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Research Article

The Restoration of the Nymphaeum of Trajanus in Miletus between Formal Renovation and Structural Repair

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Abstract

Located on the west coast of Asia Minor, near the Meander River delta and in a high-seismic risk area, Miletus experienced numerous destructive earthquakes throughout its long history, representing therefore an ideal case study for the examination of ancient architectural restoration. As part of a broader investigation into the restoration woks conducted on the public monuments of the Agora of Miletus in antiquity, this contribution offers a comprehensive reassessment of the 3rd century restoration of the Nymphaeum of Traianus. The monumental fountain was erected by Marcus Victor Traianus, the father of the Emperor Traianus, between 79 and 80 CE in the southern sector of the Agora. The central issue of the investigation was the identification and contextualization of the renovation of the building undertaken during the Emperor Gordianus III (238-244 CE), which is mentioned in the Greek dedicatory inscription carved on the blocks of the third storey. The focus of the study was to assess the architectural implications of the inscription, which could conceal a major restoration not limited to the renovation of the decorative apparatus, as the inscription suggests, but aimed at addressing possible structural damages that the monument may have suffered. Through a comprehensive review of archival documentation and a systematic survey of the archaeological evidence, intended to identify restoration traces on both architectural elements and structures, the analysis revealed widespread repairs on the blocks of the façade, particularly on the upper levels, accompanied by significant consolidation of the building's fabric. This evidence indicates therefore that the restoration conducted under the reign of Gordianus III extended beyond aesthetic refurbishment and instead addressed substantial structural damages, potentially caused by seismic activity, which required an extensive and coordinated intervention.

Keywords: Miletus, Nymphaeum, Traianus, Gordianus III, architectural restoration, structural repair.

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Araştırma Makalesi

Miletos'taki Traianus Nymphaeumu'nun Resmi Yenileme ve Yapısal Onarımı Arasındaki Restorasyonu

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Çıkar Çatışması Beyanı: Çıkar çatışması beyan edilmemiştir.

Öz

Anadolu'nun batı kıyısında, Menderes Nehri deltasının yakınında ve yüksek sismik risk taşıyan bir bölgede yer alan Miletos, Antik Çağ boyunca birçok yıkıcı deprem yaşamış ve bu nedenle antik mimari restorasyonun incelenmesi için ideal bir saha çalışması sunmuştur. Miletos Agorası'ndaki kamusal anıtların Antik Çağ'da gerçekleştirilen restorasyonlarına dair daha geniş bir araştırmanın bir parçası olan bu çalışma, Miletos'taki Traianus Nymphaeumu'nun MS 3. yüzyılda gerçekleştirilen restorasyonunun kapsamlı bir yeniden değerlendirmesini sunmaktadır. Bu anıtsal çeşme, İmparator Traianus'un babası Marcus Victor Traianus tarafından, MS 79-80 yılları arasında kentin agorasının güney bölümünde inşa edilmiştir. Araştırmanın merkezi konusu, İmparator III. Gordianus Dönemi'nde (238-244 CE) gerçekleştirilen ve yapının üçüncü katındaki bloklar üzerine kazınmış olan Yunanca adak yazıtında bahsedilen yenilemenin tespit edilmesi ve bağlamsallaştırılmasıdır. Çalışmanın odak noktası, yazıtın mimari sonuçlarını değerlendirmekti; çünkü yazıt, sadece süslemelerin yenilenmesiyle sınırlı olmayan, daha büyük bir restorasyonu gizliyor olabilir. Bu restorasyon, anıtın uğradığı olası yapısal hasarları gidermeyi amaçlamış olmalıdır. Arkeolojik kanıtların sistematik bir araştırmasının arşiv belgelerinin kapsamlı bir incelemesi yoluyla hem mimari elemanlar hem de yapılar üzerindeki restorasyon izlerini belirlemeyi amaçlayan analiz, cephe bloklarında, özellikle üst seviyelerde yaygın onarımlar ve binanın dokusunda önemli bir konsolidasyon yapıldığını ortaya koymaktadır. Bu kanıt, III. Gordianus Dönemi'nde yürütülen restorasyonun estetik yenilemenin ötesine geçtiğini ve bunun yerine sismik aktivitenin neden olabileceği, kapsamlı ve koordineli bir müdahale gerektiren önemli yapısal hasarları ele aldığını göstermektedir.

Anahtar Kelimeler: Miletos, Nymphaeum, Traianus, III. Gordianus, mimari restorasyon, yapısal restorasyon.

Introduction

Ancient architectural restoration represents a multifaceted phenomenon, shaped by the interplay of technological, socio-economic, cultural, and environmental factors[1]. As a practice which transcends the materiality of construction and conservation, it provides significant insights into the complex relationship between ancient societies, built heritage, and natural environment, which often serve as catalyst for destruction and subsequent reconstruction. Consequently, it represents a practice to which ancient cities in high seismic-risk areas were compelled to resort throughout their history. In this respect, Miletus, located on the western coast of Asia Minor, near the Meander River delta, in a region characterized by historical seismicity due to the presence of numerous active faults, represents an ideal case study, since the city experienced multiple significant earthquakes in antiquity, particularly from the 1st[2] to the 3rd century CE[3]. Therefore, for the population of Miletus architectural restoration was unavoidable but, indeed, an essential measure to ensure and perpetuate their built heritage.

Figure 1: Aereal photo of the Agora of Miletus *(archive of the German Archaeological Mission of Miletus)*

This paper is part of a broader re-examination of the restoration works carried out on the public buildings surrounding the Agora of Miletus (fig. 1). Despite they have all been extensively investigated and studied in monographic and comprehensive studies – such as the Delphinion[4], the Bouleuterion[5], the Nymphaeum of Traianus the Elder[6], and the Market Gate[7] – the central aspect of architectural restoration has been only marginally addressed in

[1] An important reference point in this sense is the volume edited by Vanden Broeck-Parant and Ismaelli 2021. See also Camporeale et al. 2008; Camporeale et al. 2010; Camporeale et al. 2012; Bonetto et al. 2014; DeLaine et al. 2016; for monographic studies specifically dedicated to the subject, see Bingöl 2011; Klein 2015; Ismaelli 2013; Perrier 2019.

[2] In one of his letters, Apollonius of Tiana mentions that Miletus was damaged by an earthquake during the reign of Claudius (Philostr. *AP.* IV, 6), perhaps the same that struck Samos in 47 CE and is recorded by inscriptions recalling the restoration of the Temple of Dionysus by Claudius itself (Robert 1978, 401).

[3] In 262 CE Miletus was struck by another earthquake, perhaps the same one attested Ephesus in the same year, which damaged the Celsus Library (Guidoboni 1989, 671-672).

[4] Kawerau and Rehm 1914.

[5] Knackfuss 1908.

[6] Hülsen 1919.

[7] Knackfuss 1924.

the historiographical debate[8]. Within this framework, the present contribution proposes a new analysis of restoration works that affected the Nymphaeum of Traianus the Elder (fig. 2) in the 3rd century CE, as the inscription mentioning the renovation of the monument during the reign of Gordianus III suggests. The central issue of the investigation was to identify, contextualize and quantify for the first time the restoration intervention referenced in the inscription, by analysing the preserved archaeological record, thus focusing on the formal, constructional, and ideological aspects of the monument, which had never been studied from this perspective. After a brief historical-archaeological introduction to the Nymphaeum, this contribution illustrates the methodology adopted in the study of the archaeological evidence and the preliminary results derived from the on-field analysis of the architectural marble elements and structures.

Figure 2: Façade of the Nymphaeum of Trajanus *(archive of the German Archaeological Mission of Miletus)*

The Flavian construction (79-80 CE) and the Gordianus restoration (238-244 CE)

The Nymphaeum of Traianus the Elder, one of the most impressive fountains in Asia Minor, is located in the southern sector of the Agora, in a scenographic setting along the processional street from the city to the sanctuary of Apollo at Didyma. The building was erected during the reign of Titus by Marcus Victor Traianus, the father of the emperor Traianus and *proconsul* of Asia between 79 and 80 CE, as the Latin inscription carved on the architraves-friezes of the first storey during the reign of Traianus documents:

(I) [Aus]pic[iis Imp(eratoris) T(iti)] Caesa[ris D]ivi Vespa[sia]ni f(ilii) Vespa[siani]

(II) [Aug(usti) pont(ificis) max(imi) trib(unicia) pot(estate) IX imp(eratoris) XV co(n)s(ulis) VIII censoris p(atris) p(atriae)]

(III 1) [per M(arcum) Ulp]ium Traianum, co(n)s(ulem), leg(atum) A[ug(usti) leg(ionis) X fretensis bello Iudaico]

[8] For the restoration of the Delphinion, see Niewohner 2016, 58-64; for the restoration traced detected in the Bouleuterion, see Weber 2013, 176-183; for a possible restoration of the Market Gate, see Ismaelli 2013, 294, fig. 24d.

(IV) et provinciae Syriae, proco(n)s(ulem) Asiae et Hispaniae Baeticae, XVvir(um)

(V) [s(acris) f(aciundis), sod]alem Flaviallem, triumphalibus orn[a]men[t]is ex s(enatus) c(onsulto)

(III 2) [cu]m amplius in eo crevit [aqua, nymphaeum dedicatum est][9]

"*Under the auspices of the Emperor Titus Caesar Vespasianus Augustus, son of the deified Vespasianus, pontifex maximus, holder of the tribunicia potestas for the ninth time, hailed imperator fifteen times, consul for the eight time, censor, pater patriae, through Marcus Ulpius Traianus, consul, legatus Augusti of the Tenth Fretensis Legion during the Jewish War and of the province of Syria, proconsul of Asia and Baetica in Hispania, member of the collegium of the XVviri Sacris Faciundis, Flavian sodalist, and recipient of triumphal ornaments by decree of the Senate, as the water flow had increased, a nymphaeum was dedicated*"

The fountain belongs to the type of rectilinear nymphaea with an imposing *Tabernakelfassade*[10] (20.25 m) consisting of three storeys of Corinthian order, decorated with aediculae framing nine alternating rectangular and semicircular statuary niches per storey (fig. 3). The building is provided of two storeyed and projecting lateral wings, lower than the façade and without a rear wall, enclosing a large rectangular pool for water collection. The pool, which used to feed two latrines on each side of the fountain, is defined, toward the street, by a high balustrade, in front of which a second, lower basin is located for water supply. In the façade, the aediculae, formed by pairs of reddish-yellow marble columns supporting a white marble entablature, are arranged in a staggered and non-axial layout between the three storeys, and are crowned on the second and third levels by triangular and double-voluted pediments. The statuary programme hosted in the niches includes marble images of deities from the city's *pantheon*, personifications and subjects closely linked to the aquatic world, now housed in the museums of Izmir, Istanbul, and Berlin[11].

The back wall of the façade and the perimeter walls are constructed using small ashlar blocks arranged in regular horizontal courses and laid in a stratified pattern, with larger elements employed in the lower sections and progressively smaller blocks in the upper levels. Behind the façade, three rooms, each covered with vaulted roof composed of irregular limestone blocks mixed with marble fragments and bricks, served as substructures for the two upper cisterns, where the water conveyed by the aqueduct located behind the fountain flowed through. Here, the water was redistributed and channelled toward the basins through a complex system of longitudinal and transversal terracotta pipes, meticulously reconstructed by Ch. Hülsen[12].

The monument was restored in the 3rd century CE, during the reign of Gordianus III, as the Greek inscription carved on the architraves-frieze of the third storey attests (fig. 4):

ἐπὶ αὐτοκράτορος Μ(άρκου) Ἀντωνίου Γορδιανοῦ Εὐσεβοῦς Εὐτυχοῦς Σεβ(αστοῦ) καὶ Ἰουλίας Τρανκουιλλείνης [ ] διά τε τῶν ἀνδριάντων τῶ[ν χ]αλκῶν [ ] τῆς περὶ τὸ ἰδ[ ] (or περὶ ΤΟΥΔ[ ] or περὶ τὸ ΥΔ[ ]) προνοίας ἐπεκόσμησεν ἐκ τῶν θείων δωρεῶν [ ][13]

"*Under the reign of Emperor Marcus Antonius Gordianus Pius Felix Augustus and Iulia Tranquillina… through the setting of bronze statues… redecorated* [the monument] *using divine funding …*"

[9] Alföldy 1998, 381; Hülsen 1919, 53; Kreiler 1975, 32-33. For a comprehensive discussion of the text, see Barresi 2003, 433-436.
[10] Berns 2002.
[11] On the sculptural programme, see Aristodemou 2013, 1-2.
[12] Hülsen 1919, pls. 49-52.
[13] Hülsen 1919, 54, pls. 24-25.

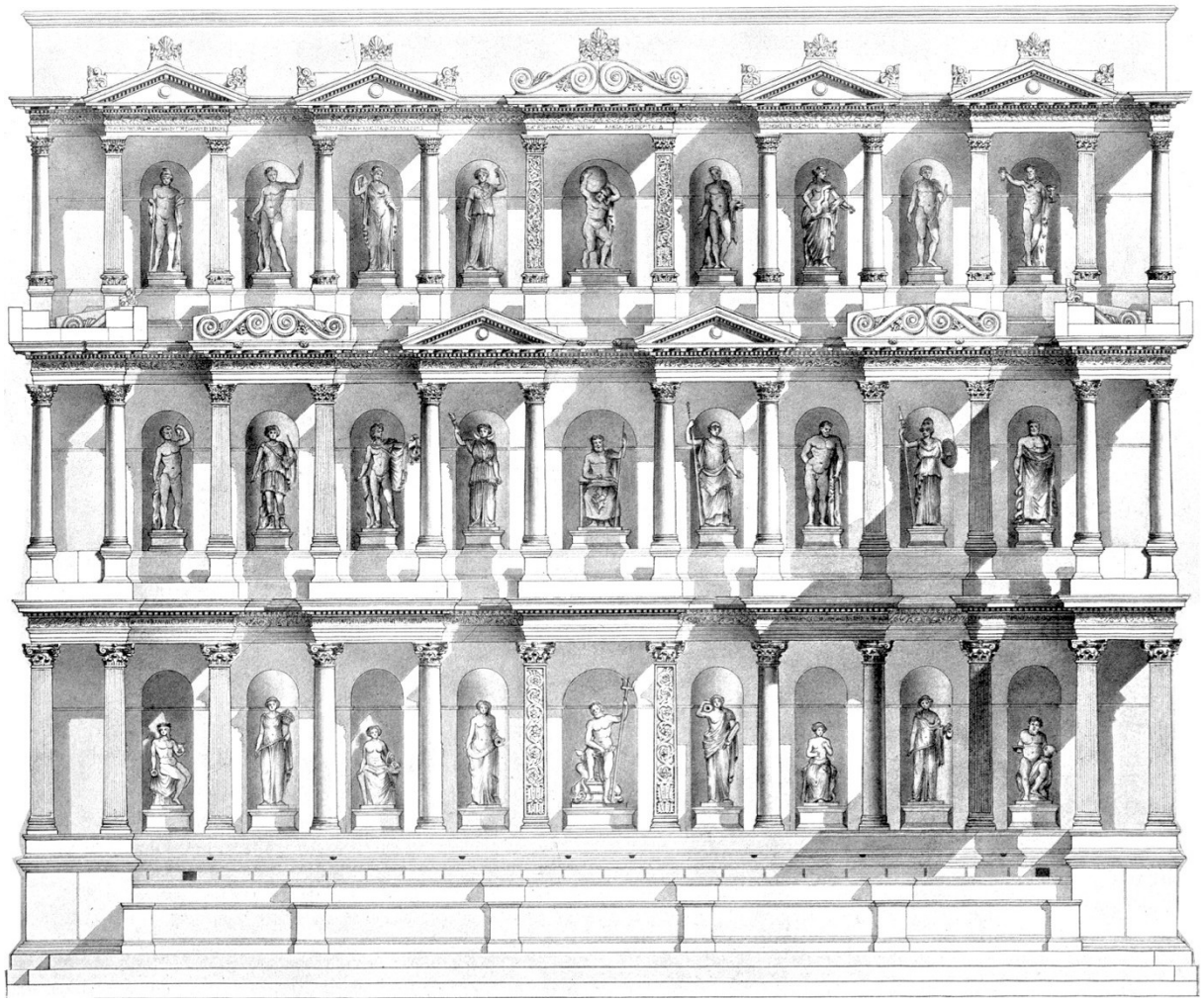

Figure 3: Architectural restitution of the Nymphaeum of Trajanus *(after Hülsen 1919, pl. 58)*

Within the historiographical debate, the text of the inscription has prompted multiple interpretations regarding its meaning and its architectural implications. Some scholars have attributed the inscription to the addition, during the time of Gordianus III, of the third storey, which would not have been included in the fountain's original design[14]. Other scholars, instead, considered the third level as a change occurred during the construction[15], while others assigned it to the original project[16]. In the assessment of the extent of this intervention, the verb ἐπεκόσμησεν (*epekosmesen*) plays a crucial role: since the expression can be translated as "redecorated", it seems to suggest merely a formal renovation of the fountain, with a new display of statues. In this sense, the discovery, in the area of the Nymphaeum, of the statue base of Victor Egnatius Lollianus, *proconsul* of Asia for the third time when Philippus the Arab was emperor (244-249 CE), may indicate his contribution in the renewal of the statuary programme. Nevertheless, the decision to commemorate this intervention through the affixing of a solemn dedication – indeed a common practice in ancient times and in Asia Minor[17] – could in fact conceal a major restoration, not limited to the renovation of the Nymphaeum's decorative apparatus. This latter hypothesis was the

[14] Jung 2006, 81-82.
[15] Köster 2004, 65-67; Maischberger 2009, 104-107.
[16] Quatember 2014, 111-114.
[17] See the restoration of the theatre of Hierapolis under Constantius II (Ismaelli et al. 2022).

starting point of the present research, which focused on the identification of possible restoration traces on the architectural elements and on the structures of the fountain.

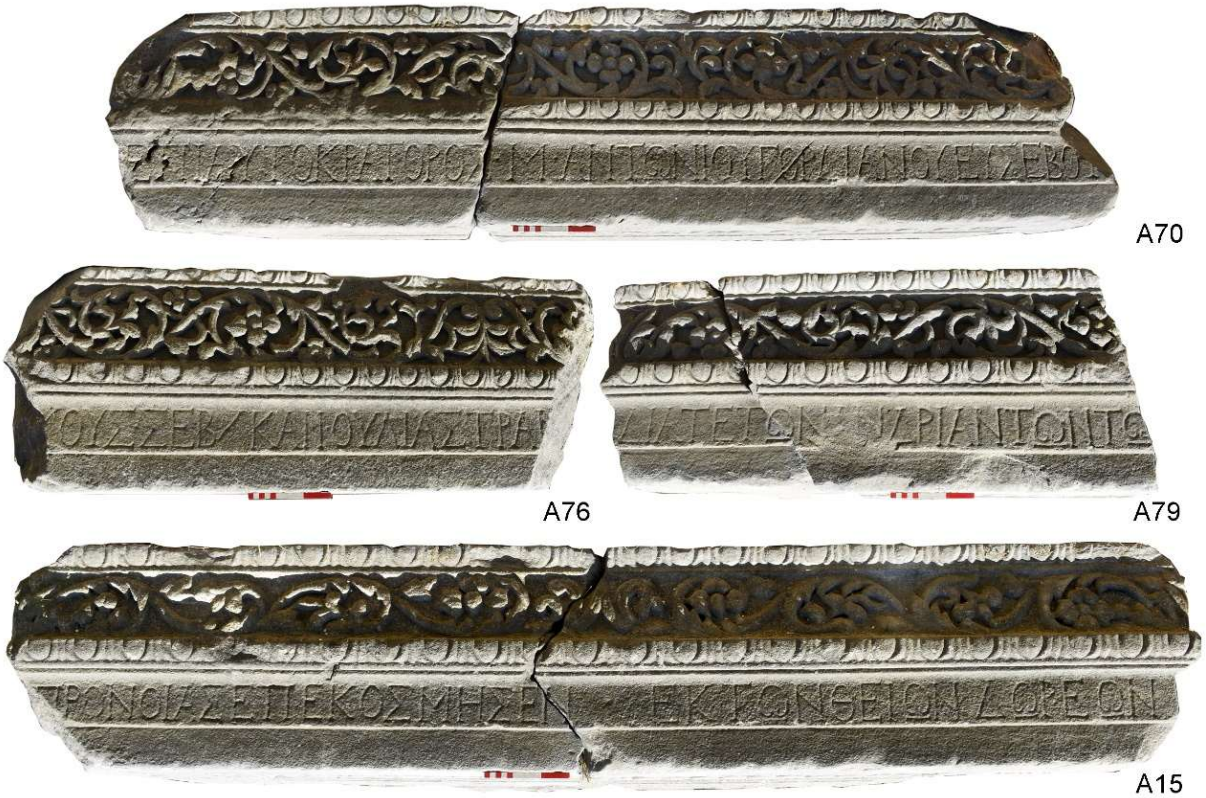

Figure 4: Architrave-friezes with the inscription of Gordianus III *(archive of the German Archaeological Mission of Miletus)*

Methods

The investigation of the Nymphaeum has been grounded in the seminal monograph by Ch. Hülsen, which represents an essential point of reference due to its meticulous accuracy in the reconstruction of the configuration of the three architectural orders, of the functioning of the hydraulic installation, and of the layout of the original sculptural programme, as well as for the rich photographic documentation (fig. 5). The fieldwork was preceded by a systematic review of the archival documentation preserved at the Zentralarchiv and at the Altes Museum of Berlin. Particularly valuable were the photographs taken shortly after the excavation of the building, which proved crucial for recording and documenting traces and details of the architectural elements now lost due to the progressive deterioration of surfaces, caused by the periodic flooding of the Meander River, which has severely and irreversibly compromised the state of preservation of the blocks.

The on-field analysis required a preliminary phase devoted to the identification of all the architectural elements of the façade collected in the catalogue of Ch. Hülsen. This process was hindered by the scattered distribution of the blocks across the area surrounding the Nymphaeum – a condition already remarked upon by the German archaeologist[18] – and ultimately resulted in the identification of over seventy additional architectural elements

[18] Hülsen 1919, 1: «*sind eine große Anzahl teilweise zerstörter, oft weit verstreuter Werkblöcke durch die Ausgrabung wieder zum Vorschein gekommen*».

("SN"[19]) not included in Ch. Hülsen's published catalogue and very likely belonging to the building. A further problem concerned the actual state of preservation of the blocks, generally resting on their upper faces, thus preventing a comprehensive analysis of all their surfaces. Consequently, in some cases the examination relied only on the drawings made by Ch. Hülsen, without the possibility of a direct verification.

The main objective of the examination of the preserved architectural elements was the identification of possible restoration traces that would suggest the structural nature – and not just decorative – of the intervention carried out under Gordianus III. Following the most recent typologies of ancient restoration measures affecting architectural elements elaborated for other important cities of Asia Minor[20], the analysis focused on four main classes of operations. A first group of interventions (A) involves the insertion of Π-shaped iron cramps, aimed at reattaching two parts of a block broken horizontally or vertically or at securing a fissure or a fracture. A second category of repairs is represented by the re-carving of the dowel hollows on the bottom and upper faces of a block, as a result of the disassembly and reassembly – of the block itself (bottom face) or of the block upon it (upper face) – within the structure (B). A similar activity concerns the re-carving of the cramp hollows along the joining face of a block (C). Finally, a further common operation is the replacement of a small broken section of the main block with newly-carved elements (patches or *emblemata*), possibly held in place with iron rods or cramps (D).

Figure 5: Archival photos of the Nymphaeum of Trajanus after the excavation *(after Hülsen 1919, pl. 1)*

[19] *Sine numero.*
[20] Ismaelli 2013, 273-295.

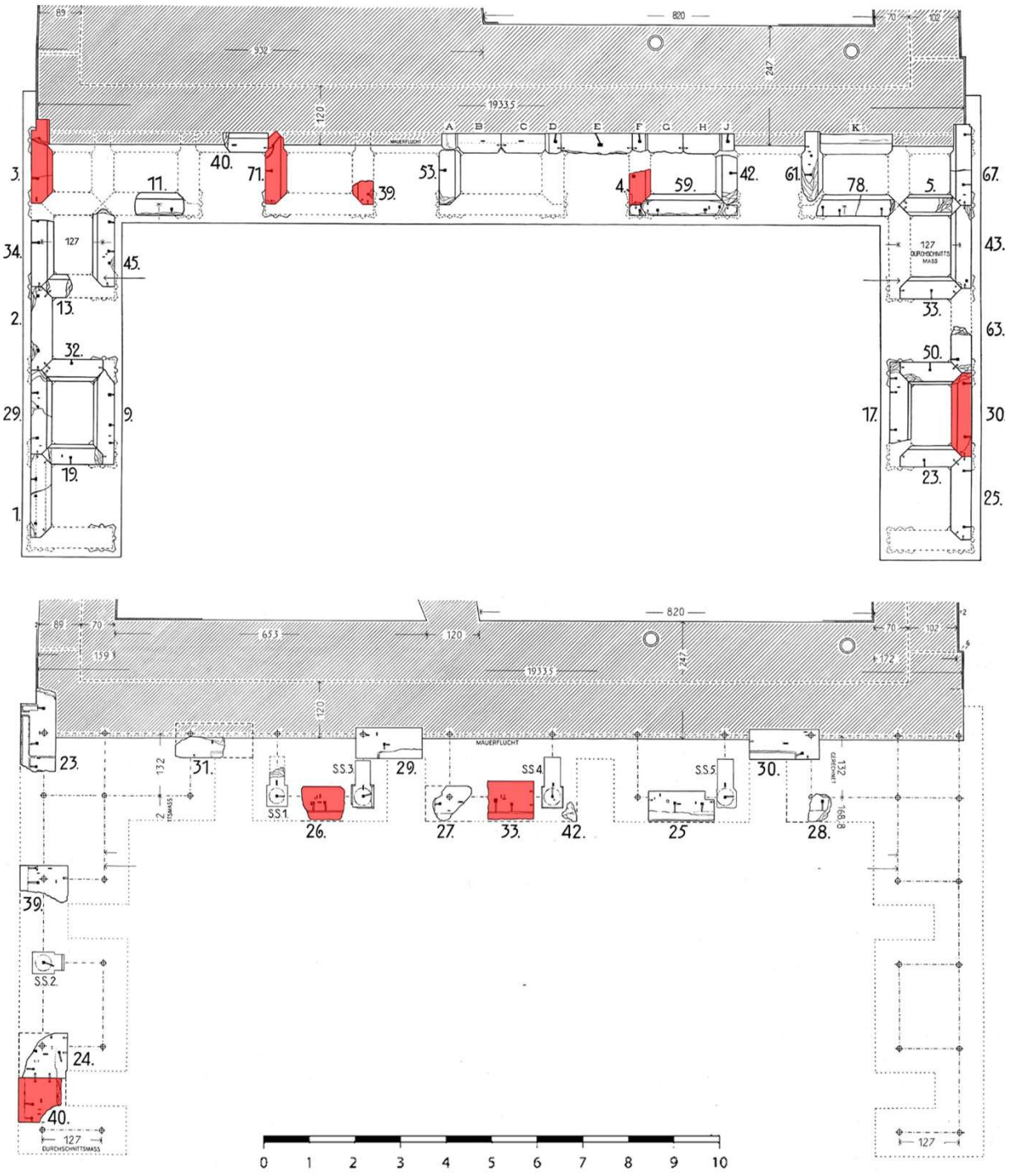

Figure 6: Restoration works identified on the architectural elements of the first storey *(elaboration of the author after Hülsen 1919, pls. 43-44)*

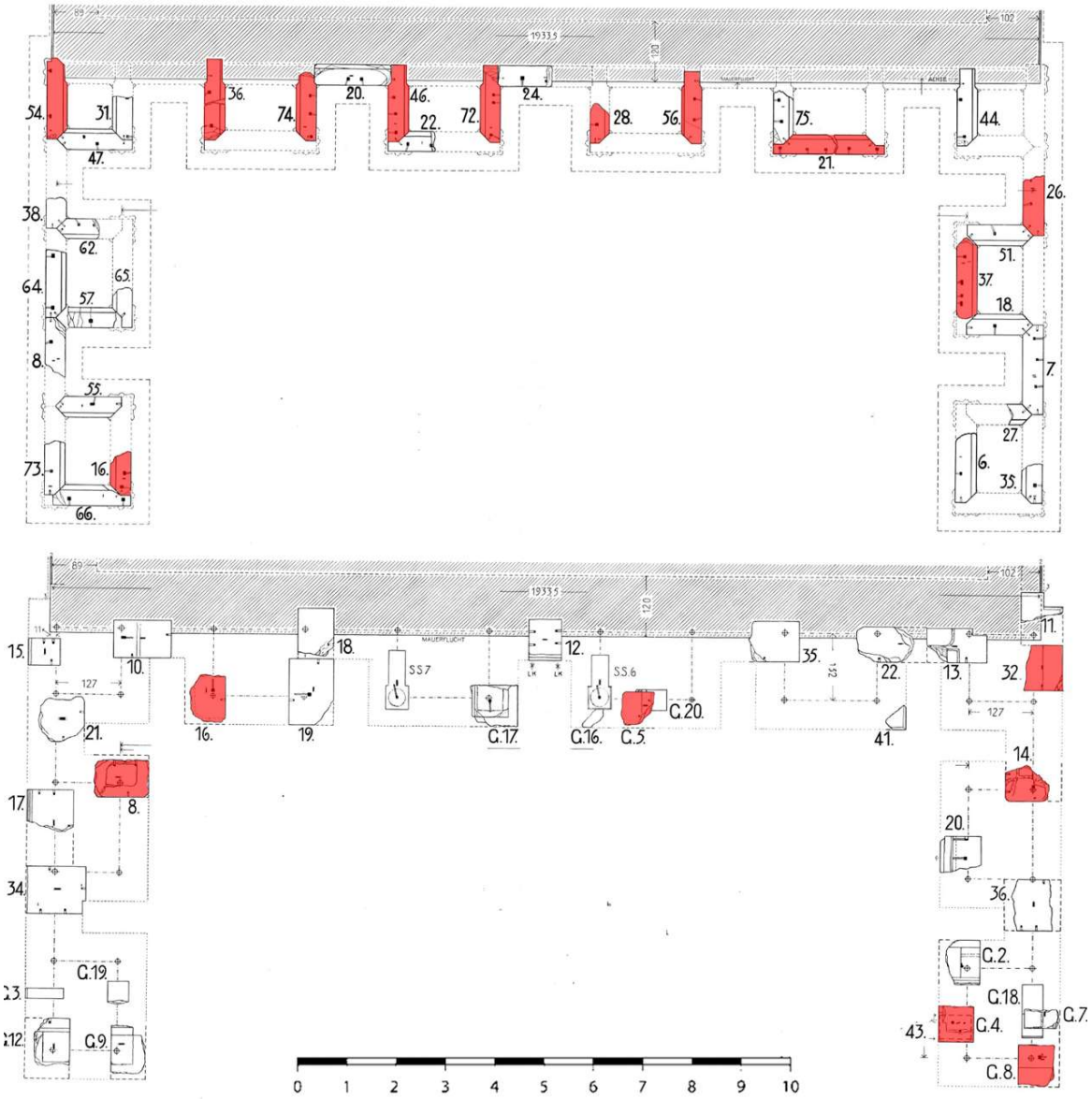

Figure 7: Restoration works identified on the architectural elements of the second storey *(elaboration of the author after Hülsen 1919, pls. 45-46)*

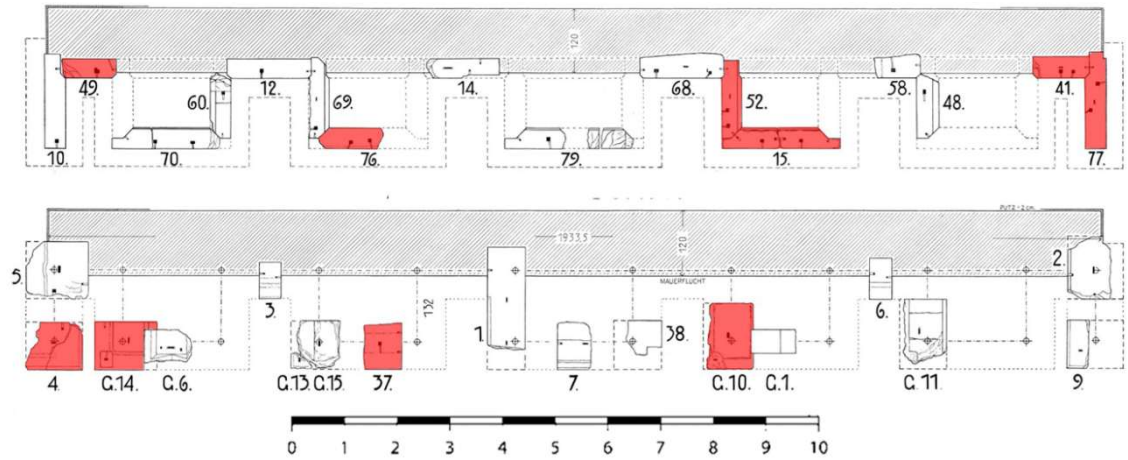

Figure 8: Restoration works identified on the architectural elements of the third storey *(elaboration of the author after Hülsen 1919, pl. 47)*

Results

The on-field survey revealed widespread restoration measures related to all these four main categories in all the three storeys of the Nymphaeum (figs. 6-8). On a total of 37 identified restoration interventions (fig. 9), 26 involve operations of re-carving dowel hollows on the upper and bottom faces, 5 the insertion of *emblemata* (patches) in substitution of damaged portions, 3 the placement of cramps for fragment rejoining and 2 the re-carving of cramp-hollows (tab. 1).

Storey	Restoration interventions				Total
	A Insertion of anti-cracking cramps	**B** Operation of re-carving dowel hollows	**C** Operation of re-carving cramp hollows	**D** Insertion of *emblemata*	
I		A3 (bf); A71* (uf); C26* (uf); C33 (uf); C40 (uf)	A39	A4; A30	8
II	A28; G5*	A16* (uf); A21* (uf); A36 (bf); A37* (uf); A46* (uf); A54* (uf); A56 (bf); A72* (uf); A74* (uf); C16 (bf); C14 (bf); C32 (bf); C43 (uf); G8 (uf)		A26; C8	18
III	A15; C4	A41* (uf); A49* (uf); A52* (up); A76* (uf); A77 (bf); C37* (bf); G14 (uf)	A52*	G10	11
*A = architrave-friezes; C = horizontal cornices; G = pediments; *Not verified on-field; (bf) = bottom face; (uf) = upper face*					

Table 1: Schematic overview of the restoration's types identified on the architectural elements of the Nymphaeum

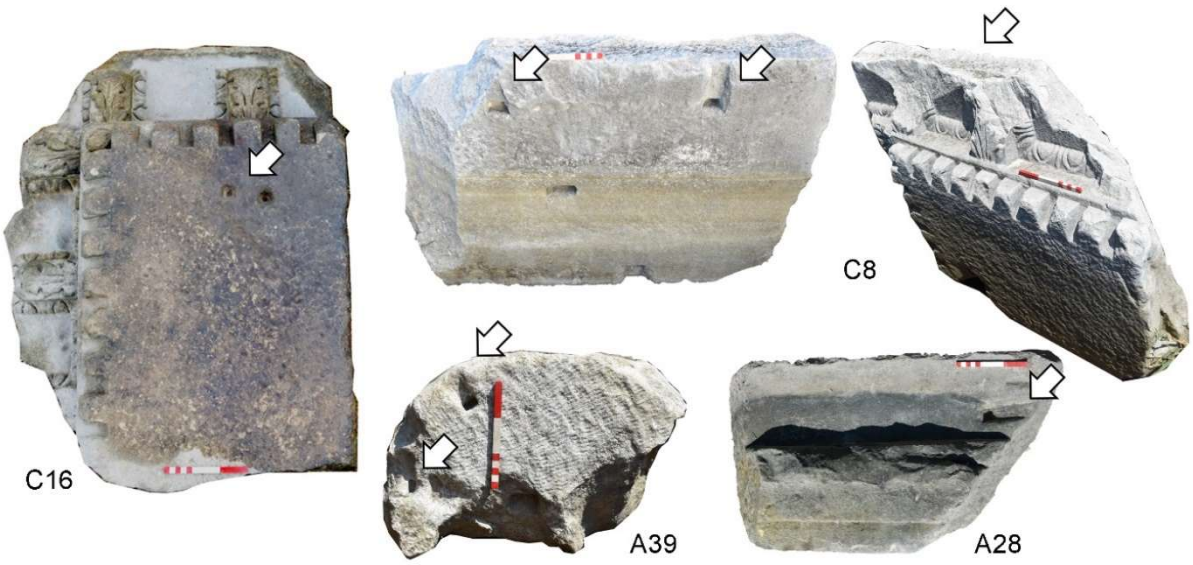

Figure 9: Types of restoration works conducted on the architectural elements of the façade *(archive of the German Archaeological Mission of Miletus)*

Nevertheless, since some types of repairs identified on the blocks may be assigned to the original construction site and reflect an accidental damage during the construction process, it was crucial to distinguish those operations that were instead possibly conducted as a response to a natural phenomenon or a structural damage[21]. Consequently, the study

[21] Ismaelli 2013, 271.

focused mainly on restoration's types which represent more than 70% of total repairs and could therefore reflect greater damages and thus be associated with a more extensive restoration (A, B).

Indeed, the cross-analysis of restoration works conducted in both the rows of architrave-friezes and cornices revealed a widespread distribution of structural repairs in the second and third storeys and, most notably, a concentration, in some cases, of restoration traces in the same aedicula, suggesting possible localised damages in specific sectors of the monument. In this sense, in the fourth aedicula from the north of the second level, both the lateral architrave-friezes A28 and A56, together with the pediment G5, underwent restoration works, likely as a result of a significant damage. This caused the cracking of A28 in two parts and the detachment of a fragment from G5 (which required the insertion of cramps), while, during the reassembly operation, it was necessary to re-carve a dowel hollow on the bottom face of A56 (fig. 10a). Similarly, in the fourth aedicula of the third level, the architrave-frieze A15, bearing the dedicatory inscription of Gordianus III, was restored with two pairs of cramps on the upper and inner faces, while in the overlying pediment G10 a marble patch was inserted to replace a damaged part, held in place by a small rectangular iron rod (fig. 10b).

However, the most significant result from the analysis of restoration works concerns the almost systematic re-carving of the dowel hollows on the bottom faces of the transversal architrave-friezes – i.e. the blocks connecting the hypostyle façade with the back wall and partially embedded within it – especially in the two upper levels. Indeed, on a total of 11 preserved transversal architrave-friezes of the second storey, 4[22] were affected by this operation; similarly, on a total of 8 preserved transversal architrave-friezes of the third storey, 3[23] were subjected to the same restoration[24] (fig. 11).

These results strongly support the hypothesis that the back wall of the façade suffered some structural problems, which imposed a partial disassembly and a consequent reassembly of some of the transversal architrave-friezes of the hypostyle structure. This operation required, in turn, the re-carving of the dowel hollows on the bottom faces of those blocks dismantled and then reassembled in a slightly different layout.

This important discovery can be related to the transformations already noted by Ch. Hülsen involving the building's structures and, in particular, some consolidation works carried out in the back wall of the Nymphaeum. At the south-east corner of the building, a quadrangular buttress was built against the original ashlar block masonry, in order to reinforce a sector particularly vulnerable form a static point of view[25] (fig. 12a). Two other buttresses were erected northward, framing the entrance to the central room: the northernmost one was likely built to support the aqueduct pier that channelled water into the two upper cisterns[26] (fig. 12a). Finally, the lateral walls of the central room were reinforced with two buttresses extending along the entire width of the chamber and about 0.85 m thick, built to support the vaulting roof of the room and, at the same time, to contain the lateral thrust of the vaults of the adjacent chambers[27] (fig. 12b-c).

[22] A36; A56; A54; SN9.
[23] A77; SN13; SN64.
[24] In this respect, out of the other 7 transversal architrave-friezes of the second storey, 4 are broken at their rear side, where they were embedded in the back wall, and it cannot be excluded that they underwent the same restoration. The same occurs in the third level, where out of the other 5 blocks, 2 are missing their rear face. At the first level, only one architrave-frieze (A3) was subjected to this restoration.
[25] Hülsen 1919, 5.
[26] Hülsen 1919, 5.
[27] Hülsen 1919, 5-6.

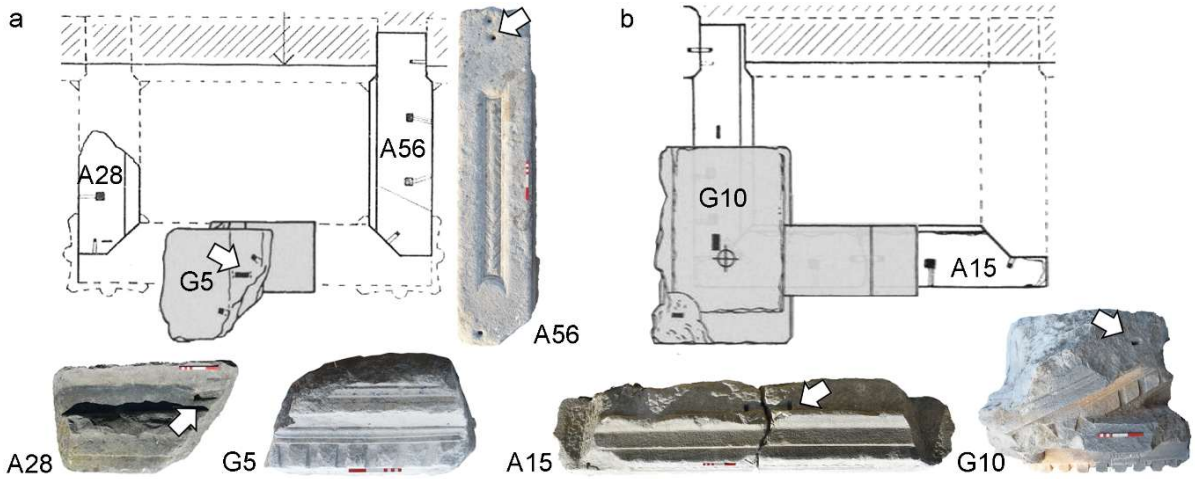

Figure 10a-b: Restoration works conducted on the blocks belonging to the same aedicula *(archive of the German Archaeological Mission of Miletus)*

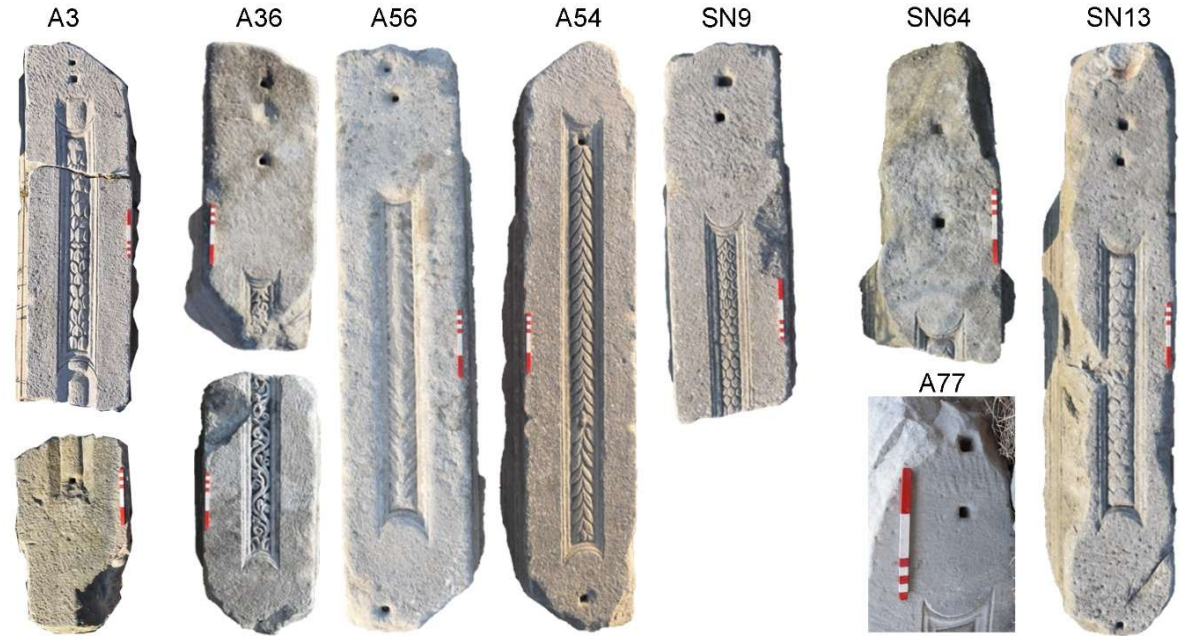

Figure 11: Re-carving of the dowel hollows on the bottom faces of the transversal architrave-friezes *(archive of the German Archaeological Mission of Miletus)*

The analysis of the architectural remains confirms therefore the hypothesis suggested by the examination of the restoration traces on the architectural elements of the façade. The construction of reinforcing structures certifies, indeed, that the building suffered more extensive structural damage, requiring an intervention which was not merely decorative.

A final remark should be made about a series of similar pedestals, high from 0.70 to 0.73 m, to be identified as blocks of the balustrades enclosing the lower basin for the water supply. The blocks, characterized by rough workmanship, were clearly added in a second phase as substitution of the original elements, since they were carved out from middle-imperial architectural elements with previous different functions: some were originally architraves decorated with bead and reel and ribbon moulding[28], while others were carved

[28] BR3; BR8.

out from Ionic cornices still preserving dentils and Ionic *kyma*[29] (fig. 13). Since a contemporary origin to the Nymphaeum is to be excluded, these balustrades should be considered as a subsequent addition, likely related to a change of the original layout of the basin occurred during the renovation of the fountain under Gordianus III.

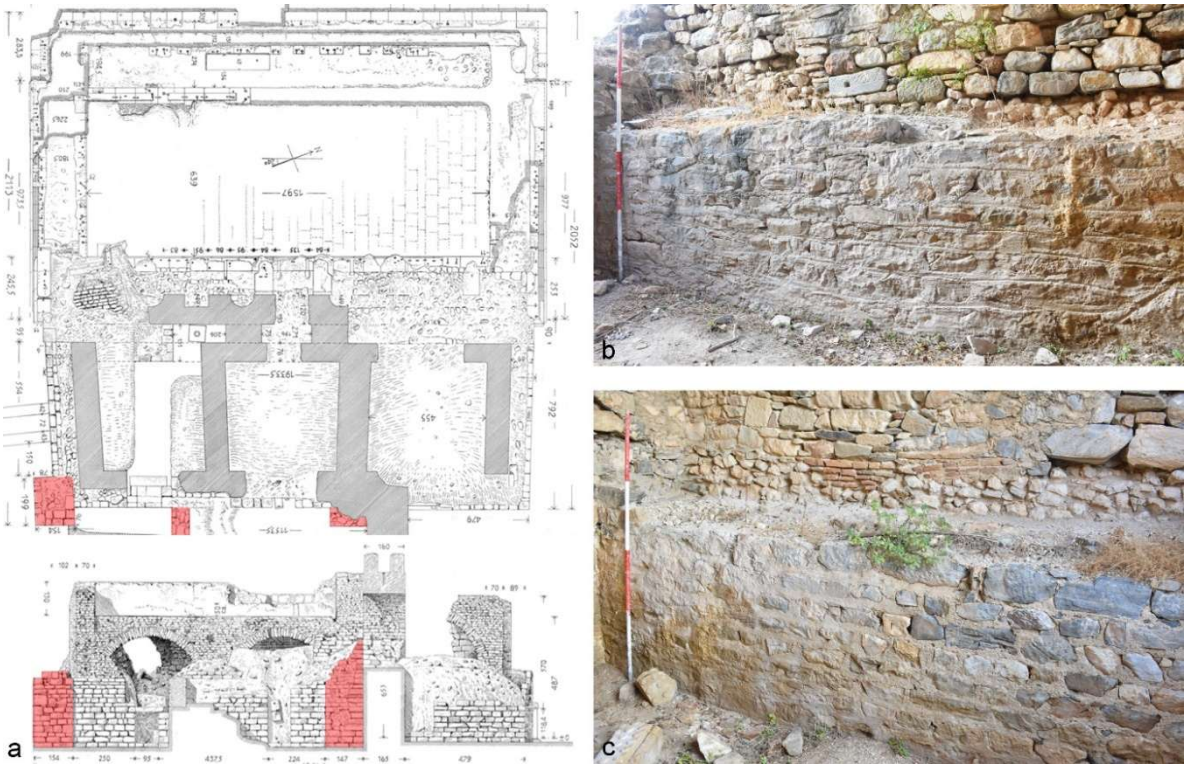

Figure 12: Consolidation works conducted on the building's fabric: a) reinforcing buttresses erected along the rear wall (elaboration of the author after Hülsen 1919, pls. 7-8); b, c) reinforcing buttresses erected in the central room *(archive of the German Archaeological Mission of Miletus)*

Figure 13: Pedestals of the balustrade enclosing the lower basin carved from previous architectural elements *(archive of the German Archaeological Mission of Miletus)*

[29] BR10; SN70.

Conclusions

The preliminary results from the analysis of the Nymphaeum of Traianus the Elder seem to suggest that the restoration works carried out under Gordianus III did not concern only the renovation of the sculptural display but were intended to address also some static problems occurred to the building. Even if it is not yet possible to precisely assess whether this restoration was undertaken as a consequence of an earthquake, geomorphological data provide significant information about the micro-seismic characterization of the subsoil: indeed, the foundations of the Nymphaeum rest on a heterogeneous geological substrate, consisting of limestone in the western sector and clay soil in the eastern one. This geomorphological difference, which led to a progressive subsidence of the entire building over decades both length-wise and width-wise[30], may have favoured in the past the action of seismic waves, causing major structural failure in the eastern sector, where consolidation works were carried out, and imposing an extensive reassembly of the architectural elements of the façade.

Since there are no extensive traces of repairs conducted on broken blocks, nor of architectural elements from later periods replacing destroyed and non re-usable pieces[31], it seems that the restoration – with the dismantling of the façade – was undertaken while the building was still standing. In this sense, an identical preventive approach characterizes the restoration of the Theatre of Hierapolis under Constantius II (350-352 CE), as the systematic study of the façade[32] and the inscription carved on the blocks of the second storey attest: the latter states, indeed, that the restoration was performed before the collapse, since "*the theatre, which was threatening to collapse and posed a danger to most of the metropolis, began to be demolished*"[33]. In the case of the Nymphaeum of Traianus the Elder, regardless of the reason behind the intervention, the study of the architectural evidence revealed a complex and dynamic reality beyond the simple refurbishment of the statues, in which repairs and consolidation of the structures were accompanied by the restoration of architectural elements damaged after the falling or that needed to be reassembled in the façade, and by the replacement of damaged blocks with new elements carved out from re-used pieces. The analysis provides therefore significant insights about restoration methods, procedures, and techniques in a mid-imperial building-site, which future examination will be able to define in all its detailed and different aspects.

Acknowledgement

This study is part of a broader research, started in 2022, developed thanks to the collaboration with the University of Hamburg and the German Archaeological Mission of Miletus, directed by Prof. Ch. Berns and operating under the permit granted by the Ministry of Culture and Tourism of Turkey. I would like to thank the director of the mission, Ch. Berns, for the opportunity to join the excavation and to be part of the German Archaeological Mission. I would like to express my gratitude also to M. Maischberger, for the aid during the consultation of the archival documentation, and to the German Archaeological Institute for

[30] Hülsen 1919, 11.

[31] In the Monumental Nymphaeum of Tripolis ad Maeandrum, instead, the early-Byzantine restoration was undertaken as a consequence of a widespread destruction of the architectural elements of the hypostyle façade, many of which were, in fact, replaced with newly carved blocks (see Ismaelli et al. 2024, 175-189).

[32] Ismaelli et al. 2022. Indeed, the study of all the architectural blocks demonstrated that the third and second storeys of the *scaenae frons* were carefully dismantled and reassembled, using a complex labelling system to replicate the correct sequence of the marble elements.

[33] Ritti 2017, 595.

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