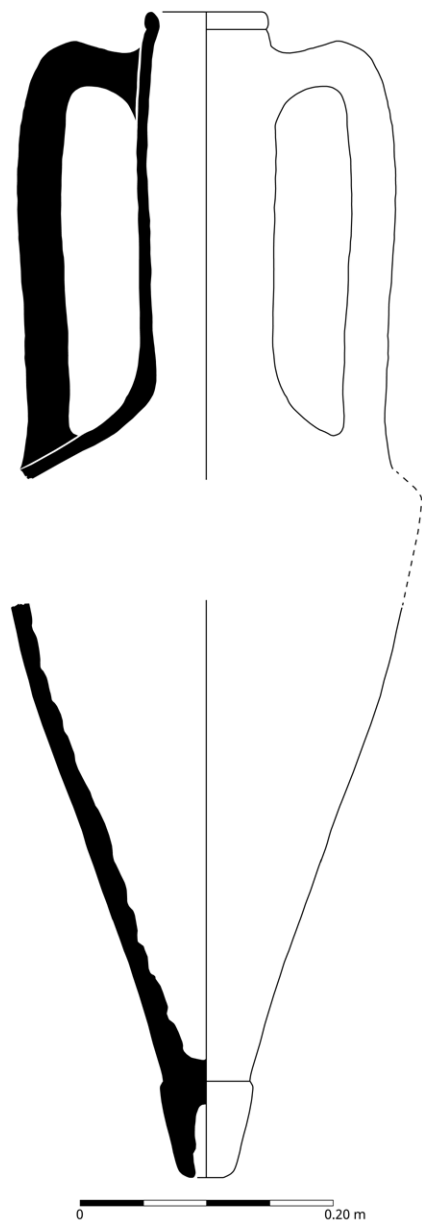


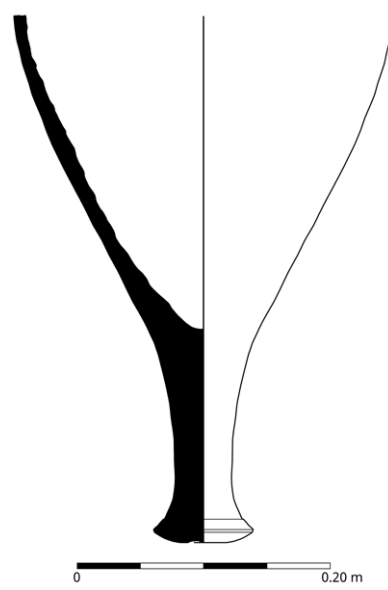
Fig. 106: Starosel. Fragment from a red-figure skyphos (Inv. 8570) (scale 1 : 1.5)

Fig. 107: Starosel. Black-glazed squat lekythos (Inv. 8833) (scale 1 : 1.5)

Fig. 108: Starosel. Chian transport amphora (Inv. 8888) (scale 1 : 6)

Fig. 109: Starosel. Mendean transport amphora (Inv. 8888) (scale 1 : 6)

108



109

neck, conical body, and a hollowed conical toe – was introduced in the last quarter of the 5<sup>th</sup> century B.C., and evolved gradually through the 4<sup>th</sup> century B.C.<sup>39</sup>. The shape of the Starosel amphora has good parallels in a number of closed deposits, dated in the period ca. 380 – ca. 330 B.C.<sup>40</sup>. It differs from Chian amphoras of the last quarter of the 4<sup>th</sup> century, which have handles attached lower on the neck, and more elongated toes. The second amphora, of which only the lower part survives, originates from the area of Mende on the Chalkidiki peninsula (Fig. 109). Mendeian amphoras with a high stem toe were produced during the second and the third quarters of the 4<sup>th</sup> century B.C. Amphoras with similar toe profiles are found in closed deposits from ca. 350–330 B.C.<sup>41</sup>.

89 The fragments of the two amphoras were found in front of the antechamber façade, at about ground level, under the fill that blocked the entrance. Therefore, the amphoras were placed on the floor of the dromos before it was filled, rather than taken out of the chambers during a later looting. The presence of broken transport amphoras in front of the entrance of a burial chamber is a reoccurring pattern in monumental tombs in Thrace<sup>42</sup>. Their deposition is part of a ritual, including horse sacrifice, performed before the closure of the tomb, presumably, immediately following a burial.

90 The ceramic finds presented above suggest that at least one burial took place in the tomb before ca. 330 B.C. This has a clear implication for the construction date of the tomb, which cannot be later than the burial. There is no archaeological evidence that indicates how long before this date the tomb was built. But its architectural design, discussed in the following section, makes it unlikely that this happened before 350 B.C.

## Architectural Design

### General Concept and Monumentality

91 The basic form of a tholos tomb with an antechamber and dromos entrance has ancient roots in Late Bronze Age Greece, but saw widespread revival in Hellenistic Thrace. In Starosel, this form was elaborated with elements from multiple architectural traditions, blended in a strikingly original design, and built on an ambitious scale. Knowing that this is the largest tomb of its kind in Thrace is not enough to grasp how extraordinary it appeared to its ancient viewers. The tomb was also one of the earliest of its kind, and the fact that it was built in a region without pre-existing traditions in monumental stone architecture is what made it really impressive. The only sizable stone masonry structures in the Thracian interior thought to date before the mid-4<sup>th</sup> century are a couple of fortification walls<sup>43</sup>. The opulent Thracian graves of the 5<sup>th</sup> and early 4<sup>th</sup> century are simple cist-like chambers, or at best resemble miniature buildings in

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39 On the typology and chronology of Chian amphoras in general, see Monakhov 2003, 9–24.

40 Mound Zmeiny, dated to the 380s B.C. (Monakhov et al. 2016, 39 f. fig. 3, 1); Nikonion Mound 4, grave 2, and Petuchovka Mound 4R, both dated to 370s (Monakhov 1999, 254 f. fig. 101, 5; 280 f. fig. 115, 1); Chersonesos, pit 1/1978, dated to the 350s B.C. (Monakhov et al. 2017, 36 fig. 11, 1); Mound Cherednikov, dated to the late 350s – early 340s (Monakhov 1999, 340–347 pl. 149, 9; for an earlier date of the Thasian stamp in this deposit see Tzochev 2016, 80 f). The Valma well on Thasos, closed ca. 330 B.C. (Blondé et al. 1991, 227 fig. 7, 47; 231 fig. 8, 50; on the date: Tzochev 2018, 130–132).

41 Late 350s or early 340s B.C. (Monakhov 1999, 381 fig. 168, 1; date based on a Sinopean amphora stamp). The Valma well on Thasos, closed ca. 330 B.C. (see the previous note).

42 E. g., Kurt Kale (Filov 1937, 80); Slavchova Mogila (Kitov 1996, 6; Tzochev 2009, 58), Ploskata Mogila (Kitov 2008, 241), Dolno Izvorovo (Nehrizov – Parvin 2011, 62). In all these cases amphoras were found along with horse bones. The presence of horse bones within the destructions of the façade at Chetinyova Mogila is mentioned in a letter by Kitov, dated 14 March 2000, in the archive of the Bulgarian National Institute for Immovable Cultural Heritage.

43 Including the fortifications of the settlement at Adzhiyska Vodenitsa and the city of Kabyle, whose dates, however, are controversial (Nankov 2008, 36). A possible exception is a site at Vasil Levski, ca. 31 km northeast of the Starosel tomb, where the remains of a stone building could be as early as ca. 500 B.C. (the architectural remains at this site still await publication).

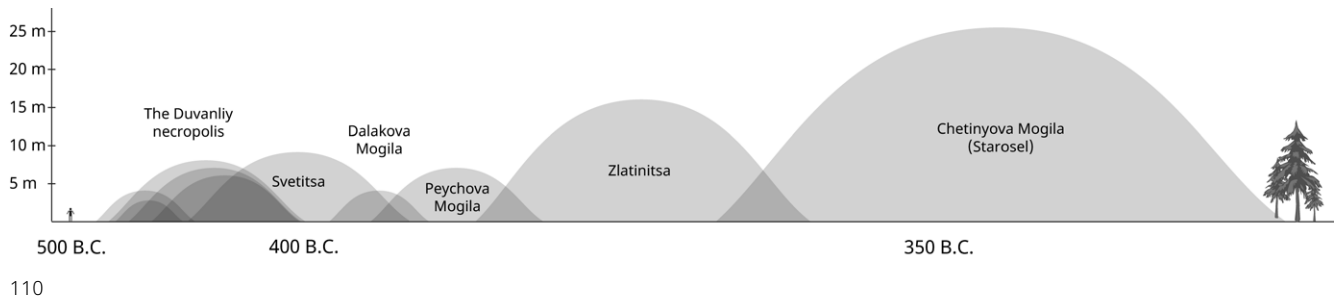


Fig. 110: Starosel. Sizes of the mounds covering the richest burials in Thrace dated ca. 500–350 B.C., compared to Chetinyova Mogila (scale 1 : 1000)

which a person could hardly stand up<sup>44</sup>. A trend towards making larger burial mounds from the 5<sup>th</sup> century onwards suggests a competition in scale, conspicuousness, and permanence (Fig. 110). The builders of the Starosel tomb took this trend to a completely different level with the decision to raise the enormous mound on a natural hill, creating a grave marker visible from kilometres. The retaining wall and the propylon were necessary to cope with the steep terrain but together with the large dromos they also provided a monumental stage for performance and spectatorship. While this design was probably adapted to serve the traditional burial rituals and beliefs of the Odrysian elite, the use of architecture as a stage and amplifier for propagating an elite ideology was something very new in Thrace.

### The Façade

<sup>92</sup> Thracian tombs have either plain, unarticulated façades or, more rarely, incorporate separate elements of the architectural orders into a front elevation. In contrast, the Starosel tomb is fronted by a fully developed representation of a building, with a composition of Ionic pilasters and Doric entablature. These elements are purely decorative: their function is to create an illusion of depth and to hide the roofing structure of the antechamber behind, with which they have no structural link. Such ›illusionist‹ façades are one of the most characteristic traits of Macedonian tomb architecture<sup>45</sup>.

<sup>93</sup> However, the Starosel façade is the result of an independent development. This is suggested not only by the early date of the monument – earlier than most Macedonian tombs with decorative façades<sup>46</sup> – but also by a number of features of the design, untypical for Macedonian architecture. Starting with the general appearance, the impression one gets when approaching the tomb from below and climbing the stairs of the propylon contrasts with the experience of descending towards a Macedonian tomb dug into the ground. The elevated position of the façade, further emphasized by the raised entrance, evokes a façade cut into a rock high above the ground. This impression is amplified by the use of stones of different texture. Unlike the plastered fronts of Macedonian tombs, the Starosel façade exploits the effects of the naked surface of the stone. The soft and smooth greyish tuff contrasts with its frame of rough granite, like the smooth surface of a façade chiselled in a rough rock face.

<sup>94</sup> Apart from this allusion to a rock-cut tomb, several other traits indicate Anatolian, rather than Macedonian influence. To begin with, the unconventional mixture of Ionic and Doric orders. While mixing elements of the two orders was not foreign to tombs and palaces in Macedonia, none of them takes it as far as the Starosel tomb, or shows the peculiar arrangement seen here. The choice of Ionic pilasters was practical as it allowed

<sup>44</sup> E. g., Ruets (Velkov 1928, 37), Kaloyanovo (Čičikova 1969), Ruzhitsa (Valeva 2020).

<sup>45</sup> Miller 1982; Miller 1993, 9–11. Fedak 1990, 109.

<sup>46</sup> The closest Macedonian parallels are a group of tombs in the area of Thessaloniki, which like Starosel have Doric façades of nearly square proportions, with engaged pilasters on both sides (Agia Paraskevi: Sismanides 1990; Phoinikas, Agios Athanasios: Tsimbidou-Aulonite 2005). All these tombs were built at least three decades after Starosel.

for a taller façade wall, which in itself was required by the change in the level between the dromos and the antechamber. Topping the pilasters with Doric architrave and frieze, and an Ionic geison was an unconventional decision<sup>47</sup>, and was probably meant to keep the style consistent with the tholos interior (cf. Fig. 61 and Fig. 99). An Ionic doorframe and a Doric entablature within the same façade wall are an extremely rare combination<sup>48</sup>. There are very few pre-Hellenistic cases of similarly inventive mixture of building traditions. The examples that come to mind are andrones A and B at Labraunda in Caria, built between 377 and 350 B.C. The old view that this combination of the orders was a »barbaric misinterpretation of Greek architectural forms«<sup>49</sup> has long been dispensed with in favour of a thoughtful and programmatic mixing. It has been argued that the choice of architectural orders in the Labraunda's andrones reflects Mausollos's political ambition to rule the Doric and Ionic peoples in the east Aegean<sup>50</sup>. Or, that it was aimed »to develop an original and memorable design by cherry-picking architectural elements from various building traditions«<sup>51</sup> – an explanation that seems also apt for Starosel.

95 Ionic doorframes are virtually absent in Macedonian tombs<sup>52</sup>. Until the 4<sup>th</sup> century B.C. Ionic doorframes were reserved for temples and treasuries<sup>53</sup>. Starting with the Nereid monument, the fusion of temple and funerary architecture introduced Ionic doorframes in Carian and Lycian tombs, which must have been the source of influence for Thracian tombs<sup>54</sup>. Eastern influence is particularly clear in the horn-like acroteria of the Starosel doorframes. Their prototypes can be found in Achaemenid monumental tombs<sup>55</sup>. By the 5<sup>th</sup> century B.C. we see them incorporated in Ionic-style lintels of buildings in Asia Minor<sup>56</sup>, and during the Hellenistic period they became common – in a more pronounced form – in Alexandrian architecture. The lions carved on the top of the Starosel lintels have the posture and proportions typical for Attic funerary sculpture of the 4<sup>th</sup> century B.C. But their arrangement – in antithetical pairs, facing an ornamental feature – evokes the sculptures from the roof of the Mausoleum of Halikarnassos, where similar composition has been interpreted as a reference to a Near Eastern tradition<sup>57</sup>.

96 The sculptured imitation of wooden planks and nails on the doors shows a clear influence from Asia Minor. Vertical bands from the side of the door axis are typical for monuments in this region, and absent on stone doors from Macedonia and Greece<sup>58</sup>. The ratio between the panels' heights are normal for Carian tomb doors<sup>59</sup>, but unusual for Macedonia, where the lower panel is about twice as high as the upper. The bosses with semi-circular section, arranged in a checkerboard pattern in three rows are other

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47 The use of Ionic antae and pilasters in Doric buildings can be seen in 2nd-century-B.C. monuments but it has an early precedent already in the Older Parthenon (Hill 1912, 552 f; Shoe 1936, 180).

48 The only other examples known to me are the Mausoleum at Belevi (Praschniker – Theuer 1979, 43–45 fig. 31; Heinz 2017, 137–138 fig. 77 pl. 123) and the Asklepieion at Lissos on Crete, built in the late 3rd or the 2nd century B.C. (Kanellopoulos 2019).

49 Tomlinson 1963, 139.

50 Karlsson 2013.

51 Blid 2020, 83 f. Recently, Pontus Hellström argued that the mixture was not politically motivated, but it was an »experiment to create a new architectural order by combining the most typical and significant features of the two old traditional orders...« (Hellström – Blid 2019, 274).

52 Among the rare exceptions are a 2<sup>nd</sup> century-B.C. tomb at Pella (Chrysostomou 2006, 652–654 fig. 13), as well as the tomb on the Kasta hill, Amphipolis.

53 Büsing-Kolbe 1978, 82.

54 Stoyanova 2015, 170.

55 Cf. Cahill 1988, 492 f. figs. 14–16.

56 Ateslier-Aydm 2001, 166 f. figs. 17–19.

57 Carstens 2009, 70 f.

58 Stoyanova 2002, 540.

59 E. g., Roos 1972, 84 pl. 49; Jeppesen 2000, fig. 28, 3; Henry 2010, 4. Unfortunately, detailed measurements are not systematically published.

features in common with tombs in Asia Minor<sup>60</sup>. In contrast, on Macedonian doors the knobs on the horizontal bands are aligned in two rows, and the profile of the bosses is lower and often shaped as a shield, with a bevel along the edges<sup>61</sup>.

<sup>97</sup> Besides drawing inspiration from Asia Minor, the Starosel façade incorporates design elements typical for mainland Greek architecture. These include the pilaster bases, with their semicircular tori<sup>62</sup>, and the cyma reversa-ovolo-cavetto combination on the pilaster capitals<sup>63</sup>. The mix includes not only elements from different regional styles but also from different periods. A deliberate archaism is the most probable explanation of the lateral acroteria in the form of spiral-shaped volutes. This kind of acroteria were used in certain Archaic-period temples, of which the Hekatompedon on the Athenian Acropolis probably best illustrates the idea<sup>64</sup>. In the 4<sup>th</sup> century B.C. spiral-shaped volutes were an essential part of Ionic architecture as decoration on capitals and altars, but their presence as acroteria on a pediment is highly unusual. A pair of antithetical felines as pedimental sculpture (if this reconstruction is correct) would further emphasize the reference to Archaic temple pediments.

### The Doric Order

<sup>98</sup> Starosel is a rare ancient case, where the Doric order was used in the interior elevation of a circular building. It is the earliest known example of such use, and the only one dated to the 4<sup>th</sup> century B.C.<sup>65</sup>. Doric colonnades are generally absent in 4<sup>th</sup> century temple interiors, probably because they were considered too massive for this purpose<sup>66</sup>. Circular buildings pose further difficulties, as the square abacus of the Doric capital, and the rectangular mutules are at odds with the curved lines of the architrave and the geison. In all cases where we encounter Doric order in circular buildings – such as the tholoi at Delphi and Epidauros, or the Rotunda of Arsinoe on Samothrace – it is used in the exterior. These buildings have larger diameters, hence the distortion of the curvature there is less pronounced and does not conflict with the straight lines of the abaci. Only a slight extension of the mutules was enough to make their sides parallel. However, in the interior of a smaller tholos, unless heavily contracted, the mutules would form triangular spaces, or even clash at the edges.

<sup>99</sup> The architect of the Starosel tomb resolved both these problems successfully. Curving the front of the abacus gave the capitals an elegant look against the background of the curved architrave and wall. This decision can be seen as a borrowing from the Corinthian capital, which was the standard choice for round interiors during the 4<sup>th</sup> century B.C., partly because of the concave faces of its abacus. Substituting an Ionic geison for the Doric was the obvious solution to the problem with the rectangular mutules.

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60 E. g., the doors from Mylasa and Yokuşbaşı (Akarca 1952, pl. 77; Jeppesen 2000, 170–174 fig. 28, 3–11), Beçin (Kızıl 1996; Henry 2010, 6 fig. 4), Kaunus (Roos 1972, pl. 49), Telmessos (Büsing-Kolbe 1978, 116 fig. 22), Lale Tepe (Stinson 2008, 7. 18. 19). The last example shows that this pattern in stone goes back to at least the early 5<sup>th</sup> century B.C.

61 For the shape of the knobs on doors from Macedonia see Haddad 1995, pl. 70, who considers it chronologically sensitive.

62 Dirschedl 2013, 326.

63 Shoe 1936, 29, 174–176.

64 For a comprehensive list of buildings with volute acroteria, see Danner 1989 and Danner 1997.

65 The only exception is a tomb located about 70 km northeast of Starosel, in a mound called Shushmanets (Dimitrova 2013), dated to the third quarter of the 4<sup>th</sup> century B.C. (Tzochev – Kiriati 2018, 550). Its interior design was most likely inspired by the Starosel tomb, but the style and the implementation are much cruder and suggest that it was made by local builders (who perhaps took part in the Starosel project).

66 Roux 1961, 396.

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Architects have occasionally resorted to such a substitution since at least the 5<sup>th</sup> century B.C., in cases where peculiarities of the design impeded the use of a Doric geison<sup>67</sup>.

100 Another avant-garde idea of the Starosel architect was the engaged colonnade in the tholos. Lacking any structural function, the colonnade is there solely for aesthetic purposes: to break the monotony of the wall, and to create an illusion of a peristyle, thus making the chamber look more spacious. While the idea of representing a peristyle court inside a burial chamber goes back to at least the 5<sup>th</sup> century B.C.<sup>68</sup>, the use of decorative engaged colonnade was novel at the time the Starosel tomb was built. Architects in the Peloponnese and western Greece had been experimenting with engaged columns since the Archaic period, but before the 4<sup>th</sup> century B.C. all such columns are real buttresses that reinforce walls, or – in the curious case of the temple of Apollo at Bassae – decorate load-bearing spur-walls<sup>69</sup>. Since the early 4<sup>th</sup> century half-columns were more widely and freely employed, including as decoration of pillars. Engaged columns, used in the way we see them in Starosel, did not become popular before the latter half of the century, mostly in tomb façades and theatres<sup>70</sup>. One of the earliest dated examples comes from the interior of another circular building, the Philippeion at Olympia, built between 338 and 336 B.C.<sup>71</sup>. The columns of the Philippeion are Corinthian, rest on a socle high above the floor, and are entirely carved as part of the wall blocks, but in essence, they have the same function as in Starosel. Around that time, decorative engaged columns were also introduced in the façades and the interiors of Macedonian tombs<sup>72</sup>.

101 The details of the Doric order follow Late Classical trends. The steep profile of the echinus is comparable with capitals made around and after the middle of the 4<sup>th</sup> century, although it preserves the slight curve, and – at least in some of the capitals – the tiny groove at the junction with the abacus, typical for earlier periods. The guttae's proportions rank with monuments of the end of the 5<sup>th</sup> – beginning of the 4<sup>th</sup> century<sup>73</sup> and their backs are attached to the face of the architrave as was usual in the Classical period. The softly curved tops of the triglyph grooves, the undercut groove ceilings (in the façade triglyphs), and the small, gently curved ›ears‹ on the top of the half-grooves, are typical for Attic monuments of the Classical period<sup>74</sup>.

102 The crown moulding of the abacus, however, is an unusual feature. It is mostly known from Hellenistic monuments in Asia Minor, but in rare instances it appears earlier<sup>75</sup>. Capitals with similar cyma-reversa crown can be found in the late 4<sup>th</sup> century temple of Athena Lindia on Rhodos<sup>76</sup>, and these capitals have similar proportions and echinus shape as those in Starosel. Another parallel is the treasury of Kyrene in Del-

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67 For example, in the stoa of Brauron the choice of an Ionic geison has been explained with the difficulty to fit the mutules above the contracted corner elements of the frieze (Coulton 1966, 135 f.), or as a way to negotiate the proportions between the width of the intercolumniations and the height of the elements of the entablature (Bouras 1967, 166).

68 An early example of this idea is a group of cist graves in the area around the Pagasetic Gulf and Pherai. The interior faces of the slabs of some of these graves are decorated with incised and painted Ionic columns. The examples from the Thymarakia tumulus in the northern cemetery of Pherai are as early as the second half of the 5<sup>th</sup> century B.C. (Adryme-Sismane 1983; Stamatopoulou 1999, 22–25).

69 Roux 1961, 393–398, 422 f.; Büsing 1970, 82 f.; Coulton 1977, 131 f.

70 An important step in this development was the interior colonnade in the temple of Athena Alea at Tegea, whose date of construction, however, is debated, with opinions ranging between ca. 375 and ca. 335 B.C. (Norman 1984, 191–193 with a review of earlier studies). See also Winter 1982, 392. The Lion monument in Knidos was previously considered one of the earliest cases of a purely decorative engaged colonnade, dated to the beginning to the 4<sup>th</sup> century B.C. However, most modern studies date it to the Hellenistic period (Berns 2020, 29 with further bibliography).

71 Miller 1973, 191.

72 Probably the earliest examples are the ›tomb of Eurydice‹ and Tomb II at Vergina. The dates of these tombs remain controversial: see summaries of the debates in Borza – Palagia 2007 and Hatzopoulos 2008.

73 Diam/Ht. 2.58, cf. Pfaff 2003, 101.

74 Coulton 1968, 172 f.

75 Herrmann 1983, 4–6.

76 Dyggve 1960, 102–104. 123 figs. 4, 13. 17.

phi, built between 334 and 322 B.C.<sup>77</sup>. Both the abacus crown and the unusually strong entasis of the columns of this building – comparable with that in Starosel – have been suggested as features of the ›Kyrenian‹ Doric order<sup>78</sup>. As an alternative explanation, the crown on the Starosel abaci does not have to be related with the presence of this feature elsewhere: if the curved abacus plate was borrowed from a Corinthian capital, as proposed above, then its crown could have arrived as part of this borrowing.

103 The proportions of the Doric order are often a helpful chronological indicator, although they also vary by region as well as scale. One might imagine that the moderate scale and unusual positioning within an inward facing circle might distort the tholos order at Starosel beyond the range of Doric proportions in temples and stoas. However, the proportions of the tholos's columns and entablature align closely with the mean for Doric buildings from the Late Classical period (Fig. 111 and 112). The larger axial span in Starosel is due to the use of three metopes per intercolumniation, and hence should be compared to buildings with a similar arrangement<sup>79</sup>. Indeed, the proportion between the interaxial span and column lower diameter in Starosel is not unusual for a 4<sup>th</sup> century stoa<sup>80</sup>. The proportionally lower Starosel capitals come very close to the figures for 4<sup>th</sup> century Peloponnesian buildings<sup>81</sup>, although none of the Peloponnesian capitals has a crown moulding. The triglyph to metope ratio generally diminishes with time but is more of a regional than a chronological indicator. Very high proportions such as that in Starosel (0.76) are rare in mainland Greece but frequent in the central Mediterranean, especially in Sicily<sup>82</sup>. The relatively small tapering of the column shaft may be explained with the small size of the columns, and the fact that they were meant to be observed frontally.

104 If looking for a module applied in the design of the Starosel tholos, at least two sets of proportions attract attention. The more obvious one is tied to the lower diameter of the column, 0.442 m. As Fig. 111 shows, many of the elements of the tholos can be expressed in round numbers using this unit, or a dactyl (1/16) derived from it. This includes the theoretical triglyph width (½ of the lower column diameter, as usual in a Doric building), which some scholars consider the base module in Doric temple design<sup>83</sup>. A second possibility is prompted by the architrave height and the metope width. They both are equal to 0.296 m, which is within the range of what is commonly considered an Attic foot<sup>84</sup>. Using a unit of this length, one can express the architrave height (both in the tholos and the façade) and the metope width as one foot, the column shaft height as eight feet, the lower column diameter as 1½ feet, and the triglyph width as 12 dactyls. The same unit can be found elsewhere in the tomb. For example, the heights of the string courses and the five lower corbel courses in the antechamber are all very close to 0.296 m, and the restored height of the pillars in the façade is close to 10 feet of this length, etc.

105 Irrespective of whether the design is based upon a foot unit of 0.296 m or a Doric module of 0.442, the Starosel tomb shows a design based on a logical system of

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77 Bousquet 1952, 45 f. pl. 20.

78 Pakkanen 1997, 332–334.

79 The three-metope span is also the reason for the tholos having a metope on the central axis. The façade, which uses an identically designed Doric entablature, puts the triglyph on axis in a more conventional arrangement.

80 E. g., the East Stoa in the Asclepieion at Athens: 3.673 (Allen – Caskey 1911); The stoa at Oropos: 3.485 (Coulton 1968).

81 Such as the Tholos at Epidaurus (0.383), the temple of Athena Alea at Tegea (0.380), the temple of Zeus at Nemea (0.382).

82 Clarke 1991, 277 f.

83 Jones 2001, 681.

84 0.294–0.296 m. A unit of 0.296 m was first proposed by Dörpfeld (Dörpfeld 1882, 277–312) as an Attic Euboic foot. Dinsmoor (Dinsmoor 1961, 360) considered a unit of 0.294 as ›Ionic‹ foot.

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Element	Measurement (m)	/ Column lower diam. (0.442 m)		Foot 0.296 m
		Value	Hypothetical proportion	
Architrave H.	0.296	0.670	2/3	1
Capital abacus H. (with the crown)	0.085	0.192	1/5	0.287
Capital abacus H. (without the crown)	0.055	0.124	1/8	0.186
Capital abacus W. (without the crown)	0.442	1.000	1	1.493
Capital abacus W. (with the crown)	0.470	1.063	1	1.588
Capital echinus H.	0.050	0.113	1/9	0.169
Capital echinus lower diam.	0.385	0.871	7/8	1.301
Capital echinus upper diam.	0.446	1.009	1	1.507
Capital H. (total)	0.172	0.389	2/5	0.581
Capital neck H.	0.026	0.059	1/16	0.088
Capital projection (with crown)	0.610	1.380	1 6/16	2.061
Capital projection (without crown)	0.470	1.063	1 1/16	1.588
Capital annulets H.	0.012	0.027		0.041
Column upper diam.	0.376	0.851		1.257
Column H. (shaft)	2.380	5.385		8.041
Column H. (total)	2.550	5.769		8.615
Column lower diam.	0.442	N/A	N/A	1.493
Frieze H.	0.326	0.738	3/4	1.101
Interaxial span (chord, avg.)	1.665	3.767	3 3/4	5.625
Metope W. (avg.)	0.296	0.670	2/3	1
Stylobate depth	0.262	0.593	3/5	0.885
Stylobate H.	0.224	0.507	1/2	0.757
Tholos diam. at stylobate edge (avg.)	4.842	10.955	11	16.358
Tholos diam. at column axis (avg.)	5.387	12.18		18.19
Triglyph W. (avg.)	0.225	0.509	1/2	0.760

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Proportion	Starosel	Average for 399–323 B.C.
Column H. (capital included) / Column lower diam.	5.769	5.79
Column upper diam / Column lower diam.	0.851	0.783
Capital H. / Column lower diam.	0.389	0.432
Architrave H. / Column lower diam.	0.67	0.67
Frieze H. / Column lower diam.	0.738	0.756
(Architrave H. + Frieze H.) / Column lower diam.	1.407	1.41
Interaxial span / Column lower diam.	3.767	2.35
Architrave H. / Frieze H.	0.908	0.901

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Fig. 111: Measurements, hypothetical proportions and units of measurement of the Doric order in the tholos

Fig. 112: The proportions of the Doric order in the Starosel tholos compared with the average proportions of Doric buildings of the Late Classical period as provided by Clarke 1991

regular geometric proportions, similar to those applied in the design of Greek temples. This observation is important as it speaks of the professional background of the architect and masons. And so do technical tricks of the trade, such as the overlapping edge of the triglyphs hiding the joints between the frieze blocks, or the entasis of the columns.

### Polychrome Decoration

106 Compared to Macedonian tombs, which form the main body of evidence for painted architecture in the late 4<sup>th</sup> – early 3<sup>rd</sup> century B.C. on the Balkans, in Starosel colour was used sparingly, and, in all cases, to enhance, rather than replace architectural elements. The drift towards imitating structural details in paint, so typical of Macedonian façades, cannot be seen here. While most of the mouldings were left unpainted, in the few cases where paint was applied, we observe canonical combinations: egg-and-darts on an ovolo, Lesbian cymation on a cyma reversa, meanders on flat surfaces. The elements of the Doric architrave and frieze follow the established Classical-period colour scheme, except for the red crowning fascia of the metopes and the darker front surfaces of the triglyphs. The first can be explained as an abbreviation of the usual blue metope capitals and lowering the geison taenia onto their place. Using different shades on the triglyphs is known from only one other building – temple B at Selinous, built around the end of the 4<sup>th</sup> century B.C. There, however, the dark shade was applied inside the grooves, probably as a way to strengthen the sense of depth<sup>85</sup>. While the case of Selinous can be seen as a rare instance of chiaroscuro enhancement of exterior sculpted elements<sup>86</sup>, the reverse use of light and dark in Starosel is hard to explain.

107 The three-dimensional meander painted on the façade geison is of particular interest, as the only explicit attempt at trompe-l'oeil painting in the tomb, and because of the very early date at which it appears. This type of ornament became rather popular in paintings and mosaics during the Late Hellenistic period but its origin should be sought in the 4<sup>th</sup> century development of illusionist painting<sup>87</sup>. The Starosel meander is among the earliest known examples of its kind, together with the [François Tomb](#) at Vulci<sup>88</sup>. It is also the only case where this ornament appears on a projecting architectural member, instead of breaking up a large flat surface, such as a wall or a mosaic floor.

### Roofing Structures

108 The antechamber roofing is an unusual implementation of a simple concept, namely a truncated corbel vault. Truncating the vault in this case was a practical necessity, in order to achieve a span over 3 m wide without using excessive cantilevering, compromising the strength of the vault, or making it too high. Indeed, reducing the height of the vault was crucial because it was constrained by the height of the façade, and the slope of the embankment. Technically, a more effective solution would have been a barrel-shaped vault of the type used in Macedonian tombs, as it allows much wider span in relation to height. It is likely that at the time the Starosel tomb was built,

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85 Summitt 2000, 252. For a recent brief presentation of Temple B, see Markoni et al. 2020, 301.

86 Summitt 2000, 254.

87 Plantzos 2018, 184–189, 217.

88 The François tomb: dated to ca. 330–310 B.C. based on the style and technique of its wall-paintings (Cristofani 1967; Andrae 2004, 196). Tomb A at Katerini (Despoine 1985, 46 fig. 4; Schmidt-Dounas 2017): initially dated to the second quarter of the 4<sup>th</sup> century B.C. based on a coin which, however, comes from the fill above the tomb. Vassiliki Stamatopoulou suggests a date in the last third of the 4<sup>th</sup> century B.C. based on the elements of a horse harness (Stamatopoulou 2010, 246 f.; some of the Thracian parallels referred to by the author may be even later). The rest of the examples from Macedonia and Thrace are not earlier than the last decade of the 4<sup>th</sup> century: the tombs at Phoinikas (Tsimbidou-Aulonite 2005, 37 fig. 12 pls. 3 b; 11, 12; the stamped Thasian amphora is slightly later than 300 B.C.), Korinos (Brecoulaki 2006, 242 f. pl. 85, 2; Besios 2010, 278), and Aleksandrovo (Kitov 2005, 42).

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the barrel vault had not yet been introduced, or it was still a very new technique<sup>89</sup>. But whether or not the architect was familiar with the barrel vault, the choice of a roofing solution was not driven by purely technical motives.

109 What makes the Starosel vault exceptional, is that it was truncated with a beamed ceiling system of the kind used in Greek temples. This combination is without equivalent, to my knowledge, although all-stone beam-and-slab ceilings spanning underground tomb chambers exist in 4<sup>th</sup> century B.C. Caria. The tombs in question consist of one or several rectangular chambers buried in the ground close to the surface, covered with beamed structures very similar to that of Starosel<sup>90</sup>. Olivier Henry has argued that this type of roofing system has no functional merits in stone, and hence it is a »petrified« version of wooden ceilings, used in Carian tombs from the late 6<sup>th</sup> to the mid-4<sup>th</sup> century B.C. It is possible that the architect of the Starosel tomb was familiar with this Carian tradition, even more so considering the Carian parallels of the Starosel doors. But this ceiling design is more likely to derive directly from Greek temples, where it was a standard feature in stone<sup>91</sup>. Its adaptation to tomb chambers can be seen as part of the trend to incorporate elements of temple architecture in funerary monuments.

110 The corbel dome is the hallmark of Thracian tombs but how this feature appeared in Thrace is a subject of a century-old debate with no satisfying answer yet. Early 20<sup>th</sup> century scholars thought that Thracian tholoi were late survivals of a Mycenaean burial tradition, which had spread to Thrace already in the Late Bronze Age<sup>92</sup>. Subsequent scholarship abandoned this hypothesis and focused on two explanations: local evolution from the Early Iron Age rock-cut tombs and dolmens<sup>93</sup>, and transmission of design ideas and structural systems from neighbouring regions<sup>94</sup>. While external influence seems the more likely explanation, no study has shown concrete evidence linking the Thracian tholoi with a particular building tradition outside Thrace. The most recent and comprehensive review on the subject by Nikola Theodossiev provides a useful list of potential prototypes throughout the Mediterranean<sup>95</sup>, but none of these monuments is chronologically and architecturally close enough to be considered a predecessor of the tholos tombs in Thrace.

111 The problem surfaced even more prominently following a recent reconsideration of the dates of certain Thracian monuments. Contrary to earlier opinions that tholos tombs were built in Thrace since the 5<sup>th</sup> or the beginning of the 4<sup>th</sup> century B.C., a recent reappraisal showed that none of these tombs can be dated before the middle of the 4<sup>th</sup> century B.C.<sup>96</sup>. Lowering the dates of the earliest Thracian tholoi opens up an over-a-century-long gap between them and the latest survivors of the tholos tomb tradition in Greece – those in Thessaly – which are also very different in terms of architecture<sup>97</sup>.

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89 The date of introduction and the origin of the barrel vault have been the subject of a long debate, see (among others) Boyd 1978; Miller 1982, 167 note 3; Tomlinson 1987; Borza – Palagia 2007, 85–89; Huguenot 2020. At present, no convincing evidence has been published for the use of a true barrel vault before ca. 340 B.C.

90 Henry 2010, 10–16; Henry 2013, 261–268.

91 Note the presence of a recess on the beam soffits in Starosel: this feature originates in stone temple architecture of Asia Minor, where its purpose was to divert attention from joints in composite epistyles (Marquand 1909, 107). At least one Carian tomb has beams with recessed soffits, tomb M33 near Milas (Henry 2013, 11). Normally, the beams' soffit and the cover slabs in the tombs of this group are plain (I am thankful to Olivier Henry for this observation).

92 Hasluck 1911, 78 f.; Filov 1937, 92–104.

93 Mikov 1942; Mikov 1955; Venedikov 1974, 203–205; Venedikov 1998, 73–77.

94 Venedikov – Gerasimov 1973, 70–72; Hoddinott 1981, 121; Theodossiev 2007.

95 Theodossiev 2007.

96 Stoyanov – Stoyanova 2016.

97 On the tholos tombs of the Classical period in Thessaly, see Stamatopoulou 2016; Stamatopoulou – Katakouta 2020, 147–152. Note that the tomb at Krannon – the latest datable tholos in Thessaly – is a semi underground chamber, closed with masonry instead of a door, and fit with two sarcophagi. While these features are common in Thessaly, they are absent in Thracian tholos tombs.

112 The Starosel tholos provides a crucial piece of evidence for this debate. On the one hand, this is the largest known corbel dome in ancient Thrace, probably the largest built on the Balkans after the Late Bronze Age. Builders of the Hellenistic period in the region introduced certain improvements in dome technology<sup>98</sup>, but none of them dared to approach a span of 5 m. The size of a dome is not only a matter of resources: it depends primarily on specialized knowledge of structural systems and masonry craftsmanship, both abundantly evident at Starosel. On the other hand, the Starosel dome is also among the earliest in Thrace. Current chronologies do not allow us to claim this with certainty, but it is very possible that this was the first domed chamber built there<sup>99</sup>. If the largest and most elaborate corbel dome in Thrace is also among the earliest, the notion of a gradual local development of corbel structures from flat-covered chambers should be ruled out. Moreover, no structures that can constitute a chain of development from an earlier period have been identified. The evidence from Starosel suggests that the corbel dome was introduced in Thrace in its fully developed form.

113 Despite the lack of contemporaneous prototypes for the Thracian domes outside Thrace, the knowledge required for their construction was readily available. Some of the Late Bronze Age tholoi in Greece were accessible during the 4<sup>th</sup> century B.C.<sup>100</sup>, and architects no doubt drew inspiration from such impressive structures. The more interesting question is why one of these architects would choose to build a domed tholos in the Thracian interior. From an engineering perspective, if the task was to take the existing Thracian tradition of a burial chamber under a mound and develop it on a much larger scale, then the corbel dome was one of the few available solutions, and technically, the most efficient one<sup>101</sup>. But here again, the motivation was hardly only technical, and, as argued below, the resemblance with Mycenaean tholoi may have been sought intentionally.

### Significance

114 So far, I have shown that the design of the Starosel tomb draws on various regional traditions, and brings together ideas from different periods. While other monumental tombs in Thrace borrow structural and decorative concepts clumsily and mechanically, the Starosel tomb was designed by an experienced architect, who deliberately combined a diverse array of plan components, structures, and decorative elements into a well-thought-out, unified composition. With the limited knowledge we have about Thracian social and political history, we may never fully understand the messages encoded in the architecture of the tomb. But their general meaning is hard to miss. The imposing size, the conspicuous amount of skill, labour, and wealth invested in the construction were aimed to project power and claim rulership; to tell a story of a glorious past, and convey economic prosperity and far-reaching influence. Several features of

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98 Domes parabolic in section (used already in the Late Bronze Age) can be considered more efficient than the straight conical dome used in Starosel, and so are those built of baked bricks (common in Hellenistic tholoi in the Kazanlak valley), which are lighter and produce smaller outward thrust.

99 The tomb at Eriklice is thought to date around 350 B.C. based on the metal objects found inside (Stoyanov – Stoyanova 2016, 312). But metal armaments and vessels normally have very long use life, and it is conceivable that they were several decades old when put into the tomb. Still, Eriklice is likely one of the earliest tholoi built in Thrace, alongside Starosel, and it is interesting that only there the corbels were shaped with a cavetto-fascia moulding, as in Starosel. Unfortunately, this tomb has completely disappeared, and the only information about its architecture is a short report (Hasluck 1911; see also Theodossiev 2011).

100 Summaries of the evidence of later activity in Late Bronze Age tholoi can be found in Coldstream 1976, Antonaccio 1995, and Huguenot 2003; for the Late Classical and Hellenistic periods specifically, see Alcock 1991.

101 The other solutions available in the mid-4<sup>th</sup> century B.C. were the corbel vault and the lantern dome, both adopted in Thrace from Asia Minor (Stoyanova 2011). For the development of tomb chambers with corbel vaults in Asia Minor, see Huguenot 2020. Note that the type of semicylindrical corbel vault discussed by Huguenot appears in the interior of Thrace already ca. 350 B.C. (Kitov 1996; Tzochev – Kiriati 2018, 549 f.). On the lantern dome, see Ginouvès – Guimier-Sorbets 1994.

the design appear aimed at emphasizing the heroic status of the deceased. These include the elevated position of the tomb in the landscape and the borrowing of elements from temple design (columnar orders, all-stone coffered ceiling), both common characteristics of heroa in Asia Minor from early 4<sup>th</sup> century B.C. on<sup>102</sup>. The circumscribing wall and the propylon further strengthen the impression of a sacred space. All this suggests that the tomb was meant as a heroon, a focal point of a cult towards a ruler or a dynasty<sup>103</sup>. The choice of a form based on a Late Bronze Age tholos can be understood as part of this message: during the late 4<sup>th</sup> century B.C. the ruins of ancient tholos tombs were a focus of a revived interest as hero-shrines<sup>104</sup>. Designing a distinctive architectural form for a Thracian heroon may be seen as a manifestation of independence and rivalry with the Macedonian kingdom, where similar processes were underway. The Starosel tomb also marks a departure from the traditional burial customs of the Thracian elite, which were conspicuous in ritual and in precious gifts rather than in the architecture of the tomb and the size of the mound. Building a monument of such a scale that it altered the landscape and could accommodate a ceremony allowed for a wider audience, stronger and more enduring messages.

## Date and Historical Context

115 The historical narrative about the Thracian interior in the 4<sup>th</sup> century B.C. is very patchy. The period before 360 B.C. was dominated by the figure of king Kotys I, who extended the Odrysian kingdom and actively engaged in north Aegean politics until his assassination in 360/359 B.C. Approaching the question of who commissioned the Starosel tomb from the (fundamentally flawed) assumption that a great tomb means a great king, Kotys would be an obvious candidate. The ceramic finds presented in the first part of this article could fit with a burial ca. 360/359 B.C., but the architectural design weighs towards a later date. Illusionistic features such as the engaged colonnade in the tholos, the false façade, and the painted perspective meander seem unlikely to date before 350 B.C., and so does the echinus profile of the Doric capitals. Hence, the tomb's construction should be after ca. 350 and before ca. 330 B.C. – the *terminus ante quem* for a burial, indicated by the ceramic finds.

116 Following Kotys's death, the Odrysian Kingdom split into three parts<sup>105</sup>. Which of Kotys's successors took over the area between the upper Hebros valley and the Haemus mountains, where Starosel is located, is not known. Several Odrysian princes rose to power and perished in the following turbulent years, leading ultimately to the annihilation of the Odrysian Kingdom at the hands of Philip II of Macedon in 341 B.C. Given the scant evidence, it is unlikely that we can put a name to the person who commissioned the tomb. But in light of the political situation, the decade before Philip II's final blow to the Odrysians is a more plausible period for the construction than the decade after. Before 341 B.C. Thrace was as an arena of political competition. Entangled in the strife between Athens and Macedon, the successors of Kotys also waged wars among themselves in a bid to reunite the former kingdom. They had the motivation to construct imposing monuments with which to claim legitimacy and ties to strong kings of the past. They also had the means to mobilize a large work-force, and pay a team of itinerant craftsmen to invent a unique architectural design that projected their

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102 Fedak 2006, 71 f.; Carstens 2009, 58–74.

103 But it was not a temple, as claimed by its excavator, and echoed by official institutions and the tourist industry.

104 Alcock 1991.

105 For a recent review of the events of that period, see Delev 2015.

political ambitions. It is difficult to imagine all of this taking place in the 330s B.C., when Thrace south of the Haemus was governed by Macedon and the powerful Odrysian figures were gone. But the heyday of conspicuous funerary monuments in Thrace was yet to come. The last twenty years of the 4<sup>th</sup> century saw a political emancipation of Thracian elites from Macedonian rule and the emergence of the independent states of Seuthes III and Dromichaetes. An ›explosion‹ of newly built monumental tombs in this period shows that local architects kept reproducing and adapting the tholos tomb model established earlier at Starosel.

## Conclusion

<sup>117</sup> The architectural design of the Starosel tomb, presented here, is an important testimony for the history of ancient Thrace, as well as ›Greek‹ architecture at the transition from the Late Classical to the Early Hellenistic period. Since the 1970s the exhibition of ›Thracian gold‹ has toured museums around the world to become the face of Bulgaria's Thracian archaeology. Fixation on exhibition- and collection-worthy ›treasure‹ diverted attention from other aspects of material culture, and encouraged both archaeologists and looters to excavate ever more burial mounds. During the 1990s and 2000s many ancient monuments fell victims of what has been aptly called ›Bulgaria's gold rush‹<sup>106</sup>. The Starosel tomb has been robbed of its precious contents, but its real ›treasure‹ still stands, though precariously so. More than any gold mask or silver drinking cup, the architecture of this tomb testifies to a Thracian ruler's political ambitions and participation in elite networks of the Aegean. Rather than omnivorous consumers of foreign objects and fashions, the Starosel tomb shows that well-connected Thracian elites selected and deployed with care and knowledge the architectural forms they found most suitable to their own agenda and idiosyncratic identity, as they did with other forms of material culture<sup>107</sup>.

<sup>118</sup> The proposed reconstruction, date, and interpretation of the Starosel tomb advance a new explanation of how tholos tombs appeared in Thrace: not through gradual local development, nor import of a ready prototype, but as a synthesis of architectural forms conceived first at a grand scale and executed in a design by an itinerant architect for the needs of an Odrysian client. For the first time a Thracian monument provides such clear insight into the process of hybridization of building traditions that came to define Hellenistic architecture. The illusionism of false façades, engaged colonnades, and painted trompe-l'oeil patterns is considered the hallmark of Macedonian tomb architecture. Debates about the extent to which this trend originated in Macedonia or was brought from the East by the armies of Alexander the Great<sup>108</sup> will now have to consider that such elements appeared in Thrace, in original compositions, and at an early date – certainly before Alexander's Asian conquests. The strikingly innovative design of the Starosel tomb can serve as a reminder that we often tend to think about ancient artistic trends as moving in a linear fashion through space and time. But in the 4<sup>th</sup> century B.C. Mediterranean artistic innovation was far more chaotic, entangled in a complex network of competitive patrons and mobile artisans.

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<sup>106</sup> Williams 2006.

<sup>107</sup> Dimova 2015, 86–91.

<sup>108</sup> Borza – Palagia 2007, 87–89; Miller 1993, 101 f., with review of earlier opinions.

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## Supplement

119 Photogrammetric models of displaced architectural elements and their meta-data are available via <<https://doi.org/10.34780/d5bi-h53t>>. The source images for the models were captured using a DSLR camera with a 21-megapixel full-frame sensor and a 50 mm lens, along with eight coded targets and four control scales. Each block was photographed from all sides, rotated and photographed again, repeating the procedure multiple times in order to produce several partial models. The resulting point-clouds were aligned and merged in all-round models with sub-millimetre accuracy. Where possible, models of fragments of the same block were combined in a single model. Meshes were decimated down to 1,700,000 faces to meet the size requirements of the Arachne database.



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