Tobias Busen – Andreas Grüner

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The Grotta di Matermania on Capri

Construction, Space and Atmosphere of an Imperial Pavilion

Unlike the better-known examples of Roman grotto architecture like Sperlonga or Punta Epitaffio (Baia), the spectacular site of Grotta di Matermania – as well as most other sites on the imperial island beyond Villa Iovis – has not received much attention in recent research. At the end of the eighteenth century, Robert Hadrawa, Habsburg's ambassador at the court of Naples, who was responsible for the looting of the grotto's ancient marble decoration[1], gave a first written record of Grotta di Matermania[2]. Since the 1820s, when Giuseppe Feola described the structure in greater detail, the state of the ruins does not seem to have changed very much[3]. Though many works on Roman villa architecture as well as on ancient Capri have discussed the grotto[4], the site was never excavated[5]; so far, there is no proper documentation of the existing, well-preserved remains. Two small articles by Maiuri and Mingazzini, which were the basis for nearly all later references, provide only cursory descriptions and unreliable plans[6]. Until the middle of the twentieth century, the function of the complex remained mysterious. The name of the grotto[7], its architecture and some random finds either lost or of doubtful provenance[8] triggered hypothetical interpretations of the site as a sanctuary of Cybele or Mithras[9]. Since Mingazzini's ground-breaking work on the Grotta di Matermania, the function of the grotto as an imperial nymphaeum was never put into doubt.

The following paper presents the results of a fieldwork campaign, conducted in 2016 as the first part of a cooperation project focussed on the documentation and analysis of the architectural remains of Roman Capri, organised by the *Friedrich-Alexander-University Erlangen-Nuremberg*, Institute of Classical Archaeology and the *Technical University of Munich*[10], Chair of Building

The work presented here would not have been possible without the great and liberal support of Dott.ssa Tommasina Budetta (Soprintendenza Archeologia Belle Arti e Paesaggio per l'area metropolitana di Napoli). The authors are pleased to be able to contribute to the efforts of the Soprintendenza in researching and conserving ancient ruins with this project.

1 Feola 1894, 21 f.

2 Hadrawa 1794, 69.

3 As Feola's description of the ruins suggests (Feola 1894, 18–22).

4 Neuerburg 1965, 115 f. (cat. 15); Sear 1977, 62; Lavagne 1988, 561–565; Letzner 1990, 267 f. (cat. 1); Federico – Miranda 1998, 145–148 (cat. VI 96); Lafon 2001, 406 (cat. CAP 2); Bressan 2003, 248 f.; Ciardiello 2011, 119–123; a study on modern works of art representing the Grotta di Matermania is currently being undertaken by Prof. Hansgeorg Bankel.

5 In 1929, the grotto underwent only minor restoration works (Federico – Miranda 1998, 146).

6 Maiuri 1931/1932; Mingazzini 1955.

7 For the name Matermania or Matromania cf. Lavagne 1988, 563–565.

8 For a list of the findings cf. Federico – Miranda 1998, 146–148. Unfortunately, none of the objects said to be found in the grotto – amongst others, a lost altar mentioned by Hadrawa, a Mithras relief today in Naples, a funerary inscription and a terracotta figurine with Phrygian cap – can be traced with enough certainty in order to be discussed as a reliable evidence.

9 Discussed by Federico – Miranda 1998, 146–148.

10 The campaign conducted in late summer 2016 was financed for the most part by the Bavarian Funding Programme for the Initiation of International Projects (BayIntAn) of the Bavarian Research Alliance (BayFOR); the authors were supported during the campaign by Dr. des. Julian Schreyer and Kilian Wolf B.A.

Fig. 1 Topographical map of Capri (Mangoni 1834) with the position of the Grotta di Matermania

History, Building Archaeology and Heritage Conservation in cooperation with the *Soprintendenza Archeologia Belle Arti e Paesaggio per l'area metropolitana di Napoli*. During the campaign, all extant remains of the building complex were documented on basis of a building survey conducted with a total station and supported by photogrammetry.

Beside the documentation, the goal of the 2016 campaign was to find arguments in order to answer the following questions: Is it possible to establish a chronology of the building? Are we able to reconstruct different stages of planning and construction processes? How does the Grotta di Matermania fit into the typological framework of Roman grotto architecture? Which decoration strategies lie behind the revetments (or non-revetments) of floors and walls? How can we define the relation between nature and architecture in that particular case? Is there any evidence, which enables us to determine the sensualistic qualities of the building?

The following pages will discuss the remains on the island of Capri in two main sections: first, the documentation of the extant remains and the strategies of construction; second, the contextual interpretation of the grotto.

Situation

The archaeological site of *Matermania* is situated at the eastern cliff line of the island of Capri (Fig. 1) within a natural grotto, more than 125 m above sea level. In front of it, towards the north-east, the rocky promontory continues, thus forming a cave arch and covering the area in front of the grotto entrance with its overhanging rock (Fig. 2 E/F/G; c. 15 m × 15 m; Fig. 3). Towards the east, a steep and narrow valley, the *Cala Matermania*, leads down to the coast. Nowadays, a paved hiking trail with numerous steps crosses below the arch, descending from the north and leading further to the eastern and southern coast of the island. Right next to the trail lie the outermost ancient structures, continuing towards the inside of the grotto, which currently is about 13.5 m wide and up to 7.5 m high. There is no indication for any ancient access situation.

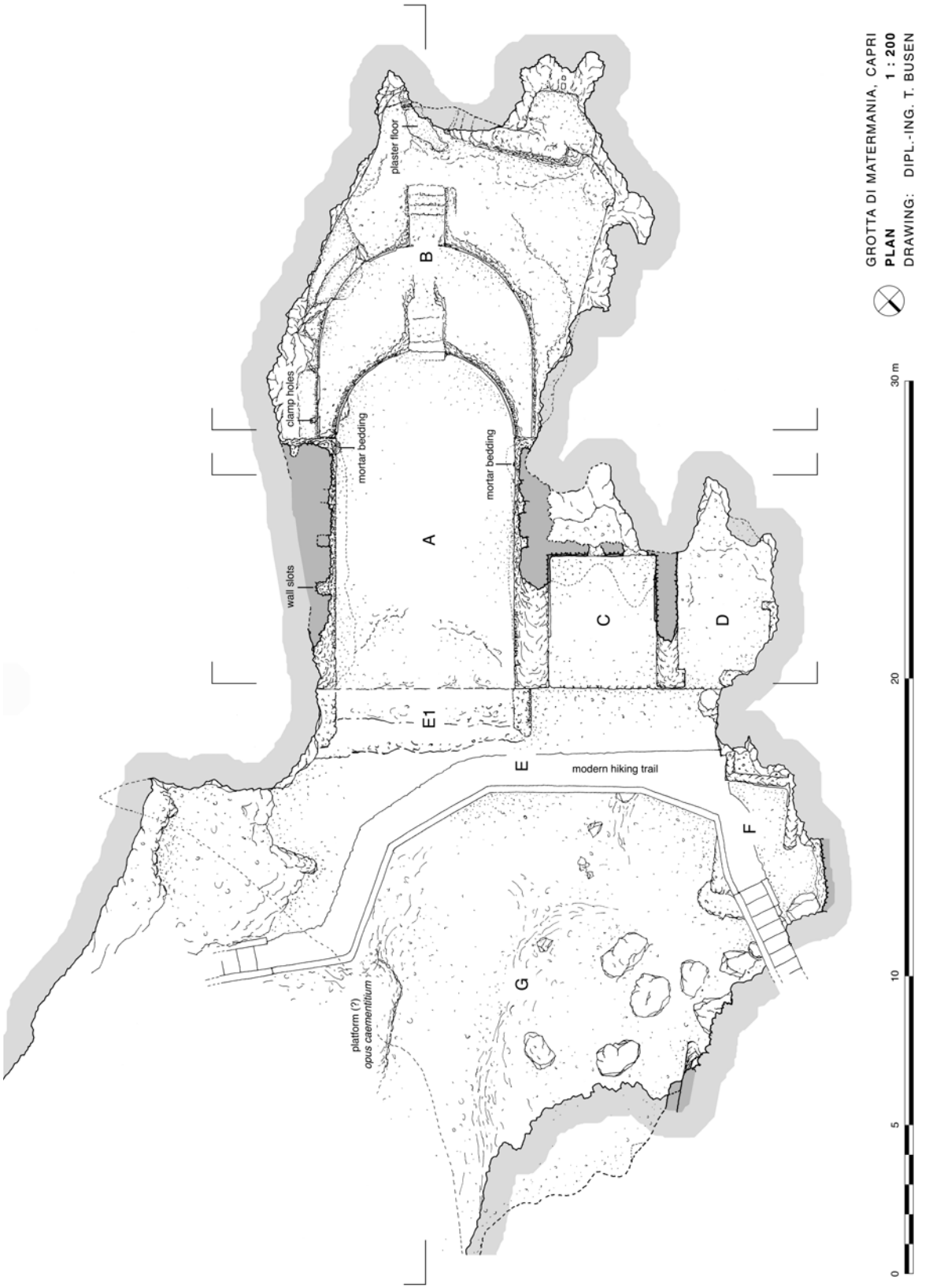

Fig. 2 Capri, Grotta di Matermania. Plan (scale 1 : 200)

The Main Building Structure

The southern half of the grotto is deeper (Fig. 2 A/B, depth c. 22 m, max. height 16 m) and therefore was utilized to integrate the main building structure. Two large side-walls (length 8.4 m, max. height 6 m) were erected, the southern one completely attached to the natural side wall of the grotto (max. thickness 1.8 m), while the northern one only meets the rock surface at its western end and continues as a freestanding construction towards the east (thickness 1.18 m). Both walls consist of an *opus caementitium* core with a dense amount of sharp and pointed quarry limestone, which in most parts is largely visible today due to the absence of the original wall covering. Nevertheless, the eastern as well as the western ends of the walls were originally clearly defined (Figs. 4. 5).

On both walls, several holes at different heights are determinable. They don't coincide with the opposite side, and especially on the northern wall it is hard to identify all of them due to the bad state of preservation. What we can say, is that on both sides the uppermost row is formed by a series of large rectangular slots (Figs. 6. 7; width c. 50 cm, height c. 80–90 cm, depth c. 50–60 cm), some of them filled secondarily. They occur in regular intervals of c. 1.57 cm and on the south wall, they even seem to continue towards the east with a man-made pedestal in the rock surface, only a few centimetres deep[11]. The other holes are all situated below the large slots, mostly square in shape and with minor dimensions (width/height 15–25 cm, depth of up to 1.5 m). Their alignment in horizontal rows suggests their purpose as putlog holes. Above the large rectangular slots, at a height of c. 4 m above floor level, horizontal lines and some remains of a reddish-white plaster indicate the lower part of a segmental barrel vault, which must have spanned a distance of 6 m between the two side walls and was backfilled to at least a height of 2 m above its springing line. The eastern end of the vault must have fitted almost perfectly below the surface line of the natural grotto, directly connecting to the rock surface and leaving only the front arch (width 60–75 cm) visible towards the entrance. The other end of the vault must have been executed in a similar way, but it could not have been connected to the rock, due to the rising height of the grotto ceiling towards the inside.

Only a few remains of the original covering of the main walls are visible: on the lower part of the south wall, up to four rows of tufa *opus reticulatum* (side length of the *cubilia* 10–13 cm) are preserved on a length of c. 6.5 m (max. height c. 60 cm). A row of seven holes for iron clamps (Fig. 13; at a height of c. 45 cm above floor level) proves the existence of a moulding or a marble revetment, at least for the lower part of the wall. On the eastern front end of the same wall – and therefore facing towards the inside of the grotto – some more *opus reticulatum* is visible, while the corner has been revetted with oblong tufa blocks (height 8–9 cm). The same type of blocks can be observed at all corners except at the western end of the north wall.

On the north wall, *opus reticulatum* exists only in the eastern part and the *cubilia* are smaller than those used on the south wall (having a side length of only 8–9 cm). Along the western part of the north wall some very small fragments of plaster have survived at a height of c. 20 cm above floor level, adherent not to an *opus reticulatum*, but to an *opus incertum* wall covering. If any clamp holes ever existed on this wall, there are no more traces to be found. There are no remains of the original flooring, but on both sides, fragments of a mortar bedding – perhaps for a marble flooring – were identified at the same level.

11 About 2 m underneath, a similar trace can be found, in this case vertically, coinciding with the front end of the south wall.

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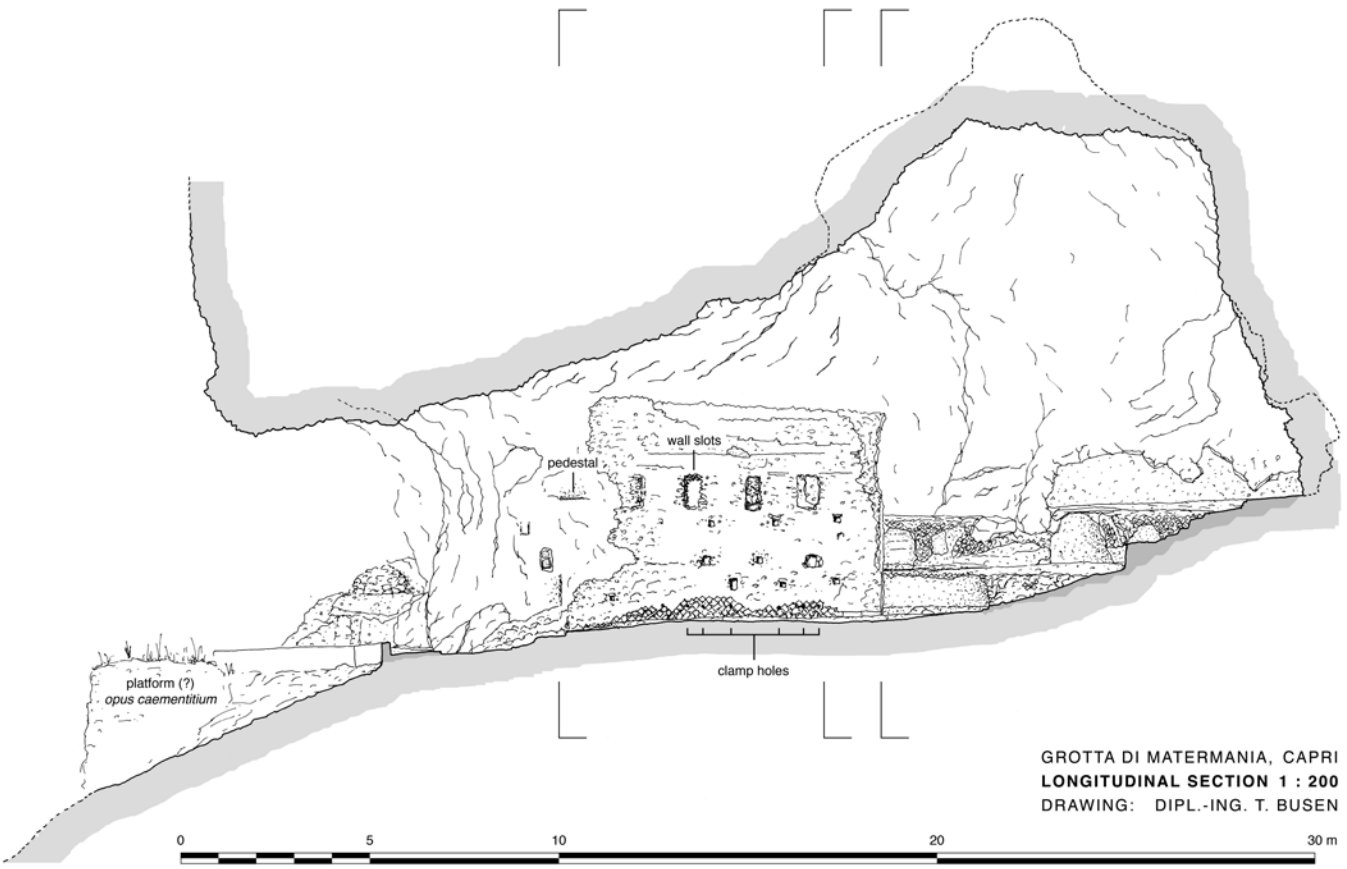

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Fig. 3 Capri, Grotta di Matermania. Panoramic view of the grotto entrance and the cave arch (photograph taken from pos. F [cf. Fig. 2])

Fig. 4 Capri, Grotta di Matermania. Northwards view into the grotto

Fig. 5 Capri, Grotta di Matermania. Westwards view into the grotto

Fig. 6 Capri, Grotta di Matermania. Longitudinal section (scale 1 : 200)

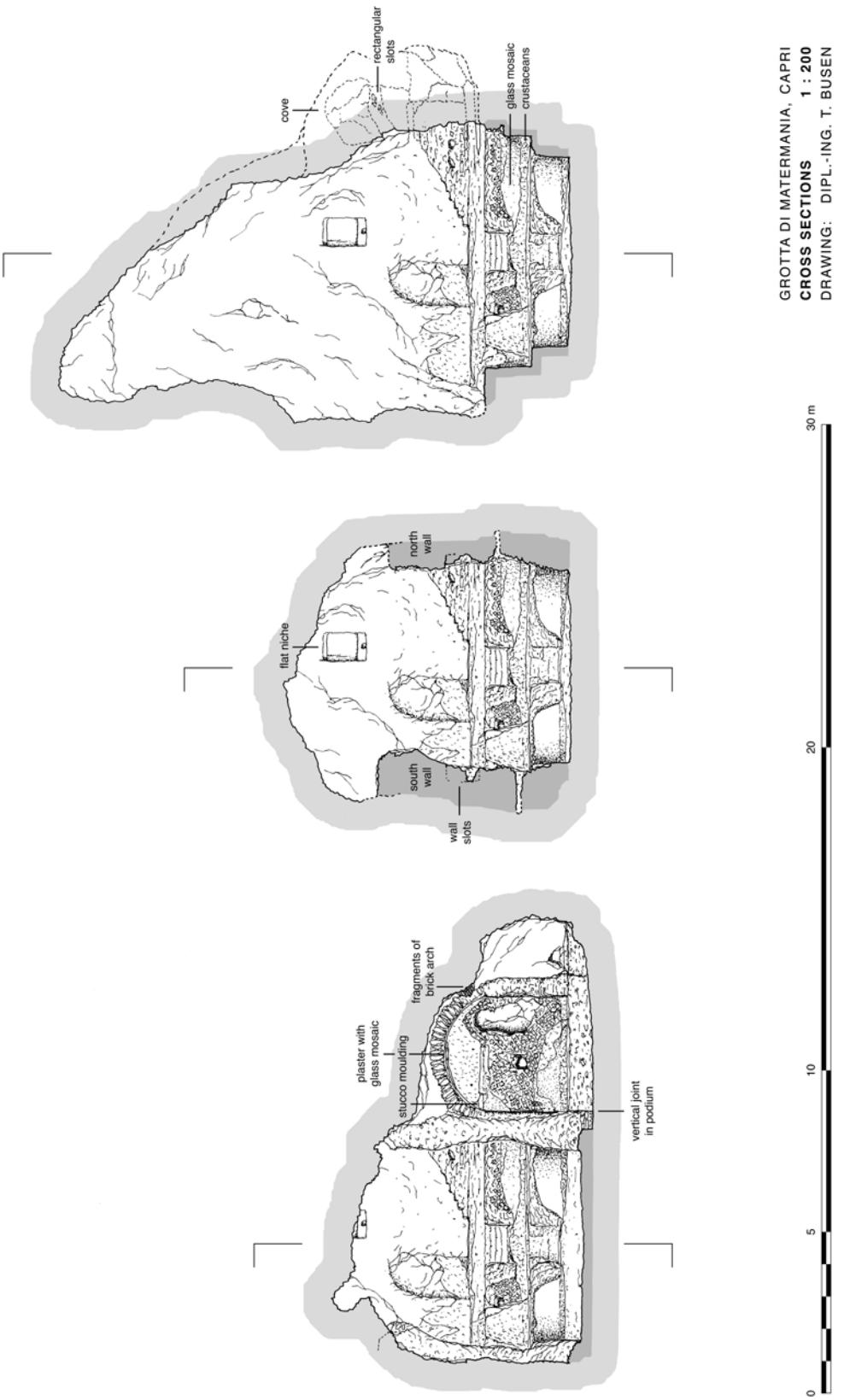

Fig. 7 Capri, Grotta di Matermania. Cross sections (scale 1 : 200)

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Capri, Grotta di Matermania

Fig. 8 View from the inside of the grotto to the outside

Fig. 9 Semi-circular platforms with remains of *opus reticulatum* and plaster

The vaulted hall was accessible via an external stairway (Fig. 2 E1), which is as wide as the hall itself and flanked by two low side walls (depth c. 2 m). No steps are preserved so that their dimensions can only be estimated. As well as the walls of the main hall, the southern side wall of the stairway is directly attached to the rock, whereas the northern one (width 59 cm) is clearly perceptible as such, also being covered with *opus reticulatum* on its outside. From the remains of white plaster at the joint line between hall and steps, we can deduce that the stairs were added in a subsequent phase of construction, in order to be able to comfortably reach the floor level of the hall from the area in front, which today lies about 80 cm lower.

In the rear part of the grotto (Fig. 2 B), a gradual succession of two platforms is connected to the rear ends of the vaulted hall (Figs. 8. 9). The lower one has a semi-circular shape, c. 1.25 m high and is as wide as the vaulted hall, whereas the upper one is wider and consists of a straight wall on each side (length 3 m, height c. 1.45 m), also terminating in a semi-circle. Both of these semi-circular walls have an opening at their centre (mean width 1.2 m), leaving room for a flight of steps or a ramp, each leading to the next higher level. The walls of both platforms, including the side walls flanking the central steps, have been constructed out of *opus reticulatum* (side length of the *cubilia* 7–8 cm). Only in the southern part of the upper platform, a short segment (length 1.6–1.8 m) has directly been cut out of the protruding rock. The corners that define the two central openings seem to have been built out of oblong blocks, but most of them are now missing – perhaps as the result of a forcible removal of precious revetment material attached to this part of the wall. Moreover, both passages were altered in a later phase: the lower one was made significantly narrower in its rear part, the upper one was converted into a small platform by raising its first step up to a height of c. 80 cm.

The joint between the platform ends and the side walls of the vaulted hall (A) is not executed on both sides in the same way: on the south side, the two walls are precisely butt-joined in a vertical line, while on the north side the *opus reticulatum* covering of the platform wall does not meet a flat wall end, and hence needed to be indented with the irregular surface of the side wall. Another interesting observation can be made on the upper edge of the second platform: at least all along the southern edge, a low step can be observed, creating a horizontal rim, c. 60 cm wide (Figs. 2. 7–9). This rim not only exists on top of the *opus reticulatum* walls, but also on the part that was cut out directly from the rock. Near the south-east end of the semi-circle, on top of this rim, two square holes (side length 2.5–4 cm), with a diagonal channel attached to

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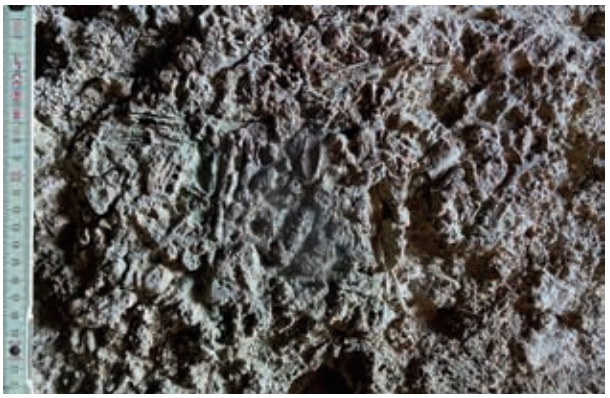
Capri, Grotta di Matermania

Fig. 10 End of upper rim with two clamp holes (lower left)

Fig. 11 Remains of plaster with crustaceans

Fig. 12 Remains of plaster with glass mosaic



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each of them, can definitely be interpreted as dowel holes with the respective casting channels (Fig. 10).

The walls of both semi-circular platforms still bear the clear remains of different plaster types: on the lower level, there is a lower zone, c. 25 cm high, that has been made using a thick and quite rough plaster. The rest of the wall above is covered uniformly with two layers of smooth and thinner plaster. Some vertical lines seem to suggest a decorative subdivision, of which no other traces are visible. The upper edge unfortunately is not preserved at any point.

The superior semi-circular wall shows a quite similar distribution: two layers of plaster have been attached to the *opus reticulatum* wall covering. The bottom zone (height 40–50 cm) was then covered with another layer of plaster containing shells of various crustaceans (Fig. 11). Instead, the upper zone of the wall must have been decorated with glass mosaic, already noted by Maiuri and Sear[12], of which some pieces can still be observed *in situ* (Fig. 12). Small *tesserae* made of glass on the front surface of both of the podia cover a colour palette ranging from blue and green to brown, red and orange. Some parts seem to have fallen of the wall, sometimes still integrated in bigger fragments of lime mortar, which can be found slightly below today's dust and dirt on top of the first platform. Unfortunately, there is no clear evidence of a geometric design of these *pasta vitrea* revetments, though in the south part of the wall, some horizontal lines in the second plaster layer might be of preparatory nature for the decoration lying on top of it. Instead, in two cases the first plaster layer on the northern part shows vertically incised lines. Not much can be said about

12 Maiuri 1931/1932, 153; Mingazzini 1955, 143. Sear 1977, 62 describes the evidence as follows: »The traces of decoration still surviving include shells of different kinds, pumice and marine incrustations, alternating with bands and panels of polychrome glass. Some fragments of coloured glass vessels were also found. In addition to this, I found some Egyptian blue. […] Maiuri says that all the decoration has disappeared, but a few red glass tesserae are still visible.« Except for the glass vessels, the 2016 campaign was able to trace and document all the elements recorded by Sear.

the flooring of the first platform, except that in some parts a layer of light grey lime mortar, probably a preparatory layer, can be identified.

The upper platform is limited on all other sides by the natural rock, which on the north as well as on the south side has been regularized with chisel tools, thus creating vertical side walls and consequently more floor space. Almost at right angles with the rocky north wall, a third stairway has been built into the grotto, yet with no connection to the rest of the symmetrical building design. Its 8–10 steps lead up to a small cove (height c. 2.5 m), situated about 1.7 m above the platform level. Two small, rectangular slots have been cut out of the sloped back wall of the niche. The stairway itself consists of an undefined mixture of rubble and mortar, with some oblong blocks in the lower part, which are poorly preserved today.

The floor of the upper platform is preserved only fragmentarily at the western end, in continuation of the central stairs: on a surface of less than 2 m × 0.5 m a dark and slightly sloping cast plaster floor can be observed. Not far from this, another fragment sticks out from underneath the stairway – suggesting the subsequent construction of the stairs. The rest of the platform is covered with a thick mixture of rubble, mortar and dirt, which was most likely a preparatory layer for the floor above.

Finally, about 3.2 m above the floor level, a rectangular flat niche (width c. 0.8 m, height c. 1.3 m, depth c. 15 cm) was cut out of the back wall of the grotto, with a small rectangular slot at the bottom centre (measuring c. 15 cm × 15 cm). The rest of the rear part of the grotto bears no traces of human intervention.

The Lateral Chambers

In the northern section, the grotto is 5–7 m deep, leaving only room for two small chambers (Fig. 2 C/D; Fig. 3). The floor of the chambers is at the same level as the main hall and ends at the same front edge. This part of the podium was evidently added in a second stage of construction, as can be seen by the clear vertical joint between its front and the north wall of the main hall. The front is made of *opus incertum* with some poorly preserved plaster fragments attached to it.

The larger of the two chambers (Fig. 2 C; width 3.1 m, depth 4.5 m) is delimited on three sides by walls and was once covered with a segmental barrel vault, which is partly preserved in its rear section, determining a room height of 3.85 m at the centre and 2.65 m at the sides. The *opus caementitium* vault, consisting of radially placed quarry stones and mortar, at its south end rested on the northern wall of the main hall and at its north end on the opposite side wall (thickness 72 cm). A small fragment of radially laid bricks, situated at the front edge of the room, is still attached to the rock above – it is apparently part of the remains of the front revetment of the barrel vault.

All three walls are covered with irregular tufa *opus reticulatum* on the inside (Fig. 14; side length of *cubilia* 10–12 cm), while the rear wall, which is partly built against the rock surface, was left without any covering on its back. It has subsequently broken through in two points, allowing us to peek into the hollow space behind.

On all three walls, the original three-layer plaster is still visible. The third thick and rough layer defines a lower zone (height c. 25 cm) – quite like the one preserved on the wall of the lower platform of the main hall. At the springing level of the barrel vault, clear traces of a stucco moulding have survived,

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Capri, Grotta di Matermania

Fig. 13 *Opus reticulatum* revetment with clamp holes on south wall of hall A

Fig. 14 *Opus reticulatum* revetment on west wall of room C

but are unfortunately in a bad state of preservation. At the topmost point of the lunette, the remains of two vertical bands (width c. 4 cm; max. preserved height 6 cm) are symmetrically aligned around the middle axis at a distance of c. 25 cm from each other. Two circular holes (diameter c. 2 cm) in the lower part of the lunette were perhaps created at a later date. On the surface of the vault itself, some remains of plaster have survived, and contain pieces of blue glass mosaic similar to those found in the main hall (Fig. 2 A/B).

The remaining space between room C and the north end of the grotto (Fig. 2 D) is mostly conserved in its natural state, but apparently was closed at the front by a short wall, leaving an access opening (width c. 1.15 m). This front wall must have been built up to reach the rock surface. Inside the room, a short and very low wall, made of small format rubble and little mortar, seems to belong to a later phase of use of the area.

No remains of flooring are preserved either in the cavern room (D) nor in room C, even though Mingazzini describes fragments of *opus sectile* flooring in the rearmost part of the small room[13].

The Area in front of the Grotto

Not far from the small entrance to the cavern room (D), further walls can be observed (F), constructed in the same way as the short wall inside the room, and partly still covered with a darkened lime plaster. At the intersection of two of these walls, the plaster is also visible on the upper surface of one of them, while passing above on the other one. They seem to have formed a kind of basin at the point, where the rock above meets the ground, perhaps for collecting water.

Some more walls, made of rough rubble masonry, can be found at the opposite side of the natural arch, as well as at the south end of the area. None of these walls are similar to any of the *opus reticulatum* walls inside the grotto (Figs. 13. 14), as described above.

The area in front of the grotto was definitely compromised by the construction of the modern pathway; in any case, there is no more noteworthy evidence. A platform described by Mingazzini – maybe the same denominated as a terrace wall by Maiuri[14] – that must have been located on the same axis as the vaulted hall no longer exists. A large surface of *opus caementitium*, attached to a projecting rocky promontory below the pathway, might, however, constitute the southern side wall of this platform.

13 Mingazzini 1955, 145.
14 Mingazzini 1955, 145; Maiuri 1931/1932, 151.

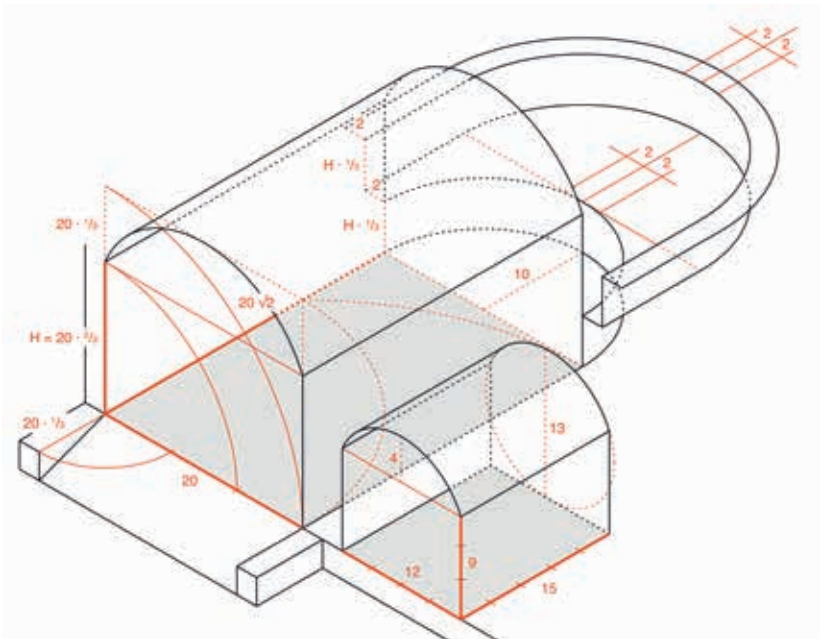

Fig. 15 Capri, Grotta di Matermania. Isometric drawing showing the building design and basic modules

Building Design and Metrology

After having looked at the different parts of the architecture within the *Matermania* grotto, what can we now say about the building design? First of all, the design task for the emperor's architect was not a standard case. He not only had to think of a convincing architectural concept of how and to which extant to combine the natural grotto with precisely defined architectural forms, but it also had to be doable within the existing physical boundary of the solid rock. Not many tool-marks are visible on the surface, which makes one assume that most of the grotto was left in its natural state, and the architectural elements were precisely fitted into it.

For this purpose, we shall look again at the architecture and try to reconstruct its original building design (Fig. 15). When analysing the dimensions of the different parts, many regularities appear. Most of the width of the profound grotto was utilized for the main hall. Its inner width, expressed in Roman feet[15], equals 20 feet, its length c. 28.5 feet (proportion 1 : √2). The length was therefore deduced from the diagonal of a square with a side length of 20 feet[16]. The stairway in front of the hall is equally wide, its depth (c. 6⅔ feet) corresponds to one third of its width. The hall's north wall is 4 feet thick, the one of the stairway only 2 feet.

The design process was continued at the two platforms on the inside of the grotto. The lower semi-circle (diameter 20 feet) has its centre on the main axis of symmetry, on the back line of the main hall. The upper platform's straight side walls are as long as the circle's radius (10 feet) and set back 2 feet each from the main hall's side walls; the radius of the upper semi-circle consequently amounts to 12 feet. 2 feet is also the width of the upper platform rim, whereas the two central stairways were originally designed with a width of 4 feet.

More observations on the proportions can be made looking at the elevation of the different elements: the side walls of the main hall (up to the springing line of the barrel vault) are 3.95 m high, which equals to two thirds of the hall's width. The segmental barrel vault rises up to c. 2 m (6⅔ feet) – or half

15 1 Roman foot = 294–297 mm; cf. Wilson Jones 2000, 72.

16 Strangely enough the line on which the *opus reticulatum* on the north wall first appears measures 20 feet from the west end of the wall. Maybe a first plan envisioned a barrel vault on a square ground plan, which was then extended towards the outside of the grotto.

Fig. 16 Capri, Grotta di Matermania. Visualization of the reconstructed volumetry (view from outside)

of the side walls' height (or the depth of the stairway in front of the hall). This means, at the centre line of the main hall, it is as high as wide, that is 20 feet (or c. 6 m).

The elevation of the two semi-circular platforms (c. 1.25/1.45 m) is not accurately determinable, but could be interpreted as approximately one third of the hall's wall height each.

Therefore, we can conclude a very simple design process that defined the geometry of the main hall by only two basic modules: firstly, the width of the hall (20 feet), from which all main dimensions in plan and elevation were deduced; and secondly the width of 2 feet (c. 59.2 cm), which served as the standard module for all minor dimensions (wall thicknesses, stairs, upper rim).

What worked well for the main hall, was not pursued in planning the much smaller room C, where – perhaps because of the limited space above and behind – a much smaller *modulus* was chosen. The room is 12 feet wide and 15 feet deep, the height of its side walls is 9 feet[17] (proportion 3 : 4 : 5) – all multiples of a base module of 3 feet. The rise of the vault amounts to 4 feet, giving the room a total height of 13 feet below the centre line of the vault. While it is certainly much smaller than the one in the main hall, its form could be defined by the segment of a circle (diameter 13 feet), which, starting from the baseline, was positioned within the room's section. The vault itself is about 2–2.5 feet thick, as is the northern side wall.

The other elements in the grotto (in particular the stairway in its rear with the votive cavern as well as the rock relief above it) show no geometric tie to the rest of the design, which makes it even more likely that they belong to a secondary use of the site. We observed previously that the smaller walls outside the grotto might not belong to the original building because of their masonry technique. This can also be confirmed by their alignment, which is without any traceable connection to the rest of the structures.

The construction process for the most parts seems to have followed the one applied during the planning phase: the erection of the two large side walls (maybe with the 20-feet long north wall in *opus incertum* as a first step) – accompanied by creating an equal floor level – was followed by the vaulting. The monumental stairway (Fig. 2 E1) was added in a subsequent step, as well as the semi-circular platforms. Afterwards, the pedestal for the smaller rooms (C/D) was created, which made it possible to erect the west and south wall of room C and the smaller barrel vault above it. Only with the two vaults finished, it was possible to close the gaps between the different elements and the rocky surface in order to create a common façade (Figs. 16. 17, 1).

17 2.66 m; the cumulative height of the two platforms in the main grotto is also c. 9 feet (1.25 m + 1.45 m = 2.70 m).

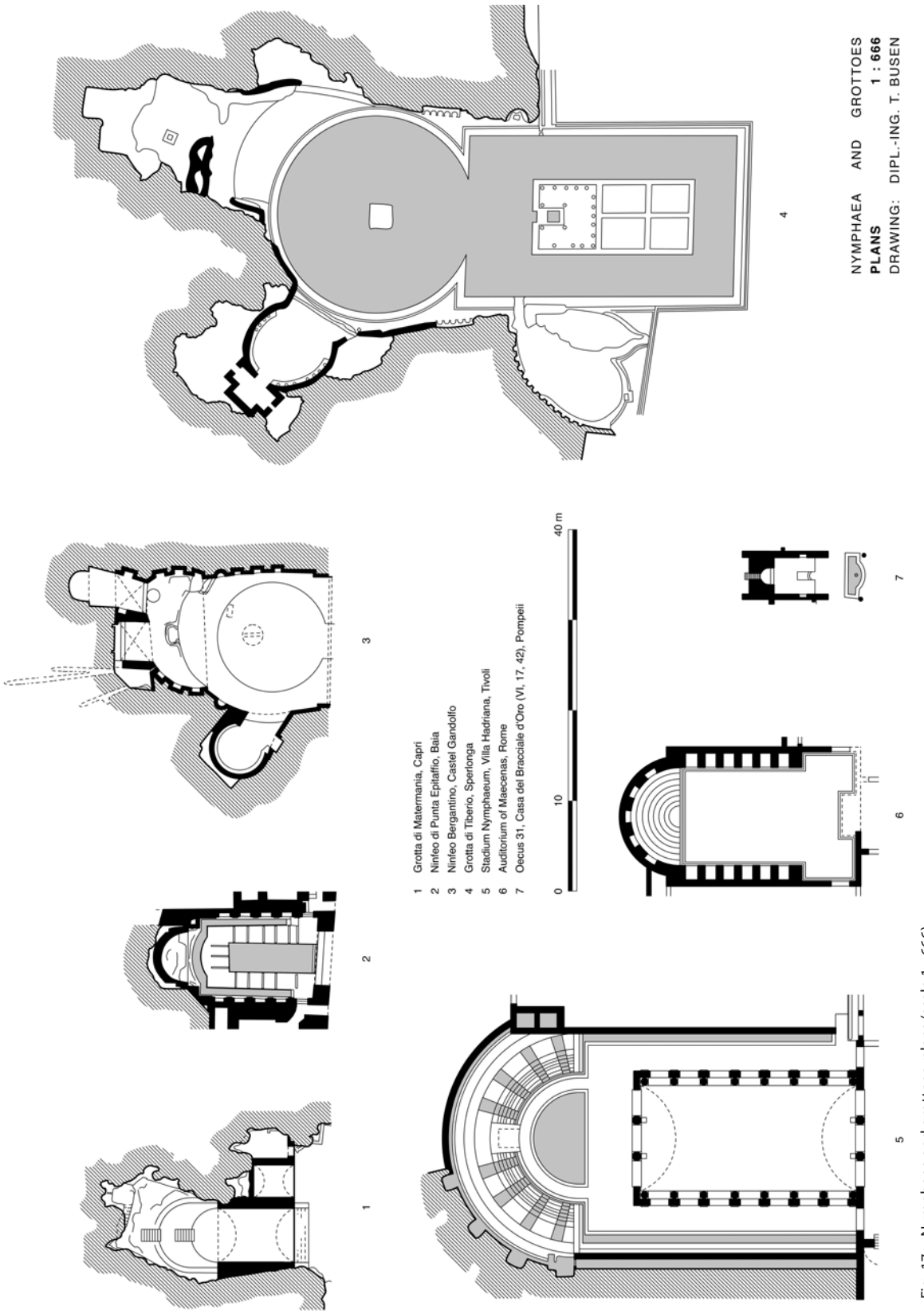

Fig. 17 Nymphaea and grottoes, plans (scale 1 : 666)

Construction and Building Technique

The analysis of the building techniques applied to incorporate the different rooms within the Grotta di Matermania cannot give us much information in terms of a more specific date of construction. However, two criteria should be considered for an approximate chronology: the type of wall revetment and the building technique of the vaults.

As for the vaulting technique, only a small part above room C is preserved, still giving us the complete section of the segmental barrel vault. The radial layout of the rough quarry stones suggests its construction during the 1st century B.C.[18]. Due to the poor preservation of the larger vault above the main hall (A) it is unfortunately impossible to say anything about the technique applied in this case.

On the other hand, the wall revetment might give us more precise limits: In all parts of the grotto it primarily consists of *opus reticulatum*, while the angles and wall ends were constructed out of oblong tufa blocks. Due to the little height of the walls at their front ends, not much can be said about the way the indentation had been made. Even though little revetment has survived in the main hall (A), its quality seems to coincide with the better-preserved parts within room C and the semi-circular platforms (B): The surface doesn't show a perfect grid, but a slightly irregular execution, while the size of the blocks varies as well (Figs. 13. 14).

As we know, the *opus reticulatum* technique is mainly used from the 1st century B.C. until the beginning of the 2nd century A.D.[19]. The usage of oblong tufa blocks[20] at the angles and the rather irregular realization[21] might support, though, an early construction date during the reign of one of the first emperors.

The Architectural Concept

At this point, it is possible to sum up the observations as follows. A uniform façade was erected at the narrowest point of the grotto (in respect of the width as well as the height), aligning the different rooms on the podium behind it and putting only the monumental stairway in front of it. The large degree of openings in the façade wall made it almost dissolve, but due to its regularity it still represented a strong contrast to the rough environment in front of it.

Behind this show façade, the natural surface of the grotto was completely concealed by the two barrel vaults and their respective side walls. In the case of the small lateral chamber, where this was not possible, it was simply closed at its front.

It is admirable that the architect who designed the *Matermania* grotto, applied simple geometric rules, based on modules of Roman feet, to create spaces of familiar proportions within the otherwise untamed environment, even though he found himself limited on almost all sides by the natural rock of the cave.

The Roman Grotto: Typological Context

The Grotta di Matermania is one of most elaborate examples of a distinctive type of Roman architecture, the *nymphaeum* or *grotto*. Being part of many late Republican and early Imperial villas and houses, the grotto is – from a

18 With the mid-imperial period the technique changes towards a horizontal layout, cf. DeLaine 1997, 158.

19 Rakob 1983, 370; Adam 1984, 144–146.

20 The classification proposed by Lugli 1957, 506 indicates an early dating; for a critical perspective cf. the review by von Gerkan 1958 and Torelli 1980, 140 and note 82; especially in Campania, the dating of monuments by means of wall revetment techniques is quite difficult, cf. Coarelli 1977, 16; Torelli 1980, 145; and recently Camodeca u. a. 2013, 20.

21 Which of course might also be explained by a less ambitious building workshop, cf. Tombrägel 2012, 70 f. and note 396.

technical point of view – difficult to define[22]. Presenting a broad range of plans, dimensions, functions and architectural contexts (Fig. 17), the *grotto* or *nymphaeum* (in the following we will use both terms as equivalents) eludes simple classification[23]. The problem of typological classification is mirrored by a highly confusing terminology; ancient authors as well as modern archaeologists apply a variety of different Latin terms to the same phenomenon, such as *specus* (*aestivus*, *subterraneus*), *spelunca*, *antrum* (*Cyclopis*), *Amaltheum*, *Nymphaeum*, *Musaeum*, *caverna*, *cavus*, *crypta*, *coenatio, triclinium* etc.[24].

Nevertheless, there are certain features, which are typical for most examples of Roman grottoes[25]: the presence of natural or pseudo-natural elements, either structural (such as an irregular, cave-like shape) or ornamental (such as shells or rocks attached to walls and ceiling); the presence *of* or reference *to* water; a luxurious or even extravagant decoration; large, barrel-vaulted halls with wide openings serving as monumental *triclinia*.

In the following we will try to analyse the specific forms of the Grotta di Matermania in relation to the architectural tradition of the Roman grotto-nymphaeum; first, in order to explain the exceptional role of the building within Roman villa architecture, and second, to suggest a reading of the architectural type of the Roman grotto, not as a fixed combination of architectural forms, but rather as a sequence of spaces determined by functions, ornamental variations, vistas and atmospheres.

The Vault

The most prominent architectural element of the Grotta di Matermania, the monumental barrel-vault, is a significant part of nearly all artificial grottoes of the Late Republican and Imperial era. From the early examples of Roman villa architecture on, the barrel-vault, often richly adorned, marks the central room of most of the grotto complexes[26]; except natural grottoes such as Sperlonga (Fig. 17, 4) or the Ninfeo Bergantino (Fig. 17, 3), where the natural rock substitutes the artificial ceiling[27]. The Grotta di Matermania turns on this convention deliberately. Like in Sperlonga, the rock could have easily served as an impressive natural vault. Instead, the architects took up the conventional element of the barrel-vault – which itself often tries to mimic a natural surface with tufa stones or even artificial stalactites – and moved it right into the natural space of the cave. The regular ceiling of the *caementitium* vault turned the irregular surface of the grotto walls into a geometric order, acting like a pavilion or rather a monumental canopy.

22 The research on the grotto as a constitutive part of Roman luxury design was actually initiated by Mingazzini's analysis of the Grotta della Matermania (Mingazzini 1955), later followed by several fundamental contributions (Settis 1973; Neuerburg 1965, esp. 31–39; Letzner 1990, 117–124; Bressan 2003; Neumann 2016, 127–136). The monumental study of Lavagne (Lavagne 1988) extensively deals with the cultural and literary context of the Roman grotto and remains the most important study for understanding the phenomenon. Most recently, the excellent study of Neumann (Neumann 2016) revealed the role of artificial and semi-artificial grottoes in Hellenistic architecture.

23 Former typological attempts concerning the quantity of natural and artificial elements (Mingazzini 1955; Neuerburg 1965, 31–39; Letzner 1990, 117–124) respectively the situation above or under-ground (Bressan 2003, 239–241) seem to be rather vague and not very helpful.

24 For the problem of terminology Lavagne 1988, 257–320.

25 For a detailed discussion of architectural and decorative forms of the Roman grotto Lavagne 1988, 369–660; Bressan 2003.

26 Bressan 2003, 241–257; Neumann 2016, 127–135.

27 Sperlonga: Lavagne 1988, 513–558; Kunze 1996. Ninfeo Bergantino: Lugli 1913; Fine Licht 1974; Lavagne 1988, 589–594.

The inherent dichotomy of natural and artificial surfaces is stressed by the fact that the irregular walls of the Matermania cave – in front of the *caementitium* vault and behind it – remained untouched. The natural background was kept in place, with few exceptions on the southern wall, where the rock was cut away in a rough manner to make space for the walls and podia. The rear part of the grotto was only slightly modified by applying a luxurious *cocciopesto* with marble inlays on the floor (a detail that – together with the stairs of the podium – testifies that the rear part was not only a dramatic scenery, but was also meant to be explored by the guests walking around). Altogether, the grotto walls established a dark and undefined background with irregular niches, rocks and hollows – a rough curtain behind the luxurious and refined textures of the great hall.

In antiquity, the contrast between nature and architecture must have indeed been even stronger. There is no doubt that, like in the smaller, lateral room, the walls and ceiling of the great hall were clad with multi-coloured marbles and frescoes. This kind of colour and texture contrast was looked for in many Roman grottoes[28]. Being one of the earliest examples of Roman grotto architecture, the grotto of the Forum of Praeneste (the so-called *Antro delle Sorti*)[29] did already combine the two main elements of the Grotta di Matermania, a barrel vault in front and a natural apse with natural surfaces behind.

Natural roughness ties the Grotta di Matermania together with some of the largest examples of Roman villa grottoes; most prominently Sperlonga, where, seen from the triclinium-island in front of the cave, irregularly diverging, smaller grotto-branches at the back of the central room created a dark, somehow mysterious curtain; a curtain accentuating the spectacle of shining marble statues in and around the pool. Later, the Ninfeo Bergantino with its multiple niches, apses and recesses revisited this idea; many others, even the reduced versions in Pompeii (for example the tiny grotto beneath the garden podium of the Casa di Octavius Quartio or the grotto-like nymphaeum in the Casa del Bracciale d'Oro in Pompei, Fig. 17, 7)[30], tried to copy the dark, natural and humid atmosphere in the background of a grotto as a well-established feature of such an ensemble.

The Apsidal Form

Given the context of the natural grotto of Capri, the artificial vault looks like an architectural quotation. It seems as though the architects – by adding the spectacular, permanent canopy – wanted to turn the Grotta di Matermania into an artificial dining room, an *oecus* or *coenatio,* and therefore be part of a villa as well as being part of a villa tradition that used to transform caves into luxurious pavilions. That tradition becomes even clearer with another architectural element, the apsidal podium. The podium complex, consisting of two steps with intermediating staircases, was attached directly to the sidewalls of the central hall.

The *formule apsidale*[31] can be found in many different solutions and concerns to nearly all examples of the Roman villa grotto[32]. As early grottoes in Tivoli and elsewhere show, the rectangular, vaulted hall with a semi-circular or segmental addition is – from the beginnings and even before the first examples in public monumental architecture (Temple of Mars Ultor) – a constitutive feature of the Roman grotto or nymphaeum[33]. The combination of a rectangular, vaulted hall and curvilinear recess occurs in a number of roughly contemporary examples around the Bay of Naples: the grottoes of the villa

28 For the decoration of Roman grottoes Neuerburg 1965, 91–97; Sear 1977; Letzner 1990, 245–262; Bressan 2003, 264–286; the combination of natural and architectural forms Neuerburg 1965, 93.

29 The long building history of the Grotta delle Sorti from the fourth century B.C. onwards (with a restructuration at the end of the second century B.C.) reexamined by Gatti 2004; cf. Lavagne 1988, 227–256.

30 Ciardiello 2009.

31 Lavagne 1988, 350.

32 Lavagne 1988, 350 f.; Bressan 2003, 241–257.

33 Concerning the development and semantics of the apsidal form in Roman architecture in general Settis 1973; Rakob 1987. For the Hellenistic (Delos, Maison de Fourni, equipped with a semicircular nymphaeum) and early Roman grottoes cf. Neumann 2016, 125–136; Lavagne 1988, 381–395.

of Posillipo (Scuola di Virgilio)[34], Baiae-Punta Epitaffio[35] and Sorrento (Villa c.d. di Agrippa Postumo)[36], just to name three imperial estates; the same principle can be found in a slightly later, abridged version at the bottom end of the scale in the Casa del Bracciale d'Oro in Pompeii (Garden Triclinium)[37].

The Podium

In Capri the architects of emperors took up the apsidal element in an ingenious way. Without discarding the dark and irregular atmosphere created by the natural walls, they combined the *formule apsidale* with another, more specific element of grotto architecture – the stepped podium. In a way, they virtually broke up the rear part of a conventional nymphaeum hall, substituting the regular apsis or fountain niche for its natural counterpart and quoting the outlines of the apsidal form by introducing a semi-circular podium. With its podium structure, the Grotta di Matermania again follows two different traditions in a quite eclectic way.

On the one hand, the structure of the so-called Auditorium of Maecenas on the Esquiline (Fig. 17, 6) can be regarded as a very close parallel (besides the missing natural environment)[38]. This is true not only in terms of the standard combination of rectangular hall and curvilinear interior front, but also regarding its pseudo-cavea. Having the Auditorium of Maecenas in mind when looking at the double podium in Capri, at least the modern viewer cannot but be reminded of a little theatre or odeion[39]. Interestingly enough, one century later the architects of Hadrian referred – consciously or not – to quite the same idea while planning the *Gartenstadion*[40] (Fig. 17, 5). The southern part of the *Gartenstadion* is basically an elaborate version of the Grotta di Matermania without the grotto: a canopy-like dining hall offers spectacular views on a semi-circular, stepped podium structure or rather a pseudo-cavea. The cavea itself quotes the former tradition by introducing a mini-cave with a small fountain right in the centre.

On the other hand, there are earlier examples for podia in villa grottoes. Again, the rear section of Sperlonga offers a parallel. Behind the circular lake, the visitor met an accessible podium, which served as a monumental basis for the equally monumental statue group of Polyphemus. Later, the Ninfeo Bergantino appears as being equipped with a podium reminding of a stage. Thus, neither defining a proper cavea, like the early imperial hall on the Esquiline nor forming a simple podium like Sperlonga or Albanum, from a formal point of view the Grotta di Matermania takes an ambivalent position. The double podium in Capri must be regarded as an exceptional solution that does not really help to interpret its proper function.

Structure and Movement

In Capri, the dichotomous arrangement of natural and artificial space was intensified by the dramatic situation of the luxurious complex. Ascending from the sea or, respectively, descending from the hills, the ancient visitor had to cross the dramatic scenery of the wild and overgrown gorge before he reached the grotto. The sudden appearance of its extravagant architectural fitting must have been an unexpected and – after the painful climb – rather pleasant surprise. Entering the grotto, the visitors first passed the impressive natural arch before they reached the podium of the elaborate hall with its shining marble

34 Günther 1913, 155–158; Letzner 1990, 332 (Cat. 126); Bressan 2003, 244; Varriale 2015, 256 f.
35 Letzner 1990, 351 f. (Cat. 351); Avilia – Caputo 2015 (with recent surveys around the Ninfeo).
36 Letzner 1990, 284 (Cat. 28).
37 Bressan 2003, 273; Ciardiello 2009.
38 Letzner 1990, 405 f. (Cat. 260); Ceccherelli 1997; Bressan 2003, 275 f. The comparison between the Grotta di Matermania and the Auditorium of Maecenas in Rome was already drawn by Lavagne 1988, 563.
39 For possible performative aspects of the imperial parks of Capri mentioned by Suetonius see below.
40 Hoffmann 1980.

floor. After that, the rear opening of the vault invited them to look up into the huge natural dome of the grotto; and finally to explore the rear part of the cave by strolling on top of the podia.

Thus, in summarising our analysis so far, we could state that the Grotta di Matermania exhibits a tripartite structure: first, the area before the core building; second, the great hall with the adjoining rooms C and D; third, the natural grotto behind the vaulted hall. The partition of the complex is reinforced by three highly distinctive, deliberately constructed, architectural atmospheres prevailing in each of the sectors.

Structure and Atmosphere 1: Access Area

In the front, the view is dominated by nature: the monumental arch; the rough surfaces of the unpolished and unadorned rock; the dramatic gorge; the wild vegetation and the sky. The light is bright, yet the natural ceiling provides shadow in summer and protects visitors from rain and wind during the winter months. As the reconstruction (Figs. 16. 17, 1) makes clear, the architecture interrupts the coherent scenery of rocks and vegetation. It closes the natural opening like a plug. A straight, single front line without recesses or projections defines the border between men and nature, between luxurious refinement and dramatic wilderness.

Another element reinforced this border. Even in that isolated microvilla, the architects did not skip the traditional feature of the *basis villae*: the rooms behind raised on a common podium stretching the whole length of the front from north to south.

A flight of low steps or a ramp leads to the vaulted hall, while the adjoining room C, possibly reserved for quiet isolation, did not have such an introduction[41]. Protected from painted walls on three sides and a colourful mosaic made of green and blue glass above, the bright little room opened to the full screen of rocks, trees and the sea and islands at a far distance. The lateral room was a kind of open, yet protected retreat we find again in the *exedrae* of the long porticoes of the Villa Jovis and Damecuta, all of them opening to the blue surface of the gulf. There, like at the Grotta di Matermania, the position on the edge of a *basis*-podium stressed the impression of the landscape as a picturesque stage setting.

Lying in that room, the emperor was protected not only from the rest of the island, but even from people and events occurring in the adjoining hall. This isolated character is certainly the reason for the peculiarity revealed during the 2016 campaign, meaning that there was no door mediating between hall and room C and no permanent ramp or staircase leading onto that part of the little *basis villae*. In a certain sense, the little lateral room epitomised the isolation, defining the grotto complex as a whole. Metaphorically speaking, it worked as an isolating ›island on an island‹, to quote a simile of Marcus Aurelius describing the ideal, reserved state of an emperor's soul and referring to a geographical situation in Ischia[42].

Structure and Atmosphere 2: Great Hall

In the great hall, the private atmosphere of the lateral room C was somehow weakened by the dimensions and the huge opening on the back. Not only the dimensions, but also the central position, seem to characterise the great hall as

41 Bressan 2003, 257 points out that Roman grotto rooms often have smaller, adjoining rooms. The lateral room in Capri may have also been suggested by the characteristic three-room-system (*Dreiraumanlage*) consisting of a central *oecus* flanked by lateral *cubicula* common in larger Pompeian houses (e. g. Casa di Labirinto) and numerous villas.

42 *Est autem quod in insula Aenaria intus lacus est; in eo lacu alia insula es, et ea quoque inhabitatur*, Fronto ed. van den Hout 40, 6–8.

the centre of the grotto complex. While the surviving structure does not give any clear indications concerning its proper function and use, the architectonical parallels seem to corroborate the interpretation of the hall as a representative dining room, as at least one possible function. In the canonical enfilade of front, vaulted hall and apsidal, respectively, natural recess discussed above, the vaulted hall always worked as a centre of interest, while the other spaces either served as intermediate/access areas (front) or as stage-like screens with fountains, sculptures, paintings and natural or pseudo-natural elements (rear section). In certain cases, such as the Punta Epitaffio or the garden nymphaeum of the Casa del Bracciale d'Oro in Pompeii, the hall had a permanent *lectus* that fixed the function of the space in a definitive way. There is no indication that the great hall of the Grotta di Matermania did not serve as a monumental framing device for the imperial *cena*.

The atmosphere of the great hall was determined by three categories: first, the specific equilibrium of light and balanced temperature, second, the decoration, and third the vistas. In the following, we will discuss these fundamental categories.

Climate: Contrasting Temperature

The imperial and senatorial elite of the Early Empire defined the substantial quality of private architecture by the criteria of light and temperature; more precisely, by the intelligent manipulation, the appropriate use and the variety of light, illumination and climate. Notwithstanding massive methodological problems regarding the archaeological analysis and verification of those design categories, recent studies unanimously stressed the importance of soft, sensualistic criteria like temperature, sound and illumination[43]. At this point, we may refer to the notorious *ekphraseis* of Pliny the Younger, who constantly refers to the deliberate integration of phenomena like sunlight, shade, coolness etc. in his villas[44]. Furthermore, many literary allusions show the importance of climate, especially in the context of villa grottoes and nymphaea.

There is no doubt that the exceptional climatic conditions of the Grotta di Matermania was one of the reasons why the imperial architects went to such extraordinary lengths to create a luxurious pavilion in the middle of nowhere. In its rear sections, the grotto provided (and still provides) a constantly mild, indoor temperature, even on very hot summer days. Consequently, there was a perfect combination between light and temperature under the huge vault in the middle. At that point, the bright sunlight from outside met the cool air coming from the dark space behind the hall.

In fact, the sequence of different spaces was accompanied by sudden changes of light and temperature. Entering the cave from the bright – and, at least in summer, hot – outside, the recipient passed the still illuminated, but shaded area in front of the hall and, after that, the climatically balanced zone under the vault with its colourful reflections of marble and glass. Then the eyes of the beholder had to adjust to the dark, in order to admire the natural background of the grotto. Having climbed on top of the two podia and turned around, they were suddenly surrounded by shadows, brightened by a spot of glaring sunlight pouring through the tunnel-like opening of the vaulted hall (Fig. 8).

The completely different character of this section takes us to another important category: the possibilities of views exploited and ingeniously conceptualised by the architects of the emperor.

43 e. g. Beste 2011 (light in the Domus Aurea); Zarmakoupi 2014, 229–235 (»Architecture of the senses«); Bressan 2003, 259 (grotto illumination).

44 Lafon 2001, 279–285 with an excellent analysis of the sensualistic principles of Pliny the Younger's descriptions.

Decoration: Contrasting Texture, Colour and Material

Unfortunately, most parts of the lavish decoration of the Grotta di Matermania have been lost. Nevertheless, the fieldwork of 2016 revealed many details concerning the revetment of walls, floors and ceilings. The overall result of this scattered and fragmentary information is, amongst others, the general importance of highly contrastive patterns of materials, colours and textures, which represents the general evidence of refined decorations typical for Roman grotto rooms[45]. Small fragments of *opus sectile* found *in situ* verified historical, so far unproven testimonies, stating that the floor of the great hall was, like in many other cases in Capri, covered with a precious marble floor robbed out by Hadrawa at the end of the 18th century[46].

Furthermore, characteristic holes and parts of metal cramps in the lower zone of the southern wall of the great hall prove that at least some parts of the lateral walls were also covered by *opus sectile*. While there are no indications at all concerning the ornamentation of walls and the vault of the great hall, a close examination of the podium structure revealed the intention to vary materials, colours and textures in an elaborate way. As mentioned above, during the campaign it was possible to document small traces of sumptuous glass mosaics[47]. Therefore, on the podia we might imagine a splendid glass decoration reminiscent of many better-known examples of glass mosaics in grottoes and nymphaea, for example the mosaic-decorated nymphaeum of Massa Lubrense near Capri[48].

The translucent quality of glass, its intense colours and highly reflective surface marked a harsh contrast to the rough and monochrome *chiaroscuro*-texture at the bottom zone of the podia. There, thousands of little shells framed and, at the same time, separated the vertical surfaces from the (again shiny and colourful) texture of the horizontal marble floor. Pondering that floor, the horizontal top of the podia was covered by slabs, almost certainly made of marble – again creating a harsh contrast, if we consider the rough and crude surfaces of the adjoining walls of the natural grotto.

The same is finally true for the decoration of room C. A brilliant glass mosaic covering the vault, frescoes and framing stucco on the walls and another plinth of maritime *mollusca* at the bottom wall continued the refined strategy of texture-, colour- and material variations documented in the hall.

Rooted in the earliest Hellenistic examples of grottoes in domestic architecture[49], the overlap and interaction of natural and artificial elements was the most significant strategy of grotto design[50]. As in many other cases, in Grotta di Matermania the decorators of ceilings, walls and floors permanently played with the contrasts of nature, art and artificiality. On the podia walls, the natural bedrock was covered with artificial *opus reticulatum* covered with again natural shells; blue and green glass gave the impression of shady groves like those in front of the cave – or of humid, mossy rocks like the real ones in the inner section of the grotto. But in the Grotta Matermania, that situation was intensified by the unique equilibrium of natural and artificial surfaces. While in other examples, either the natural (Sperlonga; Blue Grotto in Capri) or the artificial elements (all grottoes not built in the context of natural cavities) prevailed. In Grotta di Matermania an artificial centre was surrounded by natural, mostly unmodified walls. The contrast of natural and artificial colours and surfaces in the decorative details reflected the overall contrast of the artificial vault of the pavilion and the pristine dome of the cave.

Furthermore, the unique setting had implications on the impact of architecture and decoration. In the midst of a wild nature the architecture must

45 The multiple strategies and materials concerning the decoration of Roman grotto architecture are analysed by Neuerburg 1965, 91–97; Sear 1977 passim; Letzner 1990, 245–262; Bressan 2003, 264–286.

46 Cf. Betori – Esposito 2001 (closer examination of *opera sectilia* found on Capri).

47 The fashion of decorations made of glass *tesserae* in grottoes and nymphaea is discussed by Sear 1977 passim (for Capri 22. 40 cat. 348; 62 cat. 18; 62. cat. 17 [Matermania]); Lavagne 1988, 430–437; Letzner 1990, 250–254.

48 Budetta 2005/2006 (with comparisons from Pompeii, Herculaneum etc. 70–77).

49 Cf. Neumann 2016, 176–179 discussing the relation between nature and architecture in Hellenistic grottoes.

50 Sear 1977; Letzner 1990, 246–249; Lavagne 1988, 396–399; Bressan 2003, 268–271 (on the use of tufa).

have had a very different effect, at least in comparison with the conventional grottoes, which were set in the civilized context of the *villa maritima*. While most other grottoes brought a kind of natural ambiance to the architecture, the Grotta di Matermania building transferred architecture into the wilderness. That ambivalence was also true for the details: Far away from the sea, the shells directly quoted the sea[51], while the visitor could gaze at the infinite blue[52] from the distance.

View: Contrasting Earth and Sea

Ever since the ground-breaking work of Drerup[53], the importance of framed views in Roman house and villa architecture has been undisputed. Recent studies, especially on Oplontis, strengthened the idea that the paradigm of a refined variety concerning framed vistas and axial, tunnel-like views through house and garden was one of the key aspects of arranging space in Roman villas[54]. The Grotta di Matermania is, in many respects, an extraordinary example for this strategy of arranged views typically for the Roman *villa maritima* as an architectural »machine à voir«[55].

Thanks to the unusual building and preservation conditions, the Grotta di Matermania is one of the very few cases where landscape views suggested by frames and visual axes did change rather insignificantly since early imperial times. Thus, the following analysis is centred on the main observation point, proposed by the interior construction scheme of the grotto analysed above: the great hall, where – following the example of Baiae Punta Epitaffio – we might locate the assembly of the imperial *cena*.

Regarding the category of view (*Ausblick*), the architectural form of the great hall provides a clear opposition. There are two huge openings dominating the tunnel-like hall. Both of them allow vistas unrestricted by walls or doors. Equally, both openings are framing the view. Following the principle of Pliny's *tria maria*[56] and many similar examples preserved in actual villa sites, the recipient is able to observe two different sceneries: first, to the east, a graduated landscape view, second, to the west, podium and walls of the rear part of the grotto. Both vistas are distinguished by remarkable, yet extremely different aesthetic qualities.

If we analyse the view to the east alongside basic categories of the aesthetics of landscape, we encounter pictorial rules of creating spatial illusion, as if the panorama seen from the grotto was drawn by a painter. For example, the scenery can be divided in three grounds: a foreground, consisting of hanging rocks and the natural arch of the grotto; second, a middle ground formed by the surrounding slopes and trees of the gorge; and third, a deep and extensive background, split into the recessing mountains of the Amalfitana on the left and the blue sea on the right, highlighted by the scattered Sirenuse islands.

The vertical division into land and sea leads the beholder back into the foreground. Here, in front of the podium, the left side of the natural picture is suddenly blocked by the curtain of the cavern walls, whereas the right side opens to the extensive panorama and widens the view into the infinite. Furthermore, the natural framing of the grotto walls in the foreground is doubled by the artificial framing of the architecture. If the eighteenth-century category of the *picturesque* is true for any ancient view, it is the view of the Matermania with its straight composition and dramaturgy.

Except for the built opening previously mentioned, all features are part of a natural composition. In a narrow hermeneutical interpretation, we cannot

51 Cf. Lavagne 1988, 419–430 on the semantics of the common maritime elements in Roman grotto decoration; the use of shells in general (types and technique) Sear 1977, 38.
52 Cf. Lavagne 1988, 432–437 on the blue ›egyptian‹ glass in grotto decorations.
53 Drerup 1959.
54 Cf. the recent studies Bergmann 2016 and Thomas 2016 on the system of »orchestrated perspectives« in Oplontis.
55 Lafon 2001, 300; cf. Grüner 2006.
56 Plin. 2, 17, 5: *undique valvas aut fenestras non minores valvis habet atque ita a lateribus a fronte quasi tria maria prospectat*; cf. Drerup 1959, 151.

prove that the vista, so appealing to the modern viewer, was a phenomenon equally appreciated by the early imperial viewer – and, in their eyes, not just a random collage of natural elements. However, there are two arguments suggesting the idea that the spectacular view from inside was one of the fundamental qualities of the Grotta di Matermania ensemble. Firstly, the written evidence. Pliny the Younger informs us not only about the importance of graduated, depth-accentuating vistas like the view from his Tuscan villa. He, as previously mentioned and widely known, also talks about the artificial framing of such landscape sceneries. Both aspects, the varied and graduated landscape view on the one hand, the architectural framing on the other, are exemplified by the view from the Capri cave.

The fundamental aesthetic qualities of the framed view of Grotta di Matermania get even clearer if we compare contemporary landscape painting. The famous Odyssey frescoes from the Esquiline could count as a visual commentary on the fundamental qualities of the Matermania vista[57]. The wide, but fictive Odyssey landscapes are not only made up with the same elements that constitute the Matermania vista – rocks, natural arches, sea and scattered vegetation – but it also is the elevated point of view, the vertical segregation of land and sea and, above all, the line of gradually receding hills and mountains (effectively creating the illusion of depth), which provoke the comparability with the Matermania panorama.

Structure and Atmosphere 3: The Inner Grotto

Turning towards the west, the guest lying or walking under the artificial vault was faced with a completely different scenery. In the foreground, the coloured glass mosaics reflecting and refracting the light from outside worked as a *repoussoir*, similar to the fences and balustrades in Third Style garden paintings. Step by step, the view entered the cool and dark space of the natural grotto, extending to a considerable height in the rocky dome. Thus, the vista worked as a contrast to the landscape panorama to the east: dark versus light, clearly differentiated grounds versus undefined dimensions, rough and crude surfaces versus pleasing hills and islands. Entering the picture of the rear section, walking into the dark grotto and ascending the steps to the rocks, the visitor directly experienced the same atmosphere mediated by the picturesque view. In contrast to the bright and warm nature outside, they were surrounded by a frightening darkness; an atmosphere that can today still be experienced, even if in antiquity the opening of the grotto was considerably narrower and consequently the inner part of the grotto much darker than today. Regrettably, we do not know whether that atmosphere was underlined by corresponding statuary; at least in Sperlonga, the dramatic value of the Polyphemus group was quite fitting to the atmosphere of the grotto space.

Performative Aspects: The Grotta della Matermania as *venerius locus*?

An interpretation of the Grotta di Matermania would be incomplete without at least shortly mentioning a literary tradition concerning the nature of Capri as imperial residence under Tiberius. The architecture of Grotta di Matermania might have been at the roots of a persistent narrative established or reinforced by Tacitus and Suetonius: the natural environment of Capri as a stage for sexual performances invented by Tiberius[58]. In a famous passage of

57 Biering 1995.

58 Cf. Lavagne 1988, 567–571; for a critical discussion of the historiographical tradition concerning the person of Tiberius cf. Baar 1990 (the problem of the alleged erotic escapades on Capri 74 f.).

the *Vita Tiberii*, Suetonius reports: *In silvis quoque ac nemoribus passim venerios locos commentus est prost[r]antisque per antra et cavas rupes ex utriusque sexus pube Paniscorum et Nympharum habitu, quae palam iam et vulgo nomine insulae abutentes Caprineum dictitabant*[59]. The text informs us that there were certain erotic places (*venerii loci*) installed everywhere in the groves and forests of the island. Furthermore, throughout the caves and hollow rocks of Capri youths of both sexes offered themselves disguised as *Panisci* and *Nymphae*, which lead to the widely-known name *Caprineum* for these installations.

It is clear that, as tempting as it may seem, there is no evidence, neither archaeological nor historical, that allows us to identify the Grotta di Matermania as either one of Suetonius' *venerii loci* or a *Caprineum* (if in fact they don't refer to the same kind of phenomenon). However, there are three important aspects, which deserve closer attention.

First, the text tells us about remote places scattered all over (*passim*) the wild landscape of Capri, which were installed by the emperor as part of the imperial villa. No matter if Tiberius' *venerii loci* in Capri are a historiographical invention or not, the fact that Suetonius tells us about such remote places is highly significant. Considering the unusual location of the Grotta di Matermania far away from any elaborate villa structure, a phenomenon unique in Roman villa architecture, Suetonius' account parallels one of the most peculiar aspects of Grotta di Matermania.

Second, following the account of Suetonius caves and abris played an important role in the valorisation of the natural landscape of the island, thus forming an integral part of the villa. Indeed, being just one of several grottoes in Capri, the archaeological record of Grotta di Matermania testifies the importance of natural caves in the context of the imperial residence of Capri. This seems to become even more obvious when we keep in mind that grotto-like *nymphaea* were a common feature in senatorial villas – and surely not something so extravagant as to be emphasised in a short description of an imperial estate.

Third, the living statues transformed the landscape of Capri into a mythological scenery. As in Sperlonga, where an Odyssey of marble, not real humans set the mythological tone, the Grotta di Matermania could have been part of a broader intellectual concept combining a technically and aesthetically refined architecture on the one hand with the wild nature of the island on the other. Being just one of several grottoes in Capri, Grotta di Matermania with its splendid decoration and its open range of possible uses, comprising the stage-like installation of the double podium, may have been an important addition to an imperial theme park; or, rather, a theatrically enhanced landscape whose various elements, strategies and ideas are yet to be explored archaeologically.

Conclusions

1. The precise *chronology* of the grotto complex still remains difficult to assess, as it is the case in many other buildings on Capri and around the Bay of Naples. However, taking all the notorious problems of dating late Republican and early Imperial masonry in central Italy into account, some indications may support an early construction date during the reign of one of the first emperors.

2. After the documentation of the building structure, a clear picture of the *construction process*, which seems to in most parts have followed the one applied during the planning phase, can be drawn. The construction started with the

59 Suet. Tib. 43, 2.

two large side walls and was followed by the vaulting, the monumental steps in the front and the semi-circular platforms; then the pedestal, walls and barrel vault of the smaller rooms (C/D) were created, before the gaps between the different elements and the rocky surface were closed in order to create a common façade.

3. *Designing* the eccentric grotto was quite a difficult task: The architects had to combine the pre-existing, heterogeneous, physical boundaries of the solid rock with precisely defined architectural forms. On the basis of the new measurements determined in 2016, the design process of the building can be reconstructed in detail. For example, the geometric design of the main hall refers to only two basic modules: firstly, the width of the hall, equal to 20 feet, from which all main dimensions in plan and elevation were deduced; and secondly the width of 2 feet, which served as the standard module for all minor dimensions (wall thicknesses, stairs etc.). The vault design of the smaller room C emerged as a very early predecessor of Hadrian's Pantheon, being defined by a circle (diameter 13 feet), inscribed into the room's section.

4. Concerning *typology*, in its general shape, the Grotta di Matermania picks up on the tradition of the *grotto* or *nymphaeum* typical for Late Republican and Early Imperial leisure architecture in central Italy and Campania. While the geometrical ceiling of the barrel-vault evoked the impression of a pavilion or monumental canopy, the irregular surface of the natural grotto walls deliberately challenged the geometric order. However, in some respects Grotta di Matermania followed different traditions, for example with its typologically ambivalent, stage-like podium apsis.

5. The inherent *dichotomy* of *nature and architecture* goes far beyond the attractive juxtaposition of geometrical and geological forms. For the architects as well as for many contemporary beholders, we should reclaim a profound sensibility for the contrasting values of natural and artificial surfaces, greyish rock and coloured marble, gleaming outdoor light and mysterious cavern shadows, polished floors and *chiaroscuro* shell-walls. Thus, the grotto was characterized by an aesthetic *contrapposto* to be met again only twenty centuries later with the giant natural boulders in F. L. Wright's Appalachian living rooms.

6. Based on the theatrically directed *movement* from the rocky gorge outside to the quiet womb of the grotto's end, the architects succeeded in enhancing the different *atmospheres* of the complex applying a broad range of strategies. In our spatial analysis, we tried to outline, how architects and interior designers operated with the sensual categories of light, temperature, surface and vistas in order to create a coloured climax of clearly distinct spaces. Together with the principle of contrast (above, 5.), the principle of multi-sensory variety emerges as the second, important category of the Grotta di Matermania's aesthetics.

7. During and after the campaign, the authors were able to document and reconstruct many details of *decoration and ornament*, notably the multi-coloured glass-mosaic of the podium, fragments of *opus sectile*, *cocciopesto* floors and marble revetments. Those details, even if deplorably scattered, demonstrate how the decoration scheme fits into the overarching concept of contrasts and atmospheres mentioned above.

8. The same is true for the category of *panorama* widely discussed in modern research on the Roman villa. As the analysis showed, the panorama to be seen from inside the Matermania grotto with its straight composition and dramaturgy – the unique case of a naturally framed view nearly unchanged since ancient times – reveals the basic principles of the idea of *picturesque* to be found in contemporary paintings and architectures.

9. Even if there is no final evidence disclosing *function* and *use* of Grotta di Matermania, both architectonical parallels and decoration schemes point towards an interpretation of the hall as a representative dining room. Regarding the residential context of Capri, we might not go too far if we try to interpret the grotto architecture as a monumental framing device for the imperial *cena*. There is no architectural evidence that the grotto primarily functioned as a sanctuary.

10. Miles away from any residential complex and set in a difficult position in the rocks, the unique remoteness of Grotta di Matermania must be regarded as its most distinctive feature – the grotto being one of Suetonius' *venerii loci* or not. The documentation presented above reinforces the impression of architectural extravagance typical for Capri and, finally, underlines the unique role of this imperial residence in the history of Roman villa architecture.

Abstract

Tobias Busen – Andreas Grüner, The Grotta di Matermania on Capri. Construction, Space, and Atmosphere of an Imperial Pavilion

The Grotta di Matermania on the island of Capri was most probably created by one of the first Roman emperors as a monumental framing device for the imperial cena, representing one of several architectural interventions on the island residence. Features of nature and architecture were combined in this grotto by contrasting the wilderness of the natural setting and the heterogeneous rocky surfaces with the precise geometry of the architectural forms. This effect was achieved by taking into account the differing temperature, light, and shadow as well as by applying *opus sectile* floors and glass and sea-shell wall coverings. For the architect it must have been especially appealing to fit a convincing architectural design based on rules of proportions into the existing physical boundary of the grotto.

Keywords
imperial residence • Roman villa • nature • architectural design • grotto-nymphaeum

Sources of illustrations
Fig. 1: Mangoni 1834, suppl. • Figs. 2. 6. 7. 15. 16. 17: T. Busen • Figs. 3. 8–14: J. Schreyer, with the permission of the Soprintendenza Archeologia, Belle Arti e Paesaggio per l'area metropolitana di Napoli • Figs. 4. 5: K. Wolf, with the permission of the Soprintendenza Archeologia, Belle Arti e Paesaggio per l'area metropolitana di Napoli

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Addresses
Prof. Dr. Andreas Grüner
Friedrichs-Alexander-Universität Erlangen Nürnberg
Institut für Klassische Archäologie
Kochstraße 4/19
91054 Erlangen
Deutschland
andreas.gruener@fau.de

Dipl.-Ing. Tobias Busen
Technische Universität München
Lehrstuhl für Baugeschichte, Historische Bauforschung und Denkmalpflege
Arcisstraße 21
80333 München
Deutschland
tobias.busen@tum.de