Seasides of Byzantium
Harbours and Anchorages of a Mediterranean Empire

Johannes Preiser-Kapeller · Taxiarchis G. Kolias · Falko Daim (eds)

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Preface

The Priority Program (SPP) 1630 »Harbours from the Roman Period to the Middle Ages« of the German Research Foundation (DFG) started in 2012. Ports and landing places were central »bottlenecks« in trade and traffic, through which people and goods transported by ship had to pass to reach their destinations. Therefore, within the SPP 1630 various individual projects on the North Atlantic, on the North and Baltic Seas, inland rivers and canals, and on the Mediterranean were designed to explore and analyse the different developments in the construction and organisation of harbours.

One of these projects, »Harbours and landing places on the Balkan coasts of the Byzantine Empire (4th to 12th centuries)«, was based at the Römisch-Germanisches Zentralmuseum in Mainz and closely linked to the Leibniz Science Campus »Byzantium between Orient and Occident«, run by the RGZM and the Gutenberg University Mainz. Of fundamental importance for the project was the collaboration with the Department for Byzantine and Modern Greek Studies at the University of Vienna and the Division of Byzantine Research at the Institute for Medieval Research of the Austrian Academy of Sciences in Vienna. Prof. Ewald Kislinger (University of Vienna) and Prof. Andreas Külzer (Austrian Academy of Sciences) are to be thanked for their essential contributions to the joint project. The systematic surveys for the project were undertaken by Dominik Heher, Johannes Preiser-Kapeller and Grigori Simeonov, joined in the second project phase by Alkiviadis Ginalis.

The conference »Seasides of Byzantium. Harbours and Anchorages of a Mediterranean Empire«, from which the papers collected in the present volume emerged, was one among many cooperations which the collaborators for the project »Harbours and landing places on the Balkan coasts of the Byzantine Empire (4th to 12th centuries)« were lucky to establish. Without the support and goodwill of many colleagues in Croatia, Albania, Greece, Turkey, Bulgaria, and Romania, it would have been impossible to achieve the aims of the project, which identified more than 600 anchorages for the period between 300 and 1200 AD and produced an impressive number of publications (see the list at the end of the present volume).

Johannes Preiser-Kapeller, one of the editors of the present volume, was able to spend several months at the National Hellenic Research Foundation in Athens in 2014 due to generous support of the Alexander S. Onassis Public Benefit Foundation and on invitation of the then director of the Institute for Historical Research, Prof. Taxiarchis G. Kolias. He profited enormously from the expertise and friendship of the scholars of the Institute's section on the »Historical Geography of the Helladic Region« under the directorship of Anna Lambropoulou. She together with Prof. Kolias and Ilias Anagnostakis, Maria Leontsini, Anastasia Yangaki, Eleonora Kountoura Galaki and especially Angeliki Panopoulou also cooperated with the Mainz-Vienna team for the preparation and organisation of the 2017 Seasides-conference.

The conference »Seasides of Byzantium. Harbours and Anchorages of a Mediterranean Empire«, which took place in Athens from 29 May to 1 June 2017, became a highlight of the entire research project and also a visible sign of the bond between our research venues in Mainz and Vienna and the Institute of Historical Research of the National Hellenic Research Foundation. My warmest thanks go to Prof. Taxiarchis G. Kolias for the opportunity to hold the meeting at his institute and to Johannes Preiser-Kapeller for organising the conference and carefully editing the present volume. I am also grateful to Claudia Nickel and Stefan Albrecht for their steady and competent guidance in the process of the book production.

The great success of the conference, which found its wonderful conclusion in an excursion to several archaeological sites around Corinth, and the publication of the present volume would not have been possible without the teamwork of so many scholars across disciplinary and national borders. This may also serve as testimonial for the even larger necessity of such cooperations in the scholarship of Byzantium´s maritime history once the end of the current pandemic allows for international travel and encounters again.

Mainz – Vienna, April 2021
Prof. Falko Daim
Project leader of »Harbours and landing places on the Balkan coasts of the Byzantine Empire«

Johannes Preiser-Kapeller, with Alkiviadis Ginalis

Introduction: Seasides of Byzantium and Maritime Dynamics in the Aegean Sea

The conference »Seasides of Byzantium. Harbours and Anchorages of a Mediterranean Empire«, from which the papers collected in the present volume emerged, took place in Athens at the National Hellenic Research Foundation (NHRF/IHR) between 29th May and 1st June 2017[1].

The background to this event was provided by the increase of interest in the study of maritime installations and networks in the Roman and Byzantine Mediterranean over the last years, as became manifest in various projects and publications. The major Special Research Programme (SPP-1630) »Harbours from the Roman Period to the Middle Ages« with its interdisciplinary approach, funded by the Deutsche Forschungsgemeinschaft (DFG) between 2012 and 2021, constituted one core element of this development[2]. Within the framework of the SPP-1630 and its project »Harbours and landing places on the Balkan coasts of the Byzantine Empire (4th to 12th centuries)«[3], the Römisch-Germanisches Zentralmuseum (RGZM) in Mainz[4] and the Institute for Historical Research of the National Hellenic Research Foundation (NHRF/IHR) in Athens[5] established a cooperation for joint research on harbours in Byzantine Greece and the creation of a common data base (**fig. 1**)[6]. Another element of this cooperation was the organisation of the conference »Seasides of Byzantium«, when historians, archaeologists and geoarchaeologists from Greece, Germany, Austria and other countries discussed the Byzantine Empire as a phenomenon of maritime history, especially from antiquity to the 13th century AD. General phenomena such as the harbours of the capital of Constantinople, lighthouses as well as the organisation of the Byzantine navy and its operations (for the example of the Danube delta) are presented in the papers of Aikaterini Delaporta/Flora Karagianni, Eleonora Kountoura Galaki, Max Ritter and Grigori Simeonov. Jean-Philippe Goiran and his team provide a fascinating insight into recent developments in geoarchaeological research methodologies in harbour archaeology. Owing to the research focus of both the project on the harbours and landing places on the Balkan coasts of the Byzantine Empire as well as the affiliated scholars at the NHRF/IHR in Athens, however, most contributions at the conference and in the present volume (with the exception of Dimitar V. Dimitrov, who discusses the port of Sozopol on the Black Sea) examined case studies for the most important maritime core region of the Byzantine Empire, the Aegean Sea. This sea connected the remaining provinces of the Empire in south-eastern Europe and Asia Minor after the loss of Syria, Palestine, Egypt, and North Africa to the Arabs in the 7th century AD[7].

The remaining pages of this introduction therefore provide a short overview of important aspects of the maritime dynamics in this region as background to most of the papers following in the volume. Like other regions of the Mediterranean, the areas around the Aegean Sea, which had become regular battlegrounds during the preceding period of civil wars, benefited from the *pax Romana* starting with the reign of Augustus (30 BC - AD 14). Existing routes and infrastructures were used more intensively and further expanded. This not only affected centres such as Thessalonike, Athens or Corinth, but also smaller cities, which were important for regional sea connections, such as Chersonesus on Crete, whose port was equipped with moles made of *opus caementicium* (Roman concrete) probably already under Augustus. Recent analysis revealed that the volcanic sands required for this type of construction, as for other such construction projects in the eastern Mediterranean, were brought all the way from the region around Naples (Vesuvius)[8].

The »Roman Peace« in the Greek area became fragile, though, for the first time in the 3rd century AD, when the Goths advanced far into the Balkans from north of the Danube and from the Black Sea area in the 250s, not only by land, but equally through the Bosporus into the Aegean Sea as far as Rhodes, Crete, Athens and Thessalonike[9]. However, the borders could be stabilized again by AD 300, and the 4th and especially the 5th century are considered periods of relative stability and economic prosperity in the Eastern Med-

1 For the programme, see https://www.dasanderemittelalter.net/products/seasides-of-byzantium-harbours-and-anchorages-of-a-mediterranean-empire/.
2 https://gepris.dfg.de/gepris/projekt/198801704.
3 https://web.rgzm.de/en/research/research-areas/a/article/haefen-an-der-balkankueste-des-byzantinischen-reiches/.
4 https://web.rgzm.de/.
5 http://www.eie.gr/nhrf/institutes/ihr/index-en_IHR.html.
6 The digital information on 667 harbours and landing sites identified during the project was made accessible as open data via the European Harbour Data Repository, see https://www.db-thueringen.de/receive/dbt_mods_00038384.
7 On terminology and definitions of the Aegean in the Byzantine period, see Koder, Aigaion Pelagos 49-54.
8 Brandon et al., Building for Eternity 89-93.
9 Wolfram, Die Goten. – Koder, Aigaion Pelagos 72. – Belke, Bithynien und Hellespont 120-121.

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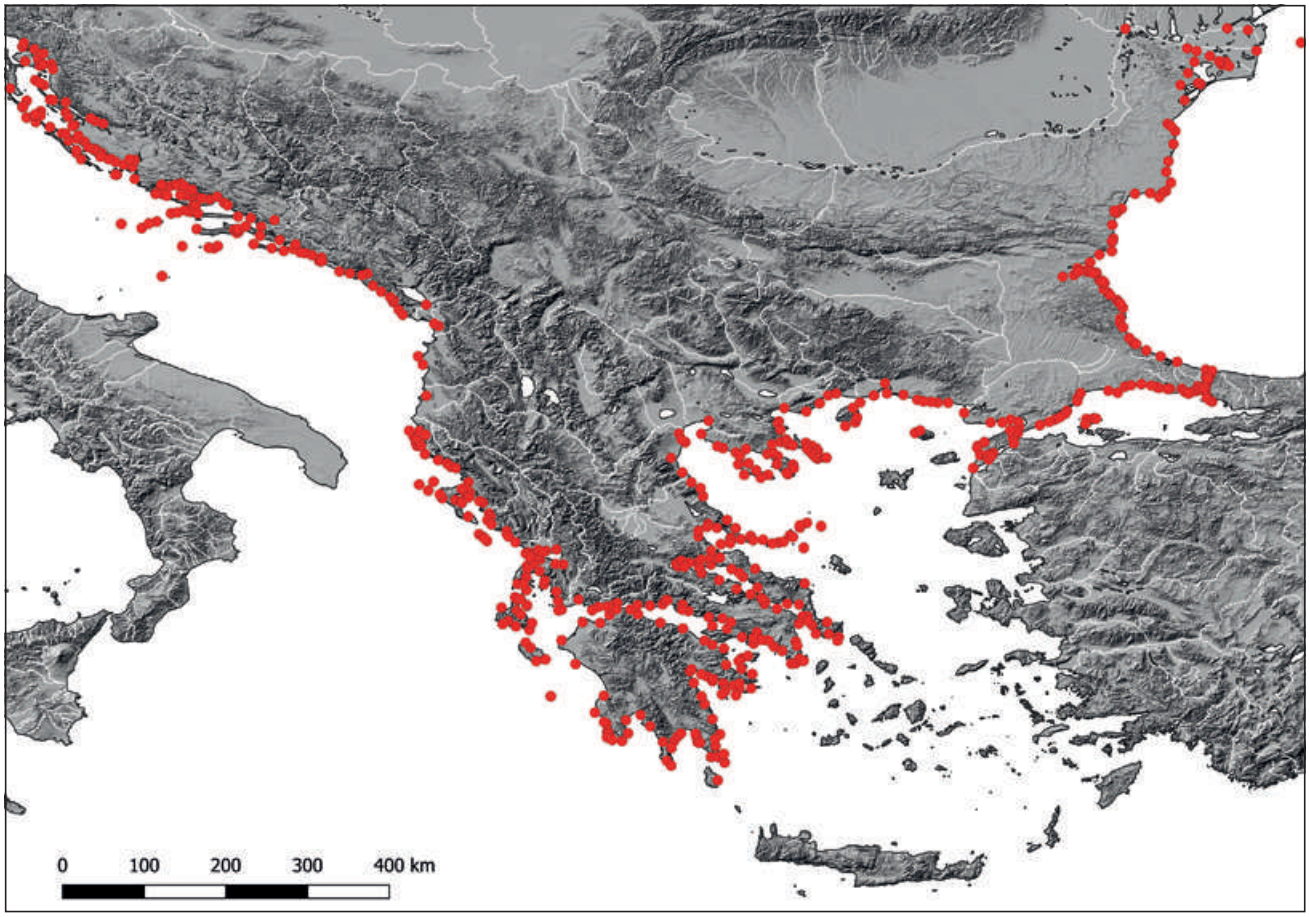

Fig. 1 Map of the on 667 harbours and landing sites identified during the DFG-funded project »Harbours and landing places on the Balkan coasts of the Byzantine Empire (4th to 12th centuries)« at the RGZM Mainz. – (Data from https://www.db-thueringen.de/receive/dbt_mods_00038384. Map J. Preiser-Kapeller, 2020).

iterranean. A new factor in these centuries was the Christian church, which since the reign of Constantine I (305/324-337) was not only tolerated but soon also supported by the Roman state; many bishoprics were established in important port cities. Architectonically, too, the church's influence in the port areas became visible, for example with the largest basilica in Greece that was built around AD 450 in Lechaion, the western port of Corinth (**fig. 2**)[10]. Another factor was the urban metabolism of the new capital of Constantinople founded by Constantine I at the Bosporus, whose growing demands for supplies were met by maritime transports across the Aegean. For this purpose, new infrastructure was created such as the granaries on the island of Tenedos (today Bozcaada) built at the order of Emperor Justinian I (527-565) for temporary storage of the grain coming every year from Egypt and destined for the capital[11].

The port architecture of this period was clearly influenced by earlier Roman traditions. Larger port cities, but also smaller ports, were still provided with a central harbour infrastructure. The elements of this infrastructure that run along the coast, such as quays, formed front façades made of large, carved stone blocks with notches for mortar or metal bonds to achieve high stability and long-term durability[12]. This façade was followed by a compact conglomerate of rubble and mortar. This construction system can be clearly observed not only in major early Byzantine ports such as the Theodosius harbour of Constantinople (excavated in Istanbul's Yenikapı since 2004) or the harbour of Ephesus[13], but also along the Balkan peninsula, such as the ports of Demetrias, Thessalian Thebes, Larymna, Aegina or the already mentioned harbour of Lechaion near Corinth[14]. Structures protruding into the water, such as breakwaters and jetties, also followed the Roman tradition. While breakwaters of the »mound«-type, common

10 Rothaus, Lechaion.
11 Koder, Aigaion Pelagos 99. 287. 289-290.
12 Ginalis, Byzantine Ports 166-167. 184.
13 Erçan, Yenikapi Fig. III. 9, Fig. III. 44-45, Fig. III. 78, Fig. III. 54. – Steskal, Ephesos 335-336. – For the Byzantine harbours of Constantinople see also another publication of the RGZM-project on the Balkan coasts: Daim, Häfen (an English translation of this volume is currently in progress).
14 Ginalis, Byzantine Ports 184. 242. – Knoblauch, Ägina 74. – Raban et al., Sebastos 65-66. – Rothaus, Lechaion 297-299. – On the role of seismic activities and other physical factors for the change of the seaside at Lechaion see also Mourtzas/Kissas/Kolaiti, Lechaion.

Fig. 2 Aerial view on the basilica at the harbour of Lechaion, 5th century AD. – (Photo by courtesy of the Ephorate of Antiquities of Corinthia).

at that time, were built with great precision and carefully selected materials, mole structures were made of hydraulic concrete. This consisted of a compact and linearly shaped mortar composition of cement, crushed stone and ceramic mixed with an aggregate, which was poured into wooden form-work sunk in the water[15]. Contrary to previous assumptions, this demanding but efficient and fast building method was used not only for imperial ports such as the previously mentioned Theodosius harbour of Constantinople[16]. As in the early imperial period (see the above-mentioned example from Chersonesus in Crete), numerous sites in the Balkans show that hydraulic concrete structures were also used in smaller ports, markets towns and even for maritime installations of individual coastal villas (so-called *villae maritimae*)[17].

In the later 5th century AD, the collapse of Roman power in the western Mediterranean area also affected the security of the Greek coasts. In 474, Nikopolis, the capital of the province of Epirus Vetus in the north-west of what is now Greece, at the entrance to the Ambracian Gulf, was sacked by the Vandals from North Africa. The new city walls of Nikopolis that were subsequently erected enclosed only one sixth of the previous settlement area, and the three ports of the city gradually fell out of use in the following centuries (**fig. 3**)[18]. The 6th century, however, saw the attempt by Emperor Justinian I (527-565) to bring the west of the Mediterranean under Roman rule once again, with the sea connections from the Aegean in westerly direction playing an important role during the campaigns to North Africa and Italy[19]. Numerous ports were built or repaired as part of the extensive construction program under Justinian to secure the maritime trade and communication network. Structurally, these projects reflect a continuity of the Roman building tradition of hydraulic concrete, but a different way of using it in terms of composition, architecture, and layout. For quay systems, instead of the previous expensive wooden form-works under water, the same were now used for more efficient, faster and, above all, more cost-effective mass production of individual blocks on land, which were filled with waste material such as rubble and set

15 Procopius Caesariensis, De aedificiis, I. 11. 18-20. – Vitruvius Pollio, De Architectura, V. 12. 3. – Brandon et al., Building for Eternity 189-222. 234-235.
16 Raban, Caesarea Maritima 64-66.
17 Ginalis, Byzantine Ports 243. – Brandon et al., Building for Eternity 135-136.
18 Preiser-Kapeller, Mapping maritime networks. – Heher/Preiser-Kapeller/Simeonov, Staatliche und maritime Strukturen 100-103. – Koder, Aigaion Pelagos 72.
19 Koder, Aigaion Pelagos 72-73.

Fig. 3 Satellite view on the site of the ancient city of Nikopolis; red line: city fortifications of the Roman period; yellow line: city fortifications after the Vandal attack of 474. – (J. Preiser-Kapeller, 2020. Base map by courtesy of GoogleEarth).

as a classic *opus quadratum*[20]. Piers with solid substructures were also set in the classic *opus quadratum* design, but provided with double joints, i. e., increased hydraulic concrete, to avoid time-consuming stone carvings[21].

But then climatic changes and in particular outbreaks of the plague from 541 onwards, which also spread across the entire empire via the maritime routes, marked the beginning of a crisis-ridden epoch of great uncertainty. This pandemic equally indicates the need to embed developments in the Mediterranean and Aegean into wider, »global« maritime networks of exchange: as recent palaeogenetic analysis has demonstrated, the plague pathogen (a variant of the bacterium *Yersinia pestis*) most probably had travelled from East Asia to India and via the sea routes in the Indian Ocean and the Red Sea to Egypt, from where it entered the Mediterranean circuits (from Pelusion)[22]. The far-reaching connectivity of the Aegean ahead of the plague (which allowed for its further diffusion) is equally documented by the wide distribution of ceramic containers produced in Western Asia Minor in the Mediterranean and beyond to the British Isles[23].

By the early 7th century, Constantinople had lost control of large parts of mainland Greece. But although Slavic groups, which had migrated southwards from beyond the Danube, used seaworthy watercrafts (in 623, some Slavic raiders even reached Crete), remnants of Byzantine rule at the coasts continued to be supplied by the still superior fleet via the sea, even in the event of sieges, as described by the »Miracula Sancti Demetrii« for Thessalonike. Places that were difficult to access from land, such as Monembasia on a narrow strip to the southeast coast of the Peloponnese, or the islands in the Saronic and Ambracian Gulf also offered new homes for people fleeing from the mainland. In addition, people migrated from the Peloponnese by sea to Sicily, which among the territories remaining after the Arab conquests of the 7th century (see above) played a particularly important role in supplying Constantinople with grain and other resources. Accordingly, the east-west connection between the Aegean Sea, the Peloponnese, Southern Italy, and Sicily still represented a main maritime axis of the Byzantine Empire. It was also used by »long-distance travellers« such as the Anglo-Saxon Willibald, who made a pilgrimage from Italy to the Holy Land in the 720s. However, in 747 the plague from Sicily (where it was probably introduced from North Africa) reached once more Constantinople via Calabria and the Peloponnese (Monembasia) via this route[24].

20 Ginalis, Emperor or Bishop 255-257. – Ginalis, Byzantine Ports 151-152. 243-244.
21 Ginalis, Anthedon. – Schläger/Blackman/Schäfer, Anthedon 67-68.
22 Preiser-Kapeller, Der Lange Sommer und die Kleine Eiszeit 29-79, with further literature.
23 Papaioannou, A Reconstruction of Maritime Trade Patterns.
24 Koder, Aigaion Pelagos 75-76. – McCormick, Origins of the European Economy 502-508. 565-569. – Kislinger, Regionalgeschichte als Quellenproblem, particularly on population movements between the Peloponnese and Sicily in the late 6th century, 33-34 on the course of the spread of the plague 746/747. – Kislinger, Verkehrsrouten zur See. – Heher/Preiser-Kapeller/Simeonov, Vom Lokalen zum Globalen. – Preiser-Kapeller/Werther, Connecting Harbours.

Fig. 4 View of the ancient harbour basin of Larymna at the Gulf of Euboia. – (Photo Schuppi, Larymna6, CC BY-SA 3.0).

As part of the attempts to secure the remaining areas in the Aegean Sea and the important west-east connection, there was another phase of imperial port construction activity in Greece between the end of the 7th and the middle of the 8th century. This can be observed at the trans-shipment and trading centres of Thessaly, Boeotia, and the Aegean islands such as Demetrias, Thessalian Thebes, the Lechaion port of Corinth, Anthedon, Larymna (**fig. 4**), Atalante, Eretria or Aegina. Based on the construction technology of the 6th century, a new, efficient as well as fast and cheap production method was developed. Both the quays and the piers consisted of a complex system of chambers made up of longitudinal and transverse walls. The individual sections of these chambers were filled with hydraulic concrete, rubble stones and bricks[25]. Despite the execution of state-initiated port construction, maritime activities gradually shifted from state-imperial control to the »private sector«, especially the church. From the 7th century onwards, there are hardly any port facilities without an associated ecclesiastical infrastructure[26]. The development of independent port facilities of churches, monasteries and *metochia* as an economic impulse, which began in the 6th century, was completed by the 7th century at the latest. This is indicated by the establishment of numerous independent so-called *ekklesiastikai skalai* and by written sources such as the Vita et Miracula Sancti Demetrii[27]. Political instability and demographic losses, however, contributed to a decline of agricultural activity such as the amount of the cultivation of olives; this was recently documented for the 7th to 8th centuries also with pollen analyses of harbour areas, such as in Elaia in Aeolia in Western Asia Minor or in Tristinika on Chalkidike[28]. A decrease of port activity is equally indicated by the decline of the lead concentration in the harbour

25 Ginalis, Byzantine Ports 176-177. 190. – Paris, Lechaion 10-11. Knoblauch, Ägina 73. – Rothaus, Lechaion 295-296. – Schäfer, Larymna 533-537. – Schläger/Blackman/Schäfer, Anthedon 52-64. – Triantafillidis/Koutsoumba, Aegina 169.

26 See Thessaloniki, Thebes or Lechaion: Ginalis, Byzantine Ports 191-192. – Karagiorgou, Thessaly 59. – Krautheimer, Architecture 556. – Leivadioti, Thessaloniki 56. – Ntina, Thessalia 422-423.

27 Leivadioti, Thessaloniki 56-59. – Lemerle, Miracles 186. – Also, in central Greece, various archaeological findings point to the existence of εκκλησιαστικαί σκάλαι: Ginalis, Byzantine Ports 192. 201. – On the archaeological evidence for this period see also Poulou-Papadimitriou, Aegean.

28 Shumilovskikh et al., The harbour of Elaia. – Panajiotidis/Papadopoulou, Human-landscape interactions in Halkidiki. – For a more general analysis of palynological evidence see Izdebski/Koloch/Słoczyński, Exploring Byzantine and Ottoman economic history. – On the dynamics on olive cultivation in the Byzantine provinces see also now Olson, Environment and Society in Byzantium.

Fig. 5 View from the fortress to the harbour basin of Naupaktos. – (Photo Dimkoa, Nafpaktos old port).

basin of Ephesos from the mid-6th century onwards[29]. These observations overlap with a general decline in the number of shipwrecks especially in the 7th and 8th centuries[30].

Nevertheless, after the repulse of the great Arab attacks on Constantinople of the late 7th and early 8th century, whose maritime operations had also perturbed the Aegean, the existence of the Byzantine Empire no longer seemed directly threatened[31]. It was, however, in the early 9th century that the maritime power relations and the security situation in the Aegean area changed again dramatically. Expelled due to an uprising from Islamic Spain, a group of émigrés, after a »stopover« in Egypt, between 824 and 828 conquered the island of Crete and established an Arab emirate. From there, but also from other ports in the Levant, Arab pirates repeatedly carried out devastating raids throughout the Aegean region and beyond to Nikopolis in western Greece in the following decades. The sack of Thessalonike, the second largest city in the empire after Constantinople, in 904 caused a special sensation. In view of this danger, travellers between Italy and the Aegean now often chose a northern itinerary instead of the southern route along the Peloponnese, which led across the Adriatic to north-west Greece and from there by land to Thessalonike and on to Constantinople[32]. This in turn benefited port towns such as Naupaktos east of the Rion/Antirion strait at the entrance to the Gulf of Corinth, which replaced Nikopolis as the administrative centre in the region and, between 880 and 899, became the capital of the new district (*thema*) Nikopolis, which was still named after the old metropolis. Naupaktos and its smaller port were less convenient in terms of transport compared to Nikopolis, but easier to defend and monitor, factors that had become decisive for the choice of location since the late 6th century (**fig. 5**)[33].

A permanent stabilisation of the maritime security situation in the Aegean was only achieved when the Byzantine general and later Emperor Nikephoros (II) Phokas recaptured the island of Crete in 960/961. The economy and regional and supra-regional (sea) trade benefited from this as well as from the general rise of Byzantine power. This was recently confirmed by pollen analyses, which indicate an increase of agricultural

29 Delile et al., Demise of a harbour.
30 Wilson, Developments in Mediterranean Shipping, modifying the earlier statistics of Parker, Ancient Shipwrecks.
31 Leontsini, The Byzantine and Arab navies. – Belke, Bithynien und Hellespont 142-147.
32 Koder, Aigaion Pelagos 76-77. – Kislinger, Verkehrsrouten zur See. – Leontsini, The Byzantine and Arab navies. – Belke, Bithynien und Hellespont 158.
33 Heher/Preiser-Kapeller/Simeonov, Staatliche und maritime Strukturen 100-103. – Veikou, Byzantine Histories.

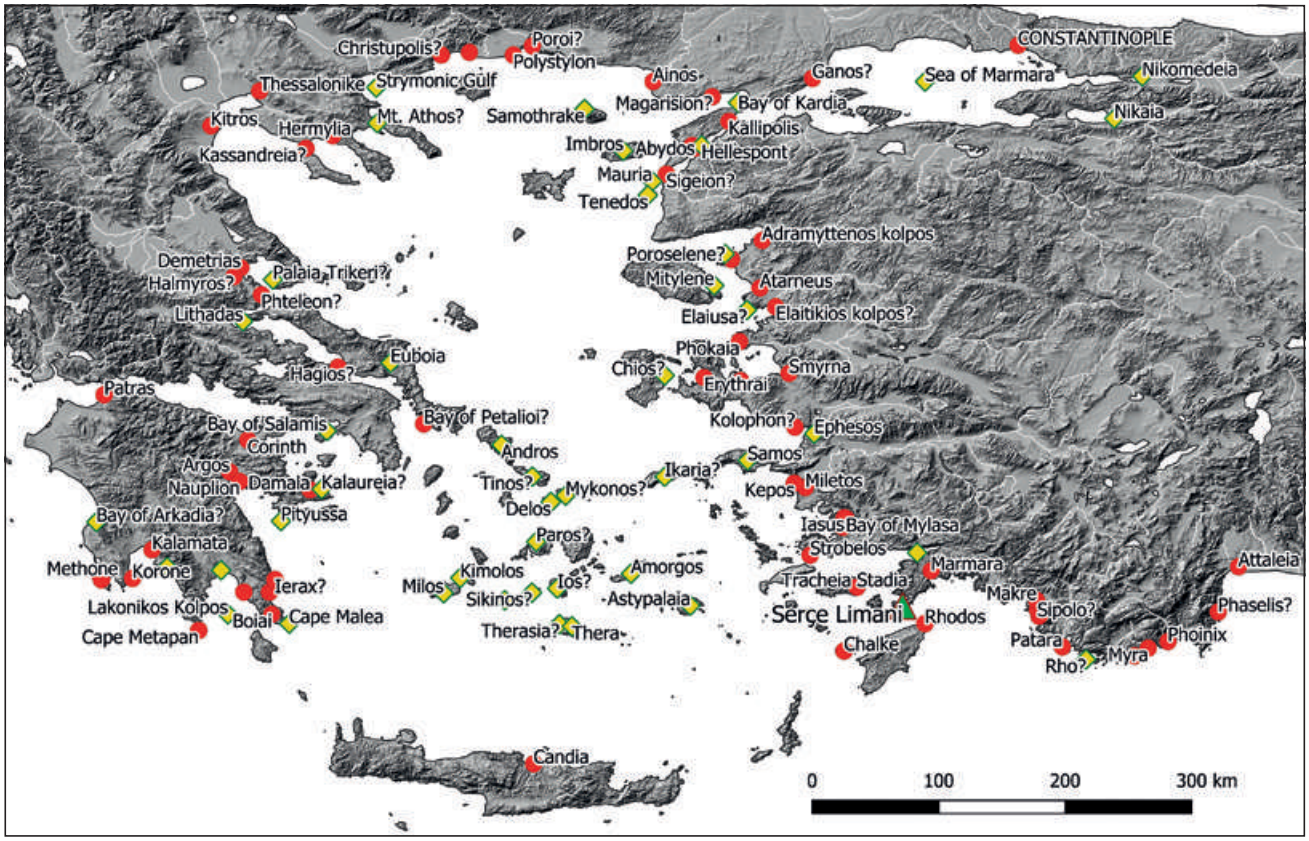

Fig. 6 Harbours and anchorages (red) and landmarks (yellows) mentioned for the Aegean in the 11th century Arab »Book of Curiosities« (created in Egypt). – (J. Preiser-Kapeller, 2020).

activity on both sides of the Aegean, from the 9th century onwards in Asia Minor, from the 10th century in Greece[34]. The composition of the ceramics in archaeological findings such as the shipwreck from Cape Stoba, Mljet, Croatia, dated to the 10th/11th century, document again wide-ranging maritime networks from the Adriatic to the Aegean, the Levant, and the Black Sea[35]. The 11th century shipwreck of Serçe Limanı in Caria in south-western Asia minor indicates another axis of commerce across the Mediterranean to Fatimid Egypt, from which most of the freight destined maybe for Constantinople – glass – came[36]. The density of ports, anchorages, and landmarks along the Byzantine coasts and in the Aegean Arab seafarers were aware of is equally illustrated in the so-called »Book of Curiosities«, which was created in Egypt in the 11th century (**fig. 6**). The maps in this manuscript depict a Mediterranean still dominated by Arab and Byzantine actors, with Western Europe only visible at the north-west margins[37].

This prosperity, however, already since the 9th century attracted new players, particularly merchants from the Italian cities such as Venice, Genoa, Pisa, and Amalfi[38]. And the established balance of power in the Eastern Mediterranean between the Byzantine Empire and the Fatimid Caliphate was destroyed from the 1060s onwards by Turkish groups and dynasties such as the Seljuks advancing from Central Asia to the Middle East and onwards to the Levant and Asia Minor. By 1090, Turkish emirs such as Tzachas (Çaka) in Smyrna had established themselves as challenger of Byzantine naval power even in the Aegean. Only in the wind shadow of the First Crusade 1096/1097, Constantinople was able to regain control over the Aegean coast of Asia Minor[39]. Nevertheless, the Byzantine emperors reacted with a certain distrust to this new form of »Holy war« of Western Christendom, especially due to the participation of Normans from Southern Italy in the First Crusade. The Normans had not only smashed the last remains Byzantine rule in Italy until 1071 but had also crossed the Adriatic to attack Greece. Since the decline of Byzantine power in the decades before had left Constantinople's naval forces in very contracted state[40], Constantinople resorted to an alliance with the boosting sea power of Venice. The Venetians, however, in return demanded and received in a

34 Izdebski/Koloch/Słoczyński, Exploring Byzantine and Ottoman economic history.
35 Kralj et al., A Byzantine Shipwreck.
36 Bass et al., Serçe Limanı. – Jacoby, Byzantine maritime trade.
37 Book of Curiosities. – Rapoport/Savage-Smith, Lost Maps of the Caliphs.
38 McCormick, Origins of the European Economy. – Jacoby, Byzantine maritime trade.
39 Belke, Bithynien und Hellespont 173-178.
40 Kislinger, Ruhm. – Jacoby, Byzantine maritime trade.

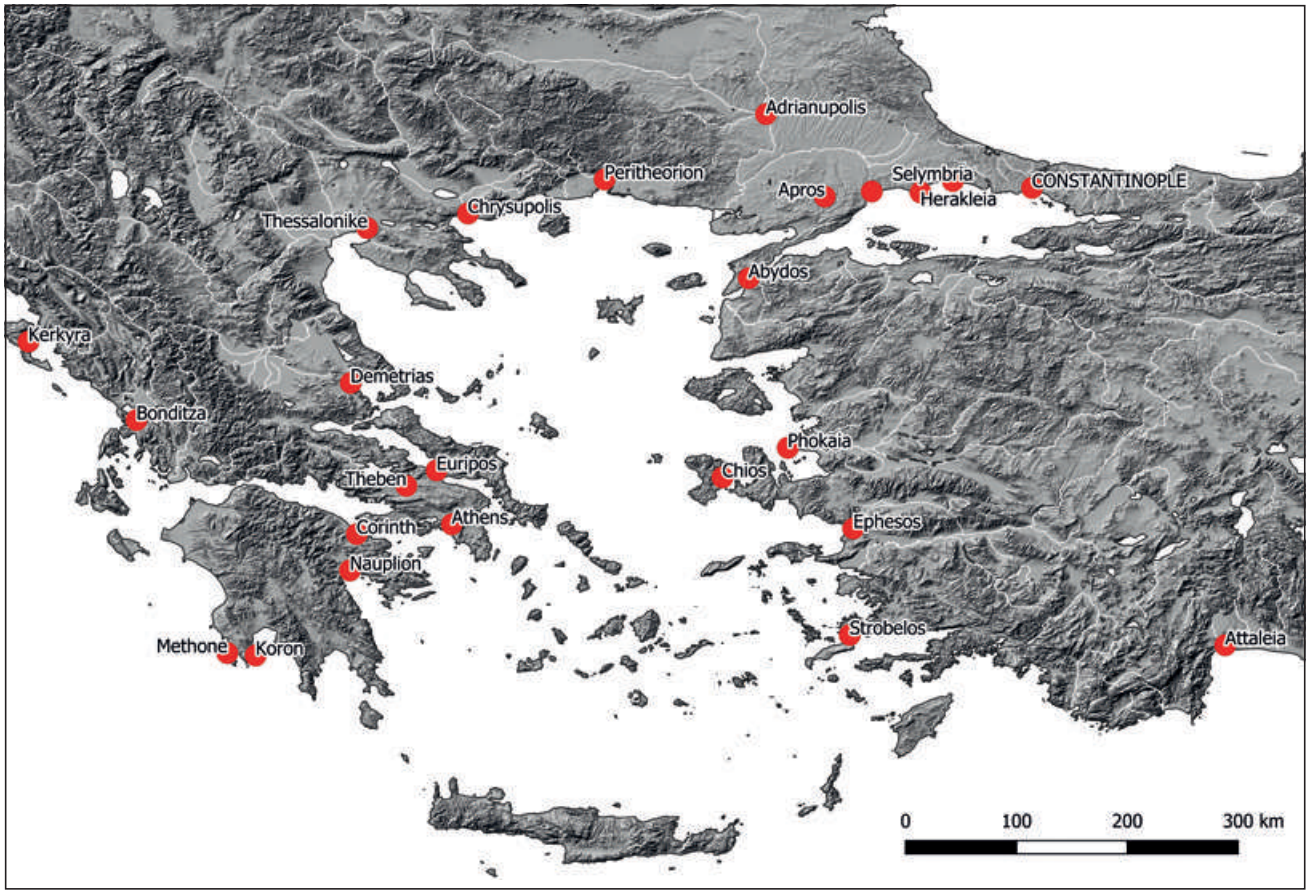

Fig. 7 Cities in the Aegean accessible for Venetian merchants according to the imperial privilege charter of 1082. – (J. Preiser-Kapeller, 2020).

charter of 1082 privileged access not only to the markets of Constantinople, but to several important port cities at the Sea of Marmara and the Aegean (**fig. 7**). Over the following decades, they demanded the renewal and expansion of these privileges, even by force of arms as in 1124/1125 and 1171/1172, when the plundered several islands (such as Chios and Lesbos) and seaside towns of the Aegean. Another list of localities in a privilege charter of 1198 shows how their influence has extended not only to more ports, but also urban markets in the hinterland (**fig. 8**). In addition, merchants from Pisa and Genoa increased their activities in the Byzantine maritime space[41].

Against this background, new trans-shipment points with their own port facilities such as Halmyros or Pteleos emerged[42]. In the context of seafaring and port architecture, the change in the economic and trading system manifests itself through the shift of port activities from monumental central ports to small, individual, and independent infrastructures, so-called *skalai* (lat. *Scalae*)[43]. Usually, these *scalae* functioned as open roadsteads with only a few elements such as piers, which, like in the Theodosius port of Constantinople or in iconographic representations, were wooden constructions[44]. However, especially under Venetian or Genoese influence from 11th-12th centuries onwards, larger trans-shipment points were also equipped with »permanent« pier and mole constructions, as can be seen in Pteleos, Skiathos and above all at the ports of the island of Euboia such as Nimporio, Boufalo (**fig. 9**) and Kastri. Although these permanent harbour structures had the same construction technology as in previous centuries, the composition of hydraulic concrete had become much coarser and unsound from the end of the 13th century onwards[45]. By that time, the conquest of Constantinople and the Greek provinces by the Crusaders and Venetians in 1204 had changed not only the political map of the region, but also permanently modified the parameters of seafaring and maritime trade[46]. However, these develop-

41 Lilie, Handel und Politik. – Koder, Aigaion Pelagos 82. – Preiser-Kapeller, A Collapse of the Eastern Mediterranean. – Jacoby, Byzantine maritime trade.
42 Ginalis, Byzantine Ports 196.
43 Ginalis, Byzantine Ports 240. – On the *scalae* of Constantinople see Kislinger, Neorion und Prosphorion 96.
44 Cod. Taphou 14, f. 265r. – Erçan, Yenikapi 116 fig. III. 8; 162 fig. III. 42. – Ginalis, Byzantine Ports 245.
45 Ginalis, Emperor or Bishop 259.
46 Koder, Aigaion Pelagos 83-85. – Preiser-Kapeller, Liquid Frontiers.

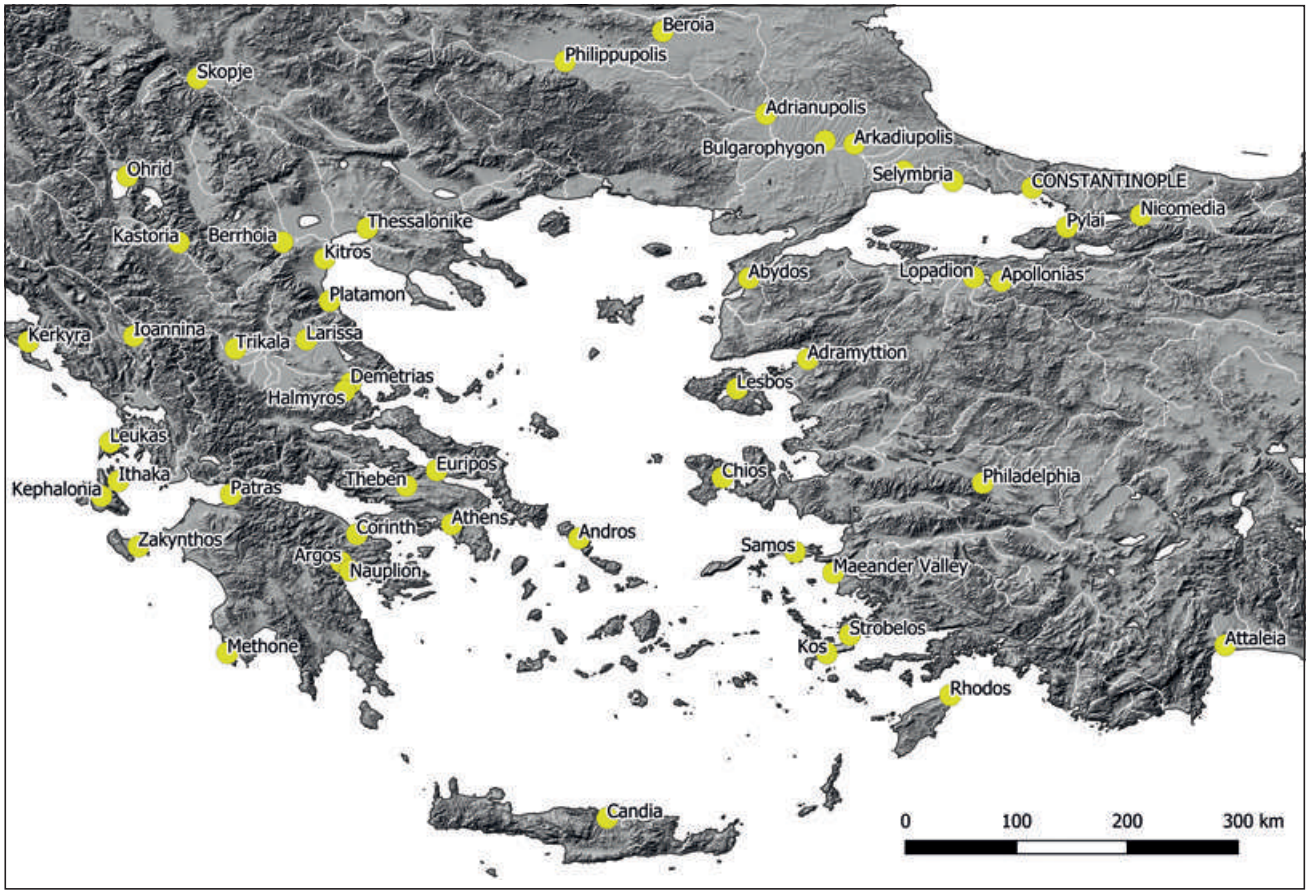

Fig. 8 Cities in the Aegean accessible for Venetian merchants according to the imperial privilege charter of 1198. – (J. Preiser-Kapeller, 2020).

Fig. 9 View of the bay of Boufalo on the island of Euboia. – (Photo by courtesy of EviaGreece).

ments belong to the following period up to the expansion of the Ottoman Empire in the 15th century and are beyond the temporal limits of the present volume.

In general, we have to reckon with a high resilience of maritime connectivity between the myriad of harbours, anchorages and landing sites at the islands and coasts of the Aegean at the local level during the Byzantine centuries, even when regional or trans-regional maritime trade suffered from political or economic crisis. For this everyday exchange of goods on small boats over short distances, no elaborate harbour architecture was needed. However, even the use of larger vessels

Fig. 10 View of the harbour of Candia (Iraklion) on Crete in 1919. – (From Baud-Bovy/Boissonnas, Cyclades no. 130.

in trade over longer distances did not necessarily require a fully equipped port. On the contrast, Ruthy Gertwagen in her analysis of the history of the port of Candia on Crete (**fig. 10**) in the 13th-15th century illustrated how traders despite the controlling efforts of the Venetian Colonial regime avoided the usage of the developed harbour of Candia (and accompanying taxes) and unloaded their cargo in nearby natural bays, accepting the higher risks for the safety of their ships[47]. On the other hand, we observe a remarkable amount of investment in more complex and durable harbour structures not only from the side of the Byzantine state, but also ecclesiastical and private actors; such decisions may have been determined by topography and navigational requirements. But as Pascal Arnaud has demonstrated in his contribution to another volume edited within the framework of our project for the Roman imperial period, the self-representation of the initiators of such building projects was often more essential than their practical impact[48]. Therefore, beyond all technical details, we shall explore more and more the social embedding of the seasides of Byzantium and their dynamics.

Acknowledgements

The conference »Seasides of Byzantium. Harbours and Anchorages of a Mediterranean Empire« in Athens 2017 as well as the present publication were possible due to the initiative of Prof. Falko Daim, then Generaldirektor of the RGZM Mainz, and Prof. Taxiarchis G. Kolias, then Director of the NHRF/IHR. Funding was provided within the framework of the project »Harbours and landing places on the Balkan coasts of the Byzantine Empire (4th to 12th centuries)« of the DFG-SPP 1630 »Harbours from the Roman Period to the Middle Ages«.

47 Gertwagen, Ports. – Preiser-Kapeller, Mapping maritime networks. – Preiser-Kapeller, Harbours and Maritime Networks.

48 Arnaud, Interplay.

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Summary / Zusammenfassung

Introduction: Seasides of Byzantium and maritime dynamics in the Aegean Sea

The introduction explains the background to the conference in Athens in 2017, in the context of which the contributions in this volume were created. In addition, it offers an overview of the maritime history and the dynamics of port architecture, especially on the coasts of the Aegean Sea, between the 4th and 12th centuries. The interplay between local conditions and over-regional political and economic changes is explored.

Einleitung: Küsten des byzantinischen Reichs und maritime Dynamik in der Ägäis

Die Einführung erläutert den Hintergrund der Konferenz in Athen im Jahr 2017, in deren Rahmen die Beiträge im vorliegenden Band entstanden. Darüber hinaus bietet sie einen Überblick zur maritimen Geschichte und der Dynamik der Hafenarchitektur insbesondere an den Küsten der Ägäis zwischen dem 4. und 12. Jahrhundert. Dabei wird das Wechselspiel zwischen lokalen Gegebenheiten und überregionalen politischen und ökonomischen Veränderungen erkundet.

Sophia Akrivopoulou

The Hellenistic Harbour of Thessaloniki and the Ekklēsiastikē Skala*

When Thessaloniki was founded in the late 4th century BCE, it was a city significantly smaller compared to the Roman one of the mid-3rd century AD[1] (**fig. 1**). The Roman city of this era is well known to us, as its walls followed more or less the same line as those that are preserved today. However, little is known about the fortifications of Cassander's Thessaloniki.

Remains of the Hellenistic wall were detected at the north-eastern corner of the existing fortification[2]. Right there must have been the Hellenistic Acropolis and than the first Roman one, of which the south-eastern corner of the wall was discovered by excavations[3] (**fig. 2**). The Hellenistic wall followed the same direction as the Roman one on the east, as far as the Agiou Dimitriou Street, where a corner tower was excavated[4]. The south part of the wall would have been parallel with the present Agiou Dimitriou Street[5]. The northern limit of the Hellenistic city coincided with the present one at its eastern end, while the western limit has not been traced. The area that the Hellenistic city covered has the highest altitude (145 m at the highest point of the Acropolis) and the steepest inclines (30 % to 10 % above Olympiados Street, 8 % to 6 % up to Agiou Dimitriou Street)[6].

Within the walls of the Roman city, burials were detected by excavations, which help to confirm the outline of the initial city[7]. The *intra muros* burials were forbidden in the Greco-Roman (but also in the Christian) world by a strict and repetitive legislation[8]. However, within the walls of Thessaloniki, there have been detected until now ten Roman burial sites. The explanation is not difficult: All these sites pre-exist the Roman fortification of the middle third century. This means that, when these tombs were dug, they followed faithfully the ethical and written legislation, since they were situated *extra muros*[9].

The phenomenon of covering burial sites resulting from the residency expansion was not unknown in Late Antiquity and dealt with. During the expansion of Constantinople, the old cemeteries of Byzantium were filled in to expand the residential area[10]. Even in the well-known Edict of Gratian, Valentinian and Theodosius of 381, only the removal of sarcophagi was ordered, while the underground tombs were consigned to oblivion by the legislator[11]. Thessaloniki proved to be a dynamical city that was constantly growing. Thus, it expanded over these tombs and gradually expanded as far as the sea. Late Hellenistic and also early Roman, that have been detected at various points south of Agiou Dimitriou Street, document this expansion.

Therefore, the Hellenistic and, later, first Roman port was situated outside the city walls, even though this may seem strange[12]. The interpretation proposed by J.-M. Spieser, that the passage of Livy refers to the shipyards of the era of King Perseus and the Roman conquest of Macedonia, confirms this hypothesis[13]. Near the shipyards, a military camp was set up on order of Perseus to function as a protection against the Roman attacks. This means that they were probably unprotected, hence they must have been situated outside the city walls.

The direction of the coastline during the Hellenistic and Roman era, in fact, is unknown to us. After the publication of the map regarding the seafront of Thessaloniki by Polycarpo Vitali (1871)[14] (**fig. 3**) and the little earlier photograph of Abdullah Brothers in the Hungarian State Archives (1864-1867)[15], many research problems received an answer, even if a negative one. The map of Polycarpo Vitali is part of a construction study of the era that proposed the demolition of the sea-wall and the filling of the coast to create two man-made arrays of city blocks for investment (»à vendre« on the map). Finally, when the study was implemented, on the map we see the latest version of the sea-wall, but in no way the ancient coastline.

* The paper was translated from Greek to English by Argiri Platsa.
1 Velenis, Teichē 20. – Adam-Veleni, Poleodomia 123-126.
2 Velenis, Teichē 21-26.
3 Velenis, Teichē 63, plans 1 and 2. – Marki, Akropoleōs kai Xenokratous. – Marki, Akropoleōs.
4 Bakirtzis, Agōgos I, 56. 292.
5 Velenis, Teichē 31. – Adam-Veleni, Poleodomia 127-128.
6 Gala-Georgila, Nero 27-30.
7 Akrivopoulou, Taphoi 42-43. 51.
8 Toynbee, Burial 48. – Emmanouelides, Dikaio 177-178. – Mango, Développement 48. – Johnson, Mausoleum 25.
9 Akrivopoulou, Taphoi 42-43 fig. 1.
10 Mango, Développement 47-48. – Mango, Mausoleum 51.
11 CTh. 9.17.6. – Johnson, Mausoleum 25.
12 Akrivopoulou, Limani 14-149.
13 Spieser, Remparts 562-563.
14 Karadimou-Gerolympou, Chartographia 160-161. – Epameinondas, Thessalonikē 1870-1917, 14 fig. 19. – The Vitalis Company undertook the construction of the new dock, for which building material of the demolished see-walls was largely used. – Anastassiadou, Mētropolē 205. – Hatziioannou, Astygraphia 47. – I would like to thank Dr Alexandra Karadimou-Gerolympou for her permission to use the map in this paper.
15 Epameinondas, Thessalonikē 1870-1917, 14 fig. 20.

In: Johannes Preiser-Kapeller · Taxiarchis G. Kolias · Falko Daim (eds), Seasides of Byzantium. Harbours and Anchorages of a Mediterranean Empire. Byzanz zwischen Orient und Okzident 21 (Mainz 2021). DOI: https://doi.org/10.11588/propylaeum.910.c12046

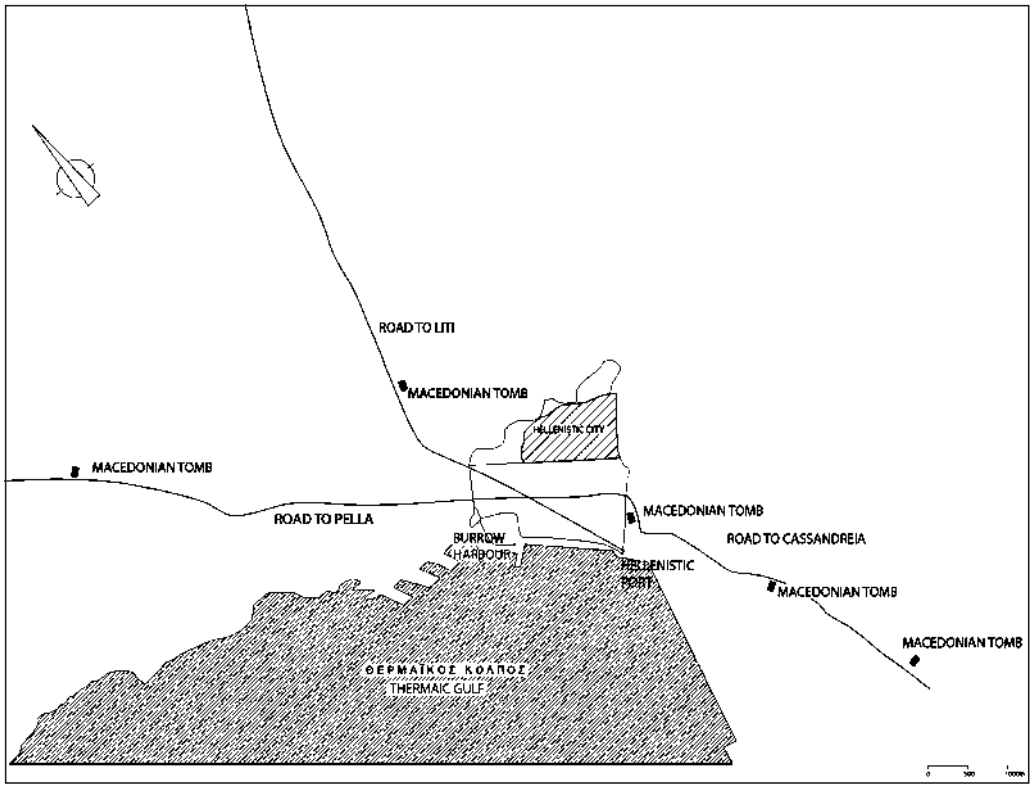


Fig. 1 Map of Thessaloniki and its surroundings, showing the Hellenistic city inside the byzantine enclosure and the country roads, that later became part of the urban fabric (suggestion, based on Sismanidis, Taphoi 56).

We suppose that during the Hellenistic era the coastline was oblique, with the western part much more on the north than the eastern one. The small peninsula, where the White Tower stands today, on the east side of the city, must always have been a steady point. In contrast, the other part of the coastline, from the region where Constantine's port was built and towards the west, was subject to considerable physical changes. The highest point proposed for the western end of the coastline is situated at the present Eleftherias square (Vardari), more or less at the position of the Porta Aurea/Golden Gate[16]. If this hypothesis, based on soil observations, is correct, then Constantine probably built the Burrow harbour at the most suitable spot on the coastline at the time, but it lost its suitability over time.

Four ancient rivers and other smaller seasonal torrents that constantly transfer alluvial deposits empty into this section of the gulf. In the middle of 20th century, in order to prevent the filling of Thermaikos Kolpos, alterations took place in the riverbeds[17]. However, Constantine's port had already been filled centuries ago, and on the west side of the Gulf, a large fertile plain was created. In this plain with the clay loam soil, the »clay plain« was developed[18]. Moreover, vegetable gardens and orchards were growing that Kaminiatis describes with pride and nostalgia[19]. Therefore, the south-western part of the city, formed from alluvial deposits, was and still is its lowest part.

Thus, Thessaloniki was founded by Cassander in a naturally sheltered location, with some differences in altitude and a distinct topographical relief, with a maximum distance of 800 metres as the crow flies from the sea. Cassander's interest in sea routes is also proven by the other city he founded in an analogous position in Pallini, from where important timber shipments were made in ancient times. The favourable position of Thessaloniki not only monitored the sea routes, but also the network of regional roads that led to it (**fig. 1**).

Two important regional roads passed outside the city. In the wider hinterland there were already smaller pre-existing towns (which were later merged for the foundation of the new town), which must have used these roads and one or more landing places.

The first regional road came from east Macedonia (Liti, Amphipoli), while the second connected major Macedonian cities in the west (Pella, Aiges and Dion) with Kassandreia in Pallini. Its ending outside Thessaloniki clearly points to the existence of an older trading port at this location[20].

Both roads were integrated into the Roman city of the 3rd century. The road of Pella-Kassandreia reached the Golden

16 Gala-Georgila, Nero 28.
17 Pazarli/Ploutoglou, Dytika.
18 Κεραμήσιος κάμπος, see Lemerle, Miracles I, 2.5.288.
19 Caminiates, De expugnatione 6.C.8-20.
20 Sismanidis, Taphoi 55-57. – Akrivopoulou, Limani 146-148.

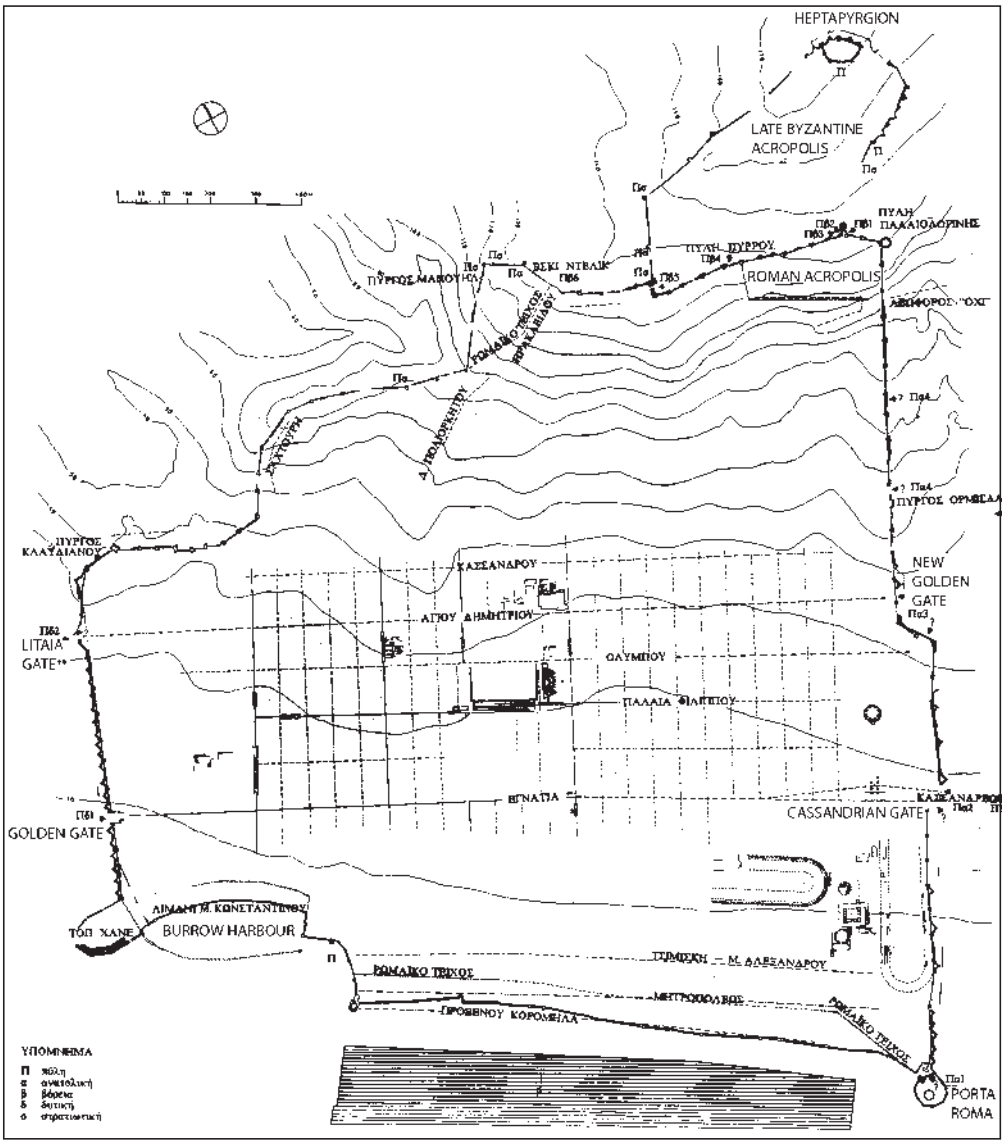


Fig. 2 Map of Thessaloniki with detailed description of the enclosure. – (From Velenis, Teichē fig. 1).

Gate on the west, ran through the city as a Decumanus Maximus and came out of the Cassandrian Gate on the east[21]. The road of Liti-Amphipoli also ended up at the western wall, at the Litaia Gate, but we are not aware where it originally led initially. At the corresponding gate on the east of the Litaia, whose initial name we do not know, only local roads ended (**fig. 2**). It is impossible that these secondary roads were the initial destination of the Liti road. We assume that it must lead somewhere else: either to the Pella-Cassandreia road, with which it probably intersected, or it led even further south, where it met the sea.

If the road of Liti is prolonged to the southeast, it crosses with the Decumanus Maximus and it meets the eastern Roman wall of the city, just above the White Tower (**fig. 1**). At this point, another gate existed, the *Porta Roma*[22]. This road must have had an oblique route with a north-western – south-eastern direction. Remains have not been located, and even if it had been fragmentarily revealed during rescue excavations, it is very probable that it was not identified since it would have been a dirt road[23]. However, other streets with similar directions have been excavated in the southern part of the city[24], and also buildings that following these axes, the most important being the Constantinian building below the Hagia Sophia and the adjacent Roman well[25]. These roads may have followed the coastline, but they were affected by the route of the more ancient road axis. While the city was

21 Caminiates, De expugnatione 9, description of the Byzantine Mesē, successor of the Roman Decumanus Maximus.

22 Caminiates, De expugnatione 28. 30. – Hatziioannou, Astygraphia 30. – Papageorgiou, Ekdomē 58. – Tafrali, Topographie 96. – Spieser, Contribution 49-50.

23 Akrivopoulou, Limani 147-148.

24 Akrivopoulou, Basileōs Ērakleiou 257-258. The dirt road found in this lot was also oblique to the rest of the city's urban tissue, vertical to the Liti road suggested here.

25 Glaser, Brunnenbauten 113-114. – Atzaka, Problēmata. – Hatzitryfonos, Agia Sophia 107-111. – The date proposed by Misčović, Ties, for the hexagonal fountain/baptistery is probably incorrect.

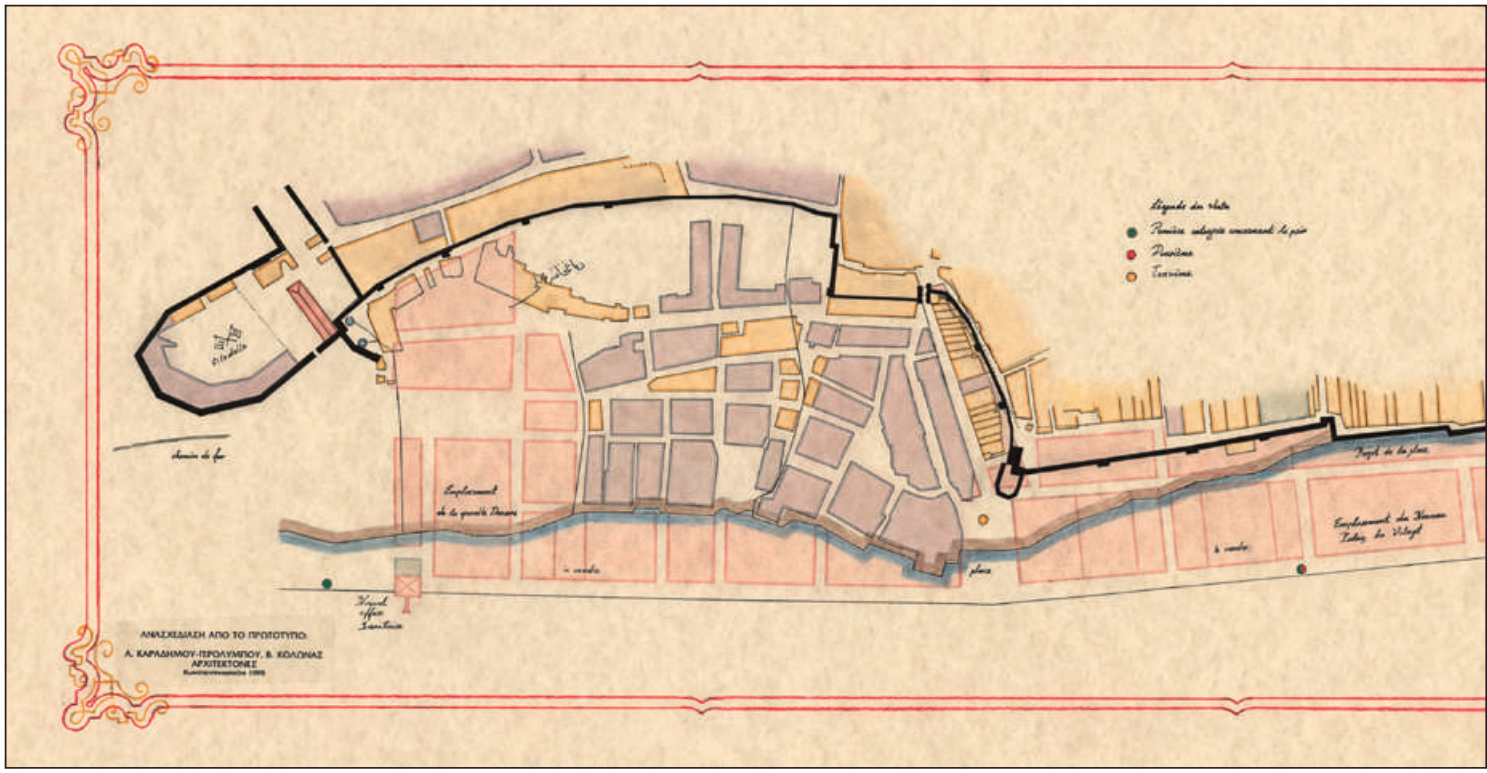


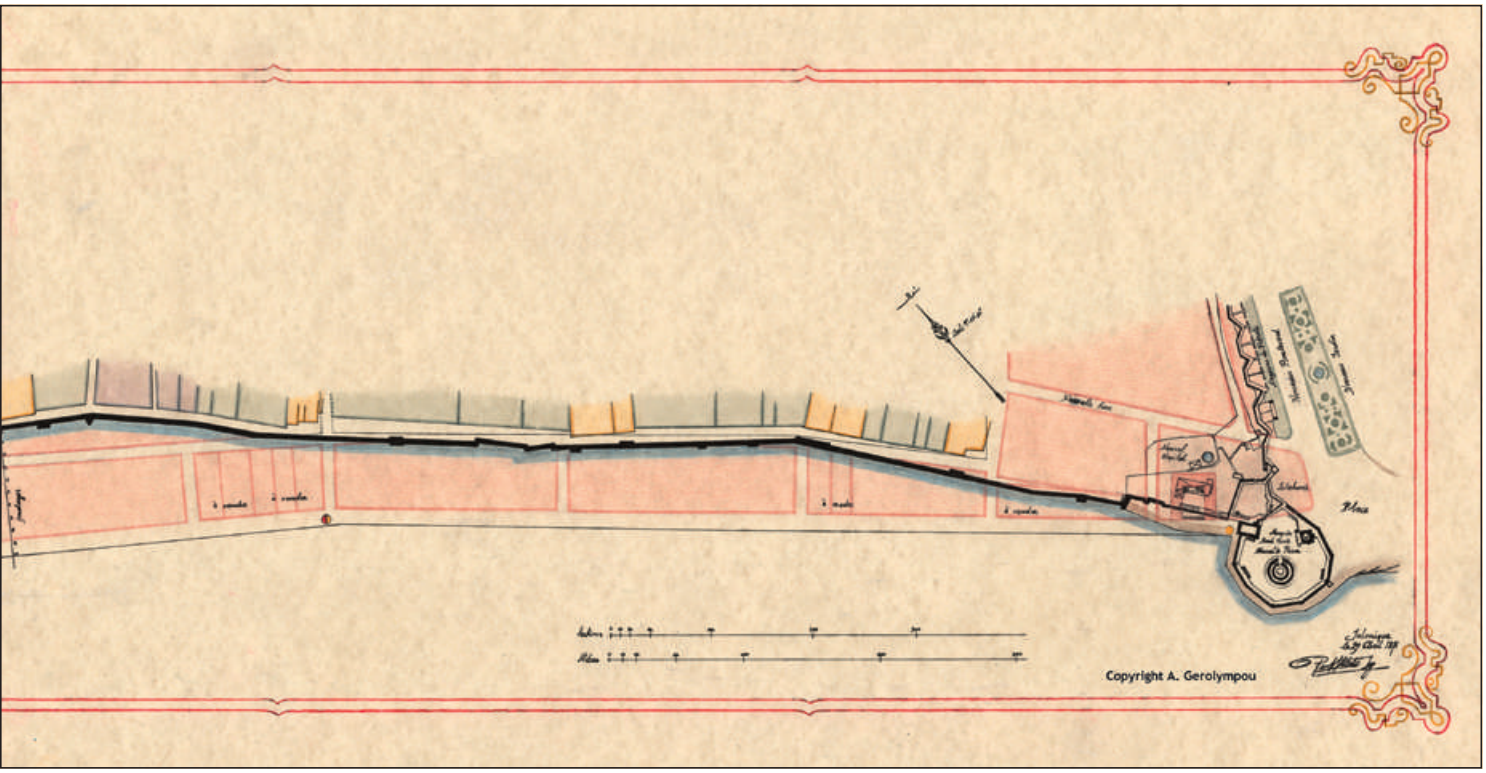
Fig. 3 Map of Polycarpo Vitali (1871), showing the coastline of mid-19th century and the latter sea wall that was demolished, for the new dock to be constructed. – (Courtesy of Alexandra Karademou-Gerolympou, 2018).

developing, the axes of the south section were corrected: hence the five-aisled basilica[26] and later the Hagia Sophia followed the axes of the rest of the city.

Here I would like to make a brief digression: many of the roads of Thessaloniki carried underground vaulted drainage pipes, which in some cases led to the identification of the roads when the road pavement was not preserved[27]. I am sure at this point that the famous *Tzeremboulon,* which has troubled researchers since the 19th century[28], was a drainage pipe of the city's network. These pipes (if not all than at least some of them, being the final ones of the network) penetrated the sea-wall and drained sewage in the sea. Few years ago, the end of such a large pipe was detected, that penetrated a part of the Byzantine sea-wall at the contemporary Kalapothaki Street, very close to Constantine's port[29] (**fig. 4**). The course of these pipes, and probably their extensions, built to reach the sea, which was constantly »moving away« as the alluvial deposits carried by the rivers filled the coast, gave rise to the idea that they were docks. It was Tafel who firstly mentioned that the »Tzeremboulon« was a *canalis subterraneus* (drainage pipe)[30], according to the entry of Du Cange's dictionary[31]. This entry was based on a passage of Eustathios of Thessaloniki that proposed the etymology from the words σύριγγξ and έμβολον (συριγγέμβολον)[32]. This channel was large enough for a person to enter and to go through; actually, it was the medieval analogous of the Paris sewers that Jean Valjean ran through in the »Misérables« in the 19th century. The usage of the word in a document of the Prodromos Monastery of Serres (1338) that talks about a *metochion* at the castle of Zichnai near »Tzeremboulon« confirms that it was not a dock as it was believed in the past. The text passage was detected and analysed by Paolo Odorico[33].

The existence of a second port in Thessaloniki apart from the Constantine's Burrow Harbour troubled the researchers a lot. In Adolf Struck's 1905 map, a small rectangular niche is marked at the sea-wall, very close to the White Tower[34] (**fig. 5**). This niche was considered a port by Bakirtzis, in his extensive and crucial study of the issue[35]. The niche proved

26 Mentzos, Agia Sophia.
27 Akrivopoulou, Limani 143-146.
28 Bakirtzis, Tserempoulon.
29 Marki, Kalapothakē.
30 Tafel, Thessalonica 298.
31 Hatziioannou, Astygraphia 67, is in accordance with Tafel. On the other hand, Tafrali, Topographie 17, based on J. von Hammer (Odorico, Limani 127) and Jean Anagnostis (διατείχισμα), assumed that the Tzeremboulon was a dock.
32 Odorico, Limani 129.
33 Odorico, Limani 125-130. As Zichnai is near Serres and landlocked, Tzeremboulon should have had another meaning than that of a dock. Nevertheless, Tafrali's opinion became very popular, so the idea that Tzeremboulon was a dock predominated. – Bakirtzis, Tserempoulon. – Bakirtzis, Thalassia ochyrōsē 318-319.
34 Struck, Eroberung 545.
35 Bakirtzis, Thalassia ochyrōsē 320-321.



to be an unknown before u-shaped arrangement inside the insula, made after the demolition of the sea-wall, since it is depicted clearly on Vitali's map (**fig. 3**). It is apparent now that Struck's map is a copy of an Ottoman prototype dating to after 1890. The rectangular niche on the eastern end of the sea wall was nothing more than a misunderstanding of the copyist, probably under Struck's guidance.

Bakirtzis' suggestion was somewhat correct though, as he proposed the eastern part of the seashore as the most appropriate position for the Hellenistic Port. There was a prejudice that the port could not have been situated outside the city walls for protective reasons. However, the truth is that the port was situated *extra muros* from the beginning, and so it was established in the mental map of the city, and it continued to exist in this position. Moreover, this port was mainly commercial with most probably little infrastructure. For that reason, Constantine decided, or was forced, to construct a second, larger and better protected port at the end of the period of wars with Licinius. The new military port, the Burrow Harbour, was surrounded by a wall and became more efficient[36].

Outside the walls, the eastern shoreline was discovered through excavations next to the YMCA building in 2002, when construction of a large car park began. The findings detected their date the facilities and the usage of the space from the early Hellenistic period onwards[37]. Across towards the east, at the Municipal Theatre (Theatro Kipou), auxiliary port facilities were found and identified already in 1997[38] (**fig. 6**). As the excavation of the YMCA car park moved on, Early Christian workshops for building material were located at a spot well-situated for transshipment and trade[39]. These findings show the position of a port in operation already from the 3rd century BC until the 5th-6th century AD at least[40]. To reach this port since Roman times and later, one had to pass through the *Porta Roma*. It is not at all impossible that its name referred the main destinations of the sea route: Rome or New Rome.

The exact position of the gate has not been identified by excavation, but the name was preserved for centuries. In two documents of the Xenophon Monastery of Mt. Athos, a gate with this name is mentioned in Ippodromiou Square, close to a small Theotokos Monastery that was the property of the Xenophon Monastery[41]. The Theotokos Monastery may have been on the site of the present church of Hagios Konstantinos and Helene, where a part of a Late Byzantine cemetery has been excavated[42]. Moreover, relatively close to

36 Zosimus, Historiae 2,22. – Cameniates, De expugnatione 4. – Kydones, Oratio 611. – Xatziioannou, Astygraphia 44-45.
37 Tsimbidou-Avloniti, ΧΑΝΘ. – Tsimbidou-Avloniti/Theodoridis, ΧΑΝΘ 321-325.
38 Toska et al., Synkrotēma 424-426.
39 Marki, ΧΑΝΘ.
40 Tsimbidou-Avloniti/Theodoridis, ΧΑΝΘ 324.
41 Actes de Xenophon 20,3; 26,4.
42 Vavylopoulou-Haritonidou, Hippodrome.

Fig. 4 The waste pipe found in Komnenon and Kalapothaki Streets, piercing the sea wall. – (Courtesy of Ephorate of Antiquities of Thessaloniki City, 2018).

the present visible part of the eastern outwork, a small walled up gate is preserved[43]. Anyway, the position of the *Porta Roma* is certainly to be located behind the Sphendone of the Hippodrome, whose boundaries have been detected directly north-east of the present church of Nea Panaghia[44]. It would be wise to search for it south of today's Tsimiski Street and possibly also on Mitropoleos Street.

I think it is very probable that the Roma Gate is the hexagonal yard that is depicted annexed to the enclosure of the White Tower in Vitali's map (**fig. 3**). It is mentioned by Evliya Celebi as the gate of the archives building (Islahane or Divanhane)[45]. In the aforementioned map, it seems that it had three openings, one towards each side of the sea and one towards the city. It was probably demolished together with the sea wall during the 1870s.

The siege of one of the two city ports is described in the Miracles of Saint Demetrius in the context of a Slavic raid on Thessaloniki, which took place in the first decades of the 7th century (c. 614)[46] (**fig. 7**). When the Thessalonikians realised the danger approaching from the sea, they tried to protect this port. They constructed underwater wooden bases to support a chain that would close the mouth, and behind the chain, they set up an underwater fence with sharp edges. This fence protruded only slightly out of the water in order to be as invisible as possible and to stop the logboats of the Slavs, who, unaware of any danger, would try to enter the harbour (**fig. 7, 7-8**). Behind the fence, they made a floating bridge of ships out of the ones that were already lying there to have space to fight in case of a landing (**fig. 7, 6**). They also dug a moat in front of a Theotokos church, which was near the port, because the place there had been unfortified, which, as the text mentions, was common knowledge. As it turned, this weak spot was discovered by the Slavs who were watching the gulf before the attack. The defenders laid traps camouflaged with branches and leaves in this ditch. Finally, they fenced the port's dock, which was also unfortified, with a palisade of plank revetments and other wood.

The attack took place from two directions at the seafront (and from other positions on the land that are not specified, but anyway are not our focus here). One group attacked the tower that was situated on the west of the Eklēsiastikē Skala, a place name that is mentioned for the first time here (**fig. 7,** attack wave **a**). The aim was to invade the small gate that was situated very close to it. A second group attacked the unfortified place that was protected by the moat and the traps (**fig. 7,** attack wave **b**).

This description, short but adequately accurate regarding topographical data and the military methods has provoked a great deal of interest. Consequently, many efforts have been made to identify the battlefields. As Spieser noted, the description of the defensive preparations seems to have just jumped out of the pages of Philo's Poliorcetica, a work of the 3rd century BC[47]. The writer of the Miracles has omitted essential elements for the understanding of these techniques, such as that the sharp fence of the city port entrance was supported underwater by a wooden base that was fixed on big rocks that had been thrown in the seabed. The same applies to the moat with the traps.

43 Eleftheriadou, Philikēs Etaireias pl. 231.
44 Kousoula, Nea Panagia.
45 Vickers, Sea Walls 264. – Bakirtzis, Thalassia ochyrōsē 323-324.
46 Lemerle, Miracles I, 2.1 (169-179) and II, 184-185. – Original text and modern Greek translation in Bakirtzis, Thaumata 236-247.
47 Spieser, Philon 366-368.

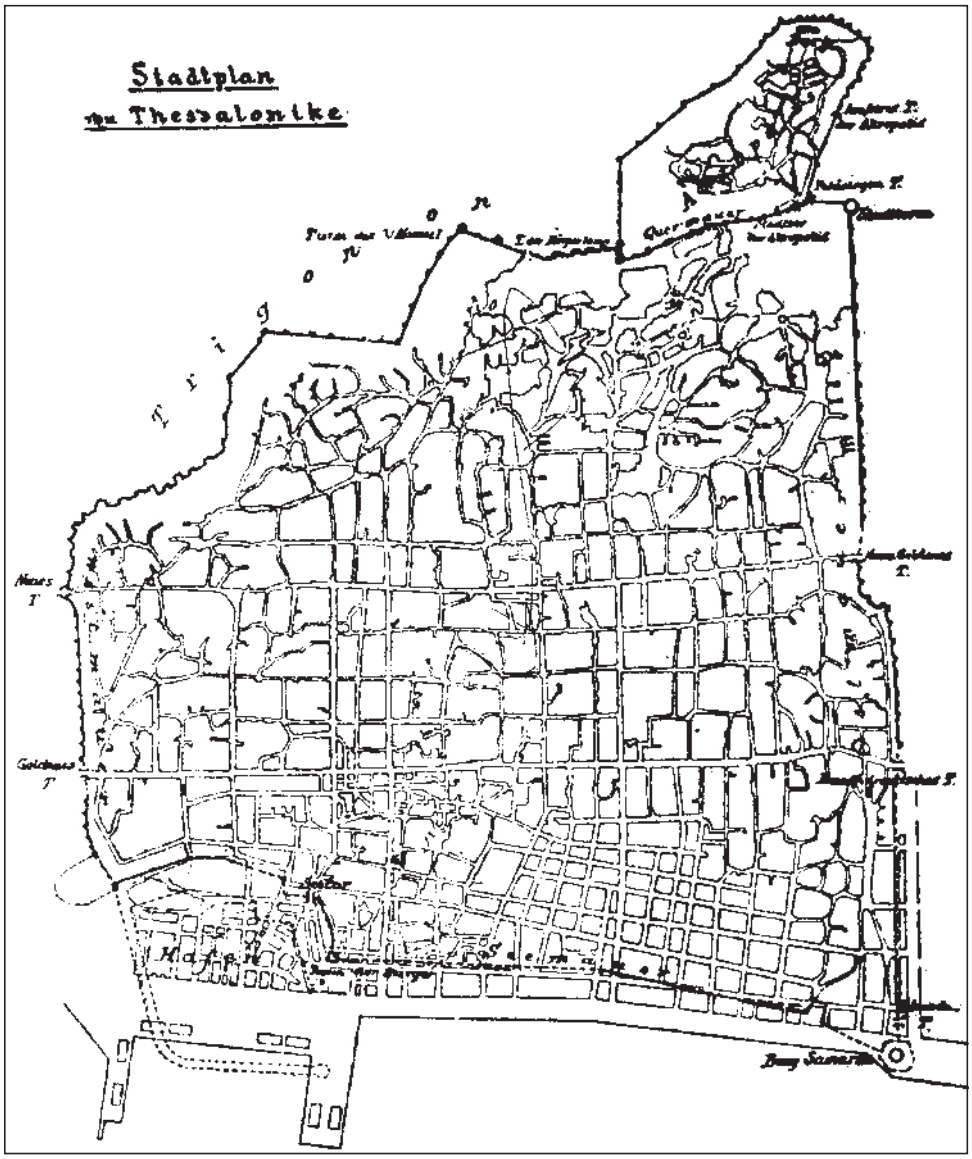


Fig. 5 Struck's map of Thessaloniki, suggestion of the sea wall route, with a rectangular niche near the White Tower. – (From Struck, Eroberung).

I believe that the port described here is the unfortified Hellenistic one with its dock. This dock is also mentioned in Pouqueville's letter to Tafel[48] (**fig. 7, 4**). After their survey, the enemies docked more on the east and as a result, they had a great view at this port and of the southern part of the eastern wall (**fig. 7, 9**). It seems that they had no reason to risk an attack at the fortified port that was situated on the west. The Hellenistic port served probably only for commercial activity, and for this reason the timber transport ships named κυβαίες[49] that were situated there at that moment, were commandeered by the defenders (**fig. 7, 6**). The neighbouring church of Panaghia might have stood either on the site of the small late Byzantine monastery/metochion owned by the Xenophontos monastery or on the position of the present New (Megalē) Panaghia Church (**fig. 7, 1**). The moat constructed to protect the church, which was in an unfortified area (which had literally become unfortified, literally, but was not always in this state) also protected the port. Such a moat began from the eastern edge of the port, as the western one bordered the tower and was thus protected. There, to the east, a torrent emptied, whose bed was detected by excavations[50]. The moat that was constructed so quickly must therefore have been a cleaning and expansion of this torrent's bed, which offered many branches and leaves to naturally hide the traps (**fig. 7, 5**).

The other group of the attackers dashed at the tower on the west of the Eklēsiastikē Skala to invade the small

48 Tafel, Egnatia 10. Pouqueville quotes a part of a letter of the French Consul, Mr. de St Sauver, who had noticed an underwater dock near the White Tower: »Pour c'est qui est du port du Thessalonique, il n'est défendu que par un misérable fort appelé Tour de Sang, où l'on étranglait les Jenissaires, qui ne prétendaient pas être pendus comme des Bacals ou regrattières. On voit sous les eaux les restes d'un môle«.

49 Lemerle, Miracles I, 2.183.

50 Tsimbidou/Theodoridis, ΧΑΝΘ 324.

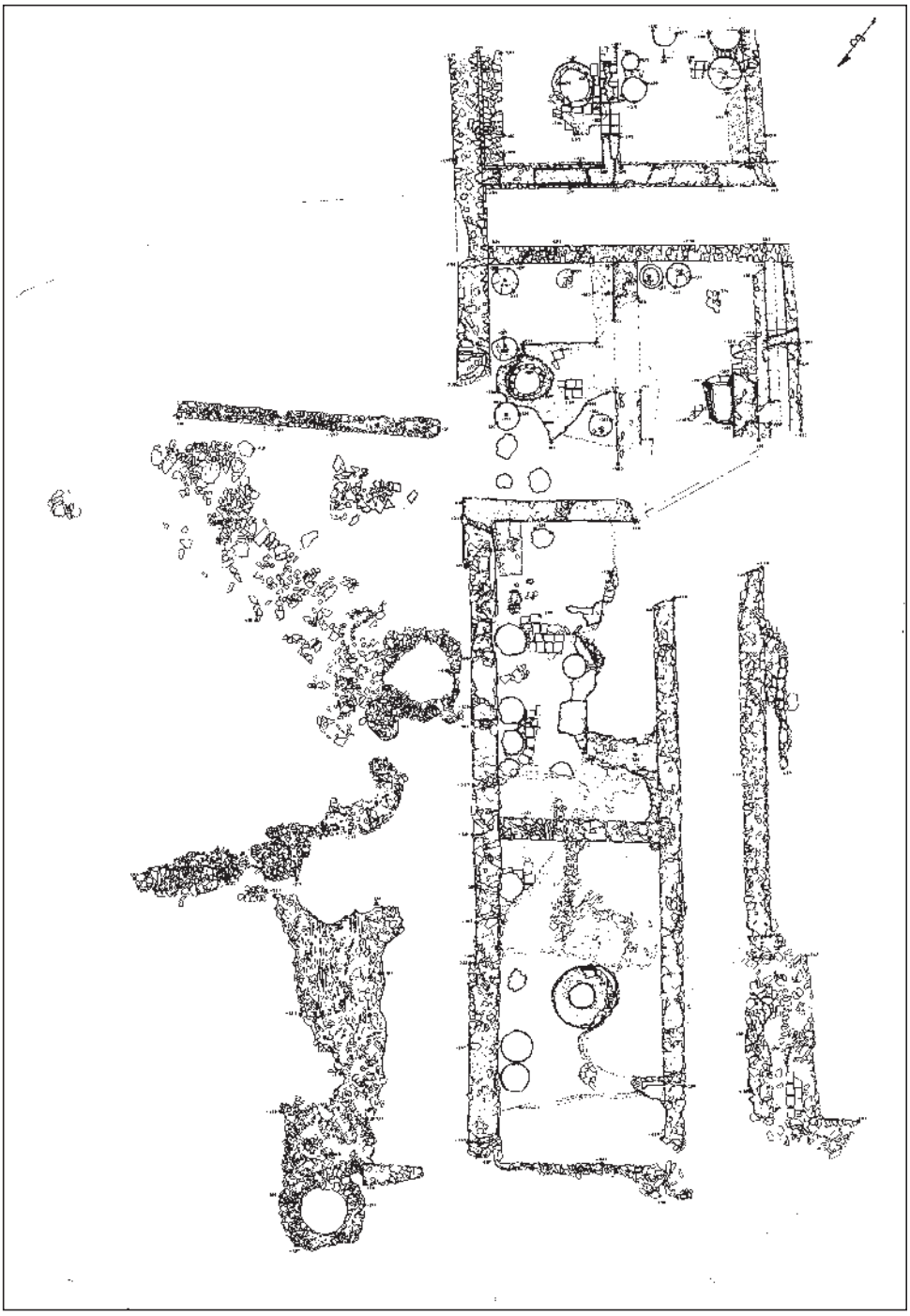


Fig. 6 Excavation at Theatro Kipou. Ground plan. – (Courtesy of Ephorate of Antiquities of Thessaloniki City).

gate that was situated very close (**fig. 7, attack wave a**). The Eklēsiastikē Skala is more difficult to define. Maybe even the Hellenistic port itself was named like this. The sudden appearance of this term could be interpreted as a simple weakness of the narrative. Apparently, the author took some topographical reference points of the city for granted, just as he considered the description of the techniques of defence to be self-evident, so that he handed them down to us incomplete.

The tower to the west of the Skala[51] would in this case have been the south-eastern tower of the fortification, say the today's White Tower (**fig. 7, 3**). The small gate next to the tower could have been the opening towards the sea-wall, which most probably existed in the *Roma* gate (**fig. 6, 2**).

51 Lemerle, Miracles I, 2.186.

Fig. 7 French map of Thessaloniki, the [Burrow] Harbour and the environs, dating to 1784: **1** Theotokos Church. – **2** Porta Roma. – **3** Tower west of the Eklēsiastikē Skala. – **4** Pouqueville's Dock. – **5** Moat with traps. – **6** Cargo ships. – **7-8** Chain and fence. – **9** Observatory. – (Courtesy of Thessaloniki History Centre).

The identification of the Eklēsiastikē Skala presupposes a gate above of the seafront and a tower west of this gate. I believe that these two elements were present only on the east. The first reason is the flow of the narrative. In general, I assume that the narrative is concise, not incomplete. I would consider it an important weakness from the writer's side (and not a simple omission, as the more specific constructive details of the defensive constructions) to move the action suddenly and, especially at its peak, to another geographical space, for which no previous reference had been made. Not to mention that he had already briefly described the spaces of action; the Eklēsiastikē Skala is not only was not included in them but also is one of the only place names he provides in the entire narrative. The place name »Eklēsiastikē« is easy to explain, as the road that led directly there was the one that passed by the Metropolis (Hagia Sophia), by the Palace and the Hippodrome (southeast of everything), which had gradually been given to monastic and ecclesiastical estates (which still exist today), but also by one of the Theotokos churches that we discovered. This road led to the *Porta Roma* that had two openings that led to the sea, one within the walls and one without. Hence, I consider Eklēsiastikē Skala to be the Hellenistic port situated outside the city walls to the east of the White Tower[52].

52 Different approaches have been used in earlier scholarship, but in none of them was a position for the Ekklesiastike Skala outside the city walls sustained. Bakirtzis, Thalassia ochyrōsē 320-321 and Bakirtzis, Thaumata 402 suggested that the Ekklesiastike Skala should be sought next to the White Tower, on its western side. Marki, Limania 174-175, is more or less in accordance with Bakirtzis. Hatziioannidis/Tsamisis, Apothēkes 189, suggest for the Skala a site at the end of today's Katouni Str., inside the Burrow Harbour. Odorico, Limani 138-141, contradicted Bakirtzis and, in accordance with Vickers, Sea walls 269-271, suggested the Burrow Harbour as the place of the siege and of the Ekklesiastiki Skala. Fotiadis, Teichos 121 and Livadioti, Limani 165, suggest for the Hellenistic port a site in the middle of the sea-wall, on the extension of today's Aristotelous Square.

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Summary / Zusammenfassung

The Hellenistic Harbour of Thessaloniki and the Ekklēsiastikē Skala

The paper deals with the transformation of the urban outline of Thessalonike from its foundation in the Hellenistic period via the Roman centuries to the Early Byzantine period. These changes also affected the structure and use of the city's seaside and until today complicate the definite identification of harbour sites and their shape throughout these centuries. The paper presents some recent archaeological findings and proposes a new localisation of the so-called *Ekklēsiastikē Skala* mentioned at the occasion of a siege of Thessalonike in the 7th century AD.

Der hellenistische Hafen von Thessaloniki und die Ekklēsiastikē Skala

Der Beitrag befass sich mit der Transformation der urbanen Gestalt von Thessaloniki von seiner Gründung in der hellenistischen Zeit über die römischen Jahrhunderte bis zur frühbyzantinischen Zeit. Diese Veränderungen wirkten sich auch auf die Struktur und Nutzung der Küste der Stadt aus und erschweren bis heute die eindeutige Identifizierung von Hafenstandorten und ihrer Form im Laufe dieser Jahrhunderte. Der Beitrag präsentiert einige neuere archäologische Funde und schlägt eine neue Lokalisierung der sogenannten Ekklēsiastikē Skala vor, die anlässlich einer Belagerung von Thessaloniki im 7. Jahrhundert n. Chr. erwähnt wird.

Ilias Anagnostakis

Methone on the Peloponnese: a Naval Base without a Harbour? In Search of the Byzantine Port in Historical Sources

While studying the Byzantine castle and the port of Methone, as well as that of Korone, I always had the feeling that the popularized images of both these Venetian castles were deceptive: producing descriptions, images, which, although difficult to do, had without fail to be deleted from my memory – as they had nothing to do with what I was aspiring to study. This is, of course, true of many other cases of monuments that survive in a subsequent, modified form. Yet the image of the more recent castle of Methone is so indelibly imprinted on the mind that, however hard we try to discard it, to forget it, we find it almost impossible and it all but hinders the archaeological study of the area in question. Even more alarmingly though, I found this to be the case with the unproven perception prevailing in various studies on the timelessly noisy and bustling Byzantine port, where numerous ships transported a multitude of products, and where travellers, merchants, sailors found refuge – thronging the quays or awaiting more favourable winds to set sail for Constantinople, Asia Minor and Palestine or the ports of Italy. And although there is a core of historical truth in the writings of some modern historians, I want to state in advance that I consider these views on Byzantine Methone excessive and in some cases erroneous; they are projections on Byzantine years of an earlier situation, namely from Roman and Late Roman times, but mainly from the Venetian era, from the 14th century onwards. In the Middle Byzantine period, reality at the port of Methone was very different and diverse.

Before looking at the sources, we shall begin our presentation of the topic with the existing archaeological studies that deal with the ancient or Byzantine port installations in Methone. It is striking that, due to a lack of data, the greater part of the research on the works falls on the Venetian and Ottoman phases of the port and the castle. Consequently, scholars have dealt little with the Byzantine port, as the lack of archaeological data prevents this, and research has unfortunately not progressed much beyond Andrews' initial findings[1]. We should, however, point out that important data not so much on the Byzantine port as on the bay of Methone was provided by underwater research in the area during the 1960s, when a submerged prehistoric settlement from the Middle Bronze Age, 2000 to 1600 BCE, covering an area of about 120 stremmas, was discovered. Also located, although already in full view, were two moles to the east of the castle, a submerged jetty of an ancient port, parallel to the castle, and another more recent, perpendicular to the castle, built in 1890 (**fig. 1, 1a**). Again, it is not certain that the first mole is a remnant of the ancient port and ultimately it was dated to the 2nd-3rd centuries AD, a phase that progressively leads us to the Early Byzantine port of Methone[2]. The depiction on a coin from Methone minted under Caracalla, an assarion from c. 198-205, is believed to show this Roman mole, and it may be the oldest image we have to date of the port of Methone (**fig. 2**): »Obv.: Laureate, draped and cuirassed bust of Caracalla, M AVRAY ANTΩNINON. Rev.: The harbour of Mothone, shown as a semicircular colonnaded wharf with, at each end, a square distyle building containing a statue; at the centre of the harbour, statue of Tyche to left; at the harbour entrance, galley with rowers to right, MOΘΩNAIΩN«[3]. Indeed, a mole is shown and a port in the form of an theatre and in the entrance a ship with sailors and in the centre or entrance of the port stands a statue. However, the underwater research that continues even today in the bay at the port has provided nothing of additional interest on the Byzantine era; on the remains of the ancient jetty (surrounding an area of 200 m east to west and 330 north to south) only small-scale Byzantine interventions, difficult to date, have been discovered, while mainly structures from the Venetian occupation have been located. The only significant research on the phases before Venetian times, the primarily Byzantine phases of fortifications in Methone with mandatory references to the port, has been presented at a recent conference[4]. Lastly, various publications repeat over and over again that the Byzantine port occupied the site of the ancient one and that the anchorages of ancient Methone, just like the Medieval ones, were never safe as they were exposed to the strong south-westerly winds from the Ionian Sea, and that sometime later the Venetians,

1 Andrews, Castles 58-83, on ancient and Byzantine ruins and the port 58-59. 74.
2 Kraft/Ashennbrenner, Paleographic Reconstructions 29-31. 36-37. – Papachatzis, Pausaniou Messēniaka 162-168 n. 5. – Lianos, Limenika erga 130-131. – Spondylis, Symbolē 30-34. – See also Nanetti, Opere difensive di Methone 6-12.
3 Imhoof-Blumer/Gardner, Numismatic Commentary on Pausanias 68 no. 1. – Price/Trell, Coins and their Cities 208 fig. 484. – Papachatzis, Pausaniou Messēniaka 166.
4 Kappas/Mamaloukos, Paratērēseis 41-42. – Kappas/Mamaloukos, Paratērēseis 2.

In: Johannes Preiser-Kapeller · Taxiarchis G. Kolias · Falko Daim (eds), Seasides of Byzantium. Harbours and Anchorages of a Mediterranean Empire. Byzanz zwischen Orient und Okzident 21 (Mainz 2021). DOI: https://doi.org/10.11588/propylaeum.910.c12047

Fig. 1 Methone from the air: **A** 1953. Two moles to the east of the castle of Methone, a submerged old jetty, parallel to the castle, and another, perpendicular to the castle, built in 1890. – **B** 2010. – (A photo K. Andrews, Castles 62 fig. 61; B photo by courtesy of Penelope Matsouka).

Fig. 2 Methone with its port on an assarion c. AD 198-205 minted under Caracalla. – (From Imhoof-Blumer/Gardner, Numismatic Commentary on Pausanias 68 no 1. Price/Trell, Coins and their Cities 208, fig. 484).

having pinpointed the problem, tried to solve it by constructing a semi-circular mole[5].

Given the lack of archaeological evidence and studies on the Byzantine port of Methone, we have opted for a critical review of the sources, as they currently provide the only data available, even if they are sometimes both helpful and misleading[6]. Although most of the references to Methone in the sources are well known, the new questions we shall ask and the new approaches and readings we shall attempt may lead to new insights. The consciously chosen rhetorical question in the title addresses a historical truth, ultimately puts the study into perspective and even announces its outcome. Obviously there has always been a harbour, but what kind of port, what was its main use and status in each period? To give an answer, however, presupposes that we have agreed on the definition of the Byzantine port and harbour. What is a Byzantine port, especially in the Middle Byzantine period, and how does it relate to the ancient and modern definitions? To what extent do terms like *limēn* that we find in Byzantine texts correspond to a port city, an artificial or a natural anchorage? Was Methone during the Byzantine period perhaps not a busy trading centre, as assumed, but the most important natural anchorage, the headquarters of the Byzantine fleet, a kind of naval base, due to its geomorphology and location, which differed from many other ports in the Byzantine Empire and, of course, in the Peloponnese? Furthermore, in which epochs? After all, was the problematic harbour less used in Byzantine times and the wider bay of Methone more, as some of the sources tell us? So let us try, for the first time, a critical review of the information we have on the topic in question.

Methone is in the fortunate position of having many different headlands, bays, islands and rocky islets, reefs and ledges, both in the immediate vicinity and at some distance (as far as Pylos and Korone). Founded at the extreme south-western point of Pylia, it was built on a small triangular point of the coast in the bay bounded on the south by the islands of Oinousses and especially the island of Sapienza, and on the north by the entire length of the coast (namely from the castle to the point known as Kokkinia, where the island of Nisakouli or Kouloura lies). With a port protected only from the west by the walls of the triangular fortress, it was for a long time one of the most important communication stations on the northern Mediterranean route, being an anchorage and a safe harbour for the naval fleet and those sailing from Western Europe, mainly the Adriatic and Ionian Seas, to the eastern Mediterranean. During the late Roman and Byzantine periods, Methone, away from the fortified part, extended to the north and north-east outside the walls and beyond the harbour, an area referred to by locals as Palio-Methone, Old Methone. Numerous Byzantine monuments from all periods can be found in the area north of Methone, east of Mount St. Nicholas, where the Paleochristian cemetery of St. Onouphrios is located (containing rooms and tombs carved into the natural rock of porous

5 Spondylis, Symbolē 30-37.

6 Vorderstrasse, Port without a Harbour 15-26. – Veikou, Byzantine ports and harbours 39-41.

Fig. 3 Satellite image depicting the geomorphology in the area of the Gulf of Methone in the Peloponnese (Greece): **1** Methone. – **2** Harbour. – **3** littoral of the bay (Roman wall, kiln and sherds). – **4** eroding cliff (mosaics, sherds, Byzantine ruins). – **5** Palioi/Aïliades. – **6** Roso Choma/Kokkinia. – **7** Nisakouli/Kouloura. – **8** Sapienza. – **9** Limni Papa (Beacon). – **10** Mount St. Nicholas. – **11** St. Onouphrios. – **12** Agaki (St. Basileios Middle Byzantine church). – **13** Palio Methone. – **14** Early Byzantine basilica. – **15** Lykotomaro. – (Background courtesy of Google Earth).

stone). This cemetery is believed to be a link in the chain of catacombs on that sea route connecting the east to the west, from the island of Melos to Sicily, and it has many features in common with the corresponding cemeteries[7]. In addition, Byzantine churches, tombs, and cisterns lie to the east of Mount St. Nicholas and to the north of Methone, at the sites known as Lykotomaro and Agaki, while remains of settlements can be found all along the coast to the east of the Castle to Kokkinia and Palioi Aïliades[8] (**fig. 3**). Consequently, Methone, built in a particularly strategic position in the central Mediterranean, on the passage linking the east to the west, took advantage of its position with a port and a castle, an obvious and well-known function that I believe will become clear below when reviewing the evidence provided by the sources. I think that schematically we can speak of four distinct periods in the history of the Byzantine port and naval base of Methone, with similar as well as very different features according to the age:

a) the first period from the 4th to the 6th century, when Methone continued to play an important role within the unifying Mediterranean framework of Late Antiquity,

b) from the end of the 6th to the beginning of the 9th century, a transitional period without information about Methone, but we can deduce elements of reorganisation and defence,

c) from the 9th to the 11th century, a period of prosperity, military and ecclesiastical organisation of the Peloponnese, of control of the seas around Methone and military action against the Arabs of Crete and Africa,

d) the Latin intervention during the time of the Komnenos dynasty was the last Byzantine occupation of Methone and a disastrous time for the castle and the port.

During the first period from the 4th to the 6th century, Methone continued to retain the features of the communication and transport hub of Late Antiquity between the Eastern and Western Mediterranean. The sources, although not providing detailed descriptions of the port or other relevant data, generally refer to the passage of pilgrims or travellers or simply speak of moored ships, mainly of the naval fleet, most likely in the bay of Methone[9]. We shall selectively give some examples. In his history (written in about 390), Ammianus Marcellinus does not allude to the port, nor does he describe the city, yet he does furnish us with a brief but unique description of his passage through Methone (*Mothonen oppidum*), revealing that he saw the hulk of a ship two miles inland from the coast, where it had been swept by the tidal wave that followed the great earthquake of 365[10]. It is believed that the said tidal wave must have caused significant damage in Methone, as it carried a ship inland, and we know that this huge earthquake of 365 destroyed most monuments in ancient Messene[11]. Saint Hieronymus in the *Life of St. Hilarion* (written in about 390) refers to a Jewish merchant, a clothes-dealer, in Methone (before 365) who knows and informs Hilarion's pupil Hesychius that his teacher is in the port of Pachynus in Sicily (today Portopalo), while the *Epitaphium Sanctae Pavlae*, written in 404, alludes to the saint passing through Methone in 385 during his journey to the Holy Land[12]. Unlike Ammianus Marcellinus, who claims to have been an eyewitness, the ref-

7 Pallas, Saint Onouphrios 147-154. – On the corresponding cemeteries and their position on the Mediterranean maritime routes, see also Laskaris, Monuments 460-471.

8 For much of what is presented here we refer to the entries and the bibliography in the forthcoming work: Anagnostakis, Messenia, entry Methone. – See also Pallas, Saint Onouphrios. – Pallas, Ereunai. – Anagnostakis, Paraktioi oikismoi. – Kavvadia-Spondyli, Pylia.

9 Gagtzis et al., Peloponnēsos kai notia Italia 480-486. – Avraméa, Péloponnèse 43-44. 132-133. – Anagnostakis, Messēnia, entry Methōnē.

10 Ammianus Marcellinus 26, 10. 19: *Ingentes aliae naves extrusae rabidis flatibus culminibus insedere tectorum, ut Alexandriae contigit: et ad secundum lapidem fere procul a litore contortae sunt aliquae, ut Laconicam prope Mothonen oppidum nos transeundo conspeximus diuturna carie fatiscentem.* Avraméa, Péloponnèse 43-44.

11 This can be deduced from the monetary evidence in destruction layers that have repeatedly been discovered during excavations conducted by professor Themelis in Messene, see bibliography Anagnostakis, Messēnia, entry Messēnē.

12 Hieronymus, Epistulae 165 no. 108 (Epitaphium Sanctae Pavlae) § 7. – Hieronymus, Vita s. Hilarionis col. 50A. – Gagtzis et al., Peloponnēsos kai notia Italia 480. – Avraméa, Péloponnèse 44. 132-133.

erences to Methone made by Hieronymus should not lead us to assume the author's presence there. There is no reference or description of the port in the *Life of St. Hilarion*, although the Jewish merchant who had probably visited or had contact with Sicily and the pupil Hesychius who leaves Methone for Pachynus imply trade and travel between Methone and Sicily.

The most important account we have for this first period is that of the historian Prokopios, who reports that in Methone, during the campaign against the Vandals in 533, Emperor Justinian's general Belisarios »anchored (*hōrmisen*) the ships and disembarked (*apebibasen*)« the entire army[13]. The same sea route (Maleas – Tainaron – Methone – Zakynthos – Sicily – Libya) was probably travelled in reverse by the Byzantine fleet on its return journey after the victorious outcome of the campaign in 534. Prokopios' narrative informs us that Methone had been designated as the meeting place for the ships of the fleet at the beginning of the campaign, i. e. for the meeting of the ships under Valerianos and Martinos (who had already left Constantinople, most probably to do reconnaissance), and with the main body that followed shortly afterwards[14]. It should be pointed out that the Byzantines tried not to divide the fleet, and Belisarios himself made sure to »keeping his whole fleet together at all times as it sailed and finding a harbour in the same place, for he knew that if a large fleet in particular was buffeted by strong winds, it was inevitable that many ships would be left behind and scattered at sea«[15]. Methone as a meeting place for the ships indicates the special function of the place, probably of the bay and not of the port. After all, where did 500 transport ships and 92 dromons moor for about two months, when it is explicitly stated that Belisarios »anchored the ships and disembarked the whole army«? Where did about 48 000 soldiers and sailors (probably not all the sailors disembarked at the same time) and 6000 horses disembark? What role did the port of Methone play in this story? Was it therefore a trading and potentially a naval port, like most Byzantine ports? The place where the fleet was moored and anchored invites speculation. The bays on the island of Sapienza and other bays in the gulf of Methone were not excluded, even those sheltered from the south-westerly winds affecting the area[16]: these were winds that constantly caused problems with the sand dunes in the port, despite the protection afforded by the construction of a breakwater and the wall of the castle to the west. Prokopios though provides us with a uniquely detailed description of a moored fleet and the life of the expeditionary force in the region of a Peloponnesian port during the Early Byzantine period. We have studied this topic in at least four of our papers and we shall not present it again[17]. The bread Belisarios had brought from Constantinople went bad and caused the poisoning and death of 500 soldiers. According to Prokopios, the number of dead could have been even higher, but Belisarios prevented this by ordering that the bread produced there in the country (*epichōrious artous*) to be furnished to them. It is just worth mentioning that around Methone, although research excavations are limited, no Late Roman constructions have been discovered that could have been storehouses (some buildings that are difficult to date have been found and the remains of an aqueduct on the coast[18]). Many hypotheses could be put forward about the role that the port of Methone played in supplying this large army[19]. It is also worth pointing out that there was always a major problem with the water supply (Methone has always been supplied with water from a few wells and cisterns) and the amount of water that could be provided to a large fleet was very limited. Prokopios described Methone as a dry place in summer with a very hot climate, and the fleet ended up bunkering water from Zakynthos on its way to Sicily[20].

Besides the question of supply and trade, archaeological research in early Byzantine Messenia has discovered abundant pottery in many coastal settlements without harbour facilities, in villas, farmhouses, in the bays without built harbours, in coves and islets (Philiatra coast, Dialiskari, Prote Island, Romanou, Pylos Bay, Phoinikous, Nichoria, etc.), but also in some Messenian harbour towns such as Kyparissia-Arkadia or Korone-Petalid (**fig. 4**). These are seaside settlements where products from the Peloponnesian and Messenian hinterland, but also from outside the Peloponnese, from the Aegean, Asia Minor, Egypt, were traded[21]. Some of this pottery was certainly transported or forwarded to all these places via the port and bay of Methone, and in this case Methone acted as a »gateway community« in terms of the interregional movement of goods and people[22]. It may be worth mentioning here that in the north-west, very close to Methone, at the southern tip of the cove known as »Limni Papa«, an early

13 Prokopios, Wars 3,13,10: ὥρμισεν καὶ ἀπεβίβασεν ἅπαν τὸ στράτευμα.

14 On the role of Valerianos and Martinos, see Anagnostakis, Wine, Water, Bread, and Love Affairs. – Anagnostakis, Stratiōtiko didymo.

15 Prokopios, Wars 3,13,1-2: Μετὰ δὲ ταῦτα ἐφρόντιζε Βελισάριος ὅπως τε ὁ ξύμπας στόλος ἀεὶ κατὰ ταὐτὰ πλέοι καὶ ἐς χωρίον ταὐτὸ προσορμίζοιτο. ᾔδει γὰρ ὡς ἐν μεγάλῳ στόλῳ, ἄλλως τε καὶ ἢν τραχεῖς σφίσιν ἄνεμοι ἐπιπέσοιεν, ἐπάναγκες ἀπολείπεσθαί τε τῶν νεῶν πολλὰς καὶ σκεδάννυσθαι ἐς τὸ πέλαγος, οὐκ εἰδέναι τε αὐτῶν τοὺς κυβερνήτας ὁποίαις ποτὲ τῶν ἔμπροσθεν ἀναγομένων ἕπεσθαι ἄμεινον. – See also Theophanes, Chronographia 189. 226-228.

16 On the most likely way of mooring ships in the bay of Methone and the islands opposite and probably in the bay of Pylos, see Anagnostakis, Paraktioi oikismoi 155-160.

17 Anagnostakis, Paraktioi oikismoi 155-158. – Anagnostakis, Wine, Water, Bread, and Love Affairs 27-35. – Anagnostakis/Angelidi, Pane pubblico, pane che avvelena 635-641. – Anagnostakis, Stratiōtiko didymo. – Tsivikis, Messenian Bread.

18 Spondylis, Symbolē 33-35. – Kavvadia-Spondyli, Pylia 222.

19 See the comment by N. Oikonomides on supply and warehousing, Anagnostakis, Paraktioi oikismoi 157 n. 64.

20 Prokopios, Wars 3, 13. – Anagnostakis, Wine, Water, Bread, and Love Affairs 27-35. – On the Byzantine cisterns and tanks in the area, see Pallas, Ereunai 78-84, Kavvadia-Spondyli, Pylia 222, and in general in Messenia, Germanidou, Rock-Cut and Underground Cisterns of Messinia. – According to Pryor/Jeffreys, The Age of the ΔΡΟΜΩΝ 354, »few ports in the Eastern Mediterranean were on large rivers and many had no river at all and were dependent upon wells. Some did not even have those, for example, Methone, which depended on cisterns«.

21 Davis et al., PRAP 459-467. – Alcock et al., PRAP 167. 170. 176 n. 88. 202-203. – Anagnostakis, Paraktioi oikismoi 140-155. – Anagnostakis, Messēnia.

22 On the Byzantine harbours as gateway communities, see Veikou, Byzantine ports and harbours 49-52. – See also in general Vroom, From one Coast to Another 353-392.

Byzantine beacon tower, a fire signal station, has been discovered, directly related to navigation and probably used also in later years. A solid, circular structure has been preserved with holes low down in the sides that appear to be auxiliary air ducts to help fuel the fire. The structure is thought to belong to a network of signal fires or beacons (*vigla*) situated along the coast from the north towards Methone and then heading to the southeast[23]. Methone's dominance as a naval base, meeting, and supply point for the Byzantine fleet and concurrently as a trading and commercial hub is widely highlighted in the sources of the following centuries.

For the next period, from the end of the 6th to the beginning of the 9th century, we have no accounts of harbours and moorings in the area we are studying, but the same is true for almost the entire Peloponnese. However, it cannot be ruled out that Constans II (641-668) passed through Methone during his campaign in Italy after leaving Athens (if he did ultimately circumnavigate the Peloponnese as is assumed[24]), to get to Taranto in 663. Moreover, as we shall see below, the commercial route Methone-Taranto is also mentioned in later sources[25]. In the years 722-723, the pilgrim and Bishop of Eichstätt Willibald coming from Sicily and across the Adriatic (and in our opinion probably via Methone and definitely via Maleas) arrived in Monemvasia (*ad urbem Manafasiam in Sclavinica terra*) and, and, leaving Corinth »to the left« (as he states), headed for Ephesus, where he venerated John the Theologian. From there, he walked to Phygela.[26]. It can be seen from the sources that, apart from the confusion between Tainaron and Maleas[27], ships passing through Tainaron, Maleas and Monemvasia had almost always previously passed through Methone (in the case of Willibald's voyage, only Sicily and the Adriatic before Monemvasia were mentioned). An early example, apart from that cited earlier concerning Belisarios' fleet, is the voyage of St. Paula, who, according to the *Epitaphium* written by St. Hieronymos, began her pilgrimage in Rome, passing through Sicily (Messina), Methone and then Maleas and Kythera[28] (**fig. 5**).

If one can hypothesise about the journeys of Constans II and Willibald possibly passing through Methone, some more probable than others – what are we to say when written sources and archaeology do not provide evidence that would allow any speculation (unless they are temporary and accidental archaeological investigations)? The Byzantine port of Methone belonged in this category during the so-called transitional or dark ages. I believe that theories of absolute Slavic control and Byzantine decline in the Western Peloponnese are untenable, as it has been more and more convincingly suggested that Patras, Methone, Asine-Korone and Kyparissia-Arkadia may have been under constant pressure, but were probably never abandoned to the Slavs. During the same period, Methone, although not mentioned and even being

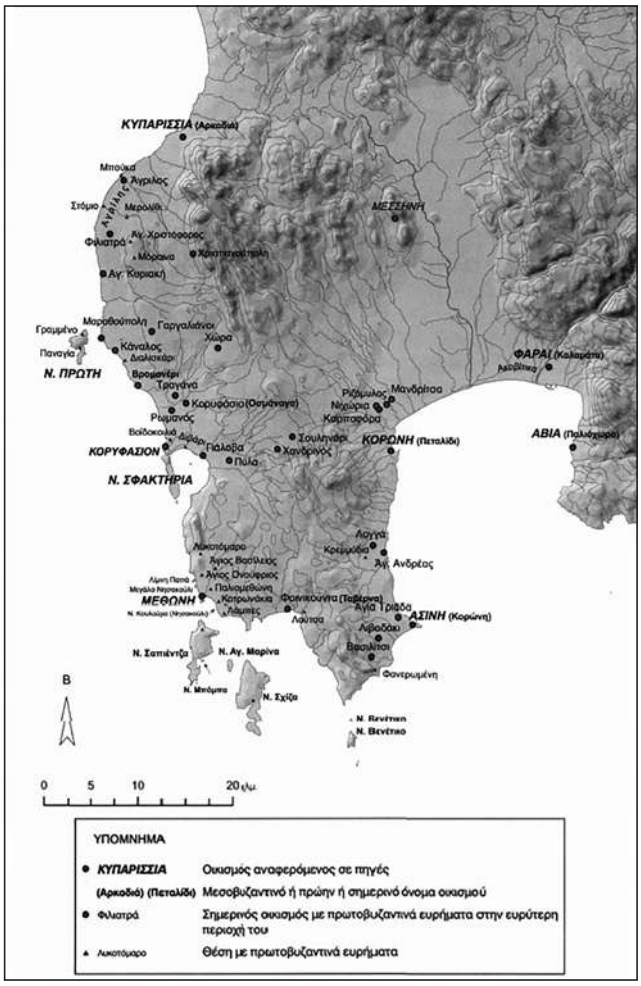

Fig. 4 Coastal settlements and ports of Messenia in the Late Roman and Early Byzantine period. – (From Anagnostakis, Paraktioi 159).

23 Spondylis, Symbolē 35-36. – Kavvadia-Spondyli, Pylia 222. – Biris, Chōra, Pylos, Methonē 178-179. – Biris, Methonē 155-156. – Anagnostakis, Messēnia, entry Methōnē.

24 Cosentino believes Constans passed through Methone, see Cosentino, Constans II 593-594. – See also Gangzis et al., Peloponnēsos kai notia Italia 477-478.

25 Von Falkenhausen, Taranto 459-460.

26 Vita Willibaldi 93-94. – Kislinger, Sightseeing 460-461. – Kalligas, Byzantine Monemvasia 42, considers that Willibald's ship came directly from Sicily to Monemvasia, a statement we find hard to believe. Moreover, it has been claimed that ships could either cross the Ionian Sea from the Sicilian Channel or the Straits of Messina directly to Modon, or alternatively follow the coasts of Calabria, Apulia, and the Balkans, almost always taking the coastal road, Pryor, Geography, Technology and War 92-94, and the map on p. 14 with the sea-currents, the trunk routes, and prevailing winds in the Mediterranean. Neither do we agree with the interpretation given in Gerolymatou, Agores 154 and Gerolymatou, Emporikē drastēriotēta 357-358, that Willibald's ship put ashore on the left-hand side of Choo (identified with Kos) the Corinthians they had taken from Monemvasia. The phrase *inde navigantes in insulam nomine Choo et demittebant Chorintheos in sinistra parte* has elicited numerous interpretations, and the island Choo has been identified with Kea, Kos, Chios. I believe the excerpt should be translated »on leaving Monemvasia they passed Corinthians (the city of Corinth) on their port side as they sailed for Kea or Kos or Chios«. Talbot interprets it correctly but translates Choo as Chios. »Sailing from Syracuse, they crossed the Adriatic and reached the city of Monemvasia, in the land of Slavinia, and from there they sailed to Chios, leaving Corinth on the port side«, Talbot, The Hodoeporicon of Saint Willibald 151. This was of old the principal interpretation, Meyrick, Life of St. Walburge 51. Kea was adopted by Malamut, Iles de l'empire 539. 555.

27 On this confusion, see Avraméa, Magne byzantin 53-54. – Anagnostakis et al., Chōros kai enotēta 77-78.

28 Hieronymi, Epistulae 165 no. 108. – Gagzis et al., Peloponnēsos kai notia Italia 480-482. – Avraméa, Péloponnèse 43-44. 132-133.

Fig. 5 Byzantine ports, coastal sites and settlements in the Peloponnese (Greece) mentioned in the text: **1** Methone. – **2** Oinousses Islands (Sapienza, Schisa etc). – **3** Phoinikous. – **4** Korone-Asine. – **5** Korone-Petalidi. – **6** Nichoria. – **7** Five Rivers. – **8** Kalamata. – **9** Bay of Pylos. – **10** Koryphasion-Pylos. – **11** Romanou. – **12** Dialiskari. – **13** Island of Prote. – **14** Coast of Philiatra. – **15** Kyparissia-Arkadia. – **16** Pondikou. – **17** Patras. – **18** Corinth. – **19** Hierax (Gerakas). – **20** Monemvasia. – **21** Maleas. – **22** Kythera. – **23** Skala (Elos/Laconia). – **24** Tainaron. – (Background courtesy of Google Earth).

in a state of neglect, remained without doubt a compulsory transit route for sailors and travellers whom we know to have been travelling from other points on the southern Peloponnesian coast. Since the 7th century, Late Roman coastal installations with natural harbours around the Gulf of Pylos and the region of Five Rivers at Nichoria in the North West Messenian bay, into which navigable rivers flowed, experienced a decline. So, after a period of thriving Late Roman facilities, with many *villae* and pottery indicating links with the entire Mediterranean, we see coastal settlements with some kind of anchorages being abandoned, with the population withdrawing into the hinterland and settling in fortified places[29]. Although the role of environmental changes due to alluvial processes (Coryphasion-Pylos, Five Rivers) cannot be overlooked, human geography and action are crucial in these changes. The case of the abandonment of the unfortified seaport of Korone-Petalidi (with an ancient harbour and a not very strong acropolis) is typical; from the 7th century onwards, according to the archaeological data so far, there is no evidence of any activity at the site until the 10th century. The population of the area most likely sought refuge further south in the very old fortified and safer town of Asine, which was renamed Korone and also had a harbour[30]. This indicates the inhabitants' new more conservative, cautious, defensive way of confronting the sea and its shores, brought about by the absence of protection and the lack on the part of the central authority of any guarantee of the security enjoyed by the coasts over the previous years. Clearly, this does not mean that the population's recourse to large fortified harbour cities excludes the use of small coastal stations, a prevailing pattern of dispersed settlement that ports have followed since the 7th century[31]. During the 7th and 8th centuries, along the entire Messenian coast, probably only Methone and Kyparissia, which was renamed Arcadia, and later Korone-Asine, albeit to a lesser extent, retained the character of port cities with their ancient artificial harbours, whose condition, however, we are not in a position to know. From the late 8th and especially the early 9th century, after the provincial military organisation of Nikephoros I, a new period of relative security began with three active port cities in Middle Byzantine Messenia, Arcadia, Korone-Asine and Methone, with the last two becoming bishoprics under the metropolis of Patras. (**fig. 4, 5**).

The following period, that is the 9th to 11th centuries, began with Methone, Korone and Patras gaining central importance and being considerably strengthened as cities, bishoprics and ports, especially under Nikephoros I (802-811). In this way, he tried to promote seafaring and trade in the Empire, but above all to enforce the Byzantine military presence in the Ionian and Adriatic Seas, in Southern Italy and in the central Mediterranean. This is the time when Methone, like the other ports in the region, initially acquired a mainly defensive and later an offensive character for the Byzantine Empire. The ecclesiastical and administrative reorganization in the »theme« of Peloponnese and the maritime »theme« of Kephallenia essentially created a defensive and potentially offensive zone in the greater area of the Ionian[32]. Within this grouping, however, Methone has a peculiarity. Despite being protected by the islets and the islands of Oinousses, functioning as gigantic natural breakwaters, it is exposed to any kind of maritime, natural, and man-made dangers, unlike other major ports on the Byzantine Peloponnese and in Greece, such as Naupaktos, Patras and Corinth, Euripos-Chalkis, Demetrias, etc. which are relatively protected within internal seas or in deep bays (**fig. 6**). It should be noted that we know today that to the Southeast, not very far from Methone, lies the most abyssal sea of the Mediterranean where the Oinnousai Pit is located, an underwater abyss with a depth of 5121 m.

Due to its position in the 9th century and particularly from 872-878, Methone suffered raids from the Arabs of Crete, while from 879-881 it was attacked by the Arabs of Africa. It periodically served as a base for sallies by the Byzantine fleet, which under the admirals and commanders of the Byzantine

29 Lukermann/Moody, Nichoria and Vicinity 78- 82. 97-112. – Rosser/McDonald, The Byzantine Occupation: Introduction 353-356. – Davis et al., PRAP 454-494. – Alcock et al., PRAP 147-209. – Anagnostakis, Paraktioi oikismoi 143-149. 154-155. – Kosmopoulos, Messēniakē gē 408-414.

30 Anagnostakis, Metonomasies 45-59. – See also Anagnostakis, Messēnia, entry Korōnē-Petalidi, and Korōnē-Asinē.

31 Veikou, Byzantine ports and harbours 45-48.

32 Soustal/Koder, Nikopolis and Kephallēnia 50-59. – On the army and the fleet during the reorganisation of the western part of the empire and especially in the Peloponnese and Kephallenia with the presence of oarsmen Carabisians and Mardaites, see Treadgold, Byzantium and its Army 66-75.

Fig. 6 Byzantine sites, ports and harbours mentioned in the text (apart from those on the Peloponnese): **1** Pachynus (Porto Palo). – **2** Syracuse. – **3** Messina. – **4** Taranto. – **5** Bari. – **6** Methone. – **7** Naupaktos. – **8** Euripos-Chalkis. – **9** Demetrias. – **10** Constantinople. – **11** Smyrna. – **12** Ephesos. – **13** Theologos. – **14** Phygela. – **15** Myra. – (Background courtesy of Google Earth).

navy (*droungarios tou ploimou*) Niketas Ooryphas and Nasar successfully dealt with Arab aggressiveness in the area[33]. The sources repeatedly mention the mobility of the Byzantine fleet in the Peloponnese and in Methone, but without any reference to the operation or use of their ports, which is implicitly assumed. Besides, Byzantine sources rarely give a description of a specific port, and it is our task, insofar the text allows, to extract information from brief references to sailings and moorings, or from the context. As regards the events of 880, the 10th-century historian Joseph Genesios alludes to the fact that the emperor sent the patrician and admiral Nasar on a naval expedition (*naustolia*) to Methone[34]. Correspondingly, Konstantinos Porphyrogennitos in the *Vita Basilii* mentions that »The emperor […] outfitted many (*plēthos)* triremes, biremes and other fast-sailing vessels and dispatched the commander of the navy with an impressive force (*dynameōs adras*) […] Nasar speedily sailed off, enjoyed favourable winds, and reached Methone in a short time«[35]. At first glance, one might think that this fleet has docked at the port of Methone. But this is impossible, as according to some accounts Nasar's fleet consisted of many ships, about 45 or more, a number that corresponds to the *plēthos* and »impressive force« mentioned by Porphyrogennitos. A fleet of 45 vessels is referred to in the *Life of St. Elias the Younger,* while 140 ships are specified in a later Arabic source (Al-Bayan al-Mughrib), information considered to be exorbitant[36]. Again, the question arises, as in the case of Belisarios' fleet, where did this fleet drop anchor? Perhaps the question is ultimately superfluous if the assumption that this fleet could be received by a port is excluded (as it clearly must be) from the frame of the research.

It is commonly known in research (and we know of numerous other cases in the same era) that prior to or during operations a large Byzantine fleet would gather or anchor in natural bases, in bays. A few examples suffice. One of the most characteristic is the report that in 878 a relatively large fleet moored at Hierax (ancient Zarax and later Gerakas) in the Peloponnese, just above Monemvasia, during Adrianos' campaign to support Syracuse under siege by the Arabs. Genesios relates in fact that Adrianos with a large fleet, literally a fleet with many men (*polyandron nautikon*), reached the Peloponnese and docked at a port (*limeni proslimeneuetai*) called Hierax, while Porphyrogennitos reports that Adrianos had the ships cast anchor at Monemvasia in the harbour called Hierax (*en tōi limeni tōi kaloumenōi Hierakos prosormisas tas naus*)[37]. In addition, corresponding massings of fleets took place during the campaigns against the Arabs of Crete in the Aegean seaports of Asia Minor, opposite Samos at *Kēpoi,* at the mouth of the Maeander river in 866, or at Phygela in the bay of Ephesos and present-day Kusadasi in 911 (about 177 vessels) and in 960 under Nikephoros Phocas with the enormous number of reportedly 3300-3360 ships[38].

33 Vlysidou, Symbolē 301-315. – Pryor/Jeffreys, The Age of the ΔΡΟΜΩΝ 65-66.
34 Genesios 84.2-6 Book 4 § 34.
35 Vita Basilii imperatoris 220 §62. 8-10: μετὰ δυνάμεως ἐκπέμπει ἀδρᾶς, τριήρων τε καὶ διήρων καὶ ἄλλων νεῶν ταχυναυτουσῶν πλῆθος ἐξαρτυσάμενος.
36 Vita s. Eliae iun. 36-37, § 25. 481-484. – Vasiliev, Byzance et les Arabes 96 n. 1.
37 Genesios, Book 4 §33.2-5: ἐξεπεπόμφει ὁ αὐτοκράτωρ Ἀδριανὸν ἄνδρα γενναῖον σὺν ναυτικῷ πολυάνδρῳ […] ὃς κατιὼν μέχρι Πελοποννήσου Ἱέρακι οὕτω κατονομαζομένῳ λιμένι προσλιμενεύεται. – Vita Basilii imperatoris 238 §69.15-16: κατῆλθεν ἄχρι Πελοποννήσου, ἐν Μονεμβασίᾳ δὲ ἐν τῷ λιμένι τῷ καλουμένῳ Ἱέρακος προσορμίσας τὰς ναῦς. – Anagnostakis, Adrianos 208-209 n. 26. – Yet it is considered »extremely improbable, meteorologically impossible in fact, for a fleet to be prevented by contrary winds from rounding Cape Maleas into the Ionian Sea for 50 continuous days«, see Pryor/Jeffreys, The Age of the ΔΡΟΜΩΝ 65, n. 113.
38 Genesios, Book 4 §20. – Theophanes Continuatus VI, 204-205. 475. – Constantini Porphyrogeniti De Cerimoniis 658. – Attaleiates, Historia 28.2. – Ahrweiler, Byzance et la mer 112-115.

In all these cases, the sources use terms related either to a bay refuge and shelter or to a port. Phygela is a *hormētērion* and a *katatopion,* which respectively mean a launching point, an anchorage, and a kind of entrepôt or a naval base with facilities for repairing ships[39]. Hierax is called *limēn*, harbour, into which the fleet *proslimeneuetai,* i. e. sails into harbour, or *prosormizetai,* i. e. drops anchor, but it clearly has nothing to do with a port. It should be noted that the naval and, in this case, port terminology used by Byzantine historians is usually dictated by the level of style they choose, usually that of the ancient writers, and therefore the terminology is only minimally or partially related to the current, popular terminology, as we know it from other sources, *Taktika*, *Naumachika*, and *De cerimoniis*[40]. As regards the aforementioned cases of ports, it is unclear whether they were merely starting points or permanent naval bases for the Byzantine fleet, but the ports existing there provided facilities. In contrast to the case of Hierax already called by Pausanias *eulimenon chōrion*, place with good harbour, and which is primarily a natural port, although it is called *limēn* (*autophyēs limēn,* αὐτοφυής λιμήν as Malalas would say)[41], the case of Methone appears to have all the features of a complex natural base as well as a constructed port, regardless of whether it is simplistically claimed that there is »no port prior to Venetian occupation« but just a fortified coastal settlement[42]. However, certain facilities for repairing and building ships in Hierax should not be overlooked, when, according to one view, Mount Parnon provided cypress wood in abundance, as another port further to the north indicates by its modern name, Kyparissi[43] (**fig. 5**). The port of Hierax, unlike Monemvasia, was suitable for mooring of a large fleet and was also a haven for simple ships, as in the case of the vessel carrying the relic of St. Nicholas from Myra in about 1087, which reportedly passed through Methone at the time; more specifically, Hierax-Gerakas is once again called *limēn* where the ship carrying the relic docks (*en tō limeni Geraka*), before putting to sea, bypassing Monemvasia and sailing to Methone to take on supplies[44].

Methone undoubtedly provided facilities to the Byzantine fleet (supplies including shipbuilding and repairs), and from this aspect the port, combined with the bay, had a double or even triple function of commercial, transport and military nature. Moreover, as we know, maritime activity (naval and mercantile) did not necessitate artificial ports[45]. Besides, fleets as large as Belisarios' and Nasar's had to have or wait for supplies, a fact that required the movement of supply boats in the bay and in the harbour. Additionally, in the case of Nasar, as in the case of Belisarios' fleet, what had happened in Methone was caused, among other things, by the fact that many soldiers had disembarked in the harbour or on the shores, and that an expeditionary force was present for a long time in a small maritime city. Therefore, as expected, major problems occurred in Methone, which after all served as a naval base where the fleet gathered, organised and launched campaigns. On this occasion, many oarsmen from Nasar's fleet deserted, a situation that urgently needed to be fixed. So when all the deserters had been caught, a plan was concocted with the involvement of the emperor to prevent further desertions and to intimidate all those rowers who refused to take part in the campaign against the Arabs. And to avoid murdering compatriots, people of the same origin (*homophylōn phonou*), thirty captured Saracens and convicted malefactors, made unrecognisable with soot-smeared faces and lowered beards and hair, were secretly transferred from Constantinople. They were impaled (*aneskolopisen*) in Methone on thirty erected gallows (*phourkas*) as if they were deserted seaman[46]. Genesios says the order was given to build wooden spikes on the spot (*peri ton topon*), apparently in places (beach, port) where the punishment would be easily seen by the soldiers. He also provides information about the social stratification of Methone, revealing that neither the local nobles nor the common people (*eghōrioi archēgetai*, *laos koinotētos)* and not even the commander of the fleet were let in on the secret of this ingenious plan[47].

Regarding the nature of the facilities Methone provided to the Byzantine fleet, as already noted, there is no information from the sources and archaeological research that Methone had storehouses and dockyards *(exartyseis* as the Byzantines called them[48]) for repairing ships. This however must not be

39 The word κατατόπιον and the verb λιμενεύω and λιμενεύομαι or προσλιμενεύομαι are of Byzantine origin and are used only by writers from the Middle Byzantine period and later. We know that in 721 Willibald visited Phygela, as we have already said, as it had taken over from the port of Ephesos which had become unusable due to silting, Foss, Ephesus after Antiquity 123. See also Preiser-Kapeller, Harbours and Maritime Networks 5. Later in the 13th century, it is called *emporion*, place of trade. On *emporion* and *katatopion*, Gerolymatou, Agores 276-278.

40 On this subject, in addition to the notes and introductions in the editions of *Naumachika*, see Ahrweiler, Byzance et la mer 409-439. – Koder, Lebensraum 70-73. – Pryor / Jeffreys, The Age of the ΔΡΟΜΩΝ.

41 Pausanias III 24.1 called it *Zarax eulimenon chōrion*, place with good harbour. – Ioannes Malalas, Chronographia chapter 11 § 3 (p. 205, ln. 34), in which an ὁρμητήριον, a base, is described as αὐτοφυής λιμήν, a natural port. – Ahrweiler, Byzance et la mer 420-421. – In ancient and Byzantine literature, ports are described accordingly as natural or manmade, artificial. – See also Gertwagen, Artificial ports.

42 Gertwagen, Artificial ports 166-167.

43 Kalligas, Byzantine Monemvasia 53-54. – Kalligas, Monemvasia 10-13. 28. 107. – The later name Porto Botte (the harbour of butts, wine casks) could indicate the continuous exploitation of wood from the area for shipbuilding and other carpentry.

44 Anonymous, Translation of the relics of St Nicholas p. 444. 20-22. – Gagtzis et al., Peloponnēsos kai notia Italia 481-483. – Kalligas, Monemvasia 22.

45 Gertwagen, Artificial ports 164.

46 Genesios 84, Book 4 § 34. – Vita Basilii imperatoris 222-224 § 62 (φοῦρκας στῆναι […] ἀνεσκολόπισεν 224 § 62. 42-43). – Vasiliev, Byzance et les Arabes 97. This desertion has been explained as being caused not by a fear of the Arabs, as Byzantine historians report, but as an act of opposition, mainly defiance and disagreement with the policy of the emperor Basileios I towards the West, see Vlysidou, Symbolē 301-315. – Vlysidou, Ypochōrēsē 308-314.

47 Genesios 84.8-26, Book 4 §34: διατέτακται περὶ τὸν τόπον ἀνασκολοπισμὸν ἱδρύσασθαι ξυλουργήματος καὶ τοὺς δραπέτας ἐν αὐτοῖς ἀνασκολοπίσαι […] καὶ μή τινα τῶν ἐγχωρίων ἀρχηγετῶν εἴτε λαοῦ τῆς κοινότητος, ἀλλὰ μήτε αὐτὸν προηγέτην στρατοῦ τῶν ὁμοίων τῆς ἐχεμυθίας ἀπολιμπάνεσθαι· καὶ δεσμῶται πάντες ἀνήρτηντο σκόλοψιν. – On archontes of maritimes themes and of naval bases, Ahrweiler, Byzance et la mer 53-90.

48 On *neōria* and *exartyseis*, Ahrweiler, Byzance et la mer 420-425.

ruled out. We know that after the oarsmen had been brought to heel and the Byzantine fleet had sallied forth against the Arabs, engaging in a naval battle off the western coast of the Peloponnese between Zakynthos and Kephallenia in the summer of 880, Nasar burnt the Saracens' fleet with Greek fire, »War Fire« (*polemikōi pyri*)[49], and brought the ships that escaped the fire, and that could have been damaged and needed repairs as prize to Methone. These prizes were presented by Nasar as a thank offering to the church of God in Methone (*charistēria edōrēsato*)[50]. I believe that the reference to the church of God in Methone (*en Methōnē tou theou ekklesia*) most likely points not to a specific church but to the church in general, namely the diocese of Methone. On the contrary, some scholars believe that it refers to the episcopal church of Methone, the church of St. John the Theologian[51]. John the Theologian is mentioned and depicted on the seals of the bishop of Methone[52], and it must be borne in mind that the initial choice of the Theologian as protector could be related to the fact that Methone has always been a port of call on the pilgrimage sea routes that led to the port and to the centre of worship of St. John the Theologian at Ephesos. I believe that the important character of Methone as the naval base of the Byzantine fleet, much more important than that of Korone or other ports in the Western Peloponnese, is revealed by the gratitude shown by this special gift of ships made by an admiral.

Apart from highlighting Methone as a naval base, information was transmitted during this period about travellers whose ship passed through or who landed there, without the sources referring to a specific port. This was also the case with St. Blasios in the late 9th century (896/897), who, on his voyage from Rome to Constantinople was forced by the captain to disembark together with his fellow passengers in *Mothone*. On arrival in Methone, the captain probably received a more interesting offer and the ship, which then continued to Demetrias presumably for commercial reasons, was captured by Arabs. In this incident Methone was a port of call on the sea, travel and trade route Italy – Methone – Demetrias – Constantinople[53].

So, from the time of Nikephoros I up to the 11th century, Methone was mainly a naval base (sometimes by chance and sometimes permanent, according to the needs and operations of the navy) – namely a port of call where the Byzantine fleet often took refuge during its expeditions against the Arabs in the West and where it probably made use of the port facilities. This facet of its character is the main reason why since the 11th century, it was constantly a target until the final destruction of the castle and apparently of the port by the Venetians, when part of the Byzantine war fleet seems to have been permanently based in Methone, causing problems to the pirates and Western ships for their uncontrolled actions[54]. This convenient position of Methone, well-stocked for a fleet base, is perhaps reflected by an Arabic geographical treatise, well-known in its English translation as the *Book of Curiosities*, written in the first half of the 11th century. The descriptions of coastal towns and islands in the Byzantine Empire, while giving the lengths and breadths of bays and referring to seas and castles, hardly ever mention ports and anchorages. The only exception is the reference to two naval bases protected from the wind, one of which is called a port and is located in the sea of *Mathûnah* (of Methone). More specifically, it states that in the bay of Methone lies the island of *Muzawwad* with a port sheltered from the winds. Needless to say, though, each leeward and sheltered bay that is suitable for mooring can be considered a port, a safe anchorage, as seen in the case of Hierax-Gerakas. Moreover, according to the translator, the Arabic name of the island of Muzawwad indicates a »suitable« or »convenient« or »well-stocked place« and this probably refers to the island of Sapienza with its bays[55]. Some other sources of the 11th century report or allude to the port of Methone: the port is alluded to in the chrysobulls issued by the Komnenos dynasty (from 1082 onwards) which gave privileges to the Venetians for their free trade and movement (with references to tax exemptions in ports, namely to *pacti limen(i)atici, poriatici* or *porteatici*)[56]. In about 1087, it is briefly mentioned that the ship carrying the relic of St. Nicholas from Myra to Bari passed through Methone after an intermediate stop at the port of Gerakas (*en tō limeni Geraka*)[57]. Unlike Gerakas, which is called a port (*limēn*), the port of Methone is not mentioned; it is simply stated that the travel supplies were purchased from Methone. Thus, in this case, we are informed indirectly about a port town in the role of a place of supply.

The history of Methone, of its castle and harbour, however, held an unpleasant surprise for us during the time of the Komnenoi. This is the fourth and final Byzantine period in the area, and I call it the period of destruction and desolation for Methone, about which little is known or has been studied independently. Even though we are familiar with the historical events that caused the destruction, albeit with the

49 This detail about the Greek Fire is given by Genesios, 4 § 34, ln. 44.

50 Vita Basilii imperatoris 24-226 § 63: τῇ ἐν Μεθώνῃ τοῦ θεοῦ ἐκκλησίᾳ […] ὡς χαριστήρια ἐδωρήσατο. – Vasiliev, Byzance et les Arabes 97. – Vlysidou, Ypochōrēsē 314. – Wortley, Skylitzes 150.

51 Wortley, Skylitzes 150 n. 133 (Cheynet).

52 Nesbitt/Oikonomides, Seals 85-87. – Cotsonis, Saints and Cult Centers 13-14. – Anagnostakis, Episkopes 117-118. – Anagnostakis, Monemvasia-Lakedaimōn 113-114.

53 Vita s. Blasii, coll. 666-667. – Gerolymatou, Agores 154-155.

54 Chronicle of the Morea, vv. 1690-1694. This is an important interpretation of the Chronicle of Morea which gives the reasons for the destruction of Methone in 1125 by the Venetians.

55 Book of Curiosities 486. 487. – On the bays, anchorages, Byzantine constructions and findings in Sapienza and the surrounding islands, see Kavvadia-Spondyli, Pylia 222-224. – Biris, Chōra, Pylos, Methonē 150-171. – Biris, Methonē 143-149. – On the bays and later history of Sapienza see also Nanetti, Sea of Sapienza 12-63.

56 TT I, 53 no. 23; 118-119 no. 51; 184 no. 70; 265 no. 85; 279. 469 no. 121. – I trattati con Bizanzio 40 nos. 2. 8; 130 nos. 11. 15.

57 Anonymous, Translation of the relics of St Nicholas p. 444. 21-22. – Gagtzis et al., Peloponnēsos kai notia Italia 481-483.

general statements of modern historiography concerning Peloponnesian trade and product handling (in which Methone is recorded as being part of a generally thriving trade climate in the Peloponnese and is considered a commercially active port during this period), I was unable to substantiate this data, beyond two ambiguous references. On the contrary, all the information about the entire 12th century points to a picture of neglect. There may have been already a serious problem with the state of the castle walls at the end of the 11th century, a situation that kindled the Byzantines' interest in repairs. The reading and interpretation of a fragmentarily preserved uncial inscription on a marble slab (today in the Archaeological Museum of Messenia), also bearing a fragmentarily preserved date, probably 1084/1085, refer to Normans, to *Kratiston Komninon* (in this transliteration we reproduce the orthography), and to repairs by a certain Theophylaktos. The inscription implies the construction or repair of a circular defensive wall (*toichō kyklōsas)* in a tower, fort or most likely in the castle. It probably refers to the reinforcement of the castle of Methone in an age when the Normans and the Venetians were becoming more and more aggressive in the Adriatic and the Ionian Sea[58]. Robert Guiscard occupied Corfu and Kephallenia in 1084, the same time as the inscription dates. From August 1122 to the winter of 1123, the Doge of Venice Domenico Michiel led the Venetian fleet to aid the Kingdom of Jerusalem and laid siege to Corfu over winter before reaching Methone. It is not certain whether the Venetians destroyed the castle and evidently the port of Methone at that time, or whether it happened during their return journey from the Holy Land in 1124-1125. It is considered more probable to have occurred before June 1125, when the Doge had already returned to Venice, having looted several islands in the Aegean, and for sure during the period when John II Komnenos refused to renew their trading privileges that also concerned the port of Methone – privileges the emperor ultimately reinstated in 1126[59]. That the Venetians destroyed Methone because the port had become an active base for the Byzantine fleet, which sallied forth to capture or harass the Venetian ships, is reported by various later sources, such as the Chronicle of Morea[60]. However, a ruined port (let alone a bay like that at Methone) could still be partially suitable for small boats. Only thus it can be explained that despite repeated references to the absolute devastation and destruction of Methone, there are reports of moorings and simple use of the harbour or its shore and obviously its bay throughout the 12th century and during the years of Frankish rule. In the following accounts of the mooring and the use of the bay or the harbour of Methone even after its destruction, we should bear in mind research findings on the use of natural havens: »maritime activity, naval and mercantile, was carried out in natural havens or harbours or along the coasts. Maritime activity did not necessitate artificial ports and the coastal settlement could have functioned as a port town«[61].

In 1126, after the destruction, it is reported that Bohemond II of Antioch passed through Methone on his way from Corfu to Jerusalem, where he intended to lay claim to the principality of Antioch[62]. In the same year, according to the account of the Bishop of Catania Mauritius (1124-1130), two Normans from Sicily and one Calabrian stole the relic of St. Agatha from Constantinople and secretly took it to Italy, via Smyrna-Corinth (where they changed ship) and Methone, where they met a group of merchants with whom they crossed to Taranto. It is interesting that (even if this is due to the literary style) it is not the port that is mentioned, but the shore, the coast of Methone: *Mothonae litori applicuit*[63]. The sea route used by the Normans that is described in this account and the presence of merchants in Methone indicate general activity in the area, indeed at a time when the castle and obviously the port had most likely been destroyed by the Venetians. The next destruction of Methone in 1147/8 is attributed to the Normans. Although only reported in later sources and confused with that carried out by the Venetians, it is believed that it really happened on account of Roger's continuing aggression on the Peloponnesian coasts in 1147/8, which, among other things, led the Byzantines into an alliance with the Venetians against him[64].

In 1160, the Bishop of Methone Nicholas in his speech to the emperor Manuel Komnenos described the triangular city, the sea girt Methone (*trigōnos, amphithalassos*) as an empty, deserted city (*erēmopolis*): »Methone is falsely called a city and it should rather be called an *erēmopolis,* without citizens, without walls and without the security (*asphaleia*) that comes from the walls«[65]. In this speech, there is no mention of a port,

58 Kappas, Epigraphē 56-57.

59 Bon, Péloponnèse 82-84. – Nicol, Byzantium and Venice 79-80. – Gertwagen, Artificial ports 175.

60 Chronicle of Morea, vv. 1690-1694.

61 Gertwagen, Artificial ports 164. – In this context Preiser-Kapeller posed some interesting questions referring to Horden/Purcell, The Corrupting Sea 391-400 »Why, for example, did some coastal settlements flourish as commercial towns without artificial ports?«, Preiser-Kapeller, Harbours and Maritime Networks 7. – See also for this period the heuristica and exegesis of the sources Nanetti, Atlante 23-29. 43-50. 92. 109. 112. 132. 134. 158.

62 Historia Hierosolymitana (1095-1127) 657. 807.

63 Epistola Mauritii Catanensis episcopi 55. – Historia translationis corporis s. Agathae 638C-D. – von Falkenhausen, Taranto 459-460. – Oldfield, Sanctity and Pilgrimage 154.

64 On this act of destruction, see Rogerus Hovedensis 199. 203 (Stubbs). 533A. 534D (Delisle) and on the hostility and plundering by the Venetians and Norman on the Greek peninsula during the same period, Bon, Péloponnèse 83-84. – Ahrweiler, Byzance et la mer 240-251. – Nicol, Byzantium and Venice 79-85. 150-158. – Magdalino, Manuel I Komnenos 137. – Gertwagen, Artificial ports 175. – See also Nanetti, Opere difensive di Methone 9. – Nanetti, Modalità 261-262 n. 18. – Nanetti, Atlante 101. 123. 147, claims the presence of Normans in 1185/6 in the area of Methone and the settlement of Benedictine monks in Sapienza.

65 This description provides interesting topographical information: Μεθώνη πόλις ([…] ἦν γὰρ ὅτε πόλις ἦν, νῦν δέ ἐστιν ἐρημόπολς, ἐρήμη πολιτῶν, ἐρήμη τειχῶν καὶ τῆς ἀπὸ τειχῶν ἀσφαλείας […]) πόλις τὸ σχῆμα, τρίγωνος τὴν θέσιν, τὰς περὶ τὴν κορυφαίαν γωνίαν πλευρὰς ἀμφιθάλλασος, ὡς μόνον τὴν διατείνουσαν πρὸς ἤπειρον ἐπανοίγουσα., see Nicholas of Methone, Logos epinikios 1-2. We use the translation of this extract by Angelou, Nicholas of Methone XII. – On the personality and work of Nicholas, see Angelou Nicholas of Methone IX-XXIII, LXV-LXVI.

nor of a blow to the economy and trade; instead, the lack of security (*asphaleia*) due to the destroyed walls is emphasised above all. Knowing that the Eastern seaside walls of Methone were directly connected to the harbour, these words about the lack of security are another argument in favour of the academic statement linking the existence of fortified ports to security for the town and its people and not for commercial reasons or anchorage facilities[66]. This description by the bishop of Methone most likely reflects the situation after the two great catastrophes, the destruction by the Venetians in 1125 and by the Normans under Roger of Sicily in 1147/1148. Although sources about the destruction of Methone reveal nothing about the port but allude only to the walls that were destroyed, the port probably had the same fate as the castle. Moreover, after such desolation caused by repeated acts of destruction by Normans, Venetians, and pirates during the 12th century, I believe that silting also contributed to the dysfunction and partial abandonment of the port, a problem that in the years that followed was described in greater detail by the Venetian administration. It is probably this neglect that is implied in the *Synaxarion of Leon the Young* (written in the middle of the century by Bishop Nicholas and preserved with subsequent additions and changes)[67]. The sickened Calabrian Leo died on his way to Jerusalem »when he reached a port (*en tini limeni*) in the Peloponnese located near the city of Methone (*pros to asty Methōnēs*)« and there, at a place called Rosso Choma (*en tini topō kaloumenō Rosō Chōmati*), sailors went ashore and buried the deceased where, in the mid-12th century, Bishop Nicholas discovered the relic. Rosso Choma (meaning Red Earth) has been identified as a beach not far east of Methone, the present-day Kokkinia, a name with the same meaning due to the red earth sliding down the slope to the shore[68] (**fig. 7**). At Kokkinia there is a small bay within the bay of Methone and, due to landslides and coastal erosion on its shores, tombs, and the remains of buildings with mosaic floors have been exposed, parts of which have been swept away by the sea[69]. In one such location, remains were found in a grave and canonized by Nicholas who wished in this way to boost the morale of the faithful in his ruined diocese. Although it is assumed that the journey, death, and burial of Leo occurred many years before the mid-12th century when the relic was discovered, the story of his burial and discovery surely reflect the maritime and topographical reality of a 12th-century catastrophe. It is also fascinating that two 12th-century sources (the one concerning the transfer of the relics of St. Agatha and the other concerning the discovery of the relic of Leo) point out that travellers disembarked not

Fig. 7 Satellite image depicting the geomorphology of the bay of Methone, between the island of Nisakouli/Kouloura and the coast of Kokkinia: **1** port of Methone. – **2** littoral of the bay (Roman wall, kiln and sherds). – **3** eroding sea cliff (**3a** Late Roman houses, mosaics, sherds, Byzantine ruins). – **4** Hagios Ilias/Palioi Aïliades. – **5** Rosso Choma/Kokkinia. – **6** Nisakouli/Kouloura. – (Background courtesy of Google Earth).

in the port, but somewhere on the shore of the bay or on the beach near Methone. Probably in Leo's case, *limēn* means anchorage and refers to part of the bay of Methone, to the east of the castle and the town, and between the island of Nisakouli/Kouloura and the coast of Kokkinia.

The question arises as to the condition of the port of a ruined and desolate city and of a castle whose walls, directly connected to the port, are often described as destroyed. So did the port in this conditino allow cargo ships to dock? I very much doubt it, but it cannot be excluded, as vessels could always approach the bay and small ships could use part of the port and the shore. Was there perhaps some handling of goods at other points on the coast in the bay of Methone? However, it is difficult to speak of a commercial port in the 12th century; I believe this becomes clear from the Venetian documents of merchants. Thus, throughout the entire 12th century, a century known for the remarkable development in the Peloponnese and its commodity trade, there is no mention of trade in the port of Methone. More specifically between 1088 and 1200, while there are about 50 Venetian documents containing references to the trade in Peloponnesian products and involvement in commercial affairs in Corinth (22 documents), Sparta (12 documents), the rest from Korone and Thebes, we have only one document dated 1201 concerning Methone[70]. I wonder if this single one is sufficient to prove commercial activity at any scale in the port or its surrounding area: Pisan merchants sell oil in

66 Gertwagen, Artificial ports 174-175.

67 On the manuscripts and the text, Follieri, Santi di Metone 403-404. 441-443, on the persons and the locations referred to in the Synaxarion, 406-407.

68 Synaxarion Leontos 442.24-29: περί που τὴν Πελοπόννησον ἔν τινι λιμένι καταντήσας πρὸς τὸ ἄστυ Μεθώνης διακειμένῳ […] ἐξεδήμησεν. οἱ δὲ ναυτικοὶ τῆς νηὸς ἀποβάντες ἐντίμως ἔθαψαν τὸ τίμιον αὐτοῦ λείψανον ἔν τινι τόπῳ καλουμένῳ Ῥώσῳ Χώματι. – On the identification of the location, see Avraméa, Géographie historique 25-29.

69 A unique description of the landslides and coastal erosion of the shores of Methone is given by Arethas, Marginalia 211: καὶ κατὰ Μεθώνην πάλιν πρὸς τῇ τῆς πόλεως ἐπεισόδῳ κατὰ τὸ βόριον μέρος ὁ ὑπερτείνων τὴν πρὸς τῷ τείχει τῆς πόλεως πεδιάδα βουνὸς σπάσματι διαστὰς μαρτύριον παρέχει τοῦ ποτὲ θάλατταν εἶναι τὰ ἐν τῷ βάθει τοῦ σπάσματος ἐνορώμενα λέπη κτενῶν καὶ κηρυκίων καὶ κοχλίων καὶ τῆς τοιαύτης δημιουργίας εἴδη ἐμπεπαρμένα. – On this see Anagnostakis, Messenia, entry Methone.

70 Documenti del commercio veneziano. – Storia documentata di Venezia. – Nanetti, Patto 41-42 n. 109.

Methone to Venetians and are paid for it in Constantinople according to an agreement made in Methone[71]. There is even earlier evidence from 1145: a marriage document in Rialto mentions various items (mainly clothing) originating from Methone, without this proving the use of a commercial port[72].

Even at the end of the century, visitors still report a destroyed and devastated city, as in 1191, when the English chronicler Roger of Howden notes that Methone (*Muszim* or *Muszun*) had been deserted after Roger of Sicily destroyed it because of the pirates there (*civitas deserta nunc*). He places it in fact outside the bay of Oitylo (*in exitu gulfi de Witun*) and calls it an old episcopal city (*civitas episcopalis antiqua, deserta nunc*)[73]. In November 1198 (after the previous renewals of privileges to the Venetians in 1126, 1147 and 1187), Alexios III Angelos, hoping for the support of the Venetians, renewed their commercial privileges in the Byzantine state and apparently in the ports of Methone and Korone by a chrysobull. However, the Genoese pirate Leone Vetrano, who probably destroyed Methone in 1199, used the bases of Korone and Methone from this date onwards[74]. In about 1200 (or later) an Italian portolan chart mentions the bay and city, *civitas* and *sinus Motonis*, *in capite occidentali*[75]. Lastly, in 1204 the *cité de Mouton* was occupied by the Franks who found it and described it as being in ruins. Villehardouin twice refers to the *port de Mouton* (I do not know if port here means anchorage, place of shelter, refuge) and tells how after Syria and Constantinople the weather and adventure brought them to an anchorage at Methone, which he describes as having been in ruins for a long time, *qui de lonc tens ere abatue*[76].

The *Chronicle of Morea*, referring to the Frankish conquest during the years 1204-1205, does not include Methone among the castles of the Western Peloponnese that have a port, and which had to be immediately seized (namely Pondikou, Arkadia, Kalamata, Korone, »four castles on the shore that also have ports (*limiōnas*)«. And while it reckons that the least powerful, the insignificant *(achamnon)* castle of Kalamata had a *limiōnas* (in this case it is most likely a reference to a bay, a kind of anchorage at the innermost point of a bay since a coastal settlement could have functioned as port town) and counts it among the Peloponnesian coastal fortresses with a port, it does not include Methone. This can probably be explained either by the fact that Methone had already been occupied by the Franks or due to the great damage it had suffered. The *Chronicle* at this point states that since the Byzantines (*Rōmaioi*) had previously kept their *pleutika*, their ships, there and obstructed or preyed upon Venetian vessels, the Venetians had destroyed the castle, which was now deserted (*erēmon*) and completely ruined (*holo chalasmeno*)[77]. This is a very significant testimony not so much about the generally known piracy in the region but about the use by the Byzantine *pleutika* of the port or the bay of Methone as a naval base and starting point for all kinds of naval sorties, even piratical ones. The Venetians appear in this account to have aimed primarily at destroying the port. Yet again, the case of Methone (port and castle) confirms the view that the construction and fortification of ports and town ports by Byzantines and later by Venetians are mainly an act of securing the town and its people and not for commercial reasons[78]. Consequently, the destruction of ports is intended primarily to affect the security of a place and secondly its trade.

The picture of Methone presented to us by both Villehardouin and the *Chronicle of Morea* is the same as that painted by all the sources throughout the 12th century (the most typical being that of Nicholas of Methone): a picture of a ruined and almost deserted city, counting little as a port (perhaps only used if the need occurred). Of importance now were the bay and the islands, mainly Sapienza, as natural bases with a unique strategic position. However, a letter written by Pope Innocent and dated 4 November 1204 gave an account of the Genoese pirate Guglielmo Porco who, with seven ships in the port of Methone (*cum septem galeis in portu de Mothone*), plundered a Venetian vessel carrying valuable objects as gifts from the Latin Emperor of Constantinople to the Pope[79]. It is presumed that the Franks repaired the walls from 1205 to 1207[80] but that the Venetians, according to later information, destroyed them again when they finally became masters of Methone in 1207: *si firent abatre a terre li murs et les forteresses*[81].

Following the conquest of Methone by the Venetians in 1207, Geoffrey I of Villehardouin, the prince of the Frankish principality of Achaea, conclusively ceded Methone and Ko-

71 Documenti del commercio veneziano, no. 456. It is claimed that until 1207 the Venetians did not have a church in Methone, as they had in Sparta, Corinth, the churches there dedicated to St. Nicholas that functioned as *mercationis loca*, Borsari, Venezia e Bisanzio 56 n. 118; 103 n. 165. – Nanetti, Patto 41-42 n. 109 and 47-50. – On the implication of Methone in Pelponnesian trade, see Gerolymatou, Agores 168. 257. – Jacoby, Rural Exploitation 234-238. – Concerning the olive oil trade in Sparta, Armstrong believes that olives were processed close to Skala, an anchorage in Elos, south of Sparta, Armstrong, Merchants of Venice at Sparta 316-317 but also see objections put forward by Jacoby, Rural Exploitation 235, n. 173.

72 Storia documentata di Venezia 405. – Nanetti, Patto 41-42 n. 109.

73 Rogerus Hovedensis 199. 203 (Stubbs); 533A. 534D (Delisle).

74 Bon, Péloponnèse 170 n. 2. – Nicol, Byzantium and Venice 156. – Gertwagen, Artificial ports 174.

75 Liber de existencia riveriarum 113.88; 148.1256; 148.1262; 149.1297; 157.1611.

76 Villehardouin, La conquête de Constantinople 2, 138-140 § 328-329. – Due to the geostrategic importance of Methone, the Frankish chroniclers in the first half of the 13th century refer to the Peloponnese as »the island of Methone«, *insula Montionis* (Chronica Albrici Monachi 906) or *l'isle de Mosson* (Robert de Clari, Conquête 105 § 111). – See also Bon, Péloponnèse 84 n. 2.

77 Chronicle of Morea, vv. 1690-1694: τὸ κάστρον ηὗραν ἔρημον, ὅλο ἦτον χαλασμένο / ·τὸ εἴχασιν χαλάσασειν ὀμπρὸς οἱ Βενετίκου/, διατὸ ἐκρατοῦσαν οἱ Ρωμαῖοι ἐκεῖ τὰ πλευτικά τους /, κ' ἐμπόδιζαν κ' ἐκούρσευαν τὰ ξύλα τῶν Βενετίκων.

78 Gertwagen, Artificial ports 174-175.

79 Innocentius III, Register 234-236 no. 147. – Fotheringham, Marco Sanudo 39-40. – Polonio, Devozioni 365-366 n. 31. – Gertwagen, Artificial ports 174. – Nanetti, Patto 34-35 n. 77.

80 Nanetti, Modalità 271. – Nanetti, Patto 27-28 n. 43.

81 Martin da Canal, Les estoires de Venise § 68. – Nanetti, Modalità 268-271.

rone to the Venetians in the Treaty of Sapienza in 1209[82]. I wonder why the treaty was signed on the island of Sapienza, off Modon, in June 1209. Was it perhaps related to the condition of the castle and the port, which despite urgent repairs after 1204 were again damaged in the conflict between the Venetians and the Franks?

One and a half centuries after the Frankish conquest, a report by the Venetian Senate from April 1358 is the most convincing confirmation for the evidence of what we have presented. The Senate states that »since the beginning of our occupation, the Castrum of Modon has always been depopulated […] because there is no port, which is the fault of this place«: *Cum a tempore quo Castrum Mothoni fuit sub dominionem et protectionem nostram, semper fuerit male populatum vel habitatum* […] *ex carensis portus deficientis dicto loco*[83].

I believe that this is the correct way to summarize the state of the port that the Venetians took over from the Byzantines, regardless of whether the Venetians themselves were responsible for this situation. The Senate's report that »there is no port (*portus deficientis*)« was used mainly as a challenge and a question in the title of my paper in which I attempted to study mainly through the sources the Byzantine port and castle of Methone.

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Summary / Zusammenfassung

Methone on the Peloponnese: a Naval Base without a Harbour? In Search of the Byzantine Port in Historical Sources

We have little information available on the Byzantine port of Methone. The remains that lie to the east of the castle belong to the ancient harbour, and small-scale Byzantine interventions can be observed on the jetties, whilst structures mainly from the period of Venetian rule are located there. The sources, in addition, do not provide detailed descriptions or other data and refer generally to ports or speak simply of an anchorage, a naval station or moorings for vessels from the commercial or naval fleets, most likely not in a port but in the Bay of Methone. The paper uses accounts from medieval sources up to the 12th century to determine (based also on the marine morphology of the area with its bays and havens) the nature of mooring in Byzantine Methone, as well as in SW Peloponnese in general.

Methone auf der Peloponnes: ein Marinestützpunkt ohne Hafen? Auf der Suche nach dem byzantinischen Hafen in historischen Quellen

Über den byzantinischen Hafen von Methone liegen uns nur wenige Informationen vor. Die Überreste, die östlich der Festung liegen, gehören zum alten Hafen, und auf den Anlegestegen können nur kleine byzantinische Eingriffe beobachtet werden, während sich dort Strukturen befinden, die hauptsächlich aus der Zeit der venezianischen Herrschaft stammen. Die Quellen enthalten außerdem keine detaillierten Beschreibungen oder sonstigen Daten und beziehen sich allgemein auf Häfen oder sprechen einfach von einem Ankerplatz, einer Marinestation oder Liegeplätzen für Schiffe der Handels- oder Marineflotten, höchstwahrscheinlich nicht in einem Hafen, sondern in der Bucht von Methone. Der Beitrag verwendet Berichte aus mittelalterlichen Quellen bis zum 12. Jahrhundert, um (auch basierend auf der Meeresmorphologie des Gebiets mit seinen Buchten und Häfen) die Art der Ankermöglichkeiten in byzantinischem Methone sowie im Südwesten des Peloponnes im Allgemeinen zu bestimmen.

Aikaterini Delaporta · Flora Karagianni

Depictions of the Byzantine Harbours of Constantinople in Early Maps and Engravings

The topography of Constantinople constitutes an extremely large field of interest for all scholars working on both secular and ecclesiastical topics. The harbours that developed during the centuries on the coastline of the capital have been the subject of several studies, especially during the last years, when our knowledge of them has been increased due to the new archaeological data that recently came up[1]. During the last decade, a series of excavations have brought to light some important information on them. In the Golden Horn, the Prosphorion[2], known even from ancient times as the »closed harbour« (Κλειστός Λιμήν), since it was protected by walls and a breakwater, has partly been excavated in the Sirkeci area, where recently the Archaeological Museums of Istanbul uncovered warehouses that, according to the excavators, used to store oil and cereals (*horrea Olearia, horrea Troadensia, horrea Valentiaca, horrea Constantiaca*)[3].

Up to now, the most extensively excavated is the Theodosius Harbour[4], which for centuries served as one of the main harbours where food and products from the Mediterranean and the Black Sea arrived at the city as cargo from merchant ships. During the excavations, a lot of information was gained on the original form of the harbour, the piers to which the ships were tied, the ships themselves (37), the sea walls for the protection of the harbour, the animals used for transportation of the products from or to the boats etc. Moreover, numerous finds coming originally from the cargo of the ships offer us a lot of information on the origin of the products that were once part of the cargoes. In the excavations there have been found plant remains, seeds and remnants of fruit plants and trees, such as figs, grapes, cherries, melon seeds, spices, olive stones, hazelnuts, and pine nuts which were spread in the sea when a strong storm hit the port or found within the amphorae, indicating that they were going to be either exported to other places, or imported to the capital[5].

Besides the archaeological excavations, maps and engravings are among the most important sources frequently used by researchers dealing with the topography of Byzantine Constantinople, because they offer us - already from the 15th century onwards - early representations of Constantinople depicting aspects of the urban organisation of the Byzantine city and its monuments. Numerous studies have been written on this particular way of depicting the city, which point out that through maps the depiction is both realistic and imaginary, both true and deceptive, with accuracies and errors, with realism and symbolism. Nonetheless, trying to discover the city's true picture is an enthralling and challenging process, which, through the study of comparative material and archaeological data, can lead to significant conclusions regarding the topography and monuments of Byzantine Constantinople.

It is known that the oldest surviving map of Constantinople has been preserved in the work of the Florentine scholar and monk Christoforo Buondelmonti. His *Liber Insularum Archipelagi* records the history of the city and its monuments and depicts it in a map that remains unique up to today, since it constitutes the first depiction of Constantinople before its fall in 1453[6] (**fig. 1**).

The original map, drawn around 1422, was destined to become the prototype for the later production of *isolarios*, or cartographic island books, which became very popular in the 15th and 16th centuries. Between 1420 and 1490 at least 60 copies were made, which in general reproduced Buondelmonti's design, although they display certain differentiations[7]. Among the very well-known copies of Buondelmonti's Constantinople, one can mention the work of Henricus Martellus Germanus, a geographer and cartographer from Nuremberg who lived in Florence between 1480 and 1496 and who also produced another *Insularium Illustratum*[8] (**fig. 2**).

The testimony of the maps is invaluable, since in all cases, despite the schematic and often abstract rendition, they offer information on the city's inner and outer walls, its piers, bridges, some of its gates and harbours. As for the Buondelmonti maps, we can observe there are no harbours depicted on the side of the Golden Horn, only the sea gates,

1 On the harbours of Byzantine Constantinople see: Daim, Häfen. – Magdalino, Harbors 11-15. – Günsenin, City's Harbors 99-105. – Janin, Ports 73-79. – Janin, Constantinople 225-244.
2 On the Prosphorion harbour see: Kislinger, Neorion und Prosphorion 91-97. – Magdalino, Harbors 13-14. – Müller-Wiener, Bildlexikon 57. – Janin, Constantinople 235.
3 Girgin, Sirkeci 98-105. – Günsenin, »City« Harbours 100-102.
4 The bibliography for the recent excavations in the Theodosius Harbour is rich, see for instance: Kocabaş, Theodosius Harbour 401-413. – Külzer, Theodosios-Hafen 35-50. – Asal, Yenikapı 5-10. – Kızıltan/Kocabaş, Theodosian Harbour 109-125.
5 Asal, Yenikapı 5-10.
6 Manners, Constantinople 73. – Barsanti, Buondelmonti 169-254.
7 Thomov, Buondelmonti 443.
8 Davies, Martellus 451-459.

In: Johannes Preiser-Kapeller · Taxiarchis G. Kolias · Falko Daim (eds), Seasides of Byzantium. Harbours and Anchorages of a Mediterranean Empire. Byzanz zwischen Orient und Okzident 21 (Mainz 2021). DOI: https://doi.org/10.11588/propylaeum.910.c12048

Fig. 1 Cristoforo Buondelmonti, Map of Constantinople. – *Liber Insularum Archipelagi*. Paris, Bibliothèque nationale de France, Département des Cartes et Plans, Ge FF 9351 Rés., fol. 37r.

Fig. 2 Henricus Martellus, flor. 1480-1496, Map of Constantinople.. – (Henricus Martellus Germanus, *Insularium illustratum* Add MS 15760: c 1490 fol. 40r).

Fig. 3 Cristoforo Buondelmonti, Constantinople. Ms. 71, Gennadius Library, (Athens), f. 36r. – (From Drakoulis, Buondelmonti).

whereas the opposite is true for the side of Marmaras, where the creators focus on depicting the harbours and omit the gates. More specifically, on the Golden Horn side there are shown the »Vlachernae Gate« / *Porta dale chorne* / Ayvansaray Kapı, the »Gate of the Platea« or »Royal / Basiliki Gate« / *Porta messi (messa)* / Unkapanı Kapısı, the »Gate of Perama / Fish-market« / *Porta Pissaria (piscaria)* / Balık pazarı Kapı and the »Gate of the Jews« *Porta Judaea* / Bahcekapı (**fig. 3**).

Later, in the 16th century, Andrea Vavassore[9] in his famous woodcut (~1530) (**fig. 4**) and George Braun with Franz Hogenberg (1572) (**fig. 5**) in their views of Constantinople published in their Atlas »Civitates Orbis Terrarum« in Cologne in 1572[10], depicted some of the gates of the walls. Their images of Constantinople are from an eastern point of view, allowing them to better illustrate the Golden Horn, add four more gates on the western side: the *Porta del Fiume*, the *Porta del Chinico* (the Hunter's Gate) / Porta ton Kynegon), the *Porta de la Farina* and the *Porta del Isole* at the point where it meets the sea of Marmaras[11]. The maps also record the commercial quarters and wharfs, which ever since the 12th century had been given to Italian settlers. The Venetians had settled near Perama, next to them and to the east were the Amalfitans,

9 Berger, Vavassore 329-355.
10 Braun / Hogenberg, Cities.
11 Berger, Vavassore 350-351.

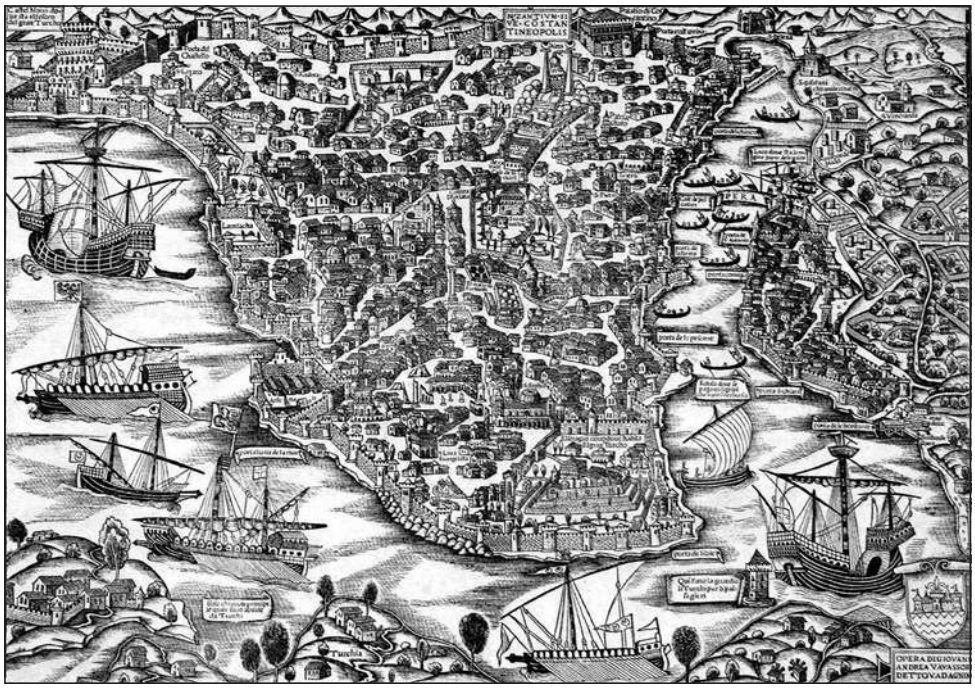

Fig. 4 View of Constantinople, Pera-Galata and the Asiatic coast by Andrea Vavassore. Woodcut, c. 1530, after an original from 1478/1479-1481. – (Bamberg, Staatsbibliothek, IV C 44, from Effenberger, Konstantinopel fig. 6).

Fig. 5 George Braun, Franz Hogenberg, Byzantium Nunc Constantinopolis, Hand Coloured map, Cologne, 1572. – (From The Barry Lawrence Ruderman Map Collection courtesy Stanford University Libraries).

the Pisani, and even more to the east, the Genoese near the old ports of Neorion and Prosphorion[12].

Correspondingly, all 16th-century maps depict the Genovese colony established after the 13th century at Pera, on the northern shore of Bosporus, in quite a lot of detail and this has been explained with the hypothesis that the creator of the original edition must have been an Italian from the Galata area. So, at the seaward walls of Pera are depicted the sea gates of S. Antonio, Porta Comego, Porta S. Chiara and Porta de le Bonborde which are not recorded in the Buondelmonti's copies, since the eastern and western sea walls of the suburb were constructed in 1435 and 1447, respectively[13].

From the side of the Sea of Marmara, the depiction becomes more detailed since the point of view from which the

12 Magdalino, Neighborhoods 209-226.

13 Drakoulis, Buondelmonti 209. It is interesting though, that even in the Düsseldorf's manuscript where the walls of Pera are presented with the additions of the 15th c., the sea gates of Pera are not recorded.

Fig. 6 Cristoforo Buondelmonti, Constantinople. Ms Rossiano 702, Biblioteca Apostolica Vaticana, f. 32ᵛ. – (From Manners, Constantinople).

Fig. 7 Cristoforo Buondelmonti, Constantinople. Ms 15, Biblioteca Correr (Venice), f. 37ʳ. – (From Manners, Constantinople).

map has been drawn has that side in the foreground. As has been often discussed, the depiction includes a representation of the city as seen from the air, from a specific SW point of view, from the opposite Asian shore, using the technique known as »bird's eye view«[14].

From the east to the west the first harbour to be depicted is the one with the inscription *Portus di Palati Imperator* (*olim palatii ipatou*), which is identified as the Imperial Harbour, outside of the sea walls, in front of the Palace of Boukoleon[15]. The harbour was artificial and thus it was called the »*man-made harbour*« (χειροποίητος λιμήν), in certain sources and according to Anna Komnene it featured a »marble and limestone-paved quay« (δι' ἐγχορήγου καί μαρμάρων)[16]. All depictions show that the harbour was delimited by two jetties forming a semicircle and protecting the inner basin where the imperial fleet was concentrated. The only exception in the Florentine monk's manuscripts is the Rossiano 702 manuscript of the Vatican Library (**fig. 6**), according to which within the palace walls there was another semi-circular structure, which was adjacent to the walls themselves[17].

Next to the harbour of Boukoleon, halfway along the coastline, there is the second harbour in the form of a closed bay, joint to the sea walls. It is the Harbour of Julian known mainly since the 9th century as the *Harbour of Sophia* / *Sophiae* / *Sophianon*[18] after the wife of Justin II who had it renovated (565-578). This harbour is the one more often mentioned in Byzantine sources for transporting passengers between the 7th and 10th centuries. It was at this harbour that Herakleios disembarked in 610[19] and from which Eustratios, the abbot of the Monastery of Agavrou on Bythinian Olympus, disembarked in the mid-9th century[20] , whilst in 996 Leon of Synada departed from there on a diplomatic mission

14 Manners, Constantinople 73.
15 Guilland, Boukoleon 187-206. – Heher, Bukoleon 67-90.
16 Anna Komnene, Alexias III 1. 5.
17 Barsanti, Buondelmonti 203-204.
18 Heher, Julianoshafen 51-66.
19 Georgios Kedrenos, Chronicon I 712 (Bekker): καὶ πολέμου συρραγέντος εἰς τὸν λιμένα τῆς Σοφίας μεταξὺ Φωκᾶ καὶ Ἡρακλείου, ἡττηθεῖς ὁ ἀλιτήριος ἔφυγεν εἰς τὰ βασίλεια.
20 The historical sources give a detailed description of the entry of the ship to the harbour. It seems that the ship was damaged due to the existence of a reef, which caused an opening to the vessel. Vita Eustratii 37 (391-392 Papadopoulos-Kerameus): Ὁ μέντοι ἡγιασμένος οὗτος πατὴρ ἐν τῷ πλοίῳ εἰσεληλυθώς, αἰσίου τοῦ πλοὸς γεγονότος, διὰ τάχους τὴν Βασιλεύουσαν κατέλαβεν· καὶ δὴ ἐν τῷ τοῦ Ἰουλιανοῦ λιμένι, ὃν δὴ Σοφίας καλεῖν ἡ συνήθεια εἴωθεν, εἰσερχομένου τοῦ πλοίου, βραχεῖ τινι ὑφάλῳ ἐπιδραμόντος, ὀπὴν ὑπέστη δυναμένην αὐθωρὸν αὐτὸ καταποντίσαι. Τῶν οὖν ἐν αὐτῷ εἰσπλεόντων ἀγνοησάντων τὸ συμβὰν αἰσθόμενος ὁ σημειοφόρος πατὴρ εὐχὴν κατὰ διάνοιαν τῷ ἑτοίμως ἔχοντι ὑπακούειν τοῖς γνησίοις δούλοις ἐποιεῖτο πολυτρόπως ἀσινεῖς πάντας τοὺς ἐκεῖσε εἰσπλέοντας διασωθῆναι. Διαφυλαχθέντος οὖν ἀσινοῦς τοῦ πλοίου καὶ μήτε μικροῦ ὕδατος ἐκ τῆς γεγενημένης ὀπῆς εἰσελθόντος ἐν αὐτῷ καὶ τῇ γῇ προσορμισθέντος ἐκβάλλεσθαι τοὺς ναυτικοὺς πάντα διὰ τάχους τὰ ἐν τῷ πλοίῳ ὄντα παρεκελεύσατο σκῦλα….

to Rome[21]. It seems that the harbour remained in operation at least until the fall of the city and was used, according to Doukas, during the defence of Constantinople on May 27th 1453 »They reached down to the Grand Palace, crossed the harbour and formed a ring as far as Vlangas / καταβάντες τό μέγα παλάτιον καί διαβάντες τόν λιμένα περιεκύκλωσαν ἄχρι τοῦ Βλάγκα«[22].

In the inscriptions accompanying the maps, the harbour is usually referred to as *Contoscalie*[23], as the harbour of Sophia and since the 13th century as *Kontoskalion* or *Kontoskelion*, because it was near the gate, which had been named after army official Aggalianos Kontoskelis who had supervised the harbour's construction, or deepening works[24].

The sources contain interesting information regarding the maintenance works performed throughout the centuries at the *Contoscalie*, which are mainly attributed to Michael Palaiologos VIII. Moreover, the Patria mention that Andronikos II (1282-1328) constructed iron gates at the entrance of the harbour to protect the ships: »[…] ὁ Σοφιανῶν καλούμενος λιμήν· ὅν δὴ καὶ ἀναχωσθέντα τῷ χρόνῳ ἀνώρυξε καὶ ἀνηνέωσε τοῦτον νῦν ὁ ἐν τοῖς βασιλεῦσι διαφανέστατος, ὁ τῆς ὀρθοδοξίας ὄντως λιμήν, ὁ αὐτοκράτωρ ἡμῶν κύριος Ἀνδρόνικος Κομνηνὸς ὁ Παλαιολόγος · ἀνακαθήρας γὰρ τὸν τοιοῦτον λιμένα καὶ εὐρύνας καὶ βαθύτατον ποιήσας καὶ θριγγεῖον τοῦτο ἀξιεπαινετώτατον ἤγειρε καὶ τὸν λιμένα διὰ πυλῶν σιδηρέων κατησφαλίσατο, τὰς βασιλικὰς τριήρεις ἀνεπιβούλους ἐν τούτῳ μεῖναι θεσπίσας › καὶ μὴ‹ σαλεύεσθαι […]«[25]. We do not know for how long these iron gates were preserved in the harbour, but in some of the Buondelmonti's team manuscripts they are depicted[26] (**fig. 7**).

In the mid-14th century, in 1348, and to face the Genoese of Galata, Emperor Ioannes VI Kantakouzenos ordered ships to be built in the shipyard of Contoscalie[27]. According to the Russian pilgrim Stephan of Novgorod, who visited Constantinople between 1348 and 1349, the site had still very large gates with iron lattices and could hold up to 300 merchantman and warships[28]. After the fall of Constantinople, the harbour continued its military function, and new arsenals were built to host the Ottoman navy during the campaign of Mehmet II[29] (**fig. 8**). It is probably these arsenals that are shown on 16th-century maps, starting from the woodcut by Andrea Vavassore[30] (1520), Sebastian Münster's Cosmographia[31] (1550) (**fig. 9**) and the map of Georg Braun and Frans Hogenberg[32] (1572).

Since Kontoskalion became the major harbour along the shoreline of the Marmara Sea and the principal basis of the imperial navy after the restoration of Byzantine rule following the Latin occupation, it is the main harbour depicted in the early maps. One very distinctive representation is preserved in the extremely significant manuscript housed in the Universitäts- und Landesbibliothek Düsseldorf (**fig. 10**). The manuscript reproduces Buondelmonti's depiction of Constantinople in an enriched edition that also includes the most striking representation of Pera with commercial vessels, galleys and wooden jetties projecting into the water from the shoreline, as well as with buildings of the early Ottoman city, such as the two castles at the Bosporus Anadolu Hisar (»Eastern Fortress«), erected in 1395/1396, and Rumeli Hisar (»Western Fortress«), erected in 1452, Yedikule and others (mosques, palaces, cemeteries, markets etc.). Even in this map, which seems to have been produced in the second half of the 15th century, and more specifically at the end of the reign of Mehmet II[33], the Kontoskalion is presented as a very well protected harbour with walls and towers.

Fig. 8 George Braun, Franz Hogenberg, Byzantium Nunc Constantinopolis, Hand Coloured map, Cologne, 1572, detail from **fig. 5**).

21 Magdalino, Neighborhoods 214.
22 Doukas, Chronographia XXXIX, 6 (ed. Reinsch 494, 7-8); transl. Doukas, Decline and Fall 222 (with modifications).
23 In the Gennadius Ms 71 it is written: »Receptaculu dictu contiscali« (Drakoulis, Buondelmonti 204).
24 Stavridou-Zafraka, Κοντοσκάλιο 1326-1327.
25 Patria Konstantinupoleos III 230. 11-20.
26 Ms Vat. Urb 270. – Biblioteca Apostolica Vaticana, f. 45v, Ms Rossiano 702. – Biblioteca Apostolica Vaticana, f. 32v, Ms 15 Fondo Dona delle Rose della Biblioteca Correr di Venezia, f. 37r, Ms. G. 13 Düsseldorf Universitäts- und Landesbibliothek (Barsanti, Costantinopoli 204).
27 καί πρός τῷ λεγομένῳ Κοντοσκαλίῳ νεωρίῳ αἱ τριήρεις ἐναυπηγοῦντο (Ioannis Kantakouzenos, Historia III, 71.10-72.8; 80.4).
28 Majeska, Russian Travelers 38.
29 Müller-Wiener, Bildlexikon 63.
30 Berger, Vavassore 350.
31 Wessel, Die Cosmographia.
32 Braun/Hogenberg, Cities.
33 Manners, Constantinople 75. 87. – Balard, Buondelmonti 392.

Fig. 9 Sebastian Münster, Constantinopel des Griechischen Keyserthumbs Hauptstatt im Land Thracia am Möre gelegen. Coloured woodcut. – (Sebastian Münster, Cosmographey Oder beschreibung Aller Länder herrschafftenn vnd fürnemesten Stetten des gantzen Erdbodens: sampt jhren Gelegenheiten, Eygenschafften, Religion, Gebreuchen, Geschichten vnnd Handthierungen, etc.. Basel 1578 p. 1246 f. c. 1550.).

Fig. 10 Cristoforo Buondelmonti, Constantinople. Ms G 13, Universität und Landesbibliothek (Düsseldorf), f. 54r. – (From Effenberger, Konstantinopel).

All the maps by the Buondelmonti team depict in the area west of Kontoskalion a pier next to an embankment outside the city walls. The area is often referred to by the inscription *Portus Vlanga*[34]. It is the well-known *Harbour of Theodosius*, which due to recent works is currently considered Constantinople's most well-studied harbour.

As it is well known, the Harbour of Theodosius, which in written sources of the 6th-7th century also referred to as *Caesarion*, after its destruction which is thought to have been brought on by severe storms which caused the river Lykos[35] to overflow, covering the ships with sand at the beginning of the 11th century, was abandoned because of erosion and silting. During the 12th and 13th centuries, a church was built on the eroded harbour area, whilst in 1261 Jewish tanners populated it. According to Eremya Celebi Kumurciyan, the majority of the area's residents were non-Muslim, and the area was named Buyuk Vlanga Bostani[36] (**fig. 8**).

The interesting thing about the depiction of Vlanga Harbour is that in the manuscripts of the Buondelmonti family describing the phase of erosion of the harbour, a rectangular stairway/pier for ships to dock is depicted instead, with part of the coastline to the side. The length of the stairway varies, but in two of the manuscripts preserved in the Vatican

34 Berger, Langa Bostani 467-477.

35 It should be noted that in most of the maps of the Boundelmonti family, the Lykos river is depicted to flow into the Kontoskalion harbour, whereas a small tributary is shown to flow into the Theodosius Harbour.

36 Berger, Langa Bostani 467.

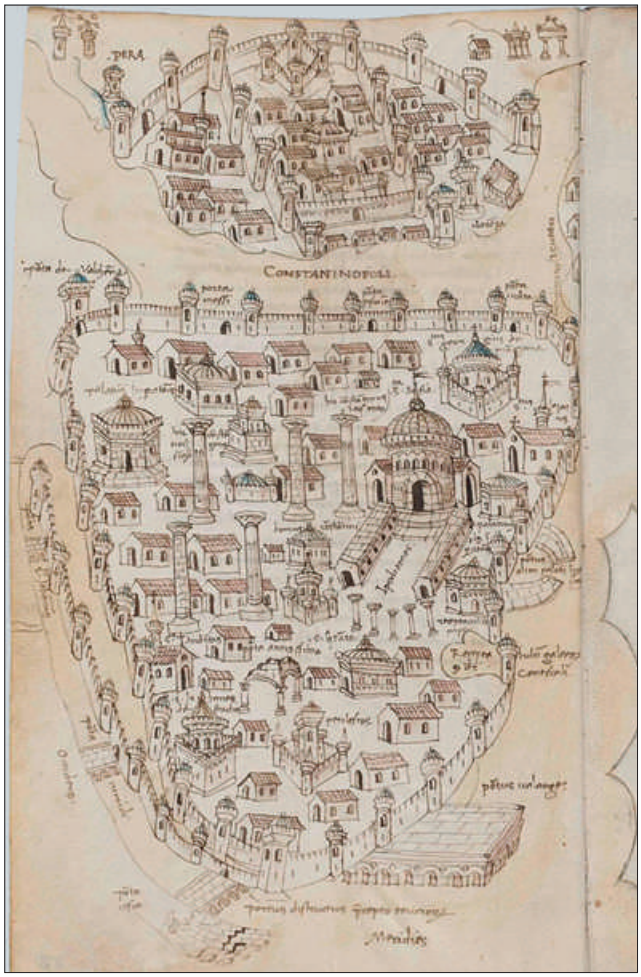

Fig. 11 Cristoforo Buondelmonti, Constantinople. Ms Vat. Chigi F.V. 110, Biblioteca Apostolica Vaticana, f. 43v. – (From Manners, Constantinople).

Fig. 12 Cristoforo Buondelmonti, Constantinople. Ms Arundel 93, British Library (London), f. 155r. – (From Manners, Constantinople).

Apostolic Library (**fig. 11**) and Pennsylvania[37], the use of the harbour is emphasised, as the pier is depicted as very large and wide, almost square. Perhaps the creator of the map wanted to restore the memory of dozens of piers in this way, because for years the harbour served a large number of merchant ships carrying goods to Constantinople, but also occasionally navy vessels[38].

The excavations in recent years have verified the idea of a large harbour we have from the sources; they have brought to light not only 37 shipwrecks but also more than 25 piers[39]. We are not sure of the state of the harbour in the 15th century, but it seems that its use has been limited since then; all that remained was a narrow strip of land outside the walls where ships could dock.

This is attested by the fact that in 1432 the Vlanga Harbour could still take 2-3 ships anchoring at the mouth of the river at the eroded piece of land, while the testimony by Nicollo Barbaro[40], an eyewitness of the 1453 events, according to whom the Turkish navy attacked the Jewish quarter from the side of the Sea of Marmaras, where part of the army disembarked on that coast, also leads to the same conclusion. This event could have taken place at the pier of the Harbour of Theodosius, and it may be the most tangible evidence that it was used before being abandoned as a harbour.

On the other hand, Vavassore and other 16th century cartographers render the harbour at the phase after its abandonment when there were gardens and orchards. What is also interesting when studying the area is that the eastern and western parts of Buyuk Langa Bostani were surrounded by a wall after 1453 and 1479 respectively, and this is how the area is depicted in 16th-century maps[41].

Finally, on some of the Buondelmonti maps, at the point where the Marmaras' coastline meets the land walls, there is depicted the *Porta Cresea* (The Golden Gate) and next to

37 Ms Chigi F.V. 100, Biblioteca Apostolica Vaticana, f. 43. – Ms 4 Collection of Boies Penrose in Pennsylvania (see Barsanti, Buondelmonti 196).

38 For example, Theophanes informs us that, it was here, ἐν τῷ Προκλιανησίῳ τῶν Καισαρίου λιμένι, that the byzantine navy gathered galleys and dromons ahead of an Arab attack (Theophanes, Χρονογραφία 958-959).

39 For the bibliography, see Footnote 4.

40 Berger, Langa Bostani 472.

41 Berger, Langa Bostani 472-473.

it a jetty starting from the moat and stretching towards the sea accompanied by the inscription *portus sed destructus preceptu turchorum*[42] (fig. 12). This certainly refers to the Golden Gate Harbour mentioned by Doukas in the 15th century (τότε ἐξελθόντες τὰ πλοῖα ἵσταντο ἐκδεχόμενα τὴν ἄφιξιν τῶν νηῶν, ἐκ τοῦ λιμένος τῆς χρυσῆς πύλης)[43]. What is interesting is the relationship between the harbour and the Pege stairway, which was used by the emperors when they returned from Asia to make a triumphant entry into the capital. Probably, the depiction in the early maps of the jetty in a way that resembles a stairway implies the relationship between the two locations[44].

To summarize, we could say that the maps, despite not having been drawn with the intention of reproducing Constantinople in full detail, do in fact offer lots of information that correspond to reality. As long as Constantinople remains unexcavated and archaeologically unexplored, these maps, especially the early ones of the 15th and 16th centuries will be the main testimony of the city's buildings and structure.

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42 Barsanti, Buondelmondi 201.
43 Historiae Byzantinae 268-269.
44 Janin, Constantinople 234-235. – Simeonov, Die Brachialion 139-146.

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Summary / Zusammenfassung

Depictions of the Byzantine Harbours of Constantinople in early Maps and Engravings

Only starting with the map of the Florentine scholar Christoforo Buondelmonti in the early 15th century, we possess detailed cartographic representations of Constantinople, its seasides, harbours and anchorages. The following decades and centuries, however, produced an increasing number of such maps and views of the city, sometimes copying earlier examples, sometimes contradicting each other. The paper selects important examples from the 15th and 16th centuries and demonstrates their value and challenges for a reconstruction of Constantinople's harbours.

Darstellungen der byzantinischen Häfen von Konstantinopel in frühen Karten und Gravuren

Erst beginnend mit der Karte des Florentiner Gelehrten Christoforo Buondelmonti im frühen 15. Jahrhundert besitzen wir detaillierte kartografische Darstellungen von Konstantinopel, seinen Küsten, Häfen und Ankerplätzen. Die folgenden Jahrzehnte und Jahrhunderte brachten jedoch eine zunehmende Anzahl solcher Karten und Ansichten der Stadt hervor, wobei manchmal frühere Beispiele kopiert wurden und manchmal diese Darstellungen einander widersprachen. Der Beitrag wählt wichtige Beispiele aus dem 15. und 16. Jahrhundert aus und diskutiert deren Wert und Probleme für die Rekonstruktion der Häfen von Konstantinopel.

Dimitar V. Dimitrov

The Harbour of Medieval Sozopol

Nestled on a tiny peninsula on Bulgaria's Black Sea coast, the town of Sozopol (Σωζόπολις) boasts more than 6000 years of history and culture. The first settlement on the site dates to the Chalcolithic Age or the beginning of the Bronze Age. Settlers from Miletus moved to the Sozopol peninsula at the end of the 7th century BC and founded Apollonia, the earliest ἀποικία on the south-western coast of the Euxinus Pontus[1]. In the middle of the 6th century BC, Apollonia became an independent πολιτεία[2] and important trade centre between Ancient Greece and Thrace. Thanks to its strong navy and naturally protected harbours, Apollonia kept control of the major merchant route along the western Black Sea coast for several centuries. After this phase of political, economic, and cultural climax, the town suffered a period of decline throughout Late Antiquity. Despite the damage, it survived the »Völkerwanderung« period and succeeded in restoring its former glory during the Middle Ages, though this time under a new name. Following the Christian mainstream tradition, its name was changed to Sozopol, »town of salvation«, which was first attested in the 5th century AD[3].

Medieval Sozopol was initially integrated into the Byzantine maritime network, and from the 13th through the 15th century, the town became part of the global Mediterranean »Weltwirtschaft« operated by Venice and Genoa. At that time, Sozopol developed into an important trade and shipping centre in the Black Sea contact zone of the Mediterranean area. Medieval authors do not spare superlatives when talking about Sozopol. In the 12th century, the Arab scholar Al-Idrisi (1100-1165) described Sozopol as »an outstanding merchant centre and a famous town«[4]. Two centuries later the Byzantine polymath Nicephorus Gregoras (c. 1295-1360) describes Sozopol as »a very rich and populous city of the Romans, situated more than a thousand stadia from the neck of the Pontus«[5]. The emperor-historian John VI Kantakouzenos (1347-1354) also speaks of it as »a populous and big town« on the Pontus Euxinus[6]. The same qualification (»a big town«) is given to Sozopol in two anonymous portolans whose protographs are supposed to originate from the 14th century[7].

Medieval Sozopol should be considered as a complex, composed of parts interconnected by a local communication network, such as the urban built-up area, its hinterland and the harbour. However, the present paper aims to analyse the functioning of one of these interwoven components – the harbour of Sozopol[8] – in order to assess its contribution to the town's prosperity. By placing the study in a broader context, it attempts to evaluate the extent to which the harbour of Sozopol, with its structures, was able to participate in the international maritime trade, thus revealing its role and significance in the maritime contacts of Byzantium and Bulgaria with the world economy in the Mediterranean.

Harbours, natural or artificial, comprise sheltered bodies of water and facilities (a pier/quay/docks) for loading and unloading vessels, dropping off and picking up passengers, as well as warehouses/storages etc. From that perspective, each harbour has two basic functions: protective/sheltering and logistics. The former refers to its ability to protect from winds, waves, and currents. The latter corresponds to its commercial activities and facilities and the way a harbour can link efficiently with the production and market areas within its hinterland. For that reason, particularly important, with a view to the study of the functional capacity of Sozopol harbour, are multifarious data on: the geographic location and microclimatic conditions, the navigational potential of the harbour water area – size, depth, the extent of protection, specifications of the seabed; the typology as well as the exact parameters of the mooring vessels; road links, land, and maritime communications; infrastructure and supply routes within the hinterland. Dealing with different primary sources, the paper will apply an interdisciplinary approach while trying

1 Gyuzelev, The West Pontic Coast 120.
2 Gyuzelev, The West Pontic Coast 121.
3 Dimitrov, La città medievale 498.
4 Nedkov, Geographiata na Idrisi 70-71.
5 Nicephorus Gregoras, Byzantina historia 83-84: βαθύπλουτὸν τὲ καὶ πολυάνθρωπον πόλιν Ῥωμαίων, πλεῖον χιλίους σταδίους ἀπέχουσαν τοῦ Πόντου αὐχένος.
6 Ioannes Cantacuzenus, Historiarum 326: τὴν Σωζόπολιν κατὰ τὸν Εὔξεινον Πόντον πολυάνθρωπον οὖσαν καὶ μεγάλην πόλιν.
7 Delatte, Portulans 231: χώρα μεγάλη. – Koledarov, Portolan 20. – Dimitrov, Kartographia 34: »Sisopoli e Città grande«
8 The medieval history of Sozopol has been studied to some extent, with B. Dimitrov in particular giving the due attention to the political, religious, cultural and economic history of the town during the Middle Ages. See Dimitrov, Sozopol 388-407. – Dimitrov, La città medievale 497-522. However, unlike the harbour of ancient Apollonia Pontica (see Dimitrov, Anchors 156-63. – Dimitrov/Porozhanov/Orachev, Pristanishtata 440-450. – Porozhanov, Les ports 196-207. – Porozhanov, Olovni shtokove 35-36. – Porozhanov, Pristanishtata 2-7. – Porozhanov, The Thracian Civilization 260-270. – Orachev, Strandzha 344-365. – Hristov, Stone anchors 31-50), the harbour of medieval Sozopol has not yet been in the focus of the researchers. So far, there have not been any studies on this specific aspect of the history of medieval Sozopol.

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Evaluation criteria	Profile
Taxonomic class in the harbour system	Tiradore – in Compasso de navegare (13th c.) Porto, λιμένας – in all portulans from the 14th-16th c.,
Rating of the harbour and its navigation characteristics	Bono, καλὸς
Vessel types to moor in the harbour aquatory	Vessels of different classes of both round and long types of ships
Status of the harbour settlement	Town, χώρα μεγάλη, Città grande
Highlighted in red colour on navigational/portolan charts	+
Presence of merchants, seafarers, and residents of the Italian maritime republics	+

Tab. 1 Harbour profile of the late medieval Sozopol.

to systemize and interpret the written, archaeological, cartographical, and geomorphological evidence.

Clarification of geographical location is essential for the exploration of the harbour's water area. In the 1st century BC, the Roman architect Vitruvius pointed out the greatest benefit of the harbours that have »natural advantages, with projecting capes or promontories which curve or return inwards by their natural conformation«[9]. Sozopol is a naturally protected harbour belonging to the craggy coastal zone of Strandzha, and more precisely to the intended coastline of Medni Rid[10], while at the same time it is a south-eastern entrance to the Gulf of Burgas (the largest bay of the Bulgarian Black Sea coast), belonging to another coastal landscape area – that of the Burgas Plain. On the one hand, the location of Sozopol fits into the spatial model typical of the Western Black Sea – a harbour town located on a micro-peninsula/promontory[11], which in the case of Sozopol protrudes ⅔ mile to the north-east. On the other hand, in the geomorphological profile of Sozopol, there is another spatial component unique for the entire coastal zone – the existence of a peculiar archipelago that dominates the navigational conditions in the harbour area of Sozopol (**tab. 1**).

The most detailed information on the characteristics of Sozopol harbour during the Middle Ages is contained in the special navigation documents from the 14th and 15th centuries – the portolans and the navigational/portolan charts[12]. In fact, the earliest notice of the harbour dates to the boundary between Late Antiquity and the Early Middle Ages and is found in an anonymous periplus of the Euxine dated to the second half of the 6th century. It says that the former Apollonia Pontica/Magna, which »is now called Sozopol, has two large harbours« (Ἀπολλωνίαν πόλιν τὴν νῦν Σωζόπολιν λεγομένην ἔχουσαν καὶ λιμένας μεγάλους δύο)[13]. The next evidence is in no less terse, but already dates from the time of the portolans. In the *Compasso de Navegare*, the earliest Italian portolan (13th century), there is a special section for *Mare Maius* – »the Great Sea«, as Italian seafarers used to call the Black Sea at that time. In the *Compasso* it is noted that »Sisopoli e bono tiradore per barche« [Sozopol is a good wharf for barques/barks.][14]

Far more specific are the portolans of the 14th and 15th centuries. Two anonymous fourteenth-century portolans whose text fragments about Sozopol are actually identical, give the following information: Ἡ Σιζόπολι ἔναι χώρα μεγάλη καὶ ἔχει καὶ πόρτο καλὸ. ἔχει νησία δύο καὶ τὸ ἕνα τὸ λέγουν Ζαφορονήσι καὶ ἔχει καὶ μίαν ἐκκλησίαν εἰς τὴν μέση τοῦ νησίου. καὶ ῥάξης τὰ σίδερα εἰς τὴν χώρα καὶ τὰ πλωρήσια δένης εἰς τὸ νησὶ καὶ ῥάξης εἰς φοῦντος ὀργίαις τέσσερης καὶ πέντε. καὶ τὸ ἄλλο τὸ λέγουν ὁ Ἅγιος Ἰωάννης καὶ ἔναι εἰς τὴν μέρεα τῆς τρεμουντάνας καὶ ἔναι εἰς τὴν μποῦκα τοῦ πόρτου. (»Sozopol is a big town and has a good harbour. There are two islands, and one is called Zaforos [St Cyricus] and there is a church in the middle of the island. And you drop the anchors to the town side and tie the ropes [at the bow of the vessel] to the

9 Vitruvius, De architectura 5.12.1.: *Hi autem naturaliter si sint bene positi habeantque acroteria sive pronunturia procurrentia, ex quibus introrsus curvaturae sive versurae ex loci natura fuerint conformatae, maximas utilitates videntur habere.*

10 Medni Rid is a ridge in the north-eastern reaches of the Strandzha mountain range. Its highest peak is Bakarlaka (376 m). The Medni Rid coast is peculiar with its strong indentation of the coastline and is characterized by peninsulas jutting out up to 2 km into the sea and bays deeply cut into the land. Orachev, Strandzha 344-365.

11 Most of the harbour towns along the Western Black Sea Coast are located on such small rocky peninsulas, with the best examples being Nessebar and Pomorie. However, Sozopol promontory is more resistant to erosion than those of Nessebar and Pomorie, since the Medni Rid shoreline as a part of the Strandzha coastal zone has the lowest rate (0.001 m/year) of coastal abrasion along the Western Black Sea coast. This is mostly due to the geological composition of Strandzha rocky cliffed coast, which determines its greater resistance to the weathering. Peychev/Peev/Stanchev, Abrasia 178.

12 The term »portolan« (from the Italian »portolano«, from Latin »portus« – harbour, port) refers to written sailing directions. Portolans are considered to be the medieval successors of the ancient periploi. The navigational/sea/maritime chart of the European Middle Ages (1300-1500) was based on compass directions and estimated distances observed by the pilots at sea, and is noted for its cartographic accuracy in presenting coastlines and ports. It is believed that the nautical charts were constructed from the information contained in contemporary written pilot handbooks (portolans), hence the *terminus technicus* »portolan charts« (harbour-finding charts). Campbell, Charts 395.

13 Diller, Geographers 137.

14 Debanne, Compasso 121.

island and drop (the anchors) at a depth of 4-5 *orgia*. And the other [island] they call it St John and it is to the north and is at the entrance to the harbour«).[15]

From these two anonymous portolans, whose supposed protographs are from the 14th century, it is clear that Sozopol was already qualified as »a big town« (χώρα μεγάλη, Città grande), which had »a good harbour« (πόρτο καλὸ, bon Porto). The depth of the harbour moorage is also indicated – 4-5 *orgia* (between 7.6 and 9.5 m[16]). Another circumstance that makes an impression is the close connection of the harbour with the two islands in the waters of Sozopol and especially with the St Cyricus Island, which is closer to Skamni peninsula.

More detailed information about Sozopol harbour is contained in the so-called Leiden portolan dated back to the 16th century, but with a probable base from the 15th century[17]. There it is noted that: Ἡ Σιζόπολι ἔναι καλὸς λιμένας καὶ ἔχει ὀμπρὸς δύο νησία. τὸ μέγα νησὶ λέγεται ὁ Ἅγιος Ιωάννης καὶ τὸ ἄλλο λέγεται ὁ Ἅγιος Κήρυκος. καὶ ἀπὸ τὸ νησὶ τὸ μικρὸν καὶ τὴν στερέαν ἔναι ὁ καλὸς λιμένας καὶ τὸ ἔμπα ἔναι ἀπὸ τὸν θρασκέα, καὶ (ἄν)θέλης νὰ ἔμπης ἀπὸ μέσα τοῦ νησίου τοῦ μέγαλου, ἀλαργάρισε ἀπὸ τὴν μέτα τοῦ νησίου τοῦ μικροῦ πλωρήσι γ'. καὶ ἀπεκεῖ κοστάρης ἐις τὴν στερέα πλωρήσι α' ς" καὶ ράξε ἐις φοῦντος ὀργίαις δ' ἕως ε'. [Sozopol is a good harbour and there are two islands in front. The large island is named St John, and the other St Cyricus. And the good/nice harbour is from the side of the little island and the mainland and the entry is from north-north-west. And if you wish to enter from the middle (side) of the large island you should give the little island's shoal a berth of three *ploresia*. And moor at 1⅙ plore*sia* from the mainland and cast (anchors) at a depth of 4 to 5 *orgia*«][18]. It is evident that the Leiden portolan confirms the status of Sozopol as »good (nice) harbour« (καλὸς λιμένας) mentioned in the two anonymous portolans and repeats the data relating to the water depth of harbour's moorage. At the same time, it gives several important details concerning manoeuvring in the water area and keeping a certain distance from land at mooring.

The complex comparative analysis of the data from the 14th and the 15th-century portolans and navigational/portolan charts[19] reveals that the harbour configuration of Sozopol is marked by three important spatial domains – Sozopol/Skamni (Stoletz) peninsula/promontory (στερέα), St Cyricus Island, situated 250 m north-west of the peninsula, and St John Island, located 1 km north of the promontory. The underwater and coastal geoarchaeological studies conducted in the waters of Sozopol contributed to the discovery of the harbours/anchorages of Apollonia Pontica, thus compensating for the complete lack of information about them in ancient written sources. With regard to the port of the medieval Sozopol, however, the results of these investigations are not yet satisfactory. Nevertheless, the accumulated data on the anchorages of Apollonia Pontica are a good starting point that could serve as a basis of comparison for the analysis of the data from the medieval written and cartographic sources on the localisation and characteristics of the port of the medieval Sozopol. The summary observations on the previous eras, based on the stone anchors and stone and lead stocks of wooden anchors found during underwater archaeological excavations in the waters of Sozopol show that from the late Bronze Age to Antiquity Apollonia's harbour was locked in the same area outlined by the two mentioned islands and the peninsula, with the anchorages shifting within its boundaries depending on climatic changes, eustatic Black Sea oscillations, epeirogenic movement (upheavals or depressions) of land, micro tectonics, seismic tectonic, accumulation, sedimentation specificity, abrasion, landslide processes, coastal and onshore environments, etc.[20]. The moorages of vessels from different historical periods are located with a fair degree of certainty thanks to two methods. The first one refers to the diachronic study and mapping of anchors and/or parts of anchors, clustered in a particular section of the seabed. These are thought to have been the traditional anchorages of ships that, for various reasons, lost part of their anchors during their stay. Their gradual longue durée accumulation is a sustainable indicator for the operation of a permanent anchorage. The second method to locate antique harbours is to take account of changes in sea level during the Late Holocene and to analyse the geomorphological dynamics of the coastline over the various historical periods[21].

The aggregated results from the underwater studies related to the bathymetric data on the sea level changes and geomorphologic data on the sinking and rising of the land reveal that the earliest anchorage in the waters of Sozopol was westwards and south-westwards from St Cyricus Island. It was used in the second half of the 2nd millennium BC and probably the beginning of the 1st millennium BC, which coincided with the beginning of the so-called Phanagorian regression, related to the decrease of the temperatures and the lowering of the sea level. In the 6th-2nd century BC, when it was the peak of the Phanagorian regression where the sea level according to the different authors and the interpretation

15 Delatte, Portulans 231. – In the Italian anonymous portolan is noted that: »Sisopoli e Citta grande et ha bon Porto et ha 2 Isole. Et una la chiamano Isola de Zaffarana,et anco ha una Chiesa sopra e mezzo de dela Isola. Et sorgite li vostri ferri verso la Cita et li Provesi sopra l'isola et sorgite in passi 4,05 (sic!). A l'altro Isolo lo chiamano Sangioanne et sta alla parte della tramontana alla bocca del Porto«. Koledarov, Portolan 20. – Dimitrov, Kartographia 34.

16 Ὀργυιά/ὀργία »orgia« – »fathom«, a unit of length. In the Byzantine period this unit of length known as ἁπλὴ ὀργυιά was roughly equivalent to the old Greek ὀργυιά/fathom and was equal to 6 Byzantine feet, c. 1.89 m. See Schilbach/Cutler, Orgyia 1532.

17 Delatte, Compléments 38-47. – Orachev/Rusinov, Portolan 84.

18 Delatte, Compléments 46-47. – Orachev/Rusinov, Portolan 78. – 1 plorisi/πλωρήσι = 10 ὀργίαι »orgiai«.

19 The two islets in the waters of Sozopol are accurately depicted on the medieval navigational/portolan charts by two blacked-ink dots. Gordieiev, Place names 353-354.

20 Dimitrov/Porozhanov/Orachev, Pristanishtata 440-450. – Porozhanov, Les ports 196-207. – Porozhanov, Olovni shtokove 35-36. – Porozhanov, Pristanishtata 2-7. – Porozhanov, The Thracian Civilization 260-270.

21 Hristov, Stone anchors 34. 36.

of the facts varied from -2/-3 m to -11 m below the present-day sea level, the permanent mooring place was shifted in the basin between St John Island and Sozopol peninsula, westward of the submerged stone reef which today is at 14 to 20 m depth. In fact, four anchorages were established marked with remnants of anchors with stone stocks. All of them are located to the north of the peninsula, in the waters around Cape Skamni, the reefs of Palikari, Gata and Milos, and in the south leeward mooring place of St John Island. In the 6th-2nd century BC, this small barrier reef probably raised above the water's surface and played the role of a natural breakwater that protected a relatively large water area from the dangerous eastern winds[22]. From the 2nd century BC until the 3rd century AD, the anchorage of the harbour of Sozopol returned to its original location – westwards from St Cyricus Island, at today's depths of 6-14 m. The relocation took place again due to the sinking of the coast (or the rise of the sea level) which took place in the 3rd/2nd century BC and led to a level up to 2-3 m above the current one[23].

Some authors assume that during the Middle Ages there were again sharp changes in sea level. The largest is associated with the so-called Nymphaean transgression, which reached its peak in the Black Sea in the 8th to mid-10th century, exceeding the present-day sea level by 1 or 2 m. According to some scholars, it explains the fact that certain antique harbour facilities on the Bulgarian coast ceased to function at the end of the 6th and the beginning of the 7th century[24]. In the 14th century, there was a decline in sea level, which some authors call the Korsunian regression named after the city of Korsun (the medieval Cherson), resulting in a lowering of 3 m. Most researchers, however, dispute the existence of such a regression and maintain that it is more appropriate to talk about a slight eustatic decline in the Black Sea level resulting from the general drop in temperatures in Europe in the 13th and 14th centuries. This lowering of the sea level explains the presence of islands and reefs along the western Black Sea coast in the 14th-17th century medieval navigation charts, which are now below sea level or are smaller than the area indicated in the medieval charts[25]. It is assumed that the current rise in the Black Sea level began in the second half of the 17th century and continues to date, with values in the last century fluctuating for the various Black Sea coastal zones from 1.4 to 4 mm per year, with the rise of the sea level at Medni Rid coast being in parameters close to the maximum (3 mm per year)[26].

The theory explaining the palaeographical changes during the Holocene, mainly with the regression/transgression cycle of the Black Sea level, first launched by the Soviet scientist Fedorov[27], has been questioned in recent years in Western science because of its controversial methodology[28], and the composite curves of the sea-level oscillations during the Holocene suggested by Shilik[29], Balabanov[30] and others[31] have been classified as »speculative and dependent upon many unreliable palaeobathymetrical indicators from diverse geological contexts«[32]. Much more precise analyses of local sediment cores, as well as ^{14}C-dated fossil coastal bars, testify that many of the apparently obvious changes to sea level are actually tectonically induced[33]. Concurrently, recent oceanographic surveys reveal that after the Black Sea was connected to the Mediterranean at the end of the Würm, both seas were in relative equilibrium and have not changed their levels by more than 0.7 m since the Archaic age[34]. Attempts to link changes in the Black Sea level with local climatic conditions and increased freshwater flow from large rivers flowing into it are hampered by digital models proving that the maximum possible rise in the Black Sea level during the Holocene could not be more than 1 m[35]. Bearing in mind the relatively stable sea level, a significant group of scientists bring to the fore tectonic movements as a major factor provoking the observed shoreline changes occurring in the form of local-regional uplift or submersion of the land[36]. In this sense, they reject as methodologically unsatisfactory the elaboration of reconstructions, common to the whole Black Sea basin and its coasts, and accept that only local sea-level curves can be established[37].

Such a local approach is applied by the French team of scientists – A. Baralis, B. Devillers, N. Marriner, A. Hermary, who undertake a geoarchaeological survey of the Sozopol coastline. Those scientists, considering the local studies of hydrographical dynamics in the Sozopol Bay which show the

22 Probably during the Roman period, the moorages to the north of the promontory and in the aquatory of St John Island have still been in use as it is attested by the lead anchor stocks discovered at the indicated places. See Hristov, Stone anchors 47-49.

23 Porozhanov, Les ports 196-207. – Porozhanov, Pristanishtata 2-7. – Porozhanov, The Thracian Civilization 267-270. – Hristov, Stone anchors 47. – The view expressed in some older publications (see for example Dimitrov/Orachev, Pristanishtnata Sistema 7-8), that the ancient harbour of Apollonia at the St Cyricus Island was protected from the west by artificial harbour facilities such as a breakwater with an approximate length of 890 m and an inner breakwater-quay about 610 m long, has been refuted by the recent underwater and geomorphological explorations made in the area. There is neither archaeological nor historical evidence of the existence of such artificial harbour facilities. – Gyuzelev, The West Pontic Coast 129-130. – Hristov, Stone anchors 47.

24 Shilik, Oscillations 115-130. – Preisinger/Aslanian/Heinitz, Geomorphologic development 9-18. – Filipova-Marinova, Sea-level change 453-482. – Peev, Archaeological data 18.

25 Peev/Peychev, Medieval charts 105-106.

26 Dimitrov/Porozhanov/Orachev, Pristanishtata 440. – Markov/Peychev/Parlichev, Izmenenia 49-53. – Peev/Peychev, Medieval charts 105-109. – Preshlenov, Morphodynamics 305-307.

27 Fedorov, Pozdnechetvertichnaia istoriia 27-32.

28 Fouache et al., A critical view 162-174.

29 Shilik, Oscillations 115-130.

30 Balabanov, Sea-level changes 711-730. – On the evaluation of Balabanov sea-level curve see Martin/Yanko-Hombach, An evaluation 51-56.

31 See more in Brückner et al., The Holocene 160-179.

32 Baralis et al., Coastal geoarchaeology 104. – For a critical view on this concept see Fouache et al., A critical view 162-174.

33 Brückner et al., The Holocene 160-179.

34 Morhange/Marriner, Sea-level indicators 146-156. – Baralis et al., Apollonia Pontica 156.

35 Martin/Yanko-Hombach, An evaluation 51-56. – Esin/Kukleva, Theoretical curve 51-52. – Esin/Esin, Mathematical modelling 32-47.

36 Baralis et al., Apollonia Pontica 156.

37 Brückner et al., The Holocene 160.

relative sea-level stability in its water area[38], argue that the most reliable base for exploring coastal movements are the sedimentary inputs over the past 5000 years[39]. Geomorphological studies[40] reveal a rapid subsidence of the shore of Apollonia, as well as the entire Strandzha coastline, compensated by sedimentary deposits along the shore. According to the French research team, it was namely the sedimentary budget, that has contributed to the progradation and regularisation of the coastline in the context of relative sea-level stability[41]. In Sozopol's case, this accumulation process explains the formation of a sandy spit (the so-called tombolo) that connected the promontory of Skamni to the mainland from as early as the 3rd millennium BC[42]. Investigating the sedimentary samples taken from the pier of the present-day Sozopol port and considering the new geomorphological configuration after the appearance of the sand isthmus, the French research team comes to the conclusion that the water area at the north-west front of the tombolo appears the most suitable place for a coastal shelter and actually was the ancient harbour, since it is very well protected from the east and south-east swell by the promontory of Skamni and from the north-west by St. Cyricus Island. Moreover, the Chernomorets peninsula efficiently provides additional protection to this area from the north-west swell. In addition, the French research team has hypothesised that there was a beach area in the north-western part of the isthmus, where vessels used to be towed to shore. This beach, together with the foothills of the promontory, was sufficiently protected to allow port activities from ancient times until the 20th century[43].

The localization of the port of Apollonia at the north-west front of the tombolo is an interesting hypothesis that has its solid foundation in terms of the main function of each port – to provide shelter. Undoubtedly, the considered water basin and its adjoining sand strip had excellent protection from the eastern, north-eastern and north-western winds. In addition, there are some archaeological and written testimonies indicating that in fact the waters and the beach at the north-west front of the tombolo were used as a harbour during Antiquity and the Middle Ages. In underwater archaeological research carried out in this area Bronze Age ceramics, antique amphorae, and antique amphorae stamps were found. In the immediate vicinity, to the west of the isthmus and to the south of St. Cyricus Island, one of the clusters of stone anchors is located[44]. Two written pieces of information are related to the assumption that the vessels were hauled on the beach of the isthmus[45]. The first is indirect and is contained in the earliest preserved medieval Italian portolan – Lo Compasso de Navegare. In it, as already mentioned, it is noted that »Sisopoli e bono tiradore per barche«. In this case, what is important is the term used – *tiradore*, its etymology leads to the verb *tirare* and means »sea bottom/land, suitable for hauling vessels onto the shoreline«[46]. The qualification of Sozopol as a *tiradore* means that its harbour features allowed small shallow-draft vessels of the type of barques to be hauled onto the beach. The same, only in a direct way, was announced in the 18th century by the Austrian diplomat Wenzel Fon Brognard. He pointed out that the harbour of Sozopol did not provide the best shelter for small ships and they were exposed to the breaking waves. However, the shoreline was only slightly elevated and made it easy to pull the vehicles on to land (»die Fahrzeuge leicht an Land gezogen werden können«)[47]. This practice continued in the following centuries, as the preserved old photographs of Sozopol from the first half of the 20th century show. The fact that the towing of small shallow-draft vessels on the sandy beach of the isthmus was traditionally practised in the different historical periods is a lasting functional indicator of the topographical continuity between the port of ancient Apollonia and medieval and modern Sozopol.

Actually, the two research theories explaining the coastal morphodynamics of Sozopol during the different periods with eustatic oscillations and widespread hydro-isostatic and neotectonic effects, despite offering different methodology, causality, and reconstruction models, are complementary to a certain extent as far as the harbour background of the town is concerned. In this sense, the results of the various studies are not mutually exclusive, but in their totality, they allow for a more precise and complex diachronic study of the harbour of Sozopol and its adjacent water area. Remnants of anchors from various historical ages localized in underwater research do not mark the entire harbour area, but rather trace the different berths suitable for mooring larger vessels within the waters of Sozopol. These anchorages, which varied depending on the navigation conditions, the tonnage and the draft of the mooring vessels, do not *a priori* negate the possibility that the harbour itself was permanently located in the north-west end of the isthmus, where it was originally the most protected section of the water basin, and where the coastal

38 Preisinger/Aslanian, The sea level 225-231.

39 Baralis et al., Coastal geoarchaeology 104. – More on the reliability of this method in a stable sea-level context see in Marriner/Morhange, Geoscience 137-194.

40 Preisinger/Aslanian/Heinitz, Geomorphologic development 9-18. – Georgiev/Stoev/Velkovsky, Geomorphologic development.

41 Baralis et al., Coastal geoarchaeology 105. – Baralis et al., Apollonia Pontica 156.

42 Baralis et al., Apollonia Pontica 156.

43 Baralis et al., Coastal geoarchaeology 107-108.

44 Porozhanov, Olovni shtokove 35-36. – Porozhanov, The Thracian Civilization 269. – Gyuzelev, The West Pontic Coast 130. – Hristov, Stone anchors 44-47. – Summarizing the results of the 2011 underwater excavations, I. Hristov even guesses a possible existence of a harbour facility in the basin south-east of the St Cyricus Island.

45 Ancient seafarers often used beaches to land their ships. It is an interesting detail that even a 37 m military trireme with 170 oarsmen could be hauled onto the beach, if the slope of the shoreline was gentle enough, for instance no more than 15 % inclination which was also the maximum inclination of the ancient slipways. De Graauw, Catalogue 129-130.

46 Debanne, Compasso 289: *tiradore* – »fondo adatto per tirare a secco l'imbarcazione«.

47 Nikov, Opisanie 31. »Für kleine Schiffe liegt dieser Hafen zu offen, um nicht von der Gewalt der einschlagenden Wellen zu leiden, dafür aber hat er eine feste und ungemein sanft aufsteigenden Küste, auf welcher die Fahrzeuge leicht an Land gezogen werden können«.

morphology favoured to a great extent the efficient handling of cargo since the natural beach at the tombolo functioned as a traditional slipway where all smaller vessels were hauled ashore for servicing and (un)loading.

The comparison of the archaeological and geomorphological data on the navigation conditions in the Apollonia water area with the information from the medieval portolans shows that during the 14th and 15th centuries, there was continuity with the elements of the harbour topography determined by the persistent genotypic characteristics of the water area along the coast of Apollonia/Sozopol. St John Island was a northern border and an entryway to the harbour (ἐις τὴν μποϋκα τοῦ πόρτου). However, all mooring guidelines are given in relation to the smaller St Cyricus Island. The portolans clearly show that within the so delimited waters of Sozopol was a good harbour between the St Cyricus Island and the peninsula (καὶ ἀπὸ τὸ νησὶ τὸ μικρὸν καὶ τὴν στερέαν ἔναι ὁ καλὸς λιμένας). It was entered from the north-west, as this was the way to avoid the shallows of St Cyricus Island. The other possible entrance was from the north, from St John Island, but it was advisable to give St Cyricus Island a berth of 3 *ploresia* (about 54 m) due to the reefs surrounding it from the north and west.

From all these data it can be seen that the main moorage of the harbour of Sozopol in the 14th-15th century was between St Cyricus Island and the mainland. The mooring was at 1⅙ ploresia (about 21 m) from the peninsula, as the bows of the vessels were turned and tied to St Cyricus Island apparently in order to be protected from the north/north-westerly winds by the island, and from the easterly and north-easterly winds – by the peninsula. It is well known that these are the dominant winds blowing in the region of Sozopol[48]. Thus, its harbour area received the necessary complex protection provided by the Skamni peninsula and its adjacent group of islands (St John Island, St Peter islet located east of it and St Cyricus Island)[49]. In fact, the main moorage in the harbour of Sozopol in the 14th - 15th centuries similar to that of the pre-Hellenic Thracian settlement from the Late Bronze Age and that of Apolonia Pontica/Magna from the 2nd century BC to the 3rd century AD was closely related to the water area around St Cyricus Island.

However, unlike the previous anchorages which were situated west-north-west of the island, the one from the late Middle Ages (probably for greater protection against the winds) was gradually shifted south-south-east toward the water basin closed between the island and the peninsula, where the modern port of Sozopol is today. Thus, a configuration is formed that resembles the one outlined in the Leiden Portolan, according to which there are two islands in front of the harbour of Sozopol (ἔχει ὀμπρὸς δύο νησία). The islands and the harbour are situated on a vertical line at the northern end of which is St John, in the middle is St Cyricus, and at its southern end is the harbour itself, sheltered also from the east-north-east by the Skamni Peninsula. Through this particular linear configuration, it acquires a higher degree of protection from the northerly and easterly winds. This circumstance was noticed by several travellers who voyaged to or passed by Sozopol over the years. In 1582 the London merchant John Newbery, whose ship was forced to seek shelter in Sozopol from the stormy east and north-eastern winds, points out that »Sissopoli is a good harbour […] and to the East of the Harbour are three Islands«[50]. In the 18th century, Wenzel von Brognard wrote that the harbour of Sozopol was protected from the northern winds (»die Nordwinde«) by two islands (»durch zwey Jnseln«)[51]. The navigation link between the archipelago and the Skamni Peninsula is also reflected in the descriptions of the Sozopol water area left by the Frenchmen Jacques Nicolas Bellin and Edouard Taitbout de Marigny. In the 18th century, Bellin presented Sozopol as a small, but very good port (»son petit port est fort bon«), where anchor could be drop at a depth of 10 to 12 brasses/fathoms (between 18 and 22 m), very close to which »there are two small isles or rocks« (»deux petites Isles ou rochers«), one of which the Greeks call Zafaronisi (St Cyricus), and the other one Ayu Yoani«[52]. Far more comprehensive in his 19th century Black Sea Pilot is Taitbout de Marigny. He mentions that the harbour of Sozopol (port de Sizopoli) was located west of the Skamni/Stolets Peninsula and had the shape of a semicircle. Its width was 1 ¼ miles. The eastern end of the harbour stretched to the Sozopol peninsula, where the settlement itself was located, and the western one to another small peninsula (Chrysosotira, present-day Chervenka) where the monastery »St Trinity« is[53]. Further Taitbout de Marigny continues his description as follows: »Half a mile north of Sozopol there is the small island of St Cyricus [petite île appellée Kirios], which forms two sailing passages (easternmost and westernmost) to the bay. The smaller one has a depth of 12 brasses/fathoms (22 m), measured midway between the island and the settlement [à égale distance de l'île et de la ville], and 6 to 8 fathoms (11-14.6 m) close to the shores. The wider passage offers a sea bottom of 10-12 fathoms (18-22 m). At the eastern end of St Cyricus Island is St Peter's Islet, which is connected to the island by a rocky bank and should be given a berth of 1 cable-length (185.3 m). In the

48 Popov/Michev, Géomorphologie 267.

49 A part of this archipelago were also two other islets/reefs named Milos and Gata, located between Skamni peninsula and the islands of St John and St Peter. These two reefs probably submerged due to an earthquake at the beginning of the 20th century. At present each of the reefs constitute a submerged rock up to 30-40 m wide, reaching 8-10 m below the water surface whereas its foundation lies at a depth of 20-22 m. The reefs are separated by a 10-15 m wide straight. – Dimitrov/Orachev, Pristanishtnata Sistema 4-5. – Dimitrov/Porozhanov/Orachev, Pristanishtata 449. – Gyuzelev, The West Pontic Coast 61.

50 Purchas, Voyages 476.

51 Nikov, Opisanie 31.

52 Todorova, Frensko opisanie 136.

53 In fact, Taitbout De Marigny describes the whole Bay of Sozopol, stretching eastwards to Sozopol peninsula and westwards to Chrysosotira (present-day Chervenka) promontory, near the present-day town of Chernomoretz. Local inhabitants still call Chrysosotira promontory »the Monastery«.

western part of St Cyricus there are reefs, jutting out into the sea 2 cables-length in west-south-west direction. Another triangle-shaped island, called St John is located 1 cable away from the west side of Sozopol [du bord occidental de Sizopoli]. This area, limited to the north by rocks that leave only a 12-14 m wide navigable pass near the island, shelters shallow-draft vessels that want to moor near the town. There they anchor at a depth of 2.5-3 brasses/fathoms (4.5-5.5 m), over a sandy sea floor and feel in complete safety [en toute sûreté]. This small harbour, approximately 200 meters long and almost as wide, has no outlet to the southward, as a bar of sunken rocks runs across it with only 3 to 4 feet water over them. The outer (western) shore of the island ends with several rocks projecting southwards, which should be circumnavigated at a distance. In the middle of the harbour of Sozopol (Au milieu du port de Sizopoli) there is a depth of 7-8 brasses/fathoms (13-14.6 m), the seafloor is sand and algae [fond de sable et d'herbes] and is in a bad condition [d'assez mauvaise tenue]. It is preferable to anchor at a depth of 4 brasses/fathoms (7.3 m), south of St John island, opposite to the isthmus [vis à vis de l'isthme], where also a well can be seen. Vessels that can approach at a distance of 1 cable will be in complete safety. Between Cyricus and Sozopol, or in other words between this island and the mainland to the west, the seabed is of mud and shells and is in a good condition [de vase et de coquilles de bonne tenue]. Near the small St Trinity peninsula, the seafloor is sandy and has a depth of 2.5 brasses (4.5 m)«[54].

It is clear from the detailed paragraph cited above that the navigational profile of the harbour of Sozopol area, outlined by Taitbout de Marigny, corresponds with the information in the medieval portolans. That is why the autopsy-like description of the French marine officer can be used retrospectively to complement with its details the *status quo* depicted in the 14th and 15th-century sailing directions. However, it is necessary to take into account a technical mistake made by Taitbout de Marigny. He incorrectly exchanged the names of the islands of St Cyricus and St John. Except for this inaccuracy, everything else in his Pilot Book corresponds to the data from the portolans, and at the same time, it expands and enriches the information they provide about the waters of the harbour of Sozopol and its immanent island configuration, the navigational approaches, the depths and the composition of the seabed, the possible mooring sites and the localization of the best moorage situated south of St Cyricus Island and west of the isthmus of the Skamni Peninsula.

In addition to its excellent navigational features, which turned it into the best natural harbour on the entire Western Black Sea coast, where ships in distress found salvation, Sozopol was also distinguished by its logistical potential. At a day-long sailing from the Bosporus under ideal conditions; one of the main ports of the Strandzha zone as well as the southern entrance to the Gulf of Burgas, connected by internal land routes with the fertile Thracian hinterland, the medieval Sozopol became one of the leading trade and communication centres on the Western Black Sea coast. The importance of the harbour town was also appreciated by the Italian merchant-seafarers, who dominated the late medieval Mediterranean »Weltwirtschaft« (world-economy). The Genoese took a particularly keen interest in the local market. Their presence and active involvement there is attested in two documents. Firstly, a decree of the Genoese *Officium Ghazariae* of 22 March 1316, explicitly interdicted Genoese merchants to go to Sozopol (*De non eundo ad Susopolim)* under threat of a fine of 50 Genoese *librae*/pounds because of the reluctance of Tsar (*Imperatori de Zagora*) Theodore Svetoslav (1300-1321) to cover the damage and losses that some representatives of the Republic of Genoa suffered from people of the Bulgarian ruler in the town of Maurocastron (the present-day town of Bilhorod-Dnistrovskyj, Ukraine) and other places. The second document, which reflects the Genoese interests in Sozopol, is the Account Book *(Computus)* of the Genoese »Military Service« of 1351-1352, where commercial exchanges with grain, wine, and slaves, made by Genoese merchants in the town, were reported[55].

What were the parameters of the logistic function of the harbour of Sozopol in the 13th-15th centuries? At this stage, there are no specific data in the sources on its storage facilities. Still, in his manual *La pratica della mercatura* the Florentine banker Francesco Balducci Pegolotti (14th century) puts Sozopol among the leading wheat markets along the Western Black Sea coast together with Anhialo (the present-day town of Pomorie, Bulgaria), Maurocastron, Varna and Vicina (a town on the Lower Danube whose location is still unknown)[56], which is an indirect indication of the commercial-logistic potential of the town and the availability of warehouses and facilities for storing the wheat traded at the harbour. The Account book of the Genoese »Military Service« mentions that wheat (74 modia) and barley (45 modia) were loaded and exported in linhs and barques from Sozopol to Pera in 1351-1352[57]. Carrying out such commercial operations which involved purchase and loading of such a large tonnage of wheat (17.7 t) and barley cannot have been successfully realized without the availability of a suitable warehouses.

A valuable piece of information, which is an attestation of the logistic function of the harbour of Sozopol, is contained in the »Sozebolu Harbour Law« drafted by the Ottoman authorities in the 16th century, which mentions the existence of a sheltered marketplace at the harbour for the use and maintenance of which the local authorities collected a certain fee[58]. It can be assumed with a great deal of probability that this market existed in the previous centuries and contributed

54 De Marigny, Pilote 26-27.
55 Gjuzelev, Ochertzi 105.
56 Pegolotti, La Pratica della mercatura 42.
57 Gjuzelev, Ochertzi 111-112.
58 Tzvetkova, Prouchvane 203.

to the higher efficiency of the maritime trade carried out at the harbour of Sozopol.

As far as the loading capacity of the harbour of Sozopol is concerned, there is only one clear evidence of the way the cargo was transported from the vessels to the shore. In his Account Book (*Computus*) Antonio Barberi, the treasurer of Amadeus VI, Count of Savoy (1334-1383), reports that on 9 January 1367 he paid in Sozopol 8 silver ducats for the boat that carried Amadeus VI's property from the galley he travelled with to the shore[59]. From this information, it appears that the transport of cargo from the basin where the large ships moored (Amadeus VI travelled with *galea grossa*) to the shore was carried out by boats, which served the internal communications in the harbour and played an important role in loading and unloading. Despite the lack of direct data, it is logical to assume that there was also a pier, which, judging by the above-mentioned use of harbour boats, was available to vessels with smaller displacement and shallow draft – vessels which, as already mentioned, could also be hauled onto the sandy beach for more effective cargo handling. Interesting information about the Sozopol pier was recorded in the 18th century by Wenzel von Brognard. He points out that the pier of the town stretched 2 miles inward (»Des Marktflekens eigene Scale ist zwey Miglien tiefer einwärts gelegen«)[60]. The existence of a harbour pier in Sozopol in the first quarter of the 17th century was also reported in a marginal note written by the abbot of the monastery of »St Anastasia« Nathanail, which says that in 1623 some Cossacks with 17 caïques »… came to the Sozopol pier«[61]. However, the question remains to what extent these two pieces of evidence for the existence of a harbour pier are relevant to the 13th to 15th centuries.

An important indicator of the functional capacity of a harbour is the type of ships it can accommodate in its waters, with the size, the displacement as well as dead-weight tonnage of the mooring vessels being of particular importance. As already mentioned, in *Lo Compasso de Navegare Sozopol* is defined as a harbour for barques. However, the 14th century sources expand this profile and indicate that it far exceeded the category of a harbour for small sail-boats. In the *Devetum de non eundo ad Susopolim* (Embargo on going to Sozopol) issued on 22 March 1316 by the Genoese Officium Ghazariae it is ordered that no one with a galley, nave (nef), linh or barque (*aliqua galea, navi, ligno vel barca*) can visit Sozopol[62]. It is clear from this prohibition that besides barques, other larger classes of both long and round types of ships[63] also moored in Sozopol before being banned from sailing to its harbour area. This evidence is supported by: the information in the Account Book (*Computus*) of the Genoese »Military Service« of 1351/1352 about a linh and galley that visited the harbour of Sozopol[64]; reports from the logbook of the large galley whose captain was Simone Lekavela of Genoa which visited Sozopol in March 1352[65]; and the data from the 1366/1367 Account Book (*Computus*) by Antonio Barberi, where, besides the galleys in Amedeus's fleet, a pamphylos and several linhs are mentioned among the vessels that transported the Count's people to and mostly from Sozopol to Constantinople[66]. From the review of these documents, it is clear that linhs stand out as most commonly used. In March 1367 Emperor John V Palaiologos (1341-1391) and the Latin Patriarch of Constantinople travelled aboard a linh from Nessebar to Sozopol. The same ship waited for them for 3 days in the water area of the harbour until they finished their mission and then took them back to the Count of Savoy[67]. On 27 April 1367 in Constantinople, 415 perpera were paid for freight to Gonrado de Lacu as a patron of a linh (*patrono cuiusdam ligni*). This ship transported 83 people from Sozopol to the Byzantine capital – including the servants of Amedeus VI, as well as some people from Württemberg[68]. The next notice is from 2 May 1367. Then, Constantine Decipat of Sozopol was given 425 perpera for transporting 84 Teutonic Knights and Englishmen on his linh (*sui ligni*) from Sozopol to Constantinople[69].

Along with the above-mentioned types of ships, the list of vessels that moored at the harbour of Sozopol is also enriched by a »small galley« (*una parva galea*)[70], by some cargo ships such as griparea[71] and pamphylos[72], as well as by sandalion[73], which was mainly used by local fishermen.

The brief overview of the types of vessels that visited the harbour of Sozopol during the Middle Ages, shows that ships of different classes, size and characteristics moored in its waters, which proves its high standard of safety and operability while handling the ship traffic, i. e. the harbour's functional capacity was absolutely relevant to the needs of medieval navigation providing shelter to both long and round types of ships.

In a nutshell, several conclusions can be drawn. Over the centuries Sozopol and its harbour underwent changes in their geomorphological configuration. As a result, during the Middle Ages the water area between St Cyricus Island and the north-west front of the tombolo established itself as the basic harbour moorage, which *a propos* seems to have been the permanent main body of the harbour since the time of the pre-Hellenic Thracian settlement. Due to its excellent

59 Bollati, Illustrazioni della spedizione 105, §411.
60 Nikov, Opisanie 31.
61 Karaiotov, Ostrov 61.
62 Gjuzelev, Ochertzi 105.
63 More on these two general types of Mediterranean ships and the main distinctions between them see in Lane, Ships 1-53.
64 Gjuzelev, Ochertzi 111-112.
65 Balard, La bataille du Bosphore 465.
66 Bollati, Illustrazioni della spedizione 118-119, § 441; 134, §542; 139, §580.
67 Bollati, Illustrazioni della spedizione 118-119, § 441.
68 Bollati, Illustrazioni della spedizione 122, § 460.
69 Bollati, Illustrazioni della spedizione 125, § 490.
70 Bollati, Illustrazioni della spedizione 112, § 432.
71 Gjuzelev, Ochertzi 119-120.
72 Gjuzelev, Tri etjuda 120.
73 Gjuzelev, Izvori 219.

functional characteristics, both sheltering and logistic, Sozopol became one of the busiest harbours along the Western Black Sea coast. The apogee of the medieval town dates back to the 13th-15th centuries when the West Black Sea system of harbour towns became part of the international maritime trade network directed by the Italian merchant-seafarers. Sozopol is present in all medieval portolans and in most (86.3 %) of the portolan charts from the 14th to the 17th centuries, with its name regularly highlighted in red[74], which reflects its location and its crucial importance as a key maritime and trade centre. There is no doubt that, not only in the heyday of the ancient Apollonia Pontica but also during the medieval prime of Sozopol, the harbour was one of the determining factors for the prosperity of the town and its inhabitants.

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Summary / Zusammenfassung

The Harbour of Medieval Sozopol

Sozopol (Σωζόπολις / ancient Apollonia) was one of the most important port cities in the late medieval and early modern Black Sea, as is documented in various portolans and documents of the 14th century onwards. This paper explores the function and topography of its harbour and anchorages based on a combination of written, archaeological, cartographic, pictorial and also new geophysical evidence.

Der Hafen des mittelalterlichen Sozopol

Sozopol (Σωζόπολις / das antike Apollonia) war eine der wichtigsten Hafenstädte im spätmittelalterlichen und frühneuzeitlichen Schwarzen Meer, wie verschiedene Portolane und Dokumente ab dem 14. Jahrhundert belegen. Dieser Beitrag untersucht die Funktion und Topographie seines Hafens und seiner Ankerplätze auf der Grundlage einer Kombination aus schriftlichen, archäologischen, kartographischen, bildlichen und auch neuen geophysikalischen Befunden.

Fig. 1 View to the town of Sozopol, its water area, the port, and the islands. – (D. Dimitrov, 2019; base map GoogleEarth).

Fig. 2 View of Sozopol peninsula and its sandy isthmus/tombolo with small vessels hauled onto the beach area in the north-western part of the isthmus. Postcard, first quarter of the 20th century. – (Unknown photographer).

Fig. 3 View of the harbour of Sozopol basin and St Cyricus Island, 1940. – (Fotoatelie »Gr. Paskov«, Sofija, State Archives – Burgas BASA-1513-1-28-1).

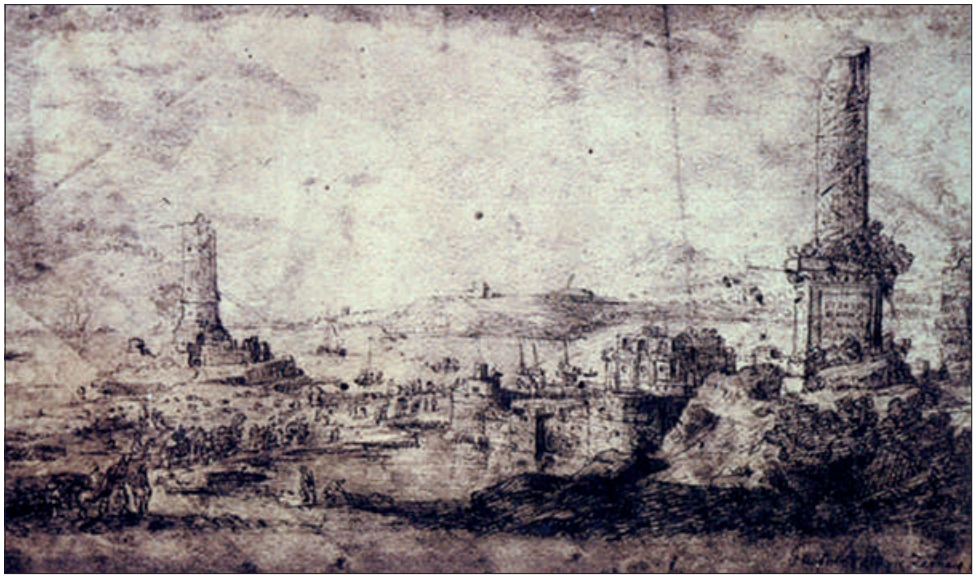


Fig. 4 A drawing of Sozopol by the Flemish painter Jan Peeters (?) (1653) showing the harbour and St Cyricus Island. – (From Dimitrov, Sozopol 396-397).

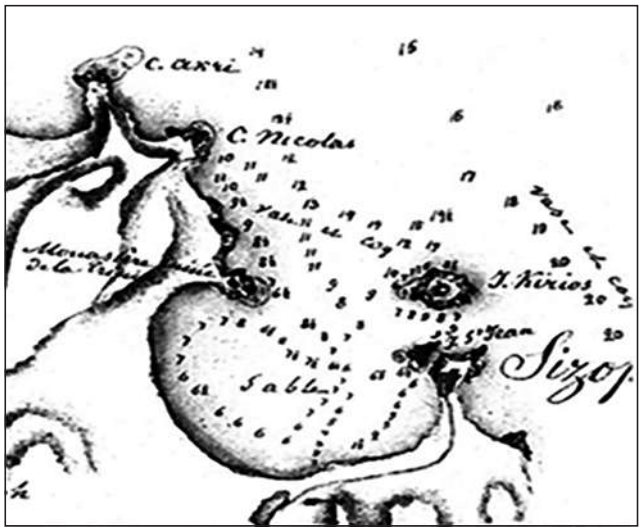


Fig. 5 Plan of Sozopol Bay by Taitbout De Marigny (1830). – (From Orachev, Prouchvania 9).

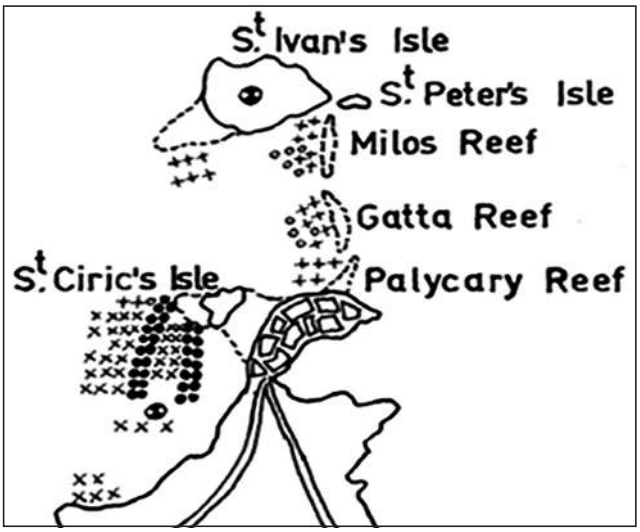


Fig. 7 Sketch of the water area and the anchorages of Apollonia Pontica. Key: ××× Stone anchors. °°° Lead stocks. - - - Coastline in Antiquity. **---** Present-day coastline. ••• hypothetical ancient breakwaters. – (From Dimitrov, Anchors 57).

Fig. 6 The Western Black Sea harbour system according to the earliest extant dated navigational/portolan chart produced at Genoa by Petrus Vesconte in 1311. Sozopol (Cisopoli) is highlighted in red and the two dots in front of its coastline designate the islands of St John and St Cyricus. – (From Dimitrov, Kartographia 43).

Fig. 8 Location of the harbour area of late medieval Sozopol according to the portolans. – (D. Dimitrov, 2019; base map GoogleEarth).

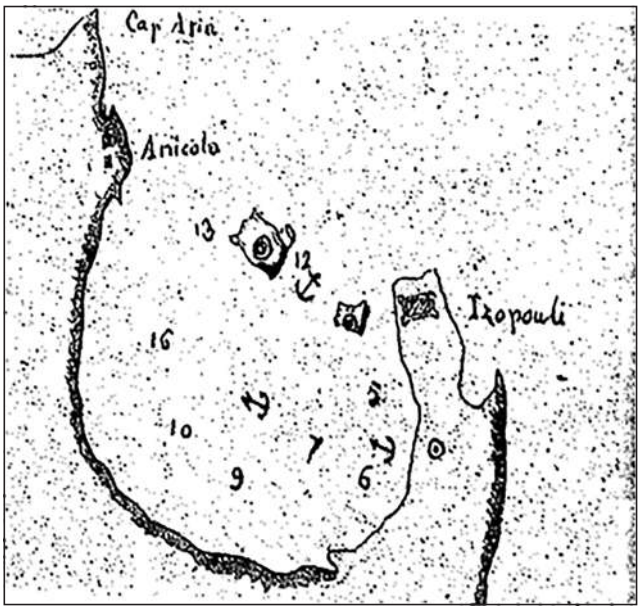


Fig. 9 Sozopol Bay and its anchorages according to an Anonymous French Plan of the Western Black Sea coast from the 17th to 18th centuries. – (From Orachev, Prouchvania 9).

Alkiviadis Ginalis

Reassessing the Harbour of Anthedon

Before starting with my analysis of Anthedon's harbour facilities, it must be mentioned that this paper is dedicated to my mentor David Blackman. His admirable work on the harbour of Anthedon together with Helmut Schläger and Jörg Schäfer not only forms the starting point of harbour studies as a scientific discipline within the field of archaeology but more so it still constitutes one of the best examples of its kind. As such, exactly 50 years after they investigated the harbour in 1966, I visited the site myself, which led me to the decision to honour Anthedon and their researchers with a re-examination of the data 50 years after they publicised »Der Hafen von Anthedon mit Beiträgen zur Topographie und Geschichte der Stadt« in 1968.

The coastal site of Anthedon is situated approximately 14 km north-west of Chalcis (Byzantine Euripus) along the Greek mainland coast (**fig. 1**). In contrast to its modern administrative affiliation to the island of Euboea, during Antiquity and the Middle Ages, it belonged to the province of Boeotia and later Hellas, respectively. This is attested by written accounts, such as Homer's Iliad (II, 508), Herakleides Criticus' Descriptio Graeciae (I, 23), the Periplus of Scymnus, Plutarch's Naturalis Historiae (IV, 7), Strabo's Geographica (IX, 2, 2; 13), Stephanus of Byzantium or Hierocles' Synekdemos (644, 12), as well as a series of inscriptions, referring to Anthedon as the most southern Boeotian harbour and member of the Boeotian League[1]. Located on the southern coast of the northern Euboean gulf, Anthedon consequently played an important role as a strategic coastal site of Boeotia as early as the Homeric Age.

The site's significance as a harbour station for the coastal network of central Greece has mainly been attributed to its proximity to Chalcis, as well as its function as one of the only three maritime connections of Boeotia with the Euboean Gulf besides Larymna and Halae (Byzantine Theologos) or Atalante, respectively. The key role of Anthedon, however, is not only based on its function as a strategic intermediate station within the Euboean Gulf and especially between the Boeotian inland city of Thebes and the Euboean capital. Moreover, lying next to the so-called River *Drestilia* (ancient *Schinous*), which divides the homonymous plain between Mount *Chtypas* (ancient *Messapion*) in the east and Mount *Ptoion* or *Ptoo* in the west (**fig. 2**), Anthedon served as a fundamental transshipment centre for the entire fertile coastal area and its wider hinterland. Even though Boeotia's harbours probably served mainly local trade, the precedence of its harbour sites becomes apparent from the fact that Anthedon was preferred to the likewise easily accessible coastal land route[2], which passes by *Loukissia* around 2.5 km further inland. Of particular importance would have been therefore its role as a so-called *epineion* for Thebes itself as well as the rural sites around the lake and later plain of *Copais* and its channel system via Lake *Ylike* and Lake *Paralimne*[3].

Beyond literary and epigraphic testimonies, mainly the rich material remains of Anthedon and its harbour area confirm the important role of the site from the Bronze Age until the Byzantine era. However, despite numerous studies by scholars such as Leake (1805), Ross (1844), Ulrichs (1846), Frazer (1895), Georgiades (1907), Lehmann-Hartleben (1923) or Orlandos (1937)[4], unfortunately, only a single season of excavation by Rolfe has so far ever been carried out, dating back to 1889. Undertaking merely four test trenches, the latter nevertheless revealed parts of the Acropolis, the city walls and other building complexes of the around 25.5 ha large area. Alongside some archaeological data of the Classical period, the documentation of an early Christian basilica next to the harbour and a large Byzantine graveyard southeast of the city point not only to a constant occupation from the Classical to Byzantine times but also to a peak of urban life and maritime connectivity throughout the late antique and early medieval periods[5]. Nonetheless, although Anthedon was subject to further investigations, such as the architectural survey by Georgiades[6], the site and above all its most prominent and important feature – the harbour area – did not receive much attention until the 1960s. Only in 1966/67 did Schläger, Blackman and Schäfer conduct a systematic examination of

1 Buck/Tarbell, Anthedon. – Hierokles, Synekdemos 17. – Keil, Sylloge 15. – Koder/Hild, Hellas and Thessalia 123. – Müller, Geographi Graeci I, 216. – Strabon, Geographika 32-33. 42-43. – Heraclides Criticus, Descriptio Graeciae 82-83. – Schläger/Blackman/Schäfer, Anthedon 25-28. 98-102.
2 Strabon, Geographika 54-55.
3 Blackman, Plautus 16.
4 Frazer, Pausanias 92-95. – Georgiades, Ports 7 pl. IV. – Leake, Travels II, 272-275. – Lehmann-Hartleben, Hafenanlagen 77-78. – Rolfe, Anthedon. – Ross, Wanderungen II, 126-132. – Ulrichs, Forschungen 36-37.
5 Leake, Travels II, 272-275. – Orlandos, Anthedon 172-174. – Schläger/Blackman/Schäfer, Anthedon 23-24. 30.
6 Georgiades, Ports 7.

In: Johannes Preiser-Kapeller · Taxiarchis G. Kolias · Falko Daim (eds), Seasides of Byzantium. Harbours and Anchorages of a Mediterranean Empire. Byzanz zwischen Orient und Okzident 21 (Mainz 2021). DOI: https://doi.org/10.11588/propylaeum.910.c12050

Fig. 1 Anthedon in its geographical setting. – (Photo A. Ginalis, 2018).

Fig. 2 Anthedon and its immediate hinterland. – (Photo A. Ginalis, 2018).

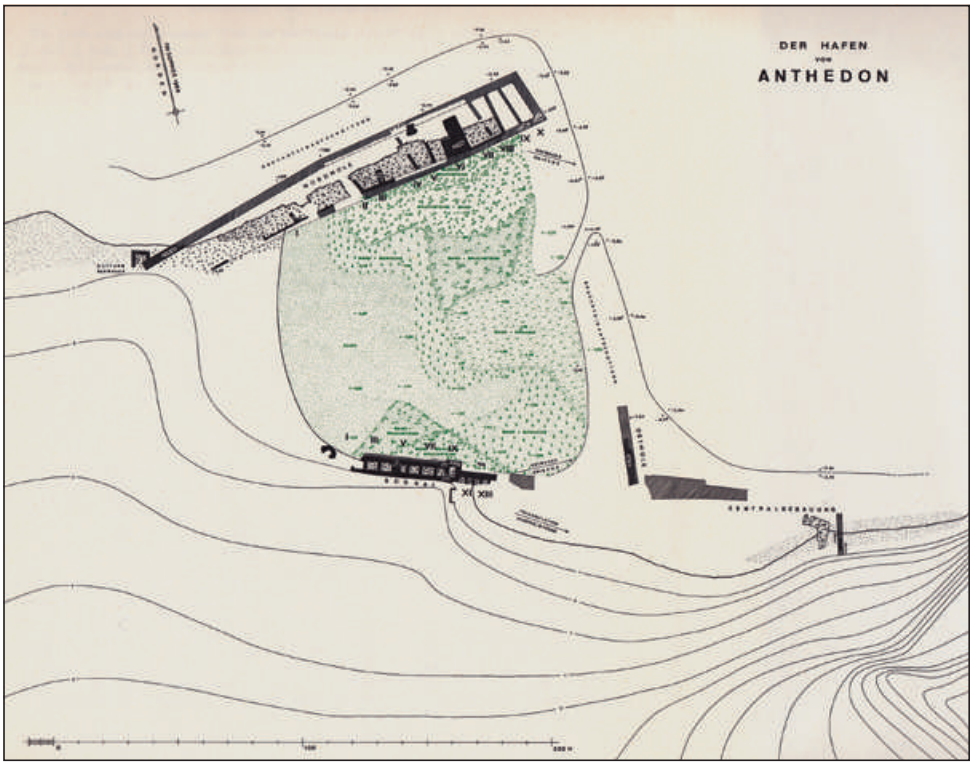


Fig. 3 Plan of the harbour of Anthedon. – (From Schläger/Blackman/Schäfer, Anthedon).

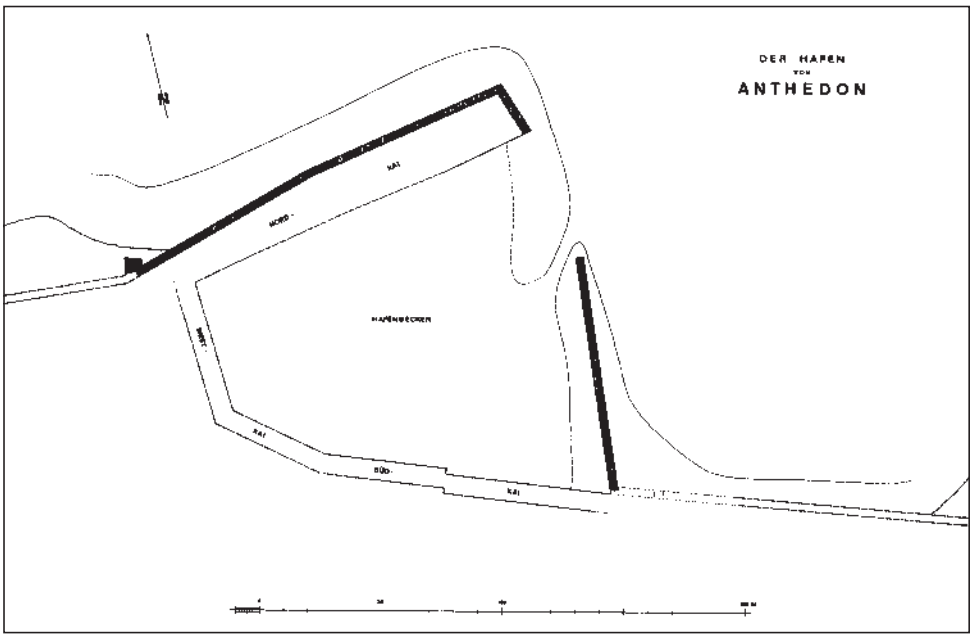


Fig. 4 Plan of the harbour basin of Anthedon. – (From Schläger/Blackman/Schäfer, Anthedon).

the still well-preserved harbour area with an architectural and topographic study of its material remains[7]. The investigation and reconstruction of the harbour installation and its associated coastal facilities include the northern and eastern breakwater with their mole superstructures and sea walls, the southern and western quayside, as well as a peculiar structure east of the harbour basin towards the western slope of the Acropolis (**fig. 3-4**). This is followed by a study of sea-level change, ceramic material, and petrographic samples.

Due to the influencing environment such as the geographical and physical conditions[8], the position and morphology of the harbour site did not change through time. This usually

7 Schläger/Blackman/Schäfer, Anthedon.

8 See Karmon, Components.

Fig. 5 Breakwaters of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

results in a rich and complex stratigraphy. However, based on the visible remains of the various harbour installations and their associated structures, the authors concluded that today's visible features most likely belong to one only building phase, for which a dating to the 6th century AD and most probably to the reign of Emperor Justinian I has been suggested[9]. Given the fact that according to Plutarch Anthedon and particularly the harbour area was destroyed by the Roman general Sulla in 86 BC, this appears to be convincing. 50 years after Schläger, Blackman and Schäfer's investigation, I visited the site in 2016 as a part of my research on Byzantine ports of central Greece. However, based on the 1966 data and photographic material, as well as my personal observations, I propose a slightly different or modified assessment, which is discussed separately for each harbour feature in the following sections:

Breakwaters

The most striking feature of Anthedon is certainly its massive breakwaters, which have the largest extent of all the structures (**fig. 5**). The harbour possesses two breakwaters: a larger northern and a smaller eastern one. The around 300 m long and 35 m wide northern breakwater shows a nearly east-west orientation, before turning south after 190 m to form a hook at its eastern end. In contrast, the eastern breakwater has a clear north-south orientation and stretches in a straight line from the southern shoreline to the north for a length of about 125 m. They overlap slightly and enclose the harbour, forming a harbour basin of about 1.50 ha.

Based on the documentation in 1966, the breakwaters consist of a steep-angled and carefully constructed tight rubble mound, which starts from the seabed and reaches up to a protruding crest. Slightly offset towards the internal part, this is followed by a shallow-angled and loosely constructed slope (**fig. 6**). Optically, the construction reminds therefore of a so-called *Composite breakwater*[10]. This type of breakwater with two levels of elevation was preferred in regions with a wide tidal range and where the depth of the water restricted the construction of the classical *Mound breakwater* for architectural or economic reasons. In this case, the rubble mound formed only a kind of foundation for vertical walls built on top of it. In the Euboean gulf, a strong tidal phenomenon can indeed be observed, which is caused by the eastern and southern tides of the Aegean Sea. Changing the direction of the water within the Euboean gulf every 6 hours, these tides cause a constant change in sea-level of up to 40-50 cm[11]. Consequently, the construction was interpreted as a uniform feature, which belongs to one construction phase. However,

9 Schläger/Blackman/Schäfer, Anthedon 91-95. 98.
10 Cornick, Engineering II, 116. 118 ff. – Ginalis, Byzantine Ports 27-31.
11 Schläger/Blackman/Schäfer, Anthedon 40. 76. – See also: http://antonios-antoniou.gr/evripos#.WobScucxnIU (08.03.2018).

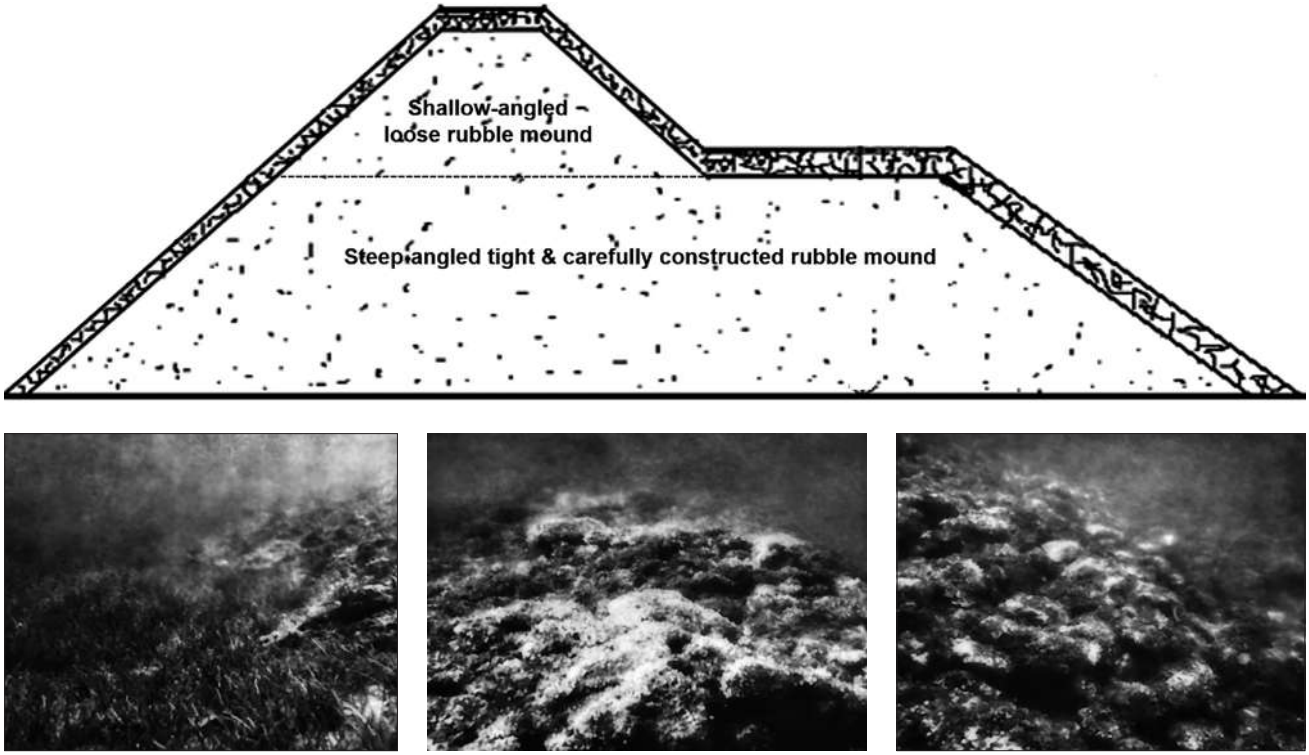
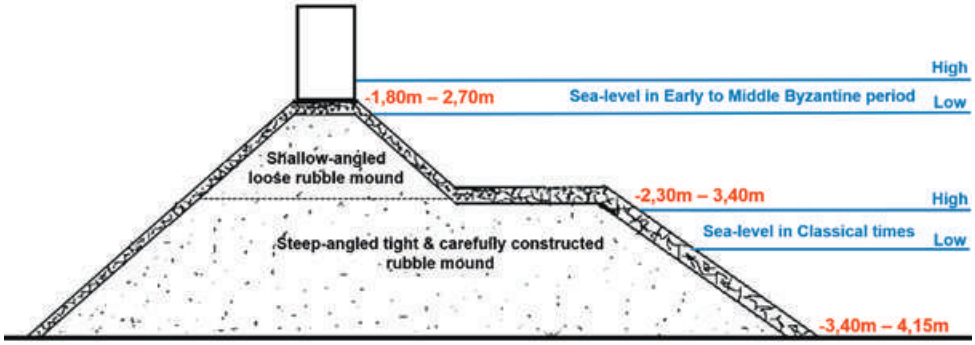


Fig. 6 Images and construction of the breakwaters of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

Fig. 7 Measures of the breakwaters of the harbour of Anthedon. – (A. Ginalis, 2018).



Tab. 1 Measures of moles in Anthedon.

	Depth at the sea floor (m)	Depth at the crest (m)	Depth at the mole foundation (m)
Northern mole: north-western end	3.40	2.30	1.88
Northern mole: centre	3.90-4.15	3.20	2.40
Northern mole: north-eastern end	4.15	3.25-3.40	2.75
Northern mole: east end	3.55-3.75	2.25-2.60	1.85-2.55
Eastern mole: northern end	3.80	1.95	-
Eastern mole: centre	3.05	2.30	-
Eastern mole: southern end	2.50	2.05	1.20

the lower and upper parts of the breakwaters show entirely different characteristics. As such, it may also be suggested that the lower steep-angled and tightly constructed part and the upper shallow-angled and loosely constructed part in fact represent two different construction phases. This allows the interpretation of an earlier mound breakwater construction, which was subsequently heightened due to the rising sea-level at a later date. Accordingly, given the maximum depth of the breakwaters of 4.15 m measured in 1966 (fig. 7; Tab. 1) compared to the estimated sea-level in antiquity, the height would not be insurmountable for the construction of a simple mound breakwater. Even though the measurements may not

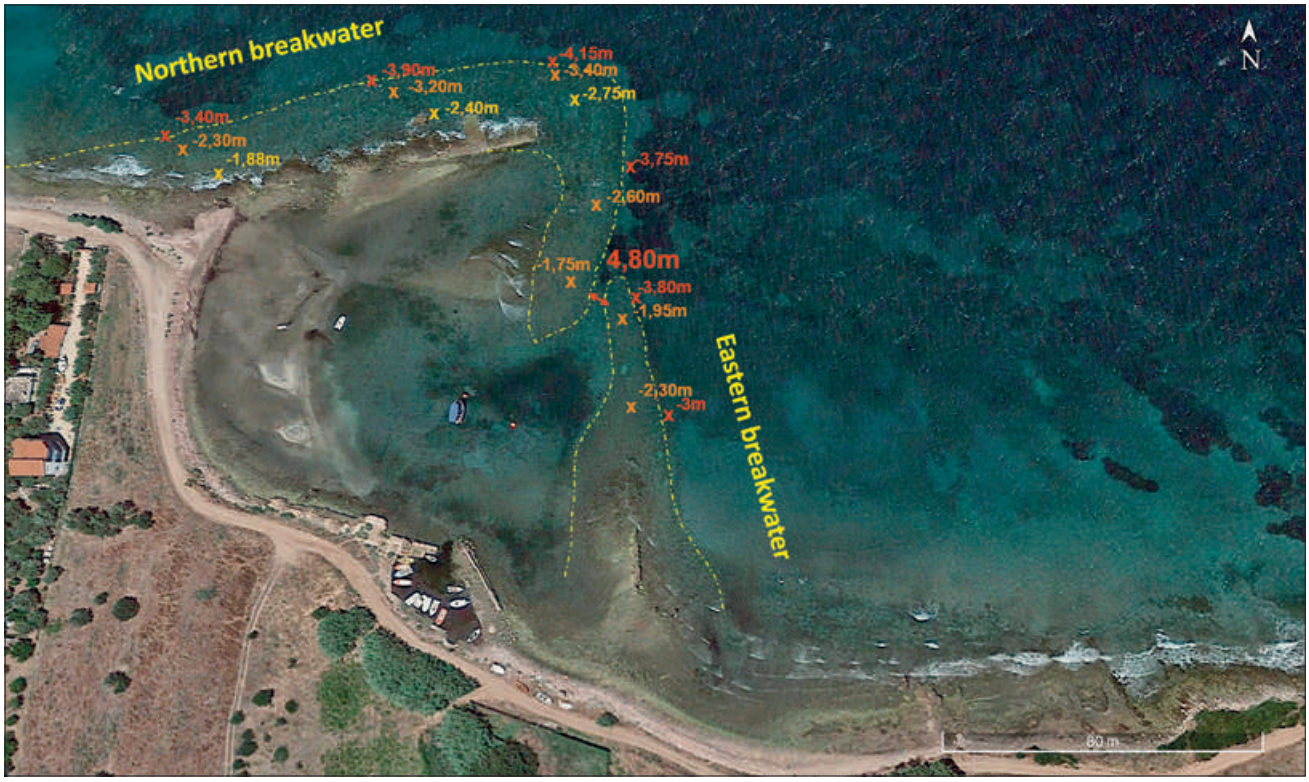


Fig. 8 Measurements of the breakwaters and of the entrance of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

represent the actual depths of the breakwaters due to the siltation of the harbour, further examples throughout central Greece such as the harbour of Skiathos attest that heights of 5 m were absolutely feasible.

But if the breakwaters truly show more than one construction phase, into which period are the two parts to be dated?

An answer to this question could be provided by the measurement of the harbour entrance in relation to the change in sea-level[12]. In the survey of the harbour entrance in 1966, a distance of 4.80 m was measured between the northern and eastern breakwaters at a depth of 2.40 m (**fig. 8**). Both, the given depth and the rather narrow passage, correspond with the Classical to Hellenistic periods and find their comparison in the port city of Pagasai, for which an equally narrow entrance of just 4.50 m was documented[13]. Even if 4.50 m seems too narrow and a more realistic width of 6-7 m may be assumed for the Classical to Hellenistic harbour entrance[14], the dimensions still clearly differ from those of later centuries. Accordingly, at a depth of 1.50 m, the entrance widens suddenly to approximately 19 m (**fig. 9**). As just mentioned, in contrast to the Classical to Hellenistic harbour entrance this is more reminiscent of harbours of a much later era, such as the central Greek sites of Thessalian Thebes, Polydendri, Koutsoupia or Stomio. Dating to the Roman Imperial to Early Byzantine periods and most probably to the era of Emperor Justinian I (6th century AD), these harbours all show a harbour entrance with a width between 20 m and 23 m[15]. As such, it can be suggested that the lower rubble mound was constructed as early as the Classical period, whereas the upper part indicates the resumption of harbour activities at Anthedon in the 6th century AD, after its destruction by the Roman general Sulla in 86 BC, as proposed by Schläger, Blackman and Schäfer[16].

This conclusion is further supported by the superstructures of the breakwaters. During the investigation in 1966, longitudinal wall structures were documented along both breakwaters[17]. While the course of the 32 m long preserved wall on the eastern breakwater follows the straight north-south orientation of its substructure, its counterpart along the northern breakwater leads 78.50 m towards the north-east, before turning east and running for another 86 m to reach a total length of 164.50 m (**fig. 4**). Even though the today largely submerged wall remains are only partly preserved, it is still clearly visible that they consist of rows of limestones constructed in a system of three headers with a total width of 3.40 m (**fig. 10**). The wall remains along the northern breakwater seem to be connected to the city wall, extending from a tower west of the harbour to the east (**figs 3-4**). As such, it had been suggested to identify both wall sections as the harbour's sea walls erected as a part of Justinian's building

12 Blackman, Sea level 123-125.
13 Ginalis, Byzantine Ports 172. – Schläger/Blackman/Schäfer, Anthedon 170 fn. 4.
14 Ginalis, Byzantine Ports 173.
15 Ginalis, Byzantine Ports 183. 231.
16 Schläger/Blackman/Schäfer, Anthedon 26. 91.
17 Schläger/Blackman/Schäfer, Anthedon 34-35. 50. 70-71.

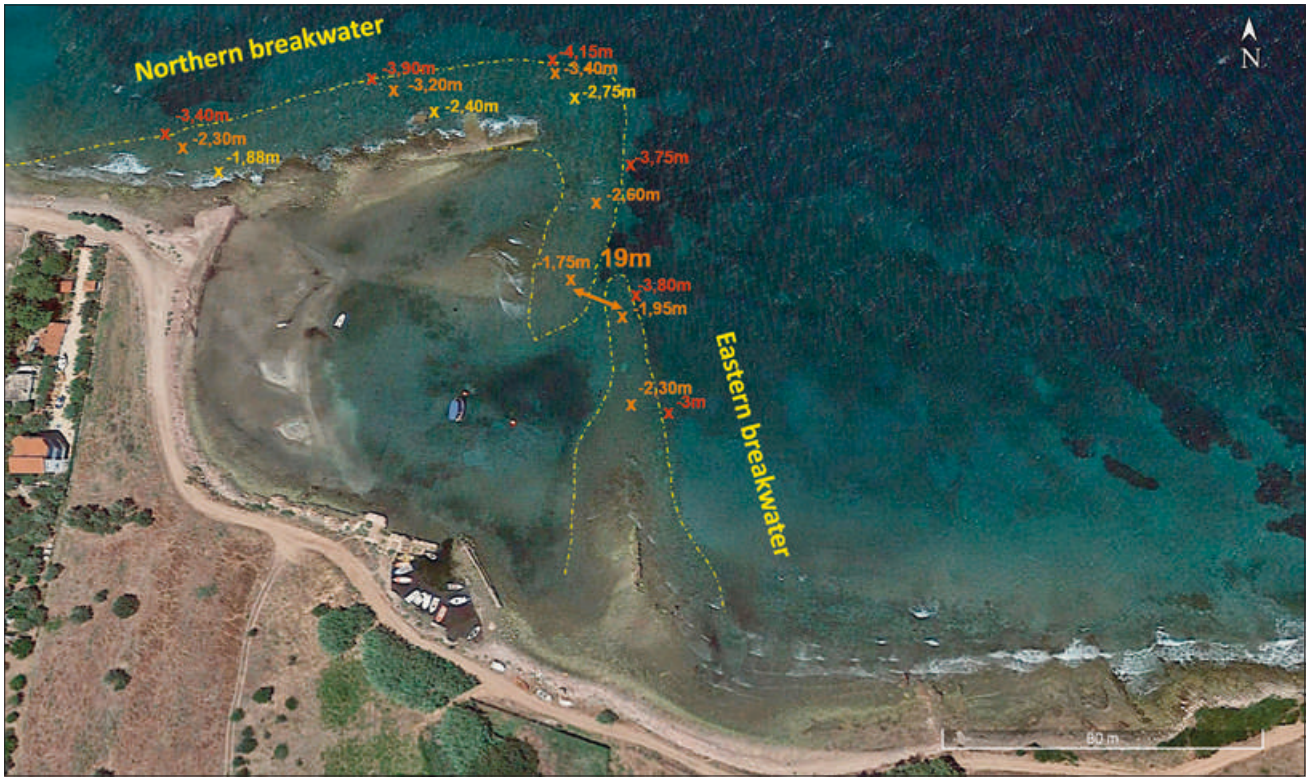


Fig. 9 Measures of the breakwaters and of the entrance of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

programme during the 6th century AD[18]. Some of the still visible stone heads of these supposed sea walls are documented under water up to a depth of 2.55 m. This corresponds precisely with the top of the breakwaters' upper part, which was used as groundwork, partly embedding the wall foundation. Despite the change in sea-level and the strong tidal phenomenon, the walls must have been at least partially under water already at the time of their construction. Consequently, this not only confirms that the walls and the upper part of the breakwaters belong to one construction phase, but also the above-described characteristics and identification of the entire structure as a composite breakwater. Since underwater artificial structures such as walls did not exist prior to the Roman period and the invention of hydraulic concrete[19], I believe that the 6th century AD date suggested by Schläger, Blackman and Schäfer can be supported but must be seen as a later addition to the existence of an earlier mound breakwater.

A point of discussion, however, appears to me more the function of the wall construction itself. The question is whether it constituted a sea wall or part of a free-standing mole. While Schläger, Blackman and Schäfer propose a reconstruction as sea walls, which integrate the harbour into the city's defensive system, Lehmann-Hartleben doubts the existence of a harbour fortification[20]. And indeed, there seem to be some discrepancies. The most substantial argument to interpret the structures as sea walls is given by its remains along the northern breakwater. The longitudinal wall with a width of 3.10-3.40 m is not only directly connected to a tower of the city wall west of the harbour but also continues smoothly in accordance with the width of the city walls for which on the Acropolis a width of 4.50 m was measured. On the contrary, the tower shows a clear east-west orientation, resulting in a rather strange angle to the south-west – north-east running wall along the breakwater. Furthermore, the walls of the tower possess a width of merely 1.20-1.40 m, which strangely enough corresponds to almost only 1/3 of the strength of the supposed sea walls. Additionally, for the effectiveness of defence, the walls should have featured also towers at their end to protect the harbour entrance. Besides the fact that these are entirely missing, the wall along the eastern breakwater should have possessed a total length of at least 90 m in order to leave a still reasonable gap of 55 m as suggested by Schläger, Blackman and Schäfer. Both, the investigation in 1966 and my own observations in 2016 could verify only a maximum length of around 40 m though.

The most serious argument against an interpretation as sea walls, however, is provided by a 15 m² large platform (**fig. 11**), which belongs to the northern mole construction

18 Schläger/Blackman/Schäfer, Anthedon 75.
19 Blackman, Ancient harbours I, fig. 1F. – Blackman, Ancient harbours II, 198. – Cornick, Engineering II, 116. 118. – Ginalis, Byzantine Ports 27-31.
20 Lehmann-Hartleben, Hafenanlagen 77-78.

Fig. 10 Superstructures on the breakwaters of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

(see next section »Northern Mole«). Situated approximately 50 m west of the mole head, this platform rests half on the remains of the longitudinal wall (**fig. 3**). Consequently, the latter constitutes a lower layer, which means that the supposed wall could not have been erected simultaneously with the mole superstructure with which the platform is associated. So, either it belongs to a different construction phase, or no sea wall ever existed. But even though the mole indeed most likely belongs to a later date, as argued in the following section, the supposed sea wall would have had to be dismantled to be able to construct the overlapping mole. But this seems rather unlikely. Finally, on the inner side, facing the harbour basin, a stone layer was documented forming remains of another longitudinal wall (**fig. 12**). It has been suggested that this wall constitutes the inner wall of the mole superstructure. On closer examination, however, a different alignment between the longitudinal wall and the mole construction can be observed. As such, it may be assumed that the inner wall belongs to the same lower stone layer as the seaward longitudinal wall onto which the mole is resting. A connection between the two parallel running walls is further supported by almost identical constructional characteristics, such as equally wide rows of three blocks built in a system of header-stretcher-header. As a result, it can be suggested that the two wall sections belong to a uniform construction of earlier date than the mole superstructure discussed in the following section. In terms of their function, the identical width of the inner longitudinal wall further discards the idea of a sea wall in favour of a preceding mole construction to the protruding remains of the northern mole superstructure.

Fig. 11 Platform on the northern mole construction of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

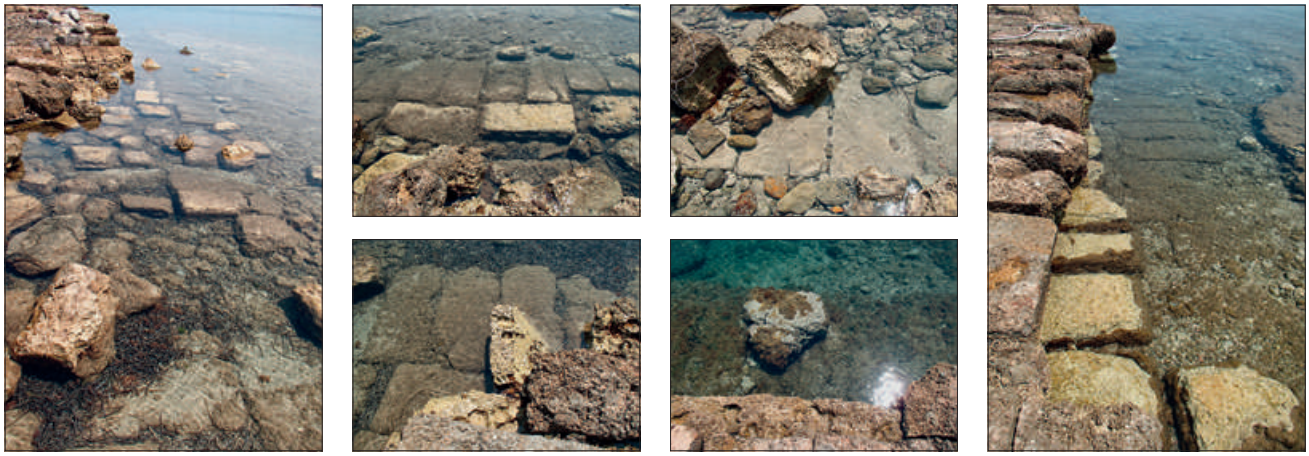


Fig. 12 Stone layer at the inner side of the breakwaters of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

Fig. 13 Northern mole construction of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

Fig. 14 Chamber system of the northern mole construction of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

Northern Mole

Apart from the two previously discussed longitudinally running wall lines, the northern breakwater also features a massive mole structure (referred to as the northern mole superstructure). Even though above the sea, the mole is only preserved for a length of 140-150 m, extending over the entire length of the two wall lines (**fig. 3** and **13**). Due to its exposure to heavy sea action, the outer part is heavily eroded. Therefore, its longitudinal walls have survived only partially along the inner side of the mole, for which the width can only be estimated at approximately 19-21 m. Nevertheless, it can be assumed that the mole adopted the shape and orientation of its preceding structure.

The mole has predominantly been constructed with a chamber system (**fig. 14**), which has erroneously been interpreted as Vitruvius' so-called »emplecton«-technique but was nevertheless correctly and impressively reconstructed by Schläger, Blackman, and Schäfer[21]. These chambers are defined by a series of lateral walls of limestone ashlar blocks, which cross the longitudinally running walls. Probably for static reasons, the lateral walls are not aligned parallel to each other, but form a rotating trapezoidal shape (**fig. 3**). These divided the mole into irregular sections filled with a conglomerate of rubble, mortar, and coarse ceramic (**fig. 15**). In contrast to the reconstruction of 1966, based on the nine still traceable sections, I noticed that they do not continuously run between the outer and inner wall of the mole but are rather divided into two chambers by another centrally located longitudinal wall (**fig. 16**). Whether the latter forms one continuous wall or multiple individual wall sections remains unclear. However, with an identical distance of approximately 9.50 m to both sides, it gives the impression of a continuous wall running lengthwise through the centre of the installation. This most probably aimed to strengthen the construction against the pressure of the filling. It is striking, however, that the use of this double chamber system was only applied to the eastern part of the mole, whereas for the entire western part no chamber could be verified at all. Only on today's shoreline, around 57 m east of the tower, the first and only lateral wall (identified by Schläger, Blackman and Schäfer as the »I. Quermauer«) can be verified[22].

In contrast to the lower longitudinally running wall lines, both the longitudinal and lateral walls of the mole's superstructure show an average width of only 1.20 m. A 10.71 m wide, platform-like part (by Schläger, Blackman and Schäfer identified as the »VI. Quermauer«) reveals that the conglomerate of rubble stones, mortar and coarse ceramic must have been covered with limestone ashlar blocks (**fig. 17**)[23]. The ashlar blocks of both the ceiling and the walls were neither clamped nor pegged. Their bonding was rather achieved by some sort of hydraulic concrete which was probably poured into their joints[24]. But since the blocks are set very tightly, no double mortar filling was applied such as at the supposed eastern mole (see next section »Eastern Mole«). Another architectural detail entirely missing from the lower wall layers

21 Schläger/Blackman/Schäfer, Anthedon 44-49. 94-95 Plan 2.
22 Schläger/Blackman/Schäfer, Anthedon 44 Plan 2.
23 Schläger/Blackman/Schäfer, Anthedon 47.
24 Schläger/Blackman/Schäfer, Anthedon 35. 38. 43. – Like other harbour sites in Greece, however, the hydraulic concrete mixture at Anthedon differs from the Roman pozzolana concrete: Brandon et al., Building for Eternity 39. 135-136.

Fig. 15 Detail views of the northern mole construction of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

Fig. 16 Detail views of the northern mole construction of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

are the so-called »bedding channels« on the surface of the ashlars. These bedding channels, which are visible at the platform and some parts of the mole's inner side, seem to have run along the lateral walls (**fig. 18**). However, due to the heavy erosion of the mole's outer part, it cannot be clarified whether the bedding channels originally ran continuously from one side to the other. As such, its exact function remains uncertain, although it certainly must have had a structural reason (see section »Southern Quay«).

Fig. 17 Superstructures on the northern mole construction of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

Fig. 18 Superstructures on the northern mole construction of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

Finally, at the turning point of the mole structure 86 m west of the mole head, the mole is breached today over a distance of 3.50 m (**fig. 3** and **19**). It was thought that this breakthrough is caused by the natural erosion of the mole due to its exposure to the open sea. As such, it has received no further attention in the study of the harbour in 1966. However, the trigger and amplifier for the erosion at this part of the mole could have been a different one. In 2016 I noticed a peculiar architectural feature, which may shed a slightly different light on this part. The structure consists of two parallel running rows of ashlars, leading from the mole into the harbour basin (**fig. 20**). Based on its formation, the two stone layers certainly do not belong to the randomly scattered ashlars and rubble stones along the inner side of the mole, but rather form an architectural unit. With a visible length of around 13 m and following the lateral wall east of the breakthrough (II. Quermauer), it reminds of a channel. Similar harbour sites with a single entrance like that of Caesarea Maritima used such channels to install underwater ashlar-lined tunnels through the moles of the harbour, so-called »sluice channels« or flushing channels, to achieve the prevention of siltation by flushing the silt out of the harbour basin[25]. Perpendicular to the mole, the channel first leads towards the harbour basin before turning southwest towards

25 Blackman, Ancient harbours II, 202 fig. 9. – Boyce et al., Caesarea Maritima 124 fig. 2.

Fig. 19 Breach of the northern mole construction of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

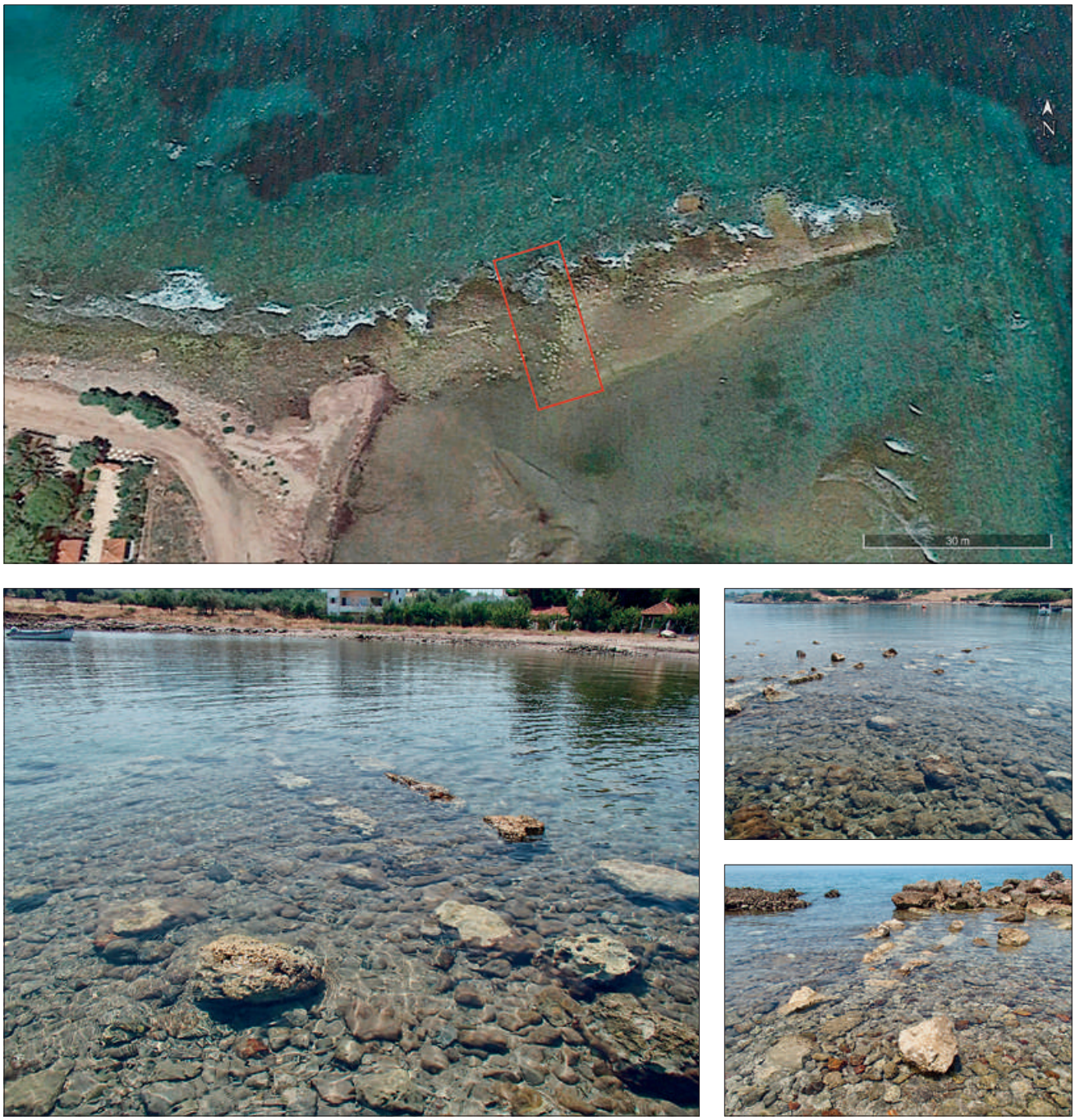


Fig. 20 Structure leading from the northern mole into the harbour basin. – (Photo A. Ginalis, 2018).

the western quay area, which today forms an entirely silted up shoreline constantly spreading to the east. But if such a sophisticated feature for desilting was indeed attempted, the location of the supposed flushing channel as far east as the bend of the mole makes little sense for counteracting efficiently the siltation process deriving from the harbour's western coastline. Since siltation becomes a serious problem only after a certain time, such a structural component would have been completely unnecessary for a supposed newly built harbour in the 6th century AD. As such, the only explanation can be found in the fact that this building measure belongs to the later construction phase when siltation had become a serious threat, namely at the time of the (re)construction of the northern mole.

Regarding the latter, Schläger, Blackman and Schäfer suggest a link between the mole visible today and the above mentioned longitudinal lower wall lines dating to the reign of Emperor Justinian I. But as I have shown earlier, their different alignment, as well as the fact that parts of the mole rest half on the remains of the lower seaward wall remains, suggest a later date for the mole superstructure. Consequently, it can be assumed that the visible remains belong to a second mole, which represents a reconstruction of a potential preceding 6th-century building. This is further supported by the incomplete architectural implementation of the chamber system. While the eastern part of the mole is built using a double chamber system, the same is missing for the entire western part, where no chamber could be verified at all (**fig. 3**). If one considers the siltation process progressing from the west, at the time of the revival of the harbour in form of a reconstruction or repair, the shoreline already seems to have reached the western part of the breakwater, almost at the point where the very first lateral wall (»I. Quermauer«) was installed. Since this western part of the mole was apparently supported by the progressing shoreline, the implementation of a chamber system probably was not necessary in contrast to the exposed eastern part. Although this indicates the construction of a new mole after the 6th century AD, only a partial new construction was realized due to the reuse of the remains of the predecessor installation in the west. Anyhow, a chronologically different successor phase is further shown by architectural details, such as the bedding channels visible at the mole's lateral walls. In contrast to the mole superstructure, these bedding channels are again entirely missing, both at the submerged lower longitudinal walls and the western onshore part of the 6th century AD.

Finally, under this assumption, suddenly also the location of the supposed flushing channel at the bend of the mole clearly makes sense. With an estimated distance of 33 m to the western shoreline, aerial photographs still clearly show its impact, however, exclusively as a measure against the danger of siltation of the reconstructed successor mole (**fig. 20** above).

Fig. 21 Detail views of the eastern mole construction of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

Eastern Mole

In contrast to the northern mole, the superstructure along the eastern breakwater is very badly preserved. While a maximum length of around 40 m can still be observed under water, above sea-level the remains have only a length of 19 m, which follow the straight north-south orientation of its substructure (**fig. 3** and **5**). It seems quite strange that in comparison to the northern breakwater, apparently, no mole structures existed on the eastern one, but it allegedly supported sea walls. This assumption by Schläger, Blackman and Schäfer derives both from the identical construction method with the longitudinally running lower wall lines on the northern breakwater by using three headers, as well as the corresponding width of their wall remains of 3.40 m (**fig. 4** and **21**). However, despite the poor state of preservation, my investigation in 2016, as well as aerial photographs, reveal that the structure must have possessed a greater width of at least an estimated 4.50-7 m and even up to 11 m (**fig. 22**). Even though the minimum width of 4.50 m can be compared with the width of the city walls on the Acropolis (see above), an identification as such can again be challenged. This results from the connection of its remains with the use of the southern shoreline between the southern quay and the Acropolis.

In this regard, some remains of a 10 m long and 5.30 m wide submerged wall structure (**figs 3-4** and **33**), which most probably forms the extension of the quay towards the eastern breakwater[26], seems to be precisely aligned with the southern end of the structure along the breakwater. Based on the remains of a peculiar platform, which was documented by Schläger, Blackman and Schäfer just east of the breakwater's superstructure[27], a continuation of the submerged coastal structure beyond the breakwater can be

26 Kingsley, Barbarian Seas 150. – Schläger/Blackman/Schäfer, Anthedon 64.

27 Schläger/Blackman/Schäfer, Anthedon 71-73.

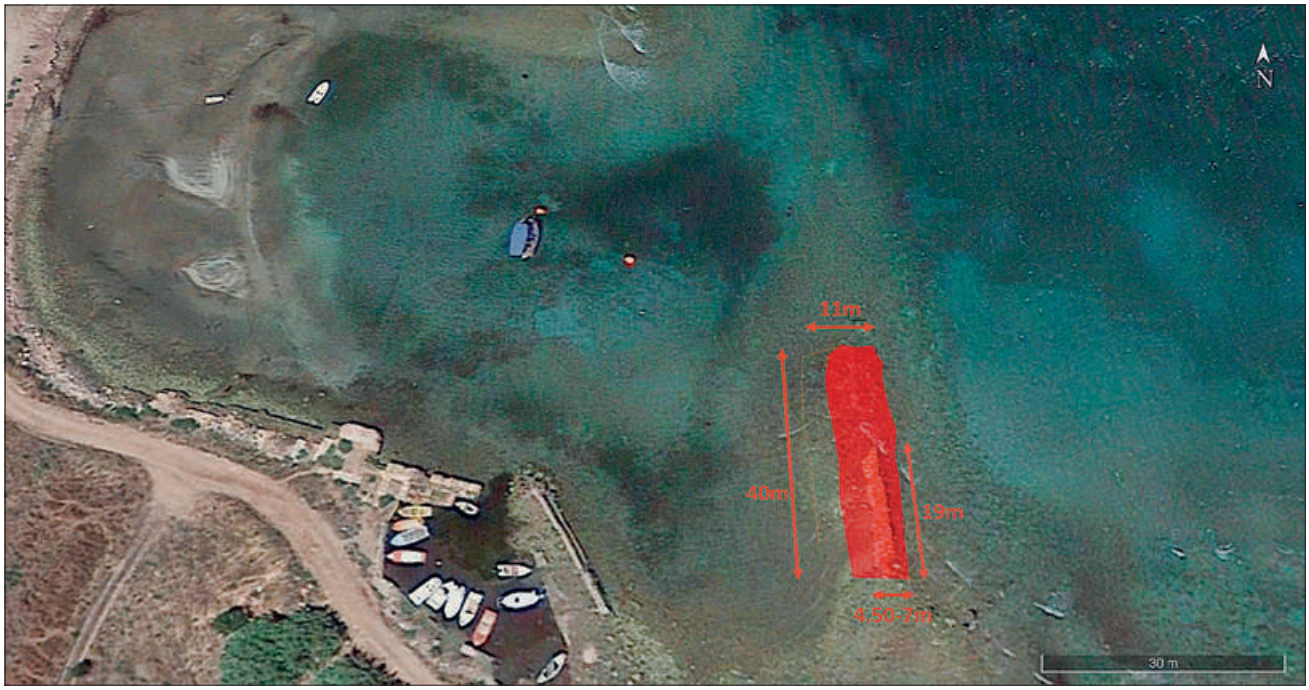


Fig. 22 Measures of the eastern mole construction of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

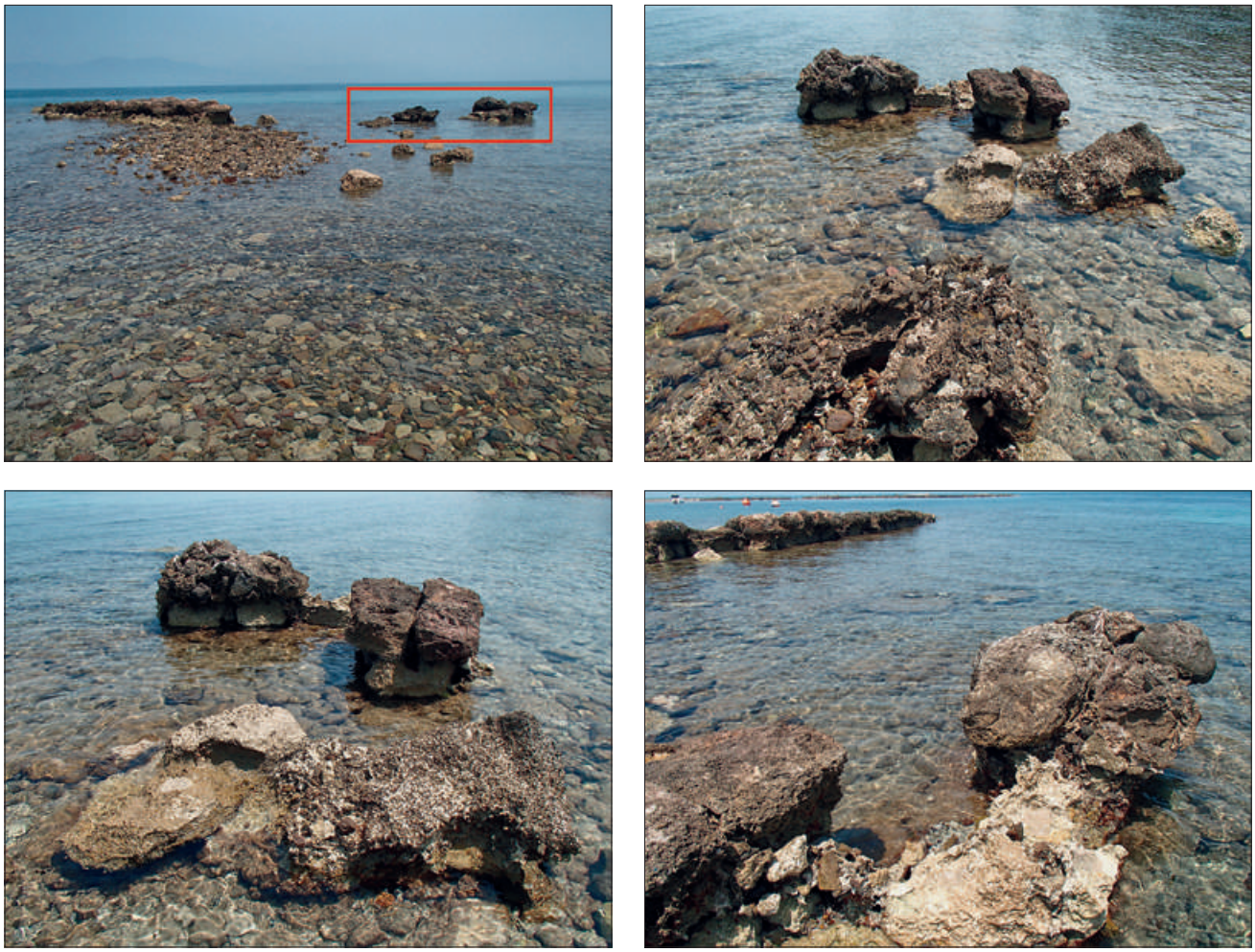


Fig. 23 Platform extending from the breakwater towards the eastern end of the shoreline of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

Fig. 24 Coastal features at the eastern end of the coastline of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

suggested. The 42 m long and up to 9.50 m wide platform extends from the breakwater towards the eastern end of the shoreline (**figs 3**, **23**, **33b**). Based on its alignment a connection to two further coastal features at the eastern end of the coastline can be observed (**figs 24** and **33b-c**), which were generally summarized as a so-called »Zentralbebauung« in 1966[28]. The easternmost structure consists of a 16.50 m long row of limestones constructed in a system of headers (**fig. 25**). Even though only a width of 1.90 m can be secured, scattered ashlar blocks next to the feature may again indicate a width of around 3.50 m, showing similarities with the submerged longitudinally running wall on the northern breakwater. Nevertheless, both its original extent and its function, unfortunately, remains hypothetical. Therefore, I agree with Schläger, Blackman and Schäfer regarding its indeterminable function and problematic identification. The western of the two structures forms a hook-shaped compound of rubble stones and mortar (**fig. 24a-c**). At only 3.50 m from the previous structure, it heads parallel into the sea. After 11-14 m from the shore towards the north, the feature turns to the west at an almost right angle to continue for another 11 m. It has been argued that the hook-shaped compound is not to be associated with the aforementioned platform[29]. Yet, its alignment fits perfectly with the southern end of the structure on the breakwater and the quay line west of it (**fig. 33**). As such, an association between the remains of the various coastal structures along the southern shoreline may well be determined, with a suggested function as a mooring area. This is supported by a roughly 290 m² large area south of the breakwater's superstructure. The latter consists of a conglomerate of compact sedimentation, gravel, pebbles, and small rubble stones and is literally strewn with ceramic fragments, confirming a rather commercial function (**fig. 26**).

As a result, unlike the conclusions of 1966, the remains rather point to the existence of a commercially orientated installation other than a sea wall. If the remains indeed do represent a structure other than a sea wall, similar to the

28 Schläger/Blackman/Schäfer, Anthedon Plan 2.

29 Schläger/Blackman/Schäfer, Anthedon 72.

Fig. 25 Structure at the eastern end of the coastline of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

	Length (m)	Width (m)
Philoxenite	120 107(?) 38(?)	4-5(?) 5(?) 5.50(?)
Lechaion	50(?) 50(?) 45	17(?) 7(?) 12-18
Amaliapolis	42	5
Anthedon	40	4.50-7 (11)
Thessalian Thebes – Outer harbour	37 25	1.70 (3.40) 4
Larymna – Outer harbour	30 30	7 1.95 (4.50)(?)
Demetrias – Southern harbour Alykes	30	3.40
Skiathos	30 14	12-15 7
Afyssos	20	5

Tab. 2 Measures of jetties in various harbour sites.

northern mole only some kind of mooring facility is conceivable. But since an interpretation as eastern mole structure is to be excluded, an identification as jetty seems not just possible but in fact appears to be the most convincing alternative. And indeed, its dimension can be compared with jetties at other harbour sites in central Greece, such as Larymna, Demetrias, Thessalian Thebes, Skiathos, Amaliapolis, Afyssos or Corinth's Lechaion[30], showing an average width of 7 m (**Tab. 2**).

Moreover, great similarities are also shown by harbour sites outside the Aegean, such as the harbour of Philoxenite on the lake of Mareotis[31], dating to the 6th century AD. The latter seems not only to present similar dimensions but also identical structural characteristics (**fig. 27**). The jetty at the harbour of Philoxenite is built out of limestone ashlar blocks with very spacious jointing, filled with a double layer of mortar. These remind of the quite big jointing between the blocks of the jetty along Anthedon's eastern breakwater. Thus, the

30 Ginalis, Byzantine Ports 101. 126. 175. 191. 211. 224. – Rothaus, Lechaion 295-296. – Schäfer, Larymna 541. – For more information on the jetties at Lechaion see: https://www.theguardian.com/science/2017/dec/14/new-underwater-discoveries-in-greece-reveal-ancient-roman-engineering (23.04.2018).

31 Khalil, Alexandria. – Kingsley, Barbarian Seas 152-154.

Fig. 26 Superstructure on the eastern mole construction of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

use of a double mortar filling between the blocks can also be assumed here, which is indicated by the remains of embedded ceramic fragments (**fig. 28**). As for its historical context, the use of three headers instead of the implementation of any chamber system, together with the apparent width of the wall remains of 3.40 m, point to an identical construction method with the longitudinally running lower wall lines on the northern breakwater. An affiliation is also visible through their common architectural characteristics, such as the complete absence of bedding channels. In contrast to this techni-

Fig. 27 Harbour of Philoxenite on the lake of Mareotis. – (From Kingsley, Barbarian Seas).

Fig. 28 Detail views of the eastern mole construction of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

cal detail applied at the northern mole superstructure and the southern quay (see sections »Northern Mole« and »Southern Quay«), the jetty uses another technique for its static strength. Like the harbour of Philoxenite, this is achieved by applying a double mortar filling. Hence, I support the conclusion drawn by Schläger, Blackman and Schäfer of dating the infrastructure along the eastern breakwater to the reign of Emperor Justinian I. Other than the function of the eastern breakwater and its potential superstructure during classical antiquity, for which a mole structure with a potential sea wall should not be excluded, during the 6th century AD the breakwater seems to have been redeployed as a suitable basis for a distinctive jetty as a part of Anthedon's commercial activities along its southern shoreline. Unlike the northern mole, however, it does not appear to have been included in the repairs of the harbour at a later date (see »Conclusions«).

Western Quay

Beyond the two breakwaters with their superstructures, the harbour of Anthedon also comprised quaysides along its western and southern shores (**fig. 4**). In contrast to the distinctive physical remains of the southern quay line (see next section »Southern Quay«), today its western equivalent hardly exists anymore. But while the quay is barely recognizable these days, in the 1960s Schläger, Blackman and Schäfer were still able to document some remains of its supposed masonry. Accordingly, the latter allegedly follows the curved shoreline from the southern quay to the northern mole, certainly showing at least one bend. Based on the observation of the terrain in 1966, the quay subsequently meets the northern mole presumably at the tower west of the harbour or at least slightly east of it. But how can the

Fig. 29 Western quay of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

almost complete absence of the western quay be explained, while the southern one is so remarkably well preserved? The only explanation may be seen in the aforementioned strong siltation process, which derives from the harbour's western coastline and progresses towards the east due to poor measures against the problem of siltation at the time of the revival of the harbour[32]. Hence, it can be assumed that the harbour basin was penetrating much further west. A roughly 5 m long wall section in between the tower west of the harbour and the shoreline (**fig. 3**), which Schläger, Blackman and Schäfer correctly consider as a part of the inner longitudinal wall of the 6th-century northern mole, indeed indicate how far west this harbour facility (and so does the basin) must have extended[33]. This supports the observation of the terrain in 1966, concluding that the western quay line apparently also ran further west. Consequently, its remains may be covered by the deposit layer and be found under the ground. This is at least suggested by satellite images, which indicate a roughly 17 m long and around 2.40 m wide wall line leading from the northern breakwater towards the western break-off of the southern quay (**fig. 29**). However, despite the progress of siltation in this area, the absence of a prominent structure corresponding to that along the southern shore is quite strange. If the two quay lines had been built at the same time, there would be no such a discrepancy between the complete disappearance of the one and the perfect preservation of the other – unless they belong to a different time-period.

As a result, in terms of its architectural affiliation and subsequently its dating, the western quay line may not be associated with the southern quay (see next section »Southern Quay«) but rather with the first construction phase of the northern mole. Accordingly, since the quay and the northern mole presumably meet close by the tower west of the harbour (where the mole does not show any signs of a chamber system), the western quay most likely belongs to the mole construction dating to the reign of Emperor Justinian I. Ultimately, the area along the western quay line seems to be greatly suffering from heavy siltation. Reaching as far east as the first lateral wall (mentioned earlier), a repair and reuse eventually appears to have been futile at a later date.

Southern Quay

Together with Anthedon's northern mole construction, the southern quay line forms today's most distinctive physical harbour feature (**figs 3-4** and **30**). Similar to the northern mole, the quay has been constructed with a chamber system defined by thirteen lateral walls of limestone ashlar blocks[34]. Here, however, the chambers do not show a trapezoidal shape but possess strictly parallel aligned lateral walls, which are again filled with an identical conglomerate of rubble stones, mortar, and coarse ceramic (**fig. 31**). The remains of the chambers stretch over a distance of around 53 m. After

32 Schläger/Blackman/Schäfer, Anthedon 52 fn. 77.
33 Schläger/Blackman/Schäfer, Anthedon 43-44.
34 Schläger/Blackman/Schäfer, Anthedon 54-59.

Fig. 30 Southern quay of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

approximately 30 m from its western break-off, however, the visible remains of the quay project around 2 m further into the harbour basin (by Schläger, Blackman and Schäfer identified as »IX. Quermauer«)[35]. But already after 8 m towards the east the quay falls back by 4 m again to form a jetty-like platform (**fig. 32**). With this false visual impression of a jetty, the platform indicates a structural change. According to this structural change, the well-preserved chambers provide different width dimensions. With an average width of 4 m, the chambers at the western part are much larger than those at the eastern part, which are only about half the width (**fig. 33a**). As such, the eight western chambers show a square shape, whereas the five eastern ones show a rectangular shape. Due to heavy erosion, similar to the northern mole, the full extent of the quay's total width can, however, only be estimated. Only at the platform-like part (chamber eight) as well as at chamber ten (between the lateral walls X and XI) both longitudinal walls are still visible and seem to be reasonably preserved. The latter consist of two rows of headers with a width of 2.40 m. These define the chambers with a length of 4.40 m. As such, a total width of the quay line of around 9.20 m can be suggested. Corresponding exactly to one parcel of the northern mole, an architectural ratio of 2:1 between the chambers of the northern mole and

35 Schläger/Blackman/Schäfer, Anthedon 58.

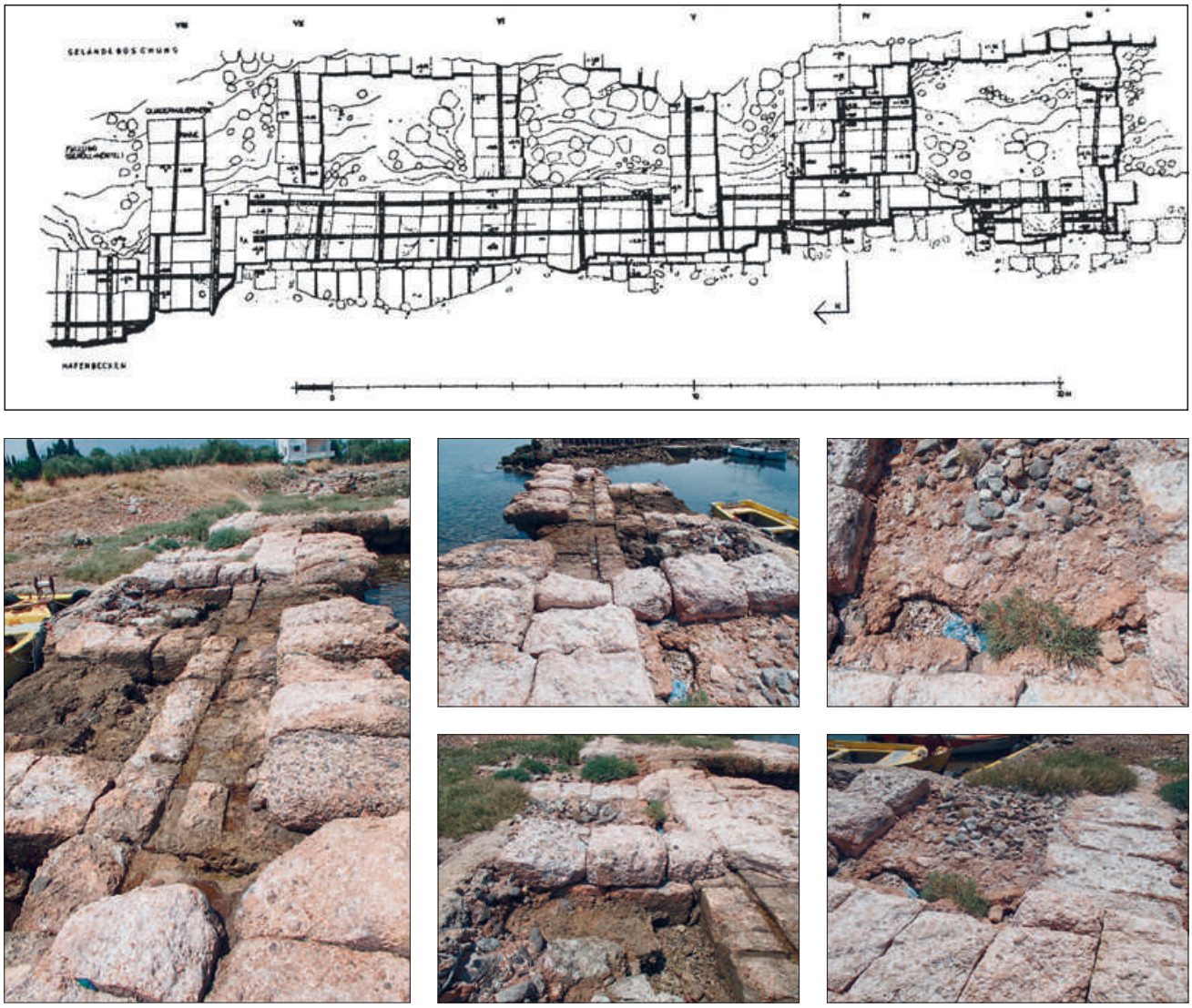


Fig. 31 Plan and views of the southern quay of the harbour of Anthedon. – (From Schläger/Blackman/Schäfer, Anthedon, and A. Ginalis, 2018).

those of the southern quay can be observed. Even though the larger dimension of the northern mole may be due to its orientation to the predecessor installation of the 6th century AD, a strong connection may be seen between both installations based on the need for robustness and stability of the structure. It has been suggested that the necessity for a resistant quay structure may be attributed to the sudden rising terrain south of the quay line. Accordingly, similar to the harbour of Leptis Magna and Rome's river quay on the Tiber, Schläger, Blackman and Schäfer propose a stepped construction also for Anthedon's southern quay[36].

A further similarity to the northern mole is given by the average width of the lateral walls of only 1.18 m, as well as the fact that the conglomerate of rubble stones, mortar and coarse ceramic is covered with limestone ashlar blocks (**fig. 34**). These blocks show again bedding channels on their surfaces. Unlike the northern mole, however, here the bedding channels are spreading over the entire structural remains of the southern quay to form a dense network. In fact, most of these channels still show the remains of a concrete filling up to the surface (**fig. 35**), consisting of a mixture of mortar, rubble stones and ceramic fragments[37]. Consequently, I agree with Schläger, Blackman and Schäfer to doubt the theories by Georgiades, Lehmann-Hartleben or Rolfe, who suggest a wooden bracing or drainage and ventilation system, respectively[38]. On the contrary, an assumption of a static-constructive function implied by the bedding channels on the northern mole may indeed be assumed instead[39].

36 Blackman, Ancient harbours I, fig. 2, 4. – Blackman, Ancient harbours II 203 fig. 11. – Blackman, Sea level fig. 8.3. – Schläger/Blackman/Schäfer, Anthedon Plan 3. – Williams, Roman harbours 75.

37 Schläger/Blackman/Schäfer, Anthedon 64. 67.

38 Georgiades, Ports 7 pl. IV. – Lehmann-Hartleben, Hafenanlagen 77 fn. 2; 105. – Rolfe, Anthedon 102.

39 Schläger/Blackman/Schäfer, Anthedon 67-68.

Fig. 32 Jetty-like platform in the southern quay of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

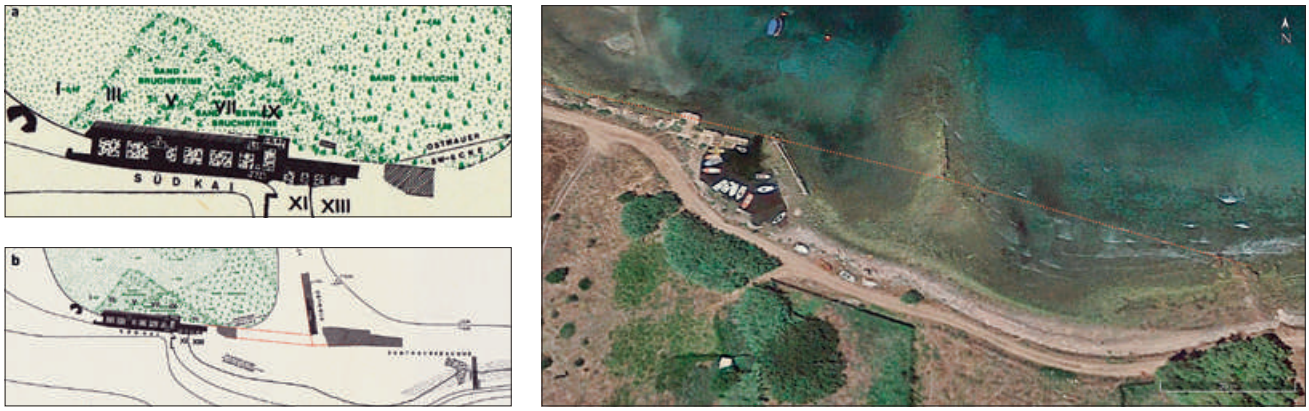


Fig. 33 Submerged wall structures in the harbour of Anthedon. – (From Schläger/Blackman/Schäfer, Anthedon, and A. Ginalis, 2018).

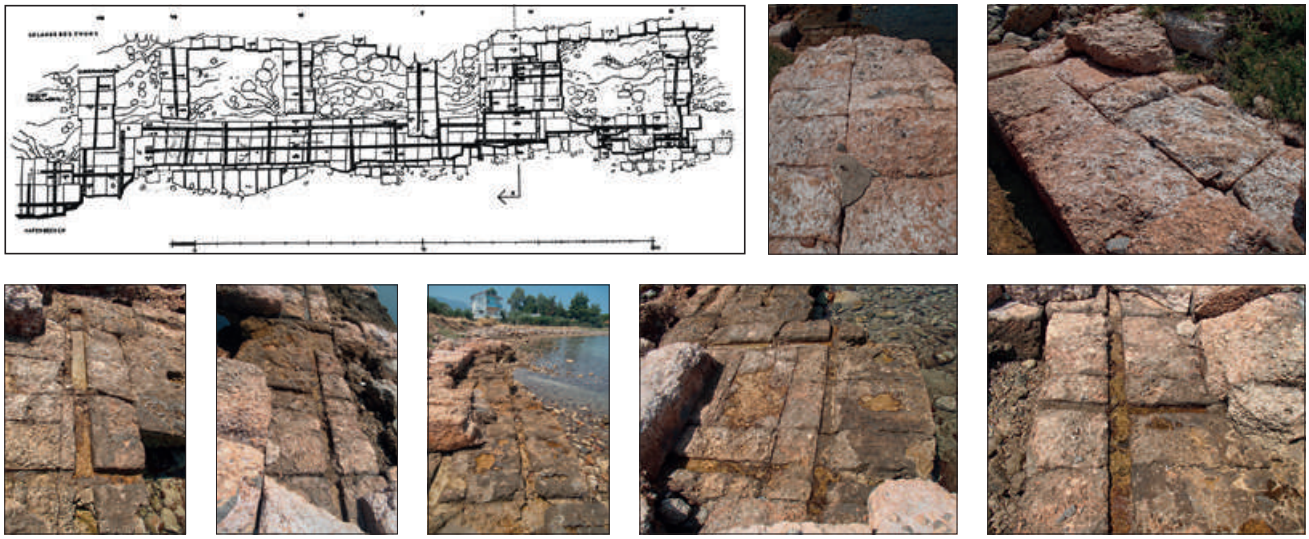


Fig. 34 Plan and views of the southern quay of the harbour of Anthedon. – (From Schläger/Blackman/Schäfer, Anthedon, and A. Ginalis, 2018).

Fig. 35 Detail views of the southern quay of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

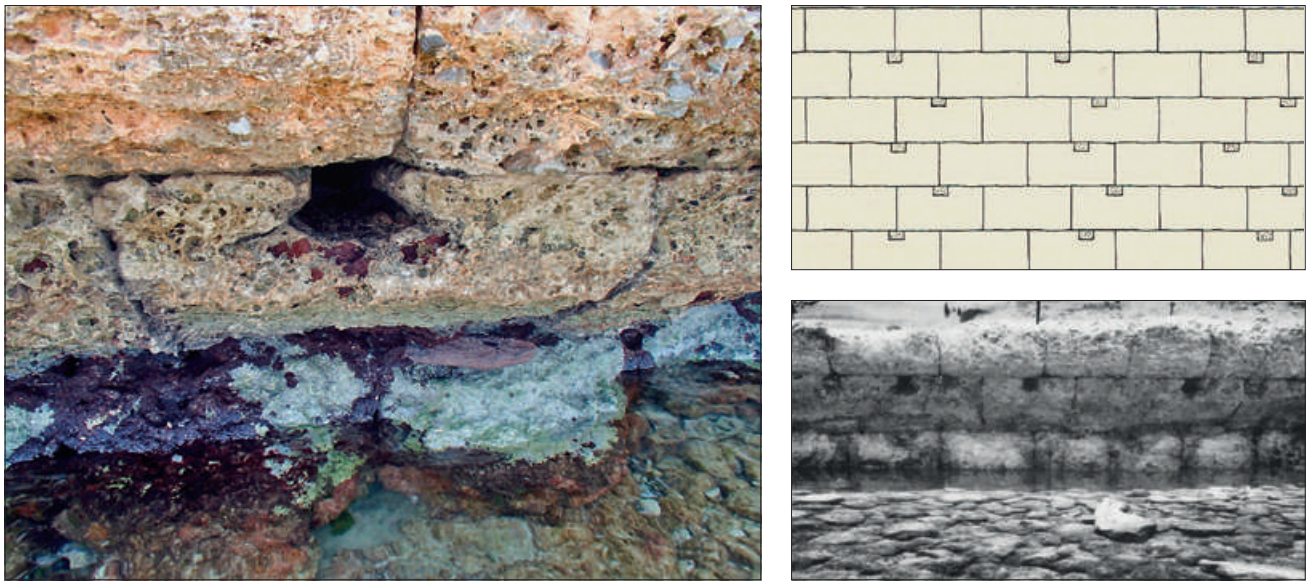


Fig. 36 Vertical view of the southern quay of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

This is further supported by the arrangement of the bedding channels. A vertical view of the quay line shows that the bedding channels lie beneath every other jointing of the following block row (**fig. 36**). Displaced from one layer to the next by one block, a consistent architectural principle can be observed. As such, despite a low use of mortar binding for rapid implementation, an effective construction method is achieved. However, at the same time this calls into question the existence of a supposed stepped construction.

As far as the chronology of the southern quay is concerned, a close connection to the northern mole superstructure can be determined. Even though Schläger, Blackman and Schäfer initially considered a different architectural approach and therefore a different dating based on their unequal density of bedding channels, a detailed study of their building techniques finally confirms a simultaneous construction. As a result, a date after the 6th century AD may be proposed for the southern quay line as well. This is further supported by the jetty along the breakwater east of the southern quay line. In contrast to the use of double mortar layers applied at the jetty, which emerges during Late Antiquity and seems to find its most frequent implementation during the 6th century AD, the chamber system together with the dense network of channels constitutes an equally robust but more sophisticated and advanced building technique avoiding an intensive use of both mortar and stonemasonry[40]. Eventually, a later date also goes along with the absence of a likewise prominent quay structure along the western shore, for which an association with the initial northern mole construction from the reign of Emperor Justinian I has been suggested (see previous section »Western Quay«). Consequently, a later repair for reuse of a certain quay section would eventually explain why only one part has been so well preserved.

Since both, the western quay and the eastern jetty show an earlier date belonging to a preceding harbour foundation, the question arises whether any predecessor structure also existed along the southern quay line. As a matter of fact, the quay's lowest visible block layer shows different characteristics to the upper layer, which in my opinion points to a different construction phase. Although the barely submerged layer is facing the problem of siltation, the ashlars are still clearly visible (**fig. 37**). So at least two rows are discernible, and according to the 1966 drawing, a third row of ashlars could even be determined[41]. The differentiation of the lowest block row from the upper layers is made evident mainly by two perceptions: the most striking one is again the complete absence of bedding channels. The same applies to the 10 m long and 5.30 m wide submerged extension of the quay towards the eastern breakwater. Even though the ashlar blocks show a high level of deterioration, signs of remains of some kind should have been existent somewhere – especially since the embedded ceramic fragments used as inclusions for the double mortar filling between the ashlar blocks are also still in place (**fig. 38**).

Secondly, the single ashlar blocks of the visible uppermost layer show a different orientation. While the latter, together with the bedding channel system, are set obliquely to the orientation of the quay, the submerged lowest layer shows a straight block setting[42]. As such, despite following the same alignment, it can be suggested that similar to the northern mole, the quay superstructure was erected on a preceding facility. Consequently, irrespective of the supposed stepped

40 Schläger/Blackman/Schäfer, Anthedon 37-38. 68.
41 Schläger/Blackman/Schäfer, Anthedon Plan 3.
42 Schläger/Blackman/Schäfer, Anthedon Plan 3.

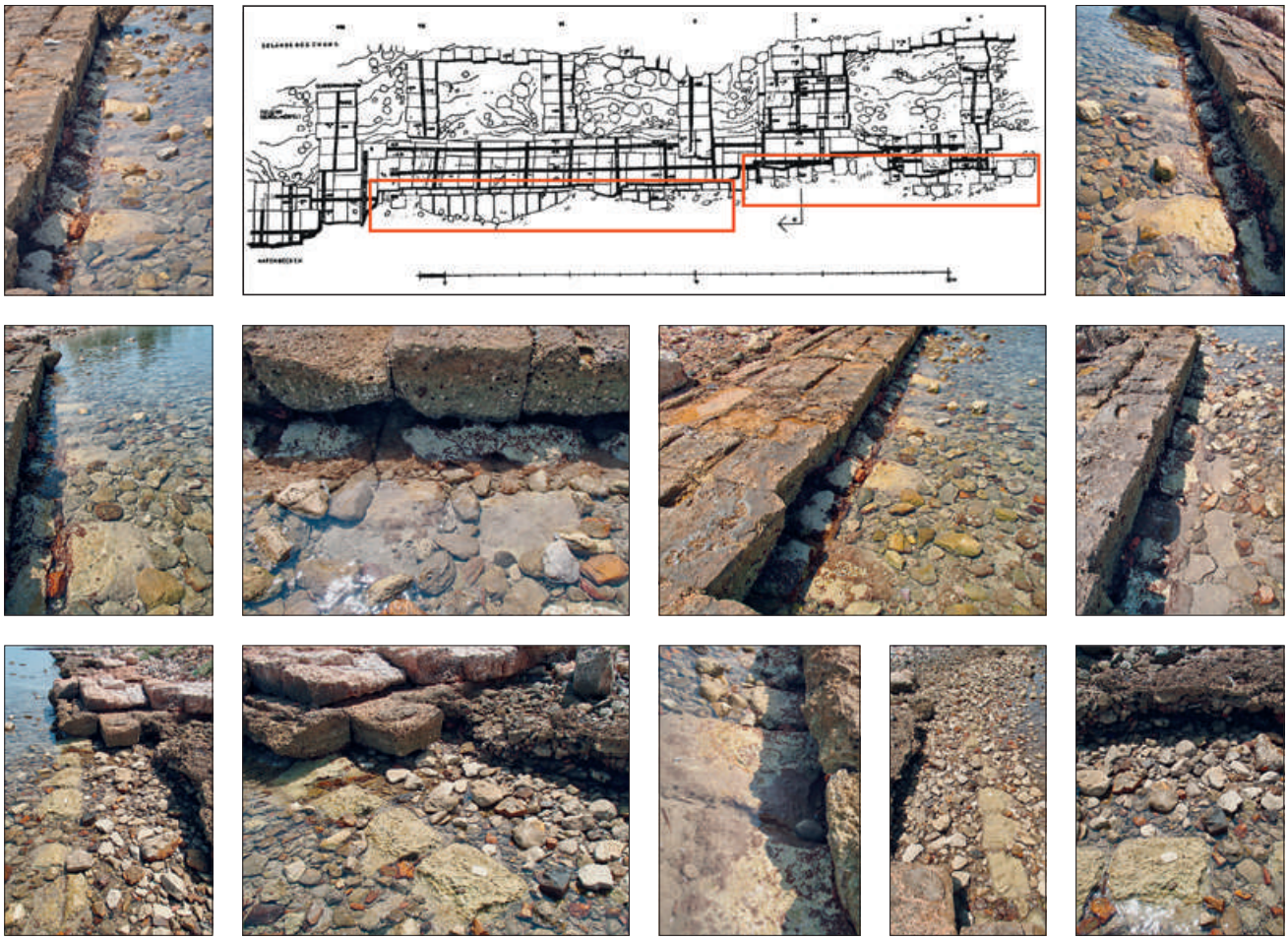


Fig. 37 Plan and views of the southern quay of the harbour of Anthedon. – (From Schläger/Blackman/Schäfer, Anthedon, and A. Ginalis, 2018).

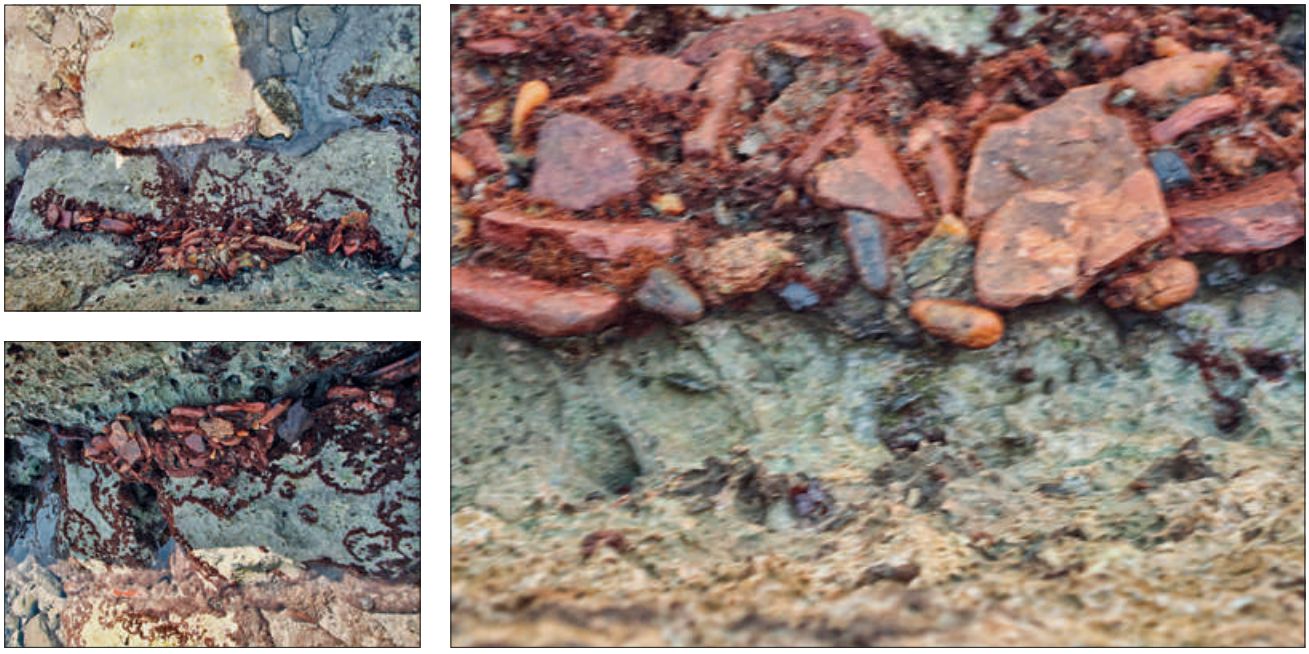


Fig. 38 Detail views of the southern quay of the harbour of Anthedon. – (Photo A. Ginalis, 2018).

shape of the quay, the existence of two different construction phases can be suggested, consisting of an earlier phase affiliated to the above-mentioned 6th century dated harbour facilities of the western quay and the eastern jetty and a reconstruction phase or repair, which is to be associated with the later dated northern mole.

Harbour basin

The broad range of ceramic fragments documented both within the harbour basin and around the wider harbour area point to different phases of harbour activities as well, which go along with the analogue harbour infrastructure discussed above. The earliest use of Anthedon's coastal area, including the harbour itself, goes back as early as the Hellenistic period. This is attested both, by a black glazed lamp from the middle of the harbour basin[43], and scattered surface finds collected south of the harbour area as well as east of the Acropolis. Despite the supposed destruction of the city and its harbour by the Roman general Sulla in 86 BC, a certain continuation of settlement activities is given by ceramic fragments found within the wider harbour area dating to the Roman Imperial and Early Byzantine periods.

Of particular interest, however, are the pottery sherds of Byzantine provenance that were found either embedded in the port facilities or in their immediate vicinity. In 1966, samples were taken of the embedded pottery sherds used as inclusions for the double mortar filling between the ashlars of the eastern jetty and the lowest block layer of the southern quay[44]. Although these comprise just diagnostic sherds, two types of ridged ceramic fragments can be determined, which most probably are to be attributed to LR 2 amphorae[45]. Indefinable pottery sherds largely and densely scattered south of the eastern jetty seem to belong to the same amphora type as well. By dating these presumably LR 2 amphora fragments to the mid to late 6th century AD[46], a first revival of the harbour during the reign of Emperor Justinian I appears indeed to be likely. However, another period of intensive harbour activity is shown also for the Middle Byzantine period. This is attested by numerous scattered surface finds from the harbour basin in the immediate vicinity to the northern mole and the southern quay as well as around the harbour entrance. Apart from similarly straight or wavy combed ceramic fragments that may well belong to globular-shaped LR13 amphorae dating to the 7th-8th century AD[47], the accumulations consist predominantly of amphora fragments of type Günsenin, which date between the 9th and 12th centuries[48].

Conclusions

Combining the visible remains of the harbour structures with the archaeological and philological evidence for the inhabitation of the area leads to the conclusion that the visible structures of the harbour probably did not belong to only one single building phase as suggested by previous scholars. Still rooted in archaeological traditions ignoring any later stratigraphy, the earliest interpretations, such as that by Lehmann-Hartleben, consider Anthedon a purely classical harbour. On the contrary, Schläger, Blackman and Schäfer finally demonstrate that Anthedon's harbour is rather to be attributed to the Byzantine era. For the first time, thanks to them it was revealed that the late antique and medieval periods show at least equally intensive coastal activities and harbour operations with the Classical and Hellenistic periods. As such, here the careful and detailed study of Anthedon's complex harbour site back in 1966 needs full admiration of the work by Schläger, Blackman and Schäfer. However, I believe that the existence of various strata can be suggested, most probably ranging from Classical or Hellenistic to Middle Byzantine times. But while the existence of a Classical or Hellenistic predecessor harbour site can only be deduced from a certain constructional characteristic of the breakwaters anymore, the Byzantine building activities are clearly visible in the preserved harbour features. This corresponds not only with the picture of the city's building remains and surface ceramic finds from the harbour basin and the wider harbour area but would also confirm Plutarch's account of the destruction of its harbour by the Roman general Sulla in 86 BC and subsequently its reconstruction in Byzantine times[49].

As far as this later construction phase is concerned, Schläger, Blackman and Schäfer rightly date the visible harbour infrastructure into the Byzantine era by carefully perceiving its physical remains and the ceramic fragments found embedded into the harbour facilities and throughout the harbour basin. While the pottery allows a rough dating, generally ranging from the 4th to the 12th centuries but with a peak between the 6th and the 9th centuries AD, based on historic criteria and the applied construction technique the authors correctly favoured a narrowed down historical time frame between the 6th and the 7th century AD, which is consistent with my observation of the harbour area in 2016. Four different scenarios were then run through that could be considered for the revival of the harbour of Anthedon, starting from Justinian's building programme prior to the so-called »Slavic invasion« in the first half of the 6th century AD and ending with the Byzantines' attempt to regain control over Central Greece in the second half of the 7th century AD[50]. In doing so, Schläger, Blackman and Schäfer eventually concluded that

43 Schläger/Blackman/Schäfer, Anthedon 86-87 fig. 87.
44 Schläger/Blackman/Schäfer, Anthedon fig. 88.
45 Vroom, Pottery 52-53.
46 Didioumi, Ceramics.
47 Didioumi, Ceramics 170. 172 fig. 3.
48 Schläger/Blackman/Schäfer, Anthedon 87-89 figs 89-90.
49 Schläger/Blackman/Schäfer, Anthedon 77. 86-88.
50 Schläger/Blackman/Schäfer, Anthedon 92-97.

the Byzantine revival of Anthedon's harbour could only have happened during the reign of Emperor Justinian I. However, in contrast to their perception of one only building phase back in 1966, I consider that also the Byzantine reconstruction of the harbour shows different phases. Based on the above-mentioned arguments, at least two phases can be reproduced with certainty: a partially protruding lower section dating to the Early Byzantine period and most probably to the reign of Emperor Justinian I in the 6th century AD and an upper section, which determines today's picture of Anthedon's harbour. This picture is mainly portrayed by a sophisticated chamber system together with a dense network of bedding channels, which back in 1966 has erroneously been identified as a supposed »emplecton« technique. The chronological-architectural differentiation is also supported by the pottery. Despite the limited and imprecise study of the ceramics in 1966, the latter also tend to confirm the interpretation of a second Byzantine reconstruction phase at a later date.

But into which period is the architecture of the upper section then to be dated? I fully agree that the partially protruding lower sections already show advanced characteristics where time-consuming stonemasonry was avoided by more intensive use of mortar as binding material. Nevertheless, their implementation is still rooted in the more traditional architecture of the Justinianic period as shown also by other sites such as the Mareotic harbour of Philoxenite. Then again, the introduction of the chamber system with a dense network of bedding channels seems to take the earlier 6th century construction a step further in the development of harbour architecture. This replacement of an already revolutionized type of construction is not an isolated case. In fact, a number of other major harbours throughout Central Greece can be compared to it, such as at the harbour of Thessalian Thebes, the Phthiotic harbours of Larymna and Theologos, the harbour of Aegina, or the outer harbour at Lechaion[51]. On the one hand, technically speaking the harbour architecture of Anthedon resembles particularly close to the chamber construction at the harbour of Larymna (**fig. 39**). On the other hand, its northern breakwater is almost identical with the outer harbour of Thessalian Thebes (**fig. 40**). With a length of 165 m and a width of 19-21 m, the latter has not only the same dimensions, but also an identical shape with a turning point dividing the structure into a part that is 78.75 m long and a part measuring 86.25 m long[52].

While regarded as post-Justinianic, based on the political, economic, and social developments in Central Greece a *terminus ante quem* of the 9th century AD is to be assumed[53]. The replacement of an already revolutionized type of construction within this time period apparently aimed to repair at least some parts of the previously destroyed or deteriorated Justinianic facilities by using a fast and cheap but equally highly efficient construction method. This supposes a time when the empire needed swift action in the area but obviously facing economic difficulties. As suggested also for Demetrias and Thessalian Thebes, I therefore believe that this corresponds to the consequences of the Arab conquest of Egypt, causing the immediate necessity for the reconfirmation of Byzantine authority over the Greek peninsula in the second half of the 7th century AD[54]. As such, due to the growing importance of central Greece and particularly that of Boeotia and Thessaly as major producers and suppliers of agricultural products, Anthedon's revival and its increasing role is rather to be associated with the importance of the rich Boeotian hinterland for the export of agricultural and industrial products from the 7th century AD onwards. In consideration of the creation of the theme of Hellas in AD 695[55], a date to the end of the 7th century AD or even slightly later appears therefore most likely for the post-Justinianic repair phase. Accordingly, Knoblauch even suggests a date of as late as AD 750 for the Byzantine reconstruction phase of the harbour of Aegina[56].

Finally, irrespective of the question of the date of the harbour construction itself, the high amount of pottery sherds throughout the entire harbour area reveals intensive maritime trade activities from the Hellenistic period up to the 12th century AD. If one takes now into account the different interpretation of the breakwater superstructures as open docking areas instead of the existence of sea walls, no military function whatsoever can be verified. Regardless the fact that Anthedon is situated in close vicinity to the major Byzantine stronghold and naval base of Chalcis (Byzantine Euripus), already Schläger, Blackman and Schäfer implied that it did not even possess a favourable strategic position[57]. Therefore, I agree with Lehmann-Hartleben that it is doubtful that there was any kind of harbour fortifications in the Byzantine era, unlike perhaps in the Classical to Hellenistic period. The harbour facilities, together with the large number of pottery sherds, tend to indicate that the harbour of Anthedon has always been commercially orientated.

In conclusion, it is suggested that the harbour of Anthedon was an important station for the coastal network of central Greece serving, along with Larymna and Halae (Byzantine Theologos) or Atalante, as one of the three key transshipment points for the entire fertile coastal area and as access points to the wider hinterland of Boeotia. After its destruction by the Roman general Sulla in 86 BC, the harbour was eventually reconstructed under the reign of Emperor Justinian I during the 6th century AD. Probably as a part of Justinian's building programme, it did not primarily serve to protect Byzantine

51 Ginalis, Byzantine Ports 190. – Paris, Lechaion 10-11. – Rothaus, Lechaion 295-296. – Schäfer, Larymna 533-537. – Triantafillidis/Koutsoumba, Aegina 169. – Knoblauch, Ägina 73.
52 Ginalis, Byzantine Ports 189.
53 Ginalis, Byzantine Ports 238-241.
54 Ginalis, Byzantine Ports 176-177. 238. 244-245. – Karagiorgou, Urbanism 31. 168 ff.
55 Koder/Hild, Hellas and Thessalia 57.
56 Triantafillidis/Koutsoumba, Aegina 169. – Knoblauch, Ägina 83.
57 Schläger/Blackman/Schäfer, Anthedon 95.

Fig. 39 Structures at the harbour of Larymna. – (Photo A. Ginalis, 2018).

Fig. 40 Structures at the outer harbour of Thessalian Thebes. – (Photo A. Ginalis, 2018).

control over the area. Similar to Thessaly's Pelion peninsula and the plain of Aghia, the aim was rather to strengthen the local economies and to secure direct access to the resources under direct protection of Chalcis. Finally, the need of Boeotia's rich agricultural resources was even greater after the loss of Egypt in AD 642, which resulted in the reorganization of state administration in Greece and the repair and last revival of Anthedon's harbour. However, despite intensive commercial activities this by no means necessarily meant a revival of the settlement itself. Although Anthedon remained an active commercial harbour until the end of the Middle Byzantine period, it finally seems to have shared the same fate as the Thessalian harbours of Demetrias and Thessalian Thebes from around the 9th century onwards. Probably influenced

by the emergence of Western merchants and subsequently the domination of the Venetian maritime network along the Euboean coast as a result of the so-called *Partitio Terrarum Imperii Romaniae* in AD 1204[58], Anthedon faced an economic decline that eventually led to a slow but constant siltation of its harbour area.

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58 Koder, Negroponte 43-45. – Carile, Partitio.

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Summary / Zusammenfassung

Reassessing the Harbour of Anthedon

More than 50 year after the first systematic analysis of the ancient and medieval harbour of Anthedon in Central Greece done by David Blackman, Helmut Schläger and Jörg Schäfer, the paper presents a re-evaluation of this earlier study and new interpretation of central features of this important archaeological site. Based on a new survey of the harbour structure, it proposes novel approaches to the dating and interpretation of the architectonical dynamics of Anthedon's port.

Eine Neubewertung des Hafens von Anthedon

Mehr als 50 Jahre nach der ersten systematischen Analyse des antiken und mittelalterlichen Hafens von Anthedon in Mittelgriechenland durch David Blackman, Helmut Schläger und Jörg Schäfer präsentiert der Beitrag eine Neubewertung dieser früheren Studie und eine neue Interpretation der zentralen Merkmale dieser wichtigen archäologischen Stätte. Basierend auf einer neuen Vor Ort-Untersuchung der Hafenstruktur werden neue Ansätze zur Datierung und Interpretation der architektonischen Dynamik von Anthedons Hafen vorgeschlagen.

Jean-Philippe Goiran · Winnie May Chan · Christophe Benech · Quentin Vitale · Nicholas Riddick · Hugo Delile
Ferréol Salomon · Stoil Chapkanski · Christine Oberlin · Gilles Brocard · Agathe Lisé-Pronovost · Cécile Vittori

Developments in Geoarchaeological Research, Methodologies and Applications in Harbour Maritime Archaeology

Overview

Geoarchaeology or *archaeology geology*[1] applies integrative concepts and methodologies from geosciences (e. g. geophysics, sedimentology, geomorphology, and pedology) to address archaeological questions. The objectives of geoarchaeological projects may include the reconstruction of an ancient landscape and/or environment, the dating of materials to establish a chronology, and determining site formation and the provenance of artefacts. Achieving these objects can provide insight into how a social group lived and how they responded to environmental changes. For example, geoscientific data may help archaeologists understand why Group X settled in Region Y or determine whether climate change caused or contributed to the demise of Group Z. Geoarchaeological applications were first introduced in the 19th century by Scottish geologist Sir Charles Lyell (1797-1875) in his book *Geologic Evidences of the Antiquity Man*, originally published in 1863, where he applied stratigraphic laws to understand the formation of Prehistoric sites[2]. Technological advancements during the 20th and 21st centuries led to improvements in field and lab techniques as well as new analytical equipment, such as high-resolution XRF core scanners[3] and Geographical Information Systems (GIS). As a result, geoarchaeological research is now being conducted all over the world in terrestrial, coastal, and aquatic environments.

Ancient Harbour Geoarchaeology

Maritime archaeology focuses on understanding the interaction between ancient societies and the sea using material and cultural remains including, shipwrecks, harbour basins, and submerged infrastructure[4]. The development of self-contained underwater breathing apparatus (SCUBA) during the 1900s allowed marine archaeologists to access the underwater world, and lead to major discoveries (e. g. the lost city of *Heracleion* in Egypt)[5]. This development has also helped Earth scientists to better interpret the importance of sea level change and its impact on ancient coastal societies[6].

The integration of geoscientific methods in maritime archaeology expanded in the 1980s around the Mediterranean, with reconstructing harbour basins being popular today[7]. For example, Reinhardt et al.[8] and Goiran and Morhange[9] revolutionized Mediterranean maritime archaeology by applying high resolution time-series sedimentary data, micropaleontology, and geochemistry to understand the environmental and anthropogenic influences that eventually led to the abandonment and destruction of ancient Mediterranean harbour cities. Reconstructing the functionality of ports and harbours is another important aspect of ancient harbour geoarchaeology.

Goiran et al. developed a model from sediment archives from *Alexandria* (Egypt), *Avaris* (Egypt), and *Portus* (Italy), to define the different types of harbours (**fig. 1**)[10]. This model can be used to identify the type of harbour (i. e. protected, or semi-protected), the foundation and/or termination of the harbour, and it may also provide an overview of how the harbour was used when it was active (i. e., the type of boats that would enter, etc.). This model is divided into three units: (I) *pre-limenic*, (II) *limenic*, and (III) *meta-limenic*. The pre-limenic unit, or *pre-harbour* phase, represents the depositional environment before the construction of the harbour. This unit is important for revealing how harbour basins were initially excavated[11]. For instance, pre-limenic and limenic units in stratigraphic continuity indicate that the basin was deep enough to support boats and that dredging was not required for harbour construction. The limenic unit contains harbour sediments when it was fully operational. The type of sediment found in this unit varies depending on the qual-

1 Hassan, Geoarchaeology: The Geologist and Archaeology 267.
2 Pollard, Geoarchaeology: an introduction 8.
3 Delile et al., the contribution of geochemistry to ancient harbour geoarchaeology 171.
4 Gibbins/Adams, Shipwrecks and maritime archaeology 279.
5 Goddio, Topography and Excavation of Heracleion-Thonis and East Canopus.
6 Benjamin et al., Late Quaternary sea-level changes and early human societies 42-45.
7 Raban, Harbour Archaeology.
8 Reinhardt et al., Caesarea Maritima.
9 Goiran/Morhange, Géoarchéologie.
10 Goiran et al., The Geoarchaeology of ancient Mediterranean Harbours.
11 Goiran et al., The Geoarchaeology of ancient Mediterranean Harbours 292.

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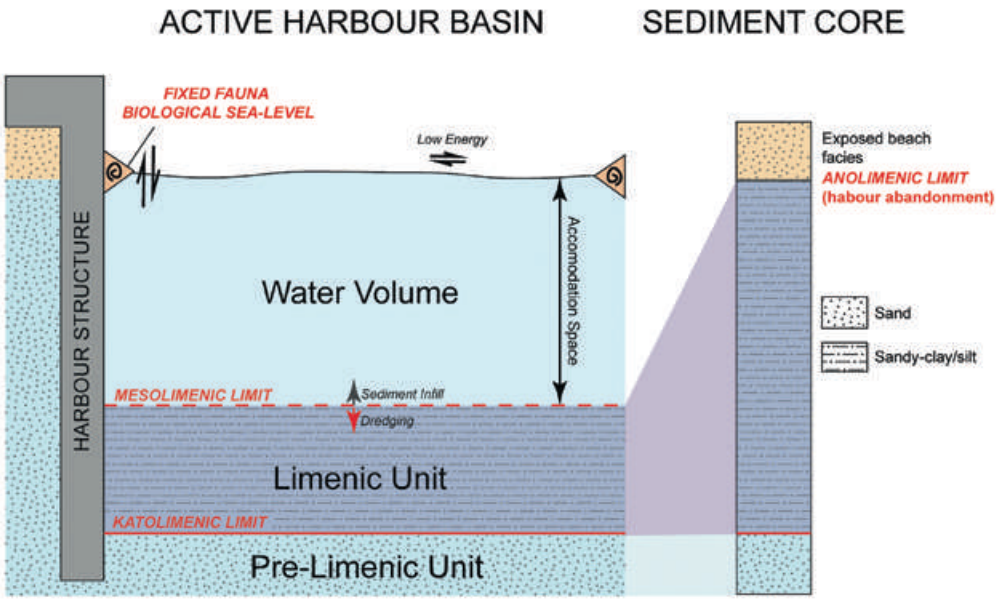

Fig. 1 Modified version of the Active Harbour Basin model originally published in Goiran and Morhange (2003), showing a typical sequence stratigraphy from a core sample.

ity of harbour infrastructure (i. e., whether the artificial basin is protected or semi-protected from marine or fluvial influence). A well-protected harbour, for example, will have a limenic unit containing silt and clay sediments which is characteristic of a confined low energy environment. A sandy limenic unit indicates an open harbour basin or an entrance of the harbour[12]. This unit may also reveal one or several dredging phases which is important for understanding how these harbours respond to various depositional environments. It also helps researchers understand how ancient societies maintained the basin while the harbour was in function as the economical/trade heart of a coastal city. The meta-limenic unit, or the inactive/post harbour phase, is often identified by a sharp contact with the limenic unit. The meta-limenic facies contains coarser sediments (e. g. similar to exposed beach or dune environments) or fine-grained silt sediment due to fluvial floods and/or deltaic progradation. Analysing this unit can determine the cause of abandonment of the harbour (i. e., whether the causes were natural or anthropogenic). Furthermore, these harbour units are divided by three limits (or boundaries): (I) *katolimenic*, (II) *mesolimenic*, and (III) *biological sea level*.

The katolimenic limit is the contact between the pre-limenic and limenic units. It is the initial limit of the harbour basin construction (i. e., the initial digging of the basin). The katolimenic unit can therefore be the foundation level or also the deepest point of harbour dredging in the basin. The latter means the initial foundation level has been destroyed by several dredging phase(s). The mesolimenic limit, or the harbour bottom, is the boundary between the ancient harbour deposits (i. e., the volume of sediment accumulated in the basin) and the water volume in the basin. It represents the upper part of sediment accumulation in the basin while the harbour was active. When the mesolimenic is closed (or reaches) the sea level, it implies that the harbour basin is infilled and near abandonment. For example, progressive abandonment is evident when there is a gradational change in facies between the limenic and meta-limenic units. A stratigraphical sharp contact implies that the abandonment process was quick (i. e., from floods, storm activity, destruction, etc.). In a stable tectonic context, the ancient biological sea level is determined using the highest measured fixed infralittoral marine fauna found on harbour quays[13]. The height of the water column (or referred to as *accommodation space* in geology) can be determined by comparing the depth of the mesolimenic limit and the biological sea level. This is useful for determining the precise depth of the harbour and can be used to construct a bathymetric profile of the basin. Once the depth of harbour is known, archaeologists can also determine which boats had access to the quay by comparing the calculated basin depth with known ancient ship draughts[14].

12 Goiran et al., Paleoreconstruction of ancient harbours of Rome 3-13.
13 Goiran et al., Découverte d'un niveau marin biologique 61. – Salomon et al., The Development and Characteristics of Ancient Harbours 7. – Vacchi et al., Multiproxy assessment of Holocene relative sea-level 177.
14 Goiran et al., High chrono-stratigraphical resolution of the harbour sequence 68-84.

Methodologies in Geoarchaeological Research

Mapping and site surveying

The initial steps in geoarchaeological research involve site surveying and mapping for excavation purposes and the understanding of the geomorphological characteristics of the study area. This is often conducted using advanced geophysical methods and spatial analysis tools such as Geographic Information Systems (GIS) and remote sensing. This section will summarize the technological developments of these methods and tools and how they are integrated into geoarchaeological research on ancient harbours.

GIS & Remote Sensing

Both GIS and remote sensing techniques are pivotal tools for spatial analysis in geoarchaeological research. Remote sensing techniques (e. g. aerial photography and satellite imagery) help researchers identify and monitor cultural and natural landscapes as well as reconstruct geomorphological changes over time[15]. Advancements in remote sensing over the past few decades including Light Detection and Ranging (LiDAR) and Interferometric Synthetic Aperture Radar (IFSAR or InSAR) technologies provide higher resolution data and have the ability to detect archaeological structures that may be covered (e. g. by vegetation)[16]. Furthermore, GIS is a computerized tool that is often used for site prospection, geo-statistics, and predictive modelling for geoarchaeological research. GIS models are used for determining research field strategies such as determining where to sample sediment cores) and for interpreting human behaviours influenced by the surrounding natural landscape by analysing the distribution of cultural remains[17]. Pourkerman et al., for example, created a model that monitors and tracks shoreline erosion in Siraf, an important port that served as one of the main hubs for trading goods (i. e., Chinese ceramics and silk) between the Persian Gulf and Asia[18]. This model enabled the researchers to localize where coastal erosions are occurring and determine the cause. These predictive models are produced through calculating, setting, and ranking various parameters based on scientific (e. g. paleoclimate, geological, and hydrological data) and available historical literature describing past human behaviours. Another advantage to GIS is it is an efficient and cost-effective tool that can add significant value to geoarchaeological research especially when funding and/or accessibility of a region is an issue[19].

Geophysics

Site surveying is often conducted using advanced geophysical methods for excavation purposes and to understand the geomorphological characteristics of a region. This involves mapping the archaeological site and identifying landscape changes. The significant development of technology in the last 20 years has made it possible to integrate geophysical methods into the geoarchaeological exploration of ancient harbours.

Geophysical methods and tools used to conduct both archaeological and environmental research depend on the type of landscape and the scale of the study area. The first step to an archaeological excavation on an ancient harbour is to conduct a geophysical survey to detect structures related to the harbour activities, such as quays and storage spaces, and to understand the context behind port infrastructures to its adjacent city. This includes understanding and identifying areas of access (i. e., traffic lanes) and/or locating site fortifications. Geophysical surveys may also lead to the discovery of new neighbourhoods and the development of urban landscapes. The technology required to conduct these surveys must be quick and detailed, as the study areas are typically thousands of square kilometres in size[20]. Although various methods are used to detect infrastructures, magnetic surveys are considered the most suitable method for a wide range of possible structures and building materials, with a reasonable survey depth up to 2 m.

The electrical methods are used less often in coastal geoarchaeology because they are notably slower and more cumbersome to implement compared to systems that give results at a reasonable time[21]. The ground penetrating radar method (GPR) is a good alternative, as towed systems are used that considerably improve the performance of this instrument and allow a depth of investigation equivalent to the magnetic method or even higher, depending on the nature of the environment. However, it should be noted that the GPR is not suitable for use in environments where clay sediments are prevalent, which can be problematic in coastal areas. The penetration depth in such environments is no more than a few tens of centimetres, which in most cases is not sufficient to detect archaeological structures. Nonetheless, the GPR remains useful in an integrated approach with other geophysical data[22]. Furthermore, there are only a few studies that use geophysical surveys and geomorphological drilling to understand the organisation of ancient harbours[23].

Geophysical methods provide additional information to contextualize the results of sediment cores and correlate them spatially to provide different scales. The magnetic method can

15 Holcomb/Shingiray, Imaging Radar 11.
16 Maktav et al., Integration of remote sensing and GIS 1667.
17 Nsanziyera et al., GIS and Remote Sensing Application 2-3.
18 Pourkerman et al., Shoreline erosion. – Shen, The China-Abbasid Ceramics Trade.
19 Nsanziyera et al., GIS and Remote Sensing Application 16.
20 Mozzi et al., The Roman City of Altinium 31-34.
21 Campana/Dabas, Archaeological Impact Assessment 145-147.
22 Neal/Roberts, Applications of ground-penetrating radar (GPR) 140-145.
23 Marriner/Morhange, Geoscience of Ancient Marine Harbours 162-165.

be useful for shallow/on surface formations, such as recording the evolution of banks or detection of paleochannels[24]. For more detailed studies on stratigraphy, electrical resistivity tomography (ERT) is the most widely used method. ERT provides large transects of vertical sections of the ground that can be directly correlated with the stratigraphic results obtained from sediment cores[25]. Electromagnetic induction (EMI) measures both electrical conductivity and magnetic susceptibility. The former is useful for detecting paleochannels or the boundaries of ancient lagoons or coastlines[26]. The latter detects the ferrimagnetic content in the top meter of the soil, which may be associated with human occupation and activities[27]. The Portus project led by the British scholar Simon Keay (University of Southampton), used these methods to show interest in an interdisciplinary approach to integrate archaeology, geophysics, and geomorphology to reconstruct the organization and operation of the harbour from an archaeological and environmental perspective[28]. Furthermore, geophysical methods can also provide insight into the evolution of harbours located in modern cities in a dense urban context.

Regarding an urban context, archaeological excavations can be achieved in the case of a temporary allotment (e. g. obtaining a permit from the government, private company, etc.) which can lead to complications in planning and executing excavations. This means non-destructive tools are essential for understanding the complexities of these environments and their extensive history. Geophysical exploration will not be able to obtain the same degree of information as in a non-urbanized environment and locations are also subjected to modern urban constraints. The integrated approach, however, remains an essential part of the study. It is essential to correlate findings to understand the exploration project. A »blind« prospection will lead to failure: a geophysical prospection will be used to validate a preliminary hypothesis but will not provide meaning without using a multidisciplinary approach considering the complexities of the subsoil. From a methodological standpoint, it is the electrostatic method[29] and GPR[30] that remain the two methods most adapted to the modern urban context. In an urban context, the depth of investigation of a geophysical method cannot be limited to the first meter and requires at least 2 m to detect surfaces undisturbed by modern occupation. The technical developments of electrostatic devices help with the range of methods that can work on the first 2 m[31]. New electrostatic systems can reach a depth of 3 to 4 m: the resolution will as a result be lower, but such systems can detect larger structures including city walls[32].

Sediment Core Analysis in Harbour Geoarchaeology

Sediment Analysis is important for (I) reconstructing the paleoenvironment and paleoclimate to understand how the environment may have influenced the construction of a harbour and (II) determining the foundation, dredging phases, and destruction/abandonment of an ancient port. Such analyses are carried out by taking surface samples or sediment cores. The research goals and the type of environment (i. e., deltaic, lacustrine, marine, etc.) determine the choice of coring method: vibration, percussion, piston, and gravity cores, augers, and large coring rid. Coring devices are summarized in **Table 1**.

Once sediment cores are collected, various analyses are conducted, such as grain size, geochemistry, mineralogy, magnetic susceptibility, and micropaleontology. The examination of bed-forms (e. g. ripples and dunes) and types of stratification is also used to determine the depositional environment. Sediment analyses helped geoarchaeologists reconstruct ancient harbours, such as identifying the foundation of the harbour (i. e., pre-limenic unit), how the basin was excavated (i. e., dredging phases) and used as identified in the limenic unit (**fig. 1**).

Micropaleontology

Micropaleontological analysis can be used for many applications including biostratigraphy, paleoenvironmental reconstruction[33], paleotempestology, tsunami/seismicity, pollution, and reservoir mapping. Reinhardt et al., for example, used micropaleontology (foraminifera) along with geochemical analysis (Sr isotopes) from sediment cores collected in Caesarea Maritima (Israel) to understand the harbour's evolution from 1st c. BC to its destruction in 2nd c. AD[34]. Microfauna is often used as a proxy for recording paleoclimate and paleoenvironmental changes because of their sensitivities to ecological changes. This section will focus on common groups of microfossils used in geoarchaeological research: I) Foraminifera, II) Ostracods, (III) Diatoms, and (IV) Palynology.

Foraminifera

Foraminifera (or forams for short) are single-celled protozoans that produce their own tests (shells) through autogenous (i. e., secrete calcium carbonate) or xenogenous processes (i. e., agglutinating foreign detritus material)[35]. Calcareous

24 Weston, Alluvium and Geophysical Prospection 266-270.
25 Wunderlich et al., The river harbour of Ostia Antica 55-65.
26 Verhegge et al., Preliminary results of an archaeological survey 166-168.
27 Tabbagh, Electromagnetic Prospecting Method 186-190.
28 Keay et al., The role of integrated geophysical survey methods 155-164.
29 Tabbagh et al., Un outil de reconnaissance géophysique en milieu urbain 6-8.
30 Conyers, Innovative ground-penetrating radar methods 139-140.
31 Panissod et al., A novel mobile multipole system 983-984. – Panissod et al., Archaeological prospecting 240-242.
32 Benech et al., Revealing the topography of the Ancient Kition (Larnaka, Cyprus) 17-19.
33 van Hengstum et al., Thecamoebians (testate amoebae) and foraminifera 305-317. – Pilarczyk/Reinhardt, Testing foraminiferal taphonomy as a tsunami indicator 133-135.
34 Reinhardt et al., Caesarea Maritima.
35 Scott et al., Monitoring in Coastal Environments 99.

Coring Device	Description
Vibracorers	Electric powered Used in terrestrial, water saturated environments (lacustrine, marshes, bogs, lagoons, deltas and some fluvial systems) or deep-water environments Penetration: ~8 m
Augers	Travel friendly (i. e. handheld and can be used in inaccessible areas and can obtain long sequences of muds, peats, soils, and sands) Easy to operate but may not provide a continuous section Penetration: up to ~10-15 m
Percussion Coring	Portable Mud, sand, peat, and minor gravel Penetration: ~10 m
Large Coring Rig	Mounted on a truck or boat Used for areas that are not easily accessible and/or difficult terrain Penetration: +10 m
Piston Corers/Gravity Corers (Russian/Gorge)	Used in water saturated fine grained muds in lacustrine environments and deep lagoons Penetration: +10 m

Tab. 1 Summary and comparison among coring devices. – (After Shuter/Teasdale, Application of drilling).

foraminifera are either benthic or planktonic and are found in marine environments where the precipitation of calcium carbonate is possible[36]. Those with agglutinated tests are found in marginal marine environments, such as estuaries and lagoons, where calcium carbonate production is limited. These microorganisms are typically collected from sediment cores and/or surface samples. They are later washed using a recommended 63 µm sieve to capture forams that are typically 0.1 to 1.0 mm, but some species can grow >10 cm in size[37]. Specimens can be observed and identified using a stereomicroscope with no less than 40× magnification and can be picked wet or dry onto a storage slide. Species assemblages are identified based on test composition and its morphological structure including, the number of chambers, coiling, aperture, and ornamentation. Once processed, foraminifera can be used for geochemical analysis and for quantitative statistical analysis which commonly requires counting a minimum of 300 specimens per sample to calculate the relative fractional abundance of each species[38].

They are often used as proxies for monitoring or reconstructing ecological changes because of their sensitivity to environmental changes (e. g. pH, temperature, salinity, and dissolved oxygen), their preservation potential, and their abundance in the geological record (first in the early Cambrian[39]), as they are easy to collect and statistically analyse[40]. For these reasons, micropaleontological analyses involving forams are commonly used in paleoenvironmental and palaeoceanographic (planktonic species) studies. They have also been proven to be a useful proxy for ancient harbour geoarchaeology, beginning with Reinhardt et al. Study in *Caesarea Maritima* (Israel)[41]. In a more recent study around the Mediterranean, Seeliger et al. were able to use foraminifera concerning transgressive contact to reconstruct the Holocene sea level curve and determine the ancient sea level from the Bay of *Elaia* (Western Turkey), the home to Pergamum's harbour dating to Hellenistic and Roman times[42].

Ostracods

The ostracods (or *ostracodes*) are microcrustaceans that are ubiquitous in marine and non-marine aquatic environments (**fig. 2, 1**); additionally, there are some semi-terrestrial species[43]. These organisms secrete a low-Mg calcium bivalved carapace typically 0.5 to 2.0 mm in size[44] and are well-preserved in the sedimentological record[45]. Ostracods are useful proxies commonly applied in ecological monitoring as well as in paleoenvironmental and paleoclimate research[46]. Similar to foraminifera, they are sensitive to variations in their biotope, such as changes in temperature, salinity, dissolved oxygen, hydrochemistry, water depth, substrate, and productivity[47]. They are excellent bioindicators in brackish marginal marine environments[48], where they are more abundant and diversified than foraminifera[49], and in freshwater ecosystems[50]. The study of these microorganisms involves the analysis of the species assemblages of the samples, the population structure (i. e., age, sex, and valve ratio) of the species and the intraspecific morphological (i. e. size, shape, ornamentation) and chem-

36 Scott et al., Monitoring in Coastal Environments 3.
37 Saraswati/Srinivasan, Micropaleontology 12-14. – Scott et al., Monitoring in Coastal Environments 10-16.
38 Patterson/Fishbein, Re-examination of the statistical method 245.
39 Pawlowski et al., The evolution of early Foraminifera 11494-11498.
40 Scott et al., Monitoring in Coastal Environments 3-4.
41 Reinhardt et al., Caesarea Maritima.
42 Seeliger et al., Foraminifera as markers of Holocene sea-level fluctuations.
43 Smith et al., Class Ostracoda 769-770.
44 Smith et al., Class Ostracoda 758. – Reeves, Ostracods 339.
45 Smith et al., Class Ostracoda 760.
46 Boomer et al., Ostracods 164-167. – Reeves, Ostracods 347-350.
47 Boomer/Eisenhauer, Ostracod faunas as paleoenvironmetal indicators 137. – Smith et al., Class Ostracoda 770-773. – Reeves, Ostracods 341. – Frenzel/Boomer, The use of ostracods 74-82.
48 Boomer/Eisenhauer, Ostracod faunas as paleoenvironmetal indicators 135-142; Frenzel/Boomer, The use of ostracods.
49 Frenzel/Boomer, The use of ostracods 74. – Barbieri/Vaiani, Benthic foraminifera or ostracoda 217.
50 Ruiz et al., Freshwater ostracods as environmental indicators.

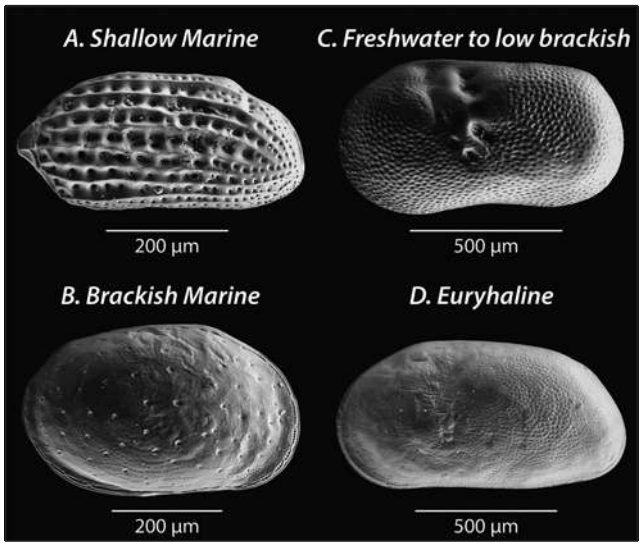

Fig. 2 Example of ostracod valves according to the ecological/environmental groups defined by Mazzini et al., Ostracods in archaeological sites along the Mediterranean coastlines 127-128 and table 1) for geoarchaeological studies: **A** shallow marine: *Semicytherura sulcata*, right valve, external view. – **B** brackish marine: *Loxoconcha elliptica*, male, right valve, external view. – **C** freshwater to low brackish: *Ilyocypris gibba*, left valve, external view. – **D** euryhaline: *Cyprideis torosa*, female, smooth valve, left valve, external view.

ical valve variations[51]. Commonly for core samples, only a few grams of dry sediment are processed using a 125 µm sieve or a finer 63 µm sieve to capture the smallest juvenile stage ostracods[52]. The ostracods are later picked dry under a binocular microscope with a fine brush and placed onto a black slide with a grid for counting and identification[53]. The most commonly used statistical threshold is 300 specimens per sample, but fewer individuals may suffice, especially for core samples requiring more samples to improve spatial and chronological resolution[54].

The ostracods are commonly used in archaeological and geoarchaeological research, especially to (1) determine the origin of ceramics and limestone and identify related quarries; to (2) reconstruct paleoclimates near human settlements and to study their impact on environments (i.e., soils erosion, pollution); and to (3) study paleoenvironmental changes in wetlands, such as lakes, lagoons, estuaries, and river deltas[55]. As such, they are excellent proxies for ancient harbour geoarchaeology in coastal (e.g. Portus in the Tiber Delta or Tyre in Lebanon), lagoon (e.g. Pisa in Tuscany), fluvial (e.g. Ostia in the Tiber Delta), or in limnological contexts (e.g. Magdala in Israel[56]). In these studies, the ostracods are used to identify harbour deposits based on the degree of isolation (i.e., in relation to the sea, rivers, and lakes) of the biotopes[57] and salinity variations that could indicate a connection with the sea, freshwater or marine inputs or evaporation periods concerning harbour infrastructures and management activities[58].

Diatoms

Diatoms are a diverse group of photosynthetic unicellular microalgae (phytoplankton) with a resilient silica-rich (SiO_2) cell wall called *frustules*[59]. There are ~200 000 species of diatoms found in aquatic environments around the world ranging from freshwater, brackish, to photic zones of marine water as well as moist terrestrial environments including soils and plants[60]. They come in many different shapes and sizes, from few micrometres to millimetres, and have two modes of life (i.e., benthic, living on the sea floor of submerged terrains or planktonic, floating in the photic zone)[61]. Diatoms, for example, are often classified into three groups: acidobiontic (pH <7), acidophilus (pH~7), and alkaibionic[62]. Their sensitivity to the pH of water makes them useful climate proxies in paleoliminological studies. In a marine environment, diatoms thrive in the photic zone and high upwelling zones. Diatoms are excellent proxies and are often used in paleoenvironmental research because of their preservation potential, abundance in the sedimentological record, as well as sensitivity and rapid response to changes in the environment (i.e., changes in pH, nutrient, temperature, salinity, etc.)[63]. The use of diatoms in geoarchaeological research is not a new phenomenon and has been practised for over 40 years[64].

Palynology

Palynology is the study of acid-resistant, organic-walled microfossils (palynomorphs); pollen, fungal spores, acritarchs and the remains of organic-walled algae, such as dinoflagellates and desmids. Palynomorphs can be found in sediments collected from freshwater and marine environments and

51 Boomer et al., Ostracods 158-164. – Reeves, Ostracods 342-347.
52 Horne/Siveter, Collecting and processing fossil ostracods 5. – Reeves, Ostracods 342. – Danielopol et al, Techniques for collection and study of ostracoda 72-73.
53 Horne/Siveter, Collecting and processing fossil ostracods 5-6.
54 Danielopol et al, Techniques for collection and study of ostracoda 75-77.
55 Mazzini et al., Ostracodological studies in archaeological settings 326-327. – Ruiz et al., Marine and brackish-water ostracods 94.
56 Marriner et al., Coastal and ancient harbour geoarchaeology 23. – Mazzini et al., Late Holocene palaeoenvironmental evolution of the Roman harbour of Portus 251-255. – Goiran et al., Paleoreconstruction of ancient harbours of Rome 10-12. – Mazzini et al., Ostracods in archaeological sites along the Mediterranean coastlines 134-138. – Goiran et al., Geoarchaeology confirms location of the ancient harbour basin of Ostia 395-397. – Rossi et al., New insights into the palaeoenvironmental evolution of Magdala ancient harbour 368-370.
57 Mazzini et al, Ostracods in archaeological sites along the Mediterranean coastlines 134-138. – Rossi et al., New insights into the palaeoenvironmental evolution of Magdala ancient harbour 368-369. – Marriner et al., Coastal and ancient harbour geoarchaeology 23.
58 Goiran et al., Paleoreconstruction of ancient harbours of Rome 12. – Mazzini et al., Late Holocene palaeoenvironmental evolution of the Roman harbour of Portus 255. – Goiran et al, Geoarchaeology confirms location of the ancient harbour basin of Ostia 395. – Rossi et al., New insights into the palaeoenvironmental evolution of Magdala ancient harbour 369-370.
59 Smith/Flocks, Environmental investigations using Diatom 1. – Chepurnov et al., Experimental studies on sexual reproduction in diatoms 91-154.
60 Bathurst et al., Diatoms as bioindicators of site use 2920-2921. – Armbrust, The life of diatoms in the world's oceans 185.
61 Bathurst et al., Diatoms as bioindicators of site use 2920. – Armbrust, The life of diatoms in the world's oceans 185-187.
62 Saraswati/Srinivasan, Micropaleontology 128.
63 Gasse et al., Diatom-inferred salinity in paleolakes 548.
64 Ognjanova-Rumenova, Paleoenvironment and archaeology 293.

represent a large group of organisms with varied environmental preferences (e. g. nutrient levels, acidities, salinities) and life modes (e. g. benthic, planktonic, autotrophic, heterotrophic)[65]. While providing information on terrestrial and aquatic environments, these microfossils can also yield insight into human activities. For example, the presence of cultivar pollen can infer agriculture/diet practices, increases in grass and other upland weed pollen may indicate land clearing by humans, and changes in aquatic palynomorph assemblages may reflect human-induced eutrophication[66]. Typical palynological processing involves the removal of non-organic constituents from a sample, usually with acids (hydrochloric to dissolve carbonates and hydrofluoric to dissolve silicates), and the addition of a known number of marker particles (e. g. *Lycopodium* spores; **fig. 3**[67]). The remaining residue is the acid-resistant, organic component that can be mounted on microscope slides and analysed for palynomorphs.

The relationship between archaeology and palynology goes back nearly a century, before the advent of radiocarbon dating, where pollen assemblages from archaeological sites were compared to the assemblages of nearby lakes and bogs[68]. Marriner and Morhange state that the use of palynology for harbour geoarchaeology has been limited, despite the presence of fine-grained harbour mud being suitable for palynomorph preservation[69]. They cite previous harbour studies where palynological analysis was inconclusive. Contamination caused by the transport of pollen in large water bodies is considered a limiting factor in harbour/coastal studies[70]. Recent harbour geoarchaeological studies employing palynology have been more successful. In studying the ancient Roman port of Ostia, Sadori et al. were able to infer phases of human impact and phases of increased siltation[71]. Respectively, the palynological signatures included relatively high pollen concentration with the presence of cultivar pollen (e. g. olive, cereals and grape) and relatively low pollen concentration with the presence of non-pollen palynomorphs like *Glomus* and *Pseudoschizaea* (**fig. 3**). More significantly, it was reported that algal remains were very scarce, and pollen was often poorly preserved in this study. Shumilovskikh et al., while completing a palynological analysis in the harbour of Elaia (Western Turkey), observed the dinoflagellate cyst *Peridinium ponticum* (**fig. 3**), a species endemic to the Black Sea[72]. This species has been observed several times, its first appearance coinciding with the Mithridatic Wars in the 1st century BCE, and has been taken as evidence of maritime trade. Recurrence of *P. ponticum* is thought to be due to repeated introduction into the harbour environment, the establishment of a population in the harbour, or both.

Geochemical applications

While harbour geoarchaeology emerged as a discipline at the beginning of the 1980s, geochemical methods were not applied until the mid-2000s. Its first application was to determine human impact based on traces of ancient metal, such as lead (Pb), copper (Cu), nickel (Ni), silver (Ag), tin (Sn), etc. More specifically, anthropogenic impact using Pb isotopes as a tracer has been used extensively in the ancient harbours of Alexandria[73], Sidon[74], Marseilles[75]. Rome[76], Naples[77], Ephesus[78], Cala Francese[79], and Fréjus[80]. Measuring Pb isotopes from sediment cores obtained in an ancient port, for example, help to solve archaeological questions including understanding human activities prior to the foundation of cities[81]. Moreover, some studies have combined the study of Pb concentrations and isotopic compositions in harbour sediments to understand water supply systems (i. e., Pb pipes, sinter deposits taken from aqueduct channels). Results have shown that Pb constitutes a proxy for the evolution of drainage systems (e. g. extension vs. contraction), connectivity, and engineering during the active period of the ancient city (e. g. Rome[82], Naples[83], Ephesus[84]). Anthropogenic Pb isotope signals trapped in harbour basins will be compared to those of known Pb ores supply sources (i. e., from mining resources), and insights into trade routes and sea roads from production centres (i. e., mining districts) to consumption centres (i. e., urban areas) can be deduced[85]. More recently, geochemistry has been used in geoarchaeology for paleoenvironmental reconstructions.

In some cases, classic environmental markers cannot be used for paleoenvironmental reconstruction due to low quantity/abundance, hiatus in the sedimentary deposits, and/or the cost of analysis permit the production of high-resolution

65 van Geel, Non-pollen palynomorphs. – de Vernal, Palynology.
66 See Iversen, Landnam. – Krueger/McCarthy, Lagerstätten. – Sadori et al., Palynology and ostracodology. – McCarthy et al., Algal palynomorphs.
67 Fægri/Iversen, Textbook of pollen analysis 294.
68 Bryant/Holloway, Archaeological palynology 913-917.
69 Marriner/Morhange, Geoscience of ancient Mediterranean harbours.
70 Marriner/Morhange, Geoscience of ancient Mediterranean harbours 171. – Sadori et al., Palynology and ostracodology 1508.
71 Sadori et al., Palynology and ostracodology.
72 Shumilovskikh et al., The harbour of Elaia.
73 Véron et al, Pollutant lead reveals the pre-Hellenistic occupation 1-3. – Véron et al., A 6000-year geochemical record 141-143. – Stanley et al., Alexandria 5-8.
74 Le Roux et al., Geochemical evidences 115-119.
75 Le Roux et al., Lead pollution in the ancient harbours of Marseilles 31-35.
76 Delile et al., Lead in ancient Rome's city waters 6594-6599. – Delile et al., Rome's urban history 1-6.
77 Delile et al., A lead isotope perspective on urban development in ancient Naples 3-6.
78 Delile et al., Demise of a harbour 205-211.
79 Fagel et al., Record of human activities in the Pb isotopes 770-781.
80 Véron et al., Fréjus, France 242-249.
81 Le Roux et al., Geochemical evidences 115-119. – Véron et al, Pollutant lead reveals the pre-Hellenistic occupation 1-4. – Véron et al., A 6000-year geochemical record 138-147.
82 Delile et al., Lead in ancient Rome's city waters 6594-6599.
83 Delile et al., A lead isotope perspective on urban development in ancient Naples 6148-6153.
84 Delile et al., Demise of a harbour 202-213.
85 Le Roux et al., Geochemical evidences 115-119. – Le Roux et al., Lead pollution in the ancient harbours of Marseilles 31-35. – Delile et al., Lead in ancient Rome's city waters 6594-6599. – Delile et al., A lead isotope perspective on urban development in ancient Naples 6148-6153. – Véron et al., A 6000-year geochemical record 138-147. – Véron et al., Fréjus, France 242-249.

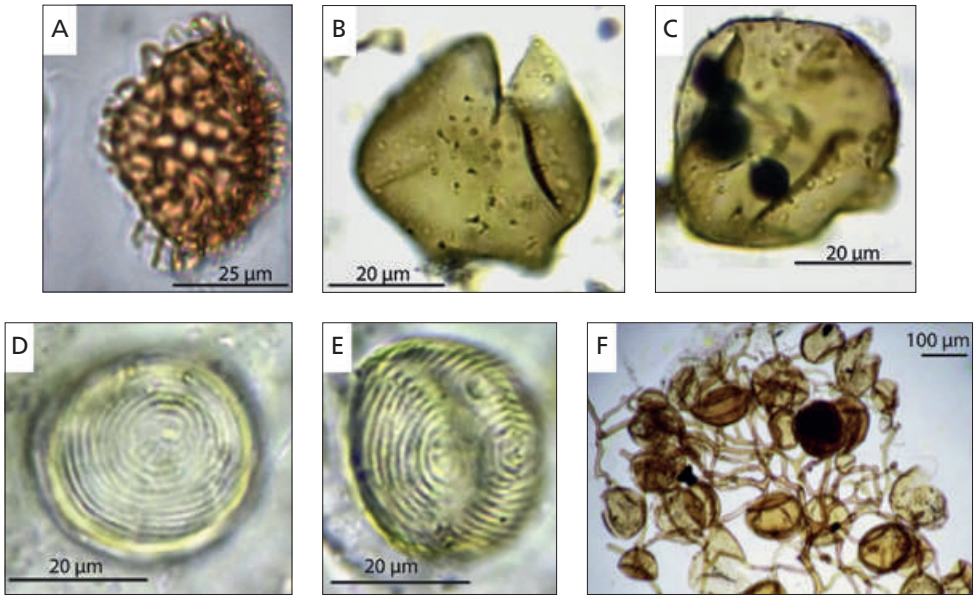

Fig. 3 Plate showing examples of Palynomorphs: **A** *Lycopodium* spore (photo by Andrea Krueger) which can be used as marker particle. – **B-C** Dinoflagellate cyst *Peridinium ponticum* (photo from Sadori et al., Palynology and ostracodology). – **D-E** Acritarch *Pseudoschizaea circula* (photo from Sadori et al., Palynology and ostracodology). – **F** cluster of fungal spore *Glomus* (photo modified from Revelles et al., Pollen and non-pollen palynomorphs).

results. To remedy these shortcomings, and to complement the more commonly used proxies, elemental geochemistry has been added to the toolkit of geoarchaeology. Only recently, research teams have used elemental geochemistry to improve the paleoenvironmental reconstructions in archaeological contexts, as in Corinth (Greece)[86], Magdala (Israel)[87], Elaia (Turkey)[88], and Alkinoos (Greece)[89]. This recent expansion of geochemistry into geoarchaeological research is a direct result of the widespread use of micro x-ray fluorescence (µXRF) core scanners during the last decade[90]. To extract as much information as possible from the elementary geochemistry data, it is recommended to link them to a factor analysis that can discriminate the main environmental factors leading to the formation of the harbour basin deposits[91]. Based on five different ancient harbour deposits, a recent study by Delile et al.[92] classified these environmental variables in order of importance as (I) current velocity, (II) biogenic production, (III) water column ventilation, (IV) anthropogenic flux, and (V) seawater versus freshwater influence. The association and coupling of these control factors have demonstrated its robustness for detailed paleoenvironmental reconstructions in numerous cases[93].

X-Ray Fluorescence (XRF) Spectrometry

XRF is a non-destructive analytical tool that has been increasingly popular in archaeology and geosciences due to its ability to offer high resolution semi-quantitative and qualitative elemental data, often with little preparation. The data produced by XRF analysis help researchers to interpret the provenance of material (archaeometry) and paleoenvironmental reconstruction (relevant for geoarchaeological studies). There are many types of XRF including both laboratory XRF and portable handheld XRF, the latter being useful for rapid analysis in the field[94]. This section introduces and summarises two types of XRF techniques commonly used by archaeologists and geoarchaeologists: energy-dispersive XRF (EDXRF) and wavelength-dispersive XRF (WDXRF).

Each technique uses x-rays to excite and displace the electrons of the inner shell of the atom. The electrons from the outer shell then fill the void, which emits x-ray photons that can be counted to identify the elements present in the material and/or sediment core. Archaeologists commonly rely on these XRF techniques for obsidian studies and more recently, analysing archaeological basalts[95]. The operating principle behind EDXRF and WDXRF are similar, however, WDXRF detects one element at a time and as a result, takes longer to process than EDXRF which is more efficient with the ability to detect groups of elements simultaneously and process within a few minutes. The spectral resolution of WDXRF is higher (i.e., ~5 eV to 20 eV) than EDXR (~150 eV-600 eV; this depends on the detector) which means there are fewer spectral overlaps of elemental data in WDXRF than in EDXRF.

86 Hadler et al., Harbour of ancient Corinth (Peloponnese, Greece) 139-180.
87 Rossi et al., New insights into the palaeoenvironmental evolution of Magdala ancient harbour 356-373.
88 Shumilovskikh et al., The harbour of Elaia 167-187.
89 Finkler et al., Tracing the Alkinoos Harbour 24-42.
90 Croudace/Rothwell, Ch. 1 Micro-XRF Studies of Sediment Cores 14-19.
91 Delile et al., Geochemical investigation of a sediment core 34-45. – Delile et al., Demise of a harbour 202-213. – Delile et al., Neapolis harbour 84-97. – Delile et al., The contribution of geochemistry to ancient harbour geoarchaeology 170-187.
92 Delile et al., The contribution of geochemistry to ancient harbour geoarchaeology 170-187.
93 Delile et al., Geochemical investigation of a sediment core 34-45. – Delile et al., Demise of a harbour 202-213. – Delile et al., Neapolis harbour 84-97.
94 Shackley, Ch. 1 X-Ray Fluorescence Spectrometry 12-15.
95 Shackley, Ch. 1 X-Ray Fluorescence Spectrometry 1-2. – Lunbald et al., Non-destructive EDXRF Analyses of Archaeological Basalts 65-77.

The interpretation of the elemental compositions in sediment cores for geoarchaeological research is site-specific. Therfore, it is imperative to understand the geochemical properties related to the ecological setting of the study area. Mistakes are often made when elements are placed in relation without considering external parameters, such as the climatic, hydrologic, and geologic context of the region[96]. Moreover, technological advancements in recent years, such as the development of micro-XRF (µXRF), can provide rapid and continuous high spatial resolution elemental records (~200 µm) than conventional XRF[97].

µXRF core scanners, such as AVAATECH/CORTEX and ITRAX are the most popular instruments used in palaeoceanography and paleolimnology studies today[98] and are becoming more widely used in geoarchaeology research for reconstructing paleoenvironments and paleoclimates. For example, depending on sediment accumulation rates in the core, µXRF can identify seasonal to multi-decadal scale changes in geochemical signatures associated with environmental change over time. Some core scanners, such as the *Cox Analytical ITRAX XRF scanner*, can also produce radiographic and optical images that can be useful for studying spatial heterogeneities, sedimentary structures, and sediment accumulation from the recorded film density of the core[99].

Dating (Relative vs. Absolute dating)

Dating is essential for geoarchaeologists to establish a chronology of their research area. There are two different types of dating methods: I) Absolute dating and II) Relative dating. Absolute dating provides a fixed date set on a chronological scale (i. e., calendar years and calibrated years) and can be determined by referencing a known printed date (e. g. a coin) or using scientific methods, such as radiometric (e. g. radiocarbon, uranium series, and single-crystal laser fusion Argon-argon dating) and trapped charged dating (e. g. thermo-luminescence, cosmogenic exposure dating, and electron spin resonance). Relative dating is arbitrary where objects are put into chronological order and geologic time series are wiggle-matched to reference curves or using a point of reference, such as an artefact or known event. Table 2 provides a summary of some of the most common absolute and relative dating methods used in geoarchaeology today. This section on dating methods will focus on the use of radiocarbon and cosmogenic isotopes (absolute dating), and palaeomagnetism (relative dating).

Radiocarbon Dating

Radiocarbon dating (^{14}C) is the most used dating technique in archaeological studies to estimate the age of carbon materials. The principle behind ^{14}C dating is simple: atmospheric carbon dioxide (CO_2) contains small proportions of ^{14}C, a naturally occurring radioactive element created in the upper atmosphere through the reaction of neutrons from cosmic rays and Nitrogen (^{14}N) in the air. The ^{14}C atom is rapidly oxidized to carbon dioxide ($^{14}CO_2$) and mixed with carbon dioxide in the atmosphere. This is passed from the atmosphere to oceans through dissolution or assimilation by plants via photosynthesis and enters the food chain, therefore marking all living organisms with carbon 14.

The production of atmospheric ^{14}C is continuous without accumulation – it spontaneously disintegrates to provide a nitrogen atom. The production of ^{14}C and its decay equilibrate around a low ^{14}C content conferring natural radioactivity to the carbon dioxide of the atmosphere. As long as the organisms remain in exchange with this carbon dioxide, ^{14}C is stored. Since ^{14}C is unstable, it will decay over time when an organism dies and is no longer exchanging carbon with the biosphere or during the precipitation of carbonate minerals. Age estimates can therefore be calculated by measuring the residual rate of ^{14}C left in a carbon sample after its death.

All carbon materials less than 50 000 years old are theoretically datable. The most common material used for this dating method is of vegetable origin (e. g. charcoal, wood, seeds, etc.) and bones. Marine organisms, such as fish, shells, and Posidonia, are special cases that will be discussed later. Samples must be treated to avoid contamination[100]. There are two principal techniques for measuring residual ^{14}C in a sample: 1) liquid scintillation counters and 2) counting the remaining ^{14}C atoms using an Accelerator Mass Spectrometry (AMS). The choice of method depends on the sample mass. For example, the first technique requires a large sample mass weighing 20-300 g, depending on the nature of the sample, while AMS requires smaller samples weighing a few 10 µg to 5 g. ^{14}C dates obtained using these tools are given in years B.P. (Before Present, i. e., before 1950) with a margin of uncertainty. A correction curve is used to convert these dates into a calendar date interval, depending on the accuracy of the measurement and the sequence of the calibration curve used, where the age of the dated sample has a confidence interval of 95[101].

In geoarchaeological studies, sampling is generally carried out by obtaining sediment cores from the study area. For this reason, samples that are selected for ^{14}C is usually small, e. g. in plant macro-remains, diffuse organic matter, and/or marine shells in coastal environments. The oceans receive ^{14}C from atmospheric CO_2 and the deep ocean from radioactive decay occurring at these depths and mixing of surface wa-

96 Delile et al., The contribution of geochemistry to ancient harbour geoarchaeology 171.
97 Croudace/Rothwell, Ch. 1 Micro-XRF Studies of Sediment Cores 24.
98 Croudace/Rothwell, Ch. 1 Micro-XRF Studies of Sediment Cores 3.
99 Croudace/Rothwell, Ch. 1 Micro-XRF Studies of Sediment Cores viii. – Axelsson, The use of X-ray radiographic methods 65.
100 Brock et al., Current Pre-treatment methods for AMS Radiocarbon 103-112.
101 Reimer et al., IntCal13 and Marine13 Radiocarbon Age Calibration Curves 1869-1887.

Dating Method	Age Range	Materials	Summary
Radiocarbon dating	1 - 50 000 years	Organic material (e. g. bones, shells, charcoal, wood, and peat)	Measures the radioactive decay of ^{14}C in carbon materials
Argon-Argon Ar-Ar	1000s - several billions of years	Volcanic material (e. g. igneous rocks) and early human artefacts	Measures the decay of the ratio 40Ar/ 39Ar in sediments/rocks containing argon
Potassium- Argon K-Ar	1000s - several billions of years	Volcanic material (e. g. igneous rocks), early human artefacts	Measures the decay of 39K and 40Ar in sediments/ rocks containing minerals with potassium
Uranium Series (U-Series)	Several thousand - 1 million years*	Minerals containing uranium (e. g. silicates and carbonates)	Measures the radioactive decay of 238U and 235U
Luminescence (OSL and TL)	1000 - several billions of years	Fired material (e. g. ceramics, pottery, burnt flint, etc.)	Measures radioactivity accumulated in the sediment and/or tool since the last time it was exposed to heat and/or light
Electron Spin Resonance (ESR)	1000 - 5 million years	Tooth enamel, carbonates (e. g. speleothems, shells, etc.), rocks/sediment containing quartz, etc.**	Determines the age of burial via measuring the concentration of free radicals in the material due to exposure to natural radiation***
Tephrochronology	100 - few billion years	Volcanic material/deposits	Measures age of volcanic material to determine the age of stratigraphic material
Paleomagnetism	Several hundreds - billions of years	Fired material (e. g. ceramics), sediments, and rocks (sedimentary and igneous)	Measures the fossilized Earth's magnetic field and compare to reference curves for relative dating

Tab. 2 Summary of common dating methods used in geoarchaeology (from Peppe/Deino, Dating rocks). – * Schwarcz, Uranium series dating 7-17. – ** Rink, Electron Spin Resonance 975-1025. – *** Skinner, Electron Spin Resonance.

ters. Marine organisms absorb ^{14}C dissolved in the water (as CO_2). Seawater, however, contains less ^{14}C compared to CO_2 in the atmosphere. Exchange between the surface of the ocean and the atmosphere is quicker than in deep waters. This is called the *Marine Reservoir Effect* which ages the estimated dates of marine organisms. This ageing (or apparent age) is estimated at 400 years[102]. In addition, the magnitude of the marine reservoir effect varies depending on the marine species and environmental conditions[103]. A marine calibration curve is used to calibrate the dates of these materials with regard to this correction[104]. The dating of shells is not used to determine absolute dates but are used to serve as chronological markers for geoarchaeological interpretation.

Incipient use of terrestrial cosmogenic isotopes in geoarchaeology

Absolute dating provides an estimated numerical age in sediments, rocks, and/or fossils. The most commonly used absolute dating method is radiometric dating, which uses the natural radioactive decay of some of Earth's most dominant elements including carbon, uranium, and potassium. Cosmogenic isotopes are produced through the interaction of high energy cosmic rays with atoms of the Earth's atmosphere and land surface. Cosmic ray fluxes are composed predominantly of protons and muons emitted during supernova explosions. They are considerably more energetic than the most energetic sun rays – whereas sun rays can overcome chemical bonds and split molecules, cosmic rays can overcome atomic bonds and split atoms. The isotopes produced by these reactions can be stable, but many are radioactive and decay after being produced. Those used in Earth Sciences are often radioactive with typical half-lives of several days to several millions of years. Meteoric cosmogenic isotopes are produced in the atmosphere and transferred to the ground through dry (e. g. dust, aerosols, gas) or wet (e. g. rain) deposition. The best known of these is ^{14}C. Others, such as Beryllium (^{10}Be), are used for their propensity to accumulate in soils by adsorption to organic matter, iron oxides and clays[105]. Terrestrial in-situ produced cosmogenic isotopes are generated directly in the lattices of minerals, within the topmost few metres of the Earth's surface. Average production rates have only been firmly calibrated for a few isotopes, in compositionally simple minerals, such as ^{10}Be, ^{14}C and ^{26}Al in quartz, or ^{36}Cl in calcite. In cases where such minerals are not available, more complex analyses can be conducted, for example on cosmogenic ^{21}Ne and ^{3}He in pyroxenes, olivine, and amphiboles.

The concentration produced by isotopes within mineral particles or adhering to their surface of ground particles can be used in three main ways: (I) to date the duration of exposure of a surface to cosmic rays or atmospheric fallout; (II) to quantify the rate at which a rock surface or soil is eroded, and (III) to date the burial and shielding of material from cosmic rays. Studies most commonly use one or some combination of these fundamental approaches.

Due to very low production rates (a few atoms per gram of mineral per year), measurements require the use of acceleration mass spectroscopy (AMS). Therefore, terrestrial cosmogenic isotopes initially found applications in geology, where time scales of a few thousand years to several million years allow concentrations to reach measurable levels[106]. They

102 Stuiver/Brazinius, Modelling atmospheric ^{14}C influences and ^{14}C ages 137-189.
103 Marchand et al., Entre »effet reservoir« et »effet de plateau« 307-335.
104 Reimer et al., IntCal13 and Marine13 Radiocarbon Age Calibration Curves 1869-1887.
105 Boschi/Willenbring, The effect of pH, organic ligand chemistry and mineralogy 711-722.
106 Granger et al., A cosmic trip: 25 years of cosmogenic nuclides in geology 1379-1402.

have been used to date glacial landforms, river terraces, fault scarps, caves, paleosols, and the natural rate of erosion of rocks and soils[107]. The use of terrestrial cosmogenic isotopes in geoarchaeology as a dating technique has been hindered by the slow build-up of isotope concentrations[108], such that most successful applications have been obtained in the field of palaeoanthropology[109]. The improvement of AMS detection limits, the strong momentum of this dating technique, and the use of novel minerals and isotopes will certainly soon result in breakthroughs in the field of geoarchaeology. Fluxes of atmospherically derived isotopes are higher, allowing for measurements over time-scales more relevant to geoarchaeology, but the mechanisms of accumulation/flushing of isotopes in soils are complex and poorly constrained, making interpretations less straightforward[110]. Its highest current potential lies in the field of erosion rate measurements, in particular, to assess the effects of anthropogenic perturbation to background environment levels[111], or as a tracer of sediment sources[112].

Palaeomagnetism

The Earth's magnetic field can be used for relative dating of historical and archaeological sites. This is done by comparing the fossilized magnetism in sediment or fired artefacts to regional reference curves and magnetic field models. Paleomagnetic dating is based on the fact that the Earth's magnetic field changes over time and that certain minerals can enclose the ambient magnetic field. The reference curves include measurements made by mariners[113], paleorecords from well-dated geological and archaeological archives (e.g. MagIC database[114]; GEOMAGIA50 database by Brown et al.[115], and geomagnetic field models (e.g. CALSxk by Korte and Constable)[116]. Paleomagnetic dating is most powerful when using the full magnetic vector (paleointensity, inclination and declination), in a region and period a priori well-documented with quality reference curves, and as a part of a multiproxy dating strategy. Paleomagnetic dating has the potential to provide good precision in periods of large radiocarbon calibration uncertainties, such as the Early Medieval Period[117]. Sampling material for paleomagnetism includes: (I) Fired material such as hearths, ceramics, bricks, and iron sledge. The magnetic minerals record a thermal remnant magnetisation (TRM) at the time of cooling through their Curie temperature; (II) Sediment deposited in a natural (e.g. lake, sea) or artificial basin (e.g. harbours). The magnetic minerals encase a detrital remnant magnetisation (DRM) at the time of deposition. The typical sample size is 8 cm^3 (8 mℓ) cubes or discrete cylinder samples for analysis in a spinner magnetometer or a cryogenic magnetometer. Sedimentary sequences can also be sampled with U-channels (core-length plastic boxes with cross-section 2 cm × 2 cm) and analysed using a cryogenic magnetometer for U-channels.

Data interpretation:
The Paleoenvironmental Age-Depth Model

The *Paleoenvironmental Age-Depth Model* (PADM) is an interpretative chart created to characterise harbour potential and operability[118] (**fig. 4**). This chart provides a useful tool for reconstructing navigability, accessibility of a water body through time, but also for visualising the degree of closure of the palaeoenvironments considered. Based on a classic age-depth model, the PADM chart combines (I) stratigraphic and paleoenvironmental data, (II) sedimentation curve, (III) reconstructed relative local sea level curve, (IV) fully laden ancient ship or boat draughts – depending on the period and the culture considered, and (V) all relevant chronological and/or altitudinal data that can possibly be collected.

PADM was initially developed and applied for the interpretation of the canals of Portus[119]. These navigable canals were excavated during the Roman period between the Imperial harbour of Rome and the Tiber River. It was then developed and improved in the context of the ERC-funded RoMP PortusLimen project to interpret different Roman harbours in coastal, lagoon or fluvial contexts in the same way[120]. Additionally, this chart was standardized for comparing different harbours and their suitability for ships and boats of varying sizes. In parallel, 2D interpretative cross-sections were built for visualising the evolution of the water column available over time with different ships[121]. Finally, a similar diagram was also applied in the harbours of Halmyris[122] (Dobrogea, Romania) and Elaia[123] (W. Turkey) using microfossil, foraminifera associations for reconstructing the water columns available over time.

To produce a PADM chart, a precise stratigraphic representation of the studied sequence is required. Paleoenvironmental analyses have to be performed for reconstructing the degree of closure of a harbour in terms of the hydrodynamism (i.e., grain-size analysis and geochemical

107 Brocard et al., Effects of a tectonically-triggered wave.
108 Akçar et al., Cosmogenic 36Cl in limestone 533-540.
109 Granger et al., New cosmogenic burial ages for Sterkfontein 85. – Philipps et al., Maximum ages of the Côa valley 100. – Verri et al., Flint mining in prehistory 7880-7884.
110 Boschi/Willenbring, Beryllium desorption 52-58.
111 Brown et al., Determination of predevelopment denudation rates 723-728. Valette-Silver et al., Detection of erosion events using ^{10}Be profiles 82-90.
112 Reusser/Bierman, Using meteoric 10Be to track fluvial sand 47-50.
113 Jonkers et al., Four centuries of geomagnetic data from historical records 2.
114 https://Earthref.org/MagIC.
115 Brown et al., GEOMAGIA50.v3: 1. Brown et al., GEOMAGIA50.v3: 2.
116 Korte/Constable, Geomagnetic field.
117 Batt et al., Advances in archaeomagnetic dating in Britain 66.
118 Salomon et al., The Development and Characteristics of Ancient Harbours 5-8.
119 Salomon et al., The Canale di Comunicazione Traverso in Portus 84-87. Lisé-Pronovost et al., Dredging and canal gate technologies in Portus.
120 Salomon et al., The Development and Characteristics of Ancient Harbours 1. – Salomon et al., Un modèle âge-profondeur paléoenvironnemental 1.
121 Salomon et al., A harbour–canal at Portus 31-49. – Goiran et al., High chrono-stratigraphical resolution of the harbour sequence of Ostia 68-84.
122 Giaime et al., Halmyris: Geoarchaeology of a Fluvial Harbour on the Danube Delta.
123 Seeliger et al., Foraminifera as markers of Holocene sea-level fluctuations 21-27.

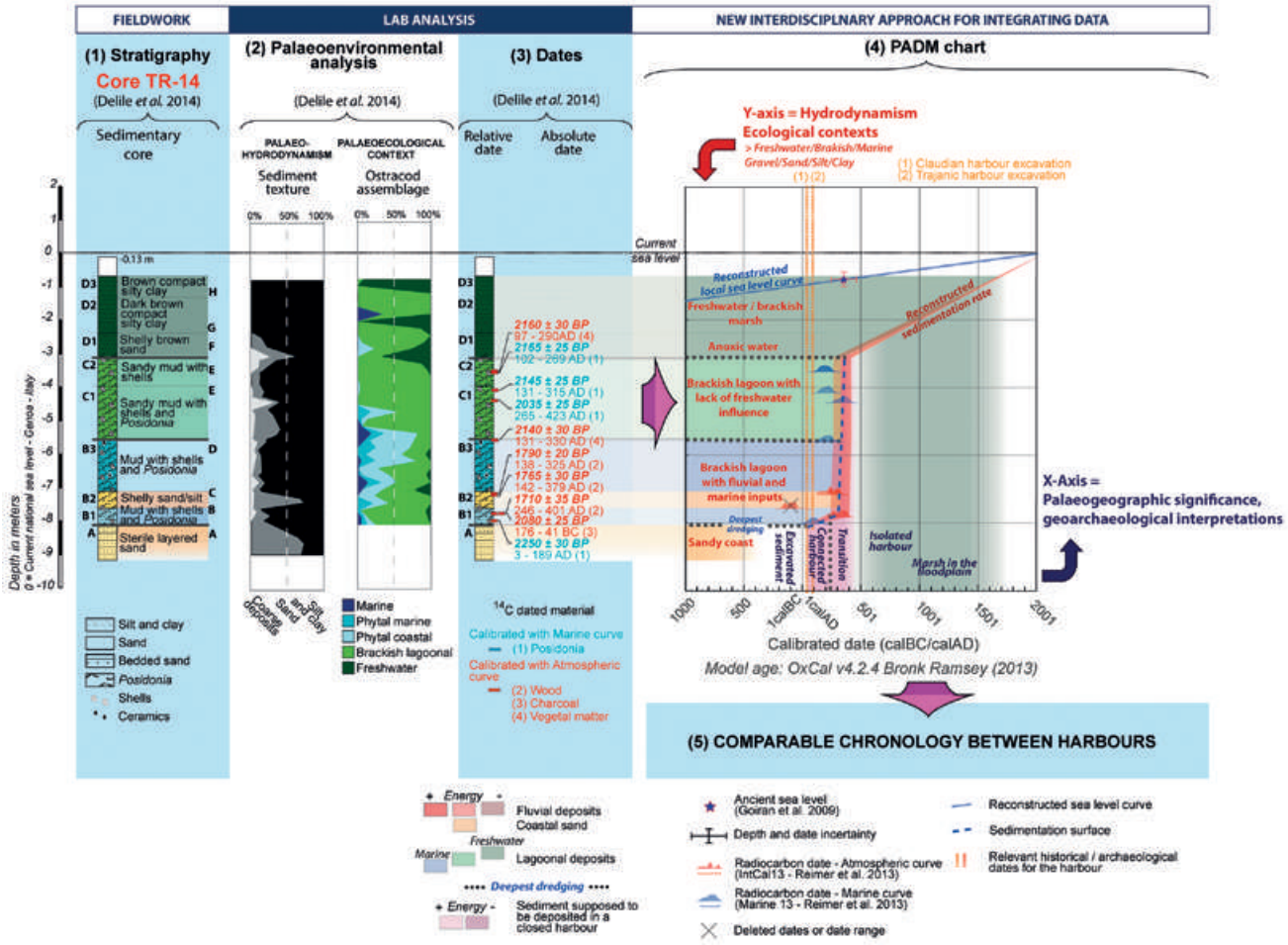

Fig. 4 An example of a Palaeoenvironmental Age-Depth Model (PDAM) Chart used to characterise harbour potential and operability. – (From Salomon et al., The Development and Characteristics of Ancient Harbours).

analysis) and the water oxygenation, connection to the sea considering the marine/freshwater balance (bioindicators – macrofauna, ostracods, foraminifera, geochemical analyses etc.). In addition, a reliable chrono-stratigraphy based on radiocarbon dating, optically stimulated luminescence dating (OSL), and archaeological dating methods (i. e., ceramics) must be established. For the reconstruction of relative sea level, the PADM requires local or regional data. Draughts of fully laden ancient boats and ships, levels of archaeologically dated quays, historical data about the use of a harbour, its foundation etc. can allow the researcher to refine the PADM.

Successive steps are taken in the construction of the Paleoenvironmental Age-Depth Model (PADM) chart:

1. Construction of an age-depth model or sedimentation curve based on absolute dates;
2. The stratigraphic sequence, the hydrodynamism, and the paleoecological context are drawn on the vertical axis (Y-axis);
3. The stratigraphic layers are transposed on the horizontal axis (x-axis) through the reconstructed sedimentation curve – interpretations relate to this axis (paleogeographical interpretation and operability of the harbour);
4. The reconstructed relative sea level curve is reported on the age-depth model – the area between the reconstructed sedimentation and the relative sea level curves correspond to the changing paleo-bathymetry;
5. The draught of a fully laden boat and ship at a given period and culture are compared to the paleo-bathymetries.

Additional elements of control can be added to the PADM chart such as complementary dates, or the reconstruction of the compaction correction. Alternatively, water depth can be inferred from bio-indicators trapped in the sediments, such as foraminifera. Multiple-core analysis and a combination of sediment curves provide a better understanding of the evolution of the different parts of the harbour[124]. This method can be applied to sedimentary sequences in a built harbour as well as in any water body (e. g. coastal area, river, lake, palaeolagoon, etc.). Archaeological evidence enables better identification of the limits of a harbour area (i. e., moles, quays, settlement location, etc.).

124 Salomon et al., The Development and Characteristics of Ancient Harbours 10.

Case Studies: Reconstructing Ancient Harbours

Alexandria (Egypt)

In 331 BC, Alexander the Great led his army to Northern Africa to defeat the Persians for their rule over Egypt and founded the ancient city of Alexandria behind the island of Pharos on the western margin of the Nile Delta. The Greek geographer Strabo described an approximately ca. 1300 m long Heptastadion (causeway) that connected the mainland to Pharos, where the famous lighthouse of Alexandria once stood. The connexion divided Alexandria's coastline into two ports located on the east and west side of the Heptastadion. The eastern port of Alexandria, called *Magnus Portus*, was one of the busiest harbours in the ancient world and served as a one of the most important trading ports between Egypt and the Greco-Roman cities around the Mediterranean. The *Magnus Portus* was better protected than the western port (known as the Eunostos harbour) which was open to the sea and more susceptible to coastal processes such as strong winds and sea swells[125].

Alexandria is exposed to north-easterly winds in summer and north-westerly winds in winter. These intense seasonal wind patterns can produce storm waves with heights of ca. 1.2-2.1 m, with the strongest ocean swells occurring between June-August[126]. The magnitude of these waves is predominantly responsible for coastal erosion and sediment transportation. Over time, sediment accumulated on both sides of the Heptastadion subsequently filling up the harbours and creating a tombolo (sandbank). About the 15th and 16th centuries AD, the city expanded to the tombolo and is still a densely urbanized centre today. Consequently, urbanization on the tombolo has made it difficult for archaeologists to precisely locate the Heptastadion. Mahmoud El Falaki (1872) hypothesized that the Heptastadion was orientated NW/SE, which was widely accepted throughout most of the 21st century[127]. However, this hypothesis was refuted in 1997 by Albert Hesse (CNRS, UMR 7619 Sisyphe) through geophysical analysis[128]. Hesse argued that the Heptastadion continued the city's ancient road network. A multidisciplinary study combining geophysical, archaeological, and geomorphological methods was later performed to understand the landscape evolution of Alexandria's coastline during the last 8000 years of the Holocene.

Hesse demonstrated how the tombolo was formed and proposed a new hypothesis for the location of the Heptastadion[129]. The results from this study indicated that urban development followed the evolution of the coastline. During the geophysical survey, most of the methods were tested including Electrostatic, EMI, GPR, and seismic. Despite the extensive geophysical survey, the original structure of the Heptastadion could not be detected, but the surveys revealed and confirmed the location of the anchorage points of the ancient causeway and the evolution of the tombolo. The electrostatic survey provided the clearest results showing the evolution of the tombolo with decreasing resistivities towards the east. This decrease can be interpreted as the difference between a hard rock resistant infrastructure (the Heptastadion) and the progradation due to more conductive sediments. Despite the metallic disturbances due to the urban environment, the EMI survey successfully confirms the results obtained from the electrostatics.

Pyrgi (Italy)

The Etruscans were an ancient civilization from the Italian Peninsula renowned for their wealth and urban development. Etruscan cities were established at the end of the Final Bronze Age (12th-10th c. BC) to the Early Iron Age (i. e., the Villanovian period from 10th-8th c. BC). In the 9th century BC, the Etruscans had occupied territories around the Tyrrhenian coast extending from modern-day Tuscany, Lazio, and Umbria. They were known for engineering extensive hydraulic structures including, canals for transport and drainage systems. According to ancient texts, the Etruscans were a Thalassocratic society since they relied on the use of commercial harbour basins and naval bases. However, despite numerous archaeological studies along the Tyrrhenian coastline, no evidence of Etruscan harbour activity has been discovered[130]. Benvento Frau (1989), an Italian archaeologist known for his research in ancient Etruscan ports of Tarquinia (Lazio, Italy), believed that Etruscan settlements in Pyrgi could have used former inland lagoons to support their waterway projects instead of large maritime harbour basins[131]. This assumption was based on analysing aerial photographs of the region which appeared to reveal buried archaeological structures linked to the harbour activities (i. e., tower structures and jetties; **fig. 5a**)[132]. To test Frau's hypothesis, a geoarchaeological expedition in 2017 was conducted in the ancient city of Pyrgi (modern-day Santa Severa) located ca. 52 km north of Rome on the Lazio coast of Italy (**fig. 5b**). The purpose of this study is to identify the structures of the Etruscan harbour of Pyrgi and to verify the findings discussed by Frau[133].

125 Lotft/Badr, Long-term relief deformation and sediment characteristics 267-268.
126 Goiran et al., Geoarchaeology of Alexandria (Egypt) 730.
127 Falakī/Ḥamdī, Mémoire sur l'antique Alexandrie.
128 Hesse, Arguments pour une nouvelle hypothèse 21-33.
129 Hesse et al., L'Heptastade d'Alexandrie 191-273.
130 Enei, Pyrgi sommersa. – Boitani, Il territorio: l'emporion di Gravisca 125-136. – McCann, The Roman Port and Fishery of Cosa. – Keay/Paroli, Portus. – Goiran et al., Paleoreconstruction of ancient harbours of Rome 3-13. – Goiran et al., Geoarchaeology confirms location of the ancient harbour basin of Ostia 389-398.
131 Frau, I porti ceretani di Pyrgi e Castrum Novum 319-327.
132 Enei, Pyrgi sommersa. – Boitani, Il territorio: l'emporion di Gravisca 125-136. – McCann, The Roman Port and Fishery of Cosa. – Keay/Paroli, Portus. – Goiran et al., Paleoreconstruction of ancient harbours of Rome 3-13. – Goiran et al., Geoarchaeology confirms location of the ancient harbour basin of Ostia 389-398.
133 Frau, I porti ceretani di Pyrgi e Castrum Novum 319-327.

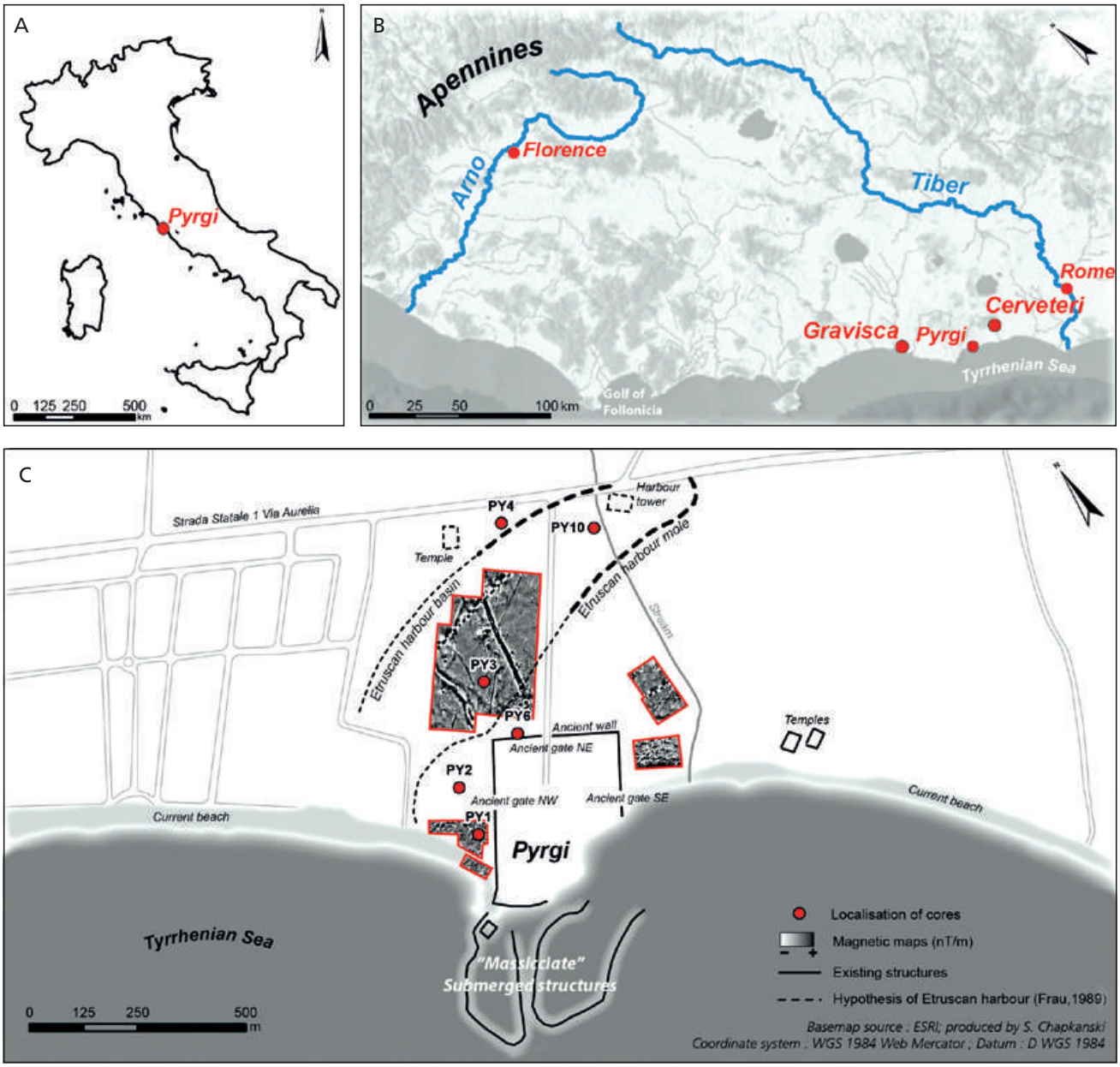

Fig. 5 Study Area: **A** Pyrgi (Italy along the Tyrrhenian Sea. – **B** Map of Pyrgi. – **C** Coring locations. This figure reveals the hypothesis of Frau, I porti ceretani di Pyrgi e Castrum Novum, suggesting the harbour of Pyrgi as well as the locations of cores and the preliminary results of magnetic maps (C) – (After Goiran et al., Recherche).

A multidisciplinary approach involving geophysical surveys and sedimentological analysis was performed. Six sedimentary cores were obtained and >8 ha of the area was investigated by geophysical prospections (**fig. 6c**). A sedimentary description of the cores revealed major stratigraphic layers, specifically silt-clay deposits overlying a sandstone bedrock (**fig. 6**). Silt-clay sediments are characteristic of a low energy depositional environment, such as a lagoon or a protected harbour. After correlating the cores (**fig. 6**), the sandstone bedrock in this area appears to be higher than the relative sea level during the Roman epoch[134]. This means that the existence of a Holocene lagoon located North-West of Pyrgi is not possible. As such, these preliminary results disagree with Frau's hypothesis regarding an inland lagoon related to Etruscan harbour settlements. These findings, however, are not conclusive as it only covers one area of Pyrgi, and radiocarbon dates are yet to be added. Future research is also needed to establish a higher spatial resolution for a more detailed paleoenvironmental reconstruction of the region. Furthermore, geophysical surveys were performed outside the ancient city walls to 1) identify a lagoon environment related to ancient harbour settlement, 2) locate the harbour's

134 Rovere et al., Relative sea level change at the arcaehological site of Pyrgi 89-90.

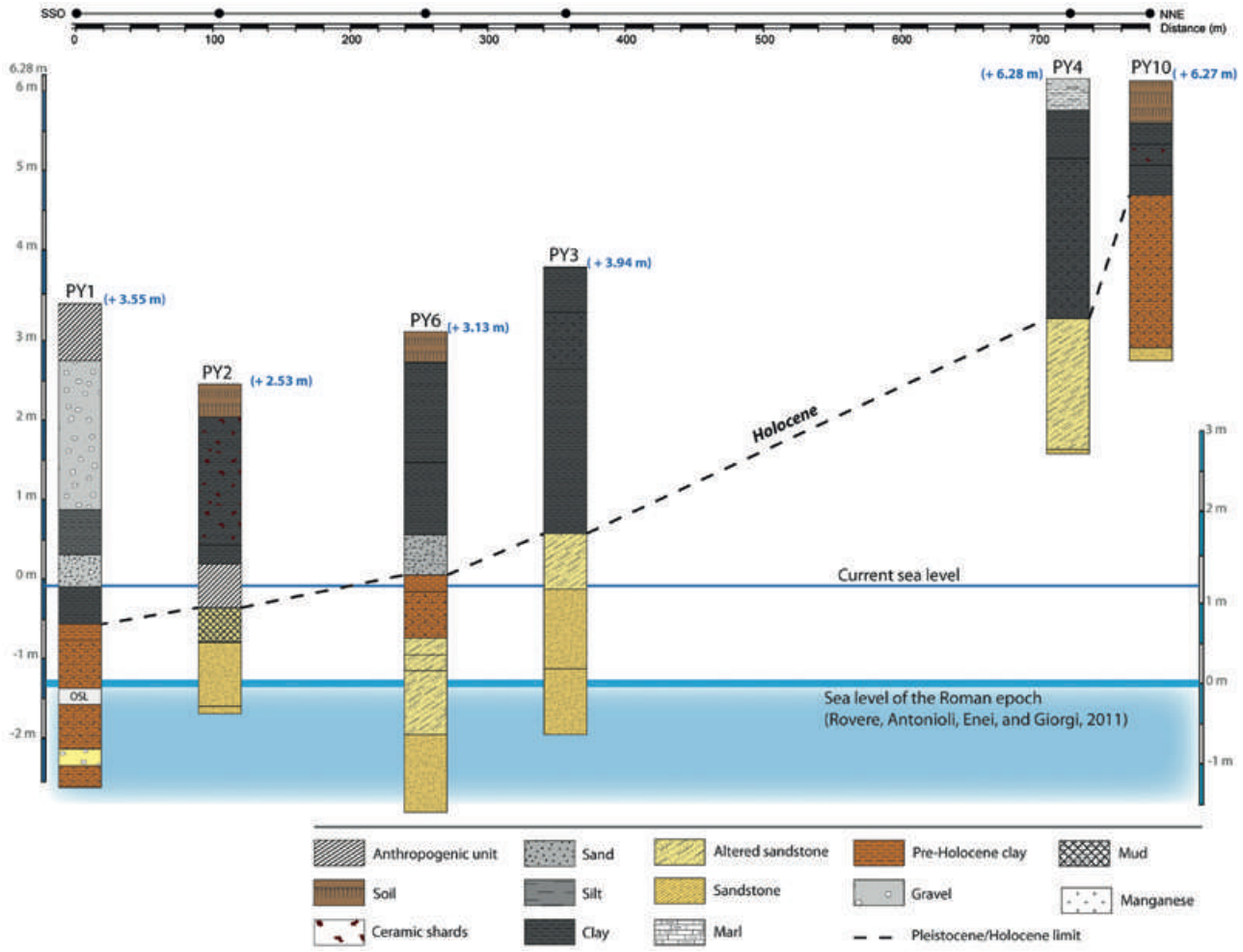

Fig. 6 Stratigraphic description of the cores in Pyrgi. Current and ancient sea-levels are marked in the figure. – (After Goiran et al., Recherche).

infrastructures, and 3) determine urban network outside the city walls (if applicable).

Magnetic surveys have been carried out in 2017 in the fields around the ancient city walls. Although the geophysical cover of the site contains several gaps and is yet to be completed, it has revealed interesting preliminary results (fig. 7). The magnetic survey (i. e., mapping the local geomagnetic field variations) highlighted road elements and buildings features within the proximity of the ancient city walls, proving that the ancient urban network continues beyond known city limits. Thus, an access road to the northern city gate as well as what appears to be an eastern neighbourhood have been identified on the magnetic map. The geophysical survey, however, is not fully completed at this stage and no harbour structures have been identified in any of the geophysical maps thus far. The contrasting electrical resistivity makes it possible to follow the clay-sandstone interface in which the clay thickness can be estimated (data is not available at this stage). This clay thickness provides insight into the size and the evolution of the alluvial plain associated with the highlighted sedimentary deposits. More research is needed,

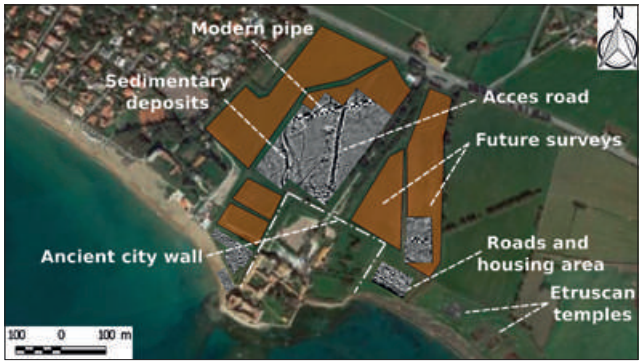

Fig. 7 Preliminary magnetic survey results for Pyrgi. – (After Goiran et al., Recherche).

however, the preliminary results presented in this section reveal promising information concerning the urban network and the ancient landscape of Pyrgi. Once the magnetic survey and a number of complementary methods, including electrical resistivity tomography cross-sections, have been completed, it will be possible to fully reconstruct the geomorphological landscape.

Conclusion

The application of geoscience provides a plethora of knowledge for harbour archaeological research. The technological advancements in geoscientific tools have made data collection more efficient and cost-effective as manifested in the introduction of non-destructive and rapid geochemical analyses using µXRF core scanners and GIS for digital modelling and spatial analyses. Such innovations have permitted geoarchaeologists to pursue further research questions and have broadened the interest in harbour maritime archaeology overall. As can be seen in Alexandria, multidisciplinary approaches have allowed researchers to gain insight into how ancient societies reacted to the natural landscape and coastal evolution. There are, of course, limitations to the methods and tools summarized in this paper. Further technological innovation is therefore needed to overcome some of these obstacles. Nonetheless, geoarchaeological research helps to understand the past but also for monitoring and preparing for the future with the use of predictive modelling.

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Summary / Zusammenfassung

Developments in Geoarchaeological Research Methodologies and Applications in Harbour Maritime Archaeology

Maritime archaeology is a popular discipline in archaeological research with a primary focus on understanding ancient societies and their connection to the sea. Over the years, the inclusion of geoscientific methods and analyses in this field has helped solve some of the largest challenges in archaeology including investigating environmental impacts on human behaviours and site formation. Technological advancements of geoscientific tools in the 20th century have allowed researchers to uncover and explore ancient ports and harbours through the detection of collapsed structures and/or land alteration, such as those found in the great Egyptian city of Alexandria. This paper provides a review of common methods used in harbour maritime geoarchaeology today including various geophysical, spatial modelling, sedimentological, geochemical, and micropaleontological analyses as well as relative and absolute dating methods. The last section of this review will focus on how these methods are executed in the field and in the laboratory based on two harbour studies from the ancient world including the famous *Alexandria* in Egypt and the Etruscan harbour of *Pyrgi* situated on Italy's Tyrrhenian coastline. The paper is written collaboratively by researchers with various geoscientific backgrounds who are working on geoarchaeological projects in various parts of the world.

Entwicklungen von geoarchäologischen Forschungsmethoden und -anwendungen in der Hafenarchäologie

Die maritime Archäologie ist eine wichtige Subdisziplin der archäologischen Forschung, deren Hauptaugenmerk auf dem Verständnis von Gesellschaften der Vergangenheit und ihrer Verbindung zum Meer liegt. Im Laufe der Jahre hat die Einbeziehung geowissenschaftlicher Methoden und Analysen in diesem Bereich dazu beigetragen, einige der größten Herausforderungen in der Archäologie zu lösen, einschließlich der Untersuchung der Auswirkungen der Umwelt auf das menschliche Verhalten und die Standortbildung. Der technologische Fortschritt geowissenschaftlicher Werkzeuge im 20. Jahrhundert hat es Forschern ermöglicht, alte Häfen zu erkunden, indem eingestürzte Strukturen und/oder Landveränderungen entdeckt wurden, wie etwa in der großen ägyptischen Stadt Alexandria. Dieser Beitrag bietet einen Überblick über gängige Methoden der heutigen maritimen Geoarchäologie, einschließlich verschiedener geophysikalischer, räumlicher, sedimentologischer, geochemischer und mikropaläontologischer Analysen sowie relativer und absoluter Datierungsmethoden. Der letzte Abschnitt konzentriert sich darauf, wie diese Methoden vor Ort und im Labor durchgeführt werden, basierend auf zwei Hafenstudien für die Antike, das berühmte Alexandria in Ägypten und den etruskische Hafen von Pyrgi an der tyrrhenischen Küste Italiens. Der Beitrag wurde gemeinsam von Forscherinnen und Forschern mit unterschiedlichen geowissenschaftlichen Hintergründen verfasst, die an geoarchäologischen Projekten in verschiedenen Teilen der Welt arbeiten.

Eleonora Kountoura Galaki

A Light in the Darkness: Monastery Lighthouses in the Aegean Sea and Surrounding Coastal Regions

On August 15th, 797, the Empress Eirene blinded her son Constantine VI and, according to the Chronography of Theophanes, this unholy act resulted in the darkening of the sun, which stopped sending its life-giving rays to earth for seventeen days. The medieval chronicler used this meteorological device to express the gravity of the event rather than to record a meteorological phenomenon[1]. However, this reference is interesting, because it is connected with a serious impact on navigation: the sunlight disappeared, so that ships lost course and drifted about. The loss of visual contact with the sun and with the other celestial bodies was disastrous for the ships, since, according to the classical practice of navigation during antiquity and the Middle Ages, ships travelled with the sun and the moon as their guides to determine directions: the sailors »followed the roads of the sky and oriented the direction of their below path without making an error the roadless journey«, as Stephen the Deacon, a 9th-century hagiographer, vividly noticed[2]. Therefore, Emperor Leo VI (886-912), an »arm-chair sailor«[3], in his *Taktika* advised the admiral in charge of a naval force to know the movements of the wind and the signs the sun and moon so that the sailors and their ships would be safe[4].

Navigation took place primarily during the day and ships followed the coastline with coastal itineraries[5] and from anchorage to anchorage, as is evident from various texts, such as the *Katarche* or *Horoskopion* of the year 475[6], the *Stadiodromikon* for the Cretan campaign of 949[7] and later in the portulans[8]. In emergencies, however, ships also sailed at night when the sky was clear and the moon was full. In these cases, the ships sailed away from the coast and the islands[9].

Travelling by sea needed much effort and skill, because »the waters do not have marked roads, because it is in the nature of water not to keep the marks of steps or the traces of vehicles«, as Stephen the Deacon pointed out, recording feelings of uncertainty mixed with fear of sea travel.

For those sailing at night, things were much worse. The likelihood of something unexpected and dangerous happening while sailing on the waves at night was greater, and the travellers' fear was correspondingly high. The combination of night and sea, especially in stormy seas, caused fear and despair among the travellers who hoped for a light on the horizon to save them.

The 4th-century polymath theologian Gregory of Nyssa rhetorically described such circumstances: »those who are at sea and have deviated search for a torch burning high or for a summit to appear at dawn to bring their ship back on the right track«[10]. Michael Psellus provided another relevant stylistic image, mentioning the lighthouses and their practical use in his work on the Crucifixion[11]: »in conditions of severely rough sea, the lighthouses guide the castaways with their light, they summon them close to them and they receive them favourably in calm ports. Thus, the lighthouses with the

1 Theophanes, Chronography 472, 18-22: ἐσκοτίσθη δὲ ὁ ἥλιος ἐπὶ ἡμέρας ιζ´καὶ οὐκ ἔδωκε τὰς ἀκτῖνας αὐτοῦ, ὥστε πλανᾶσθαι τὰ πλοῖα καὶ φέρεσθαι, καὶ πάντας λέγειν καὶ ὁμολογεῖν, ὅτι διὰ τὴν τοῦ βασιλέως τύφλωσιν ὁ ἥλιος τὰς ἀκτῖνας ἀπέθετο. – See Rochow, Theophanes 269. – Cf. Yannopoulos, Περιβάλλον 285-286. – A special study on unusual natural phenomena in Byzantium is provided by Telelis, Phenomena I 363-364.

2 Stephen the Deacon, Life of Stephen the Younger 109: τῇ θέσει τῶν ἀστέρων προσέχοντες, τὴν προκειμένην αὐτοῖς ὁδὸν διοδεύουσιν καὶ ἐκ τῶν ἄνωθεν δρόμων σοφῶς τὴν κάτωθεν τεκμαιρόμενοι τρίβον, ἀπλανῶς τῆν ἀτριβῆ πορείαν ὁδεύουσιν. – The text was written probably in 809, see the comments of the editor M.-F. Auzépy, Life of Stephen the Younger 9.

3 As he was characterized by modern scholars: Pryor/Jeffreys, Δρόμων 160.

4 Leo, Taktika 19, 9-13: προειδέναι διὰ τῆς τῶν φαινομένων ἀστέρων καὶ ἐν ἄστροις σημείων πείρας, καὶ τῶν καθ' ἥλιόν τε καὶ σελήνην γινομένων σημασιῶν. – See also Dēmētroukas, Naumachika 38.2.

5 Pryor/Jeffreys, Δρόμων 341. 354. 388.

6 Dagron/Rougé, Trois horoscopes 120-122.

7 Huxley, Portulan 295-300. – Koder, Aigaion Pelagos 102-103. – Pryor, Σταδιοδρομικόν 77-108. – Pryor/Jeffreys, Δρόμων 264-266.

8 Avramea, Land 79-82.

9 One of the ships that carried the Byzantine representatives for the Synod of Lyons (1274) managed to be kept safe from the storm in Malea, because it sailed away from the coast. ἀνώθουν πρὸς τὸ πέλαγος τὴν τριήρη: Pachymeres, History II, 507. – See also below n. 77.

10 καθάπερ οἱ ἐν πελάγει τῆς εὐθείας τοῦ λιμένος παρενεχθέντες κατὰ τὸ φανὲν σημεῖον τῆς πλάνης ἑαυτοὺς ἐπανάγουσιν ἢ πυρσὸν ἰδόντες ἀπὸ ὕψους αἰρόμενον ἢ κορυφήν τινος ἀκρωρείας ἀναφανεῖσαν: Gregory of Nyssa, Life of Moses, 11.6-9 and 13.2-4.

11 Much of his life Michael Psellos lived in Constantinople, where the sea is not far from any part of the city. Moreover, the writer was familiar with travelling by sea since he had close associations with the Bithynian coast. He originated from Nikomedeia, took the monastic habit in the monastery of Horaia Pege (Ὡραία Πηγή) on Olympos in Bithynia and owned also three monasteries there, Kellia, Monokastanos, Smilakia. – See Auzépy, Les monastères 441-442. 451. – Kravari, Évocations 75-77. – On the other hand, his stay on the Cycladic island of Andros is considered fictitious: Kedrenos 2/170. – See Lemerle, Humanisme 149.

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calm ports save people one after another and relieve them of their suffering«[12].

Two ways of reading can be discerned in the above passages. Our authors, as well as many others who used the same literary motif of the lighthouse, used it with a symbolic meaning, because the theme is appropriate for several rhetorical images with many kinds of approaches to it[13]. Regardless of their metaphorical expressions, Byzantine writers undoubtedly rendered the word »lighthouse« in its literal sense, depicting its real function to guide the sailors toward the right direction and guarantee a safe arrival to the harbour. Thus, they demonstrated the beneficial sight of the lighthouse for the navigators diachronically.

By far the best evidence for the function of a lighthouse comes from the most famous one since antiquity, that of Alexandria, which Procopius of Gaza (465-528) described in his panegyric for the emperor Anastasius I (491-518). Praising the imperial interest in restoring the lighthouse eroded by the sea, the orator used this opportunity in order to stress its contribution to the safety of navigation and furthermore depicted in a unique way sea-travellers' sentiments upon seeing the lighthouse: »the flame it emits comforts the sailors, as well as announces their arrival to the shore, and at the same time shows the captain where to steer his ship without incurring further danger. On the other hand, the sailors applaud and cheer with joy upon seeing the lighthouse, because the arrival to the town causes them bliss for the salutary end of the journey«[14].

For coastal cities with great commercial activity and well-organized harbours, like Alexandria, we find a lot of evidence for lighthouses. In Constantinople with more than one busy harbour since the early Byzantine period[15], there was a Pharos near the Great Palace and the port of Boukoleon[16]. Besides its practical use to indicate a port protected from rough water, it constituted the final point of the line of beacons transmitting messages from the borders of Asia Minor[17].

What about smaller ports that were not organised by the state and were located on dangerous coasts? Information on the lighting infrastructure at (due to their morphology) dangerous coasts along busy and important sea routes is rarely found, as Byzantine authors only occasionally referred to the actual lighthouses, such as the lighthouse of Cherson on the Crimea. Describing the severe storm that the exiled emperor Justinian II (685-695, 705-711) had to face when sailing by boat in the surroundings of Cherson, the Chronography of Theophanes referred to the lighthouse of Cherson. Through this narration, we may explore the physical space and the environment of this maritime area that was exposed to strong winds and was hardly accessible[18]. The lighthouse of Cherson was located close to the so-called Nekropela (today Karkinitic Bay[19]), a point of strategic value for the Byzantines, as is clear from its remarkably detailed geographical description in the political manual of Emperor Constantine VII Porphyrogenitus *De Administrando imperio*. The imperial writer points out also that it was a hazardous place »utterly impossible for a man to pass through«[20], thus verifying Theophanes' words about the particular weather and spatial conditions in the region.

Several years later, in connection with the attack of the Rus in 941, a fortress of great significance guarding the approach to Constantinople from the Black Sea is mentioned. It was situated at the entrance of the Bosporus, at the so-called Hieron[21] and according to the narrative sources, this maritime stronghold was equipped with a lighthouse. It was a »settlement upon which a torch was placed showing the way to those travelling at night«[22].

It seems logical that indications for lighthouses are to be found for strategic points along the maritime routes, which were not easily accessible and exposed to strong winds. Such lights could serve to predict the imminent risks at sea marking dangerous coastlines, tricky reefs, and safe entries to harbours, as Eustathius of Thessalonica realistically describe them[23]. However, how trustworthy is the evidence for light devices along the hazardous coastlines of the Byzantine seas? Do Michael Psellos' and several other Byzantine authors' simple rhetorical commonplaces describe the lighthouses? Did proper lighthouses actually exist in the Byzantine maritime space, or did other structures function

12 μᾶλλον δὲ ὥσπερ τινὲς πυρσοὶ τοῖς ἐν ζάλῃ καὶ κλύδωνι ναυαγοῦσι γεγόνασι καὶ πρὸς ἑαυτοὺς κατάραντες εὐμενῶς ὑπεδέξαντο καὶ δᾳδουχήσαντες ἐν ἀκλύστοις λιμέσι καθώρμισαν. καὶ οἱ μὲν τοῖσδε πρὸς σωτηρίαν ἐξήρκεσαν, οἱ δὲ ἐκείνους τῶν δεινῶν ἐξῃρήκασι: Michael Psellos, In Crucifixionem 137,504-138,508. – Psellos used the 4th century Church Fathers as models of style, but Gregorios of Nazianzos was his favourite, see Papaioannou, Michael Psellos 54-56.

13 Byzantine writers often describe the mutable and unpredictable life of a human who earns his or her salvation through God; his representatives on earth, the saints, function as lighthouses of salvation for humans. See for instance Theodoros Stoudites, Epistle 545,6-9: καὶ ὡς εἴς σχεδὸν πυρσὸς ὑπερλάμπων τῶν ὑφειμένων διαθέεις τῶν ἐν ἄστει, πολλοὺς μὲν φωτίζων μυωπάζοντας ἐκ φωτολειψίας, πλείους δὲ προσάγων τῷ θεῷ. A figure of considerable knowledge was regarded as a far-seen beacon by Michael Choniates, Epistle 152,48-51: ὕλῃ τελεωτέρας φιλοσοφίας χρώμενος, ἵνα τῷ κατὰ σὲ αὐτὸν ὑποδείγματι ὅσα καὶ τηλεφανεῖ πυρσῷ ἐπὶ λιμένα τοῦ καλοῦ καθορμίζοις τοὺς ναυαγοῦντας ἐν τῷ κοσμικῷ τούτῳ κλύδωνι. – For the specific words used by the Byzantine orators for the purpose of better comprehension, cf. Trapp, The role 137-149.

14 πύργος γὰρ ἄγαν ὑψηλός, παλαιᾶς ἔργον εὐδαιμονίας, ἐπ᾽ἄκρου τοῦ λιμένος ἀνέχων ἐγείρει φλόγα τοῖς ἐκ πελάγους σωτήριον καὶ παραμυθεῖται τοὺς ἐκ θαλάττης, προμηνύων τὴν πόλιν. Πρὸς τοῦτον κυβερνήτης ὁρῶν ἰθύνει τὸ σκάφος καὶ τὴν ναῦν ἀπείρατον σῴζει τῶν παρακειμένων κινδύνων· οἱ δὲ ναῦται πρὸς τὴν θέαν ἡδόμενοι κροτοῦσιν εὐθύς, καὶ δείκνυσιν ἄλλος ἄλλῳ, καὶ τὴν πόλιν ἔχειν κατεπαγγέλλονται, καὶ ἁπλῶς εἰπεῖν ἡδονὴν ἅμα καὶ σωτηρίαν τοῖς ἀφικνουμένοις χαρίζεται: Procopius of Gaza, Panegyricos 20,19.24-20.3.

15 Müller-Wiener, Bildlexikon 57-63.

16 Guilland, Études I 105-107. 285. 311. 315-317.

17 Theophanes Continuatus 280: ὁ ἐκ τοῦ Φάρου φανὸς διὰ τοῦ παπίου ἐδήλου τὴν τῶν ἐθνῶν ἐκδρομήν: Pseudo-Symeōn 682. – For other lighthouses, see Koukoules, Βίος V, 377-378.

18 Theophanes, Chronography 373: ἀποπλεύσας διέβη τὸν φάρον Χερσῶνος. εἶθ᾽ οὕτως παραπλεύσας τὰ Νεκρόπηλα τὸ στόμιόν τε τοῦ Δάναπρι καὶ τοῦ Δάναστρι, κλύδωνος γεγονότος, ἀπέγνωσαν πάντες τὴν ἑαυτῶν σωτηρίαν.

19 Mango/Scott, Theophanes 522.

20 Constantine Porphyrogenitus, DAI ch. 42.68-69. – Commentary DAI 155.

21 Ahrweiler, Fonctionnaires 246-249.

22 Theophanes Continuatus 476.

23 Καὶ ἐν τοῖς πυρσευομένοις φανοῖς εἴωθε γίνεσθαι, ὧν ἐκλαμπόντων ἄνωθέν ποθεν […] λιμένες εὐάγκαλοι διερμηνεύονται καὶ βράχεα κινδυνώδη καὶ ῥαχίαι καὶ σπιλάδες ἐκκλίνονται καὶ ἑτεροῖα σωτηριώδη γίνονται: Eustathios of Thessalonike, Episkepsis 198. 230.

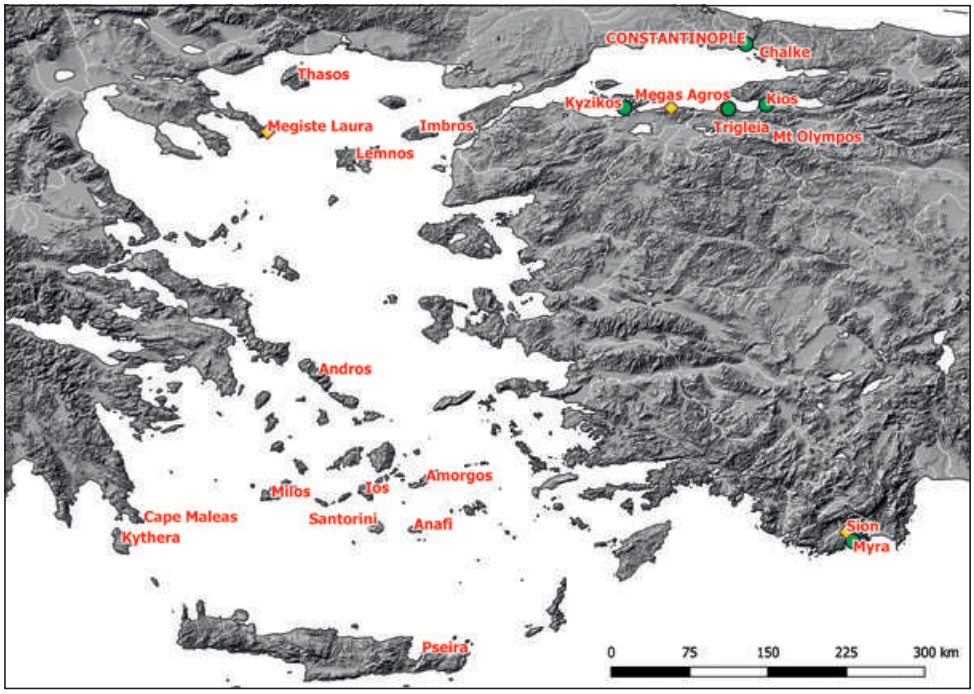

Fig. 1 Map of the localities, cities (green) and monasteries (yellow) mentioned in the text. – (J. Preiser-Kapeller, 2020).

as lighthouses, offering services analogous to those of the emblematic lighthouse of Alexandria?

The concept of a lighthouse was suitable to complement the particular spiritual context of the Byzantine monasteries. This is reflected, for instance, in the words of Theodore Stoudites, the great reformer of monasticism, who often likened the monks to lights, following the idea of Christ as light[24]. In the wake of the Patristic tradition, Theodore Stoudites stated that the monks shined like stars. With this standpoint, Theodore Stoudites underlined the monks' important contribution to the safeguarding and continuity of the Orthodox faith during the storm of the iconoclastic dispute[25]. Eustathius of Thessalonica also used the same motives for the monks by playing with the ambiguities of words and presented the monks as lighthouses in use[26].

In a letter to John, the abbot of the monastery of Chalke[27], the mighty abbot of the monastery of Stoudiou used the same metaphor again, this time applied to the monastery that John had built on the island of Chalke, one of the Princes' Islands in the Sea of Marmara, a particularly busy maritime area close to Constantinople (see **fig. 1**): »The monastery you have established shines extremely brightly on the surrounding islands with regard to its location«[28]. In this passage, Theodore Stoudites focused on the monastery's location. I think that his phrase included not only a symbolic perception but also a spatial one, showing in real terms how the monastery was represented within its maritime environment. John's monastery is identified with the Monastery of the Holy Trinity (Hagia Trias), situated on the steepest slope of the island of Chalke; judging from its location it could warn seafarers about the dangerous shores, allowing for a smooth passage between the Byzantine capital and the opposite shore of Marmara[29]. For the sailors, the Monastery of the Holy Trinity could constitute a visible sign in the sea, a cautionary warning of the dangerously steep coast.

How could a monastery function as a lighthouse in use? Answering this question requires the examination of issues related to monastic lighting and topography. Apart from its symbolic connotations[30], ecclesiastical/monastic lighting was abundantly used in practice. Among other copper tools that were in use in the monastery of Stoudiou, Theodore Stoudites referred to the hanging lights that existed not only in the church but also at other points[31]. Monasteries always had lights on, but during some special feasts, their illumination was even more splendid. This is confirmed by the monastic Typika, often mentioning the »sleepless chandeliers«[32]

24 »I am the Light of the world: he who follows me will have the light of life«: John 8.12.

25 ἐπαινετὸς εἶ, […] , ὅτι ἐκ πάντων μικροῦ δεῖν τῶν ἐν ἄστει καὶ πρὸ τοῦ ἄστεως ἡγουμένων σὺ μόνος ἐξῆλθες προκινδυνεύων τῆς εὐσεβείας, φῶς τῶν ἐν σκότει γινόμενος, ἔλεγχος τῶν ἀσεβούντων: Theodore Stoudites, Epistle 201,10-13, p. 324.

26 Eustathius of Thessalonica, Episkepsis 198-199. 230.

27 PmbZ no. 3194.

28 Καλόν τὸ μοναστήριον ὅ συνεστήσω διὰ πολλῶν κόπων καὶ ἱδρώτων καὶ τῶν κύκλοθεν νήσων ὑπερλάμπον τῇ τε θέσει τοῦ τόπου καὶ οὐκ ὀλίγοις ἑτέροις γνωρίσμασιν: Theodore Stoudites, Epistle 76,10-12, p. 197 fig See Janin, Grands centres 72-73. – Belke, Bithynien und Hellespont 483-484.

29 Cheynet, L'époque 311.

30 For the symbolic use of lights, see Galavaris, Some Aspects 69-78.

31 Τὰ τῶν κανδήλων κρεμαστήρια, πλὴν τῆς ἐκκλησίας καὶ τὰ λοιπά: Theodoros Stoudites, Magna Catechesis no. 20. 96.

32 Typikon of the Pantokrator Monastery, lines 140-148. 735. Transl. by Jordan, Pantokrator 740. 753.

besides »the ones that are lit in the services and are again extinguished«[33] showing that there was continuous lighting in the monasteries[34]. The monastic founder, according to his/her social status[35], regulated what was necessary for the illumination of the monastery, providing for various kinds of lighting devices[36]. The impressive illumination of Hagia Sophia in Constantinople is described by Paul the Silentiary in a poem written after the reopening of the church in 563: »Thus is everything clothed in beauty; (…) no words are sufficient to describe the illumination in the evening: you might say that some nocturnal sun filled the majestic church with light«[37]. The real illumination emanating from other ecclesiastic/monastic institutions was not as impressive, depending also on their importance and economic basis[38]. A passage from an anonymous text written on Saint Nikolas shows that lighting was necessary for a monastery, as food was for human beings[39], especially when the monastery was located at a troublesome location with difficult access (τὴν ἀπορίαν καὶ δυσχέρειαν τοῦ τόπου)[40].

Monasteries were deliberately established in spatial environments combining tranquillity and isolation[41], two of the most basic monastic rules associated with the spirituality of a monastery. The monastic founder was in search of a location »suitable for spiritual benefit«[42], as reiterated in the sources. However, the topography of a monastery involved further equally important aspects[43]. According to a hagiographical text, the monastic founder gave attention to »the environment, the position and the way of life«[44] of the location where the monastery was about to be established. Thus, topography[45] was a key aspect determining the future function of the monasteries. Some of the monasteries built in Asia Minor were founded in places of military significance and organized in such a way that they exercised some spatial control on the surrounding area[46]. The choice of the location for a monastery foundation involved a practical judgement on how a monastery could realistically function and interact within its spatial environment. Within this framework, the establishment of a monastic foundation at a location with steep coasts, often with a little safe harbour nearby, inevitably determined its interaction with its maritime environment. The topography of some coastal Bithynian monasteries is indicative.

Being familiar with the monastic centre of Olympus in Bithynia[47], Michael Psellus praised the mountain[48] and provided an accurate picture of this region, where »ridges meet the sea, creating steep shores and from their heights, the gaze sees far and watches all movement on land as on sea«[49]. Speaking about monasteries built there, especially after the Iconoclast movement[50], the polymath writer described them through a visual image, comparing them to lighthouses either large or small (πυρσοὶ μεγάλοι τε καὶ μικροὶ) that dominated their vicinity[51]. The evidence from some coastal monasteries of the Bithynian Olympus, such as Megas Agros, Pelekete, Medikion, strongly suggests that Psellus' expression not only describes the spiritual enlightenment of the monasteries but also encompasses other practical aspects.

Theophanes, the famous chronographer and former military officer from a wealthy military family, founded the monastery of Megas Agros[52]. The monastery was situated at the foot of Sigriane Mountain on the southern coast of Marmara, at a sensitive location at the entrance of the Sea of Marmara, dangerous for navigation because of its steep coast[53]. Apart from the strategically important position of the monastery, most interesting is the fact that this monastic establishment is described in connection with the building of fortifications in the neighbouring city of Cyzicus[54], which Theophanes had undertaken at his own expense. During this military mission, Theophanes travelled to the rugged cliffs of Sigriane, when the sea was calm (γαληνοδρομίᾳ τὴν πορείαν ἐποιεῖτο), where he chose to build his monastery, on a wooded cliff that also had its own little harbour[55]. The monastery »imitated the sky and shined like the sun and the stars carrying means of illumination to the whole earth«[56]. Hagiographical sources tampering with reality to give the air of sanctity to Theophanes avoid any other connection with military and other secular affairs. However, this literary image in combination

33 Typikon of the Pantokrator Monastery, ll. 738-739. Transl. by Jordan, Pantokrator 753.
34 Except kellia: Life of Athanasios of Athos B, 44,38,179: οὐκ εἴχομεν γὰρ φῶτα ἐν τῷ κελλίῳ.
35 Bouras, Lighting devices 479-481.
36 Bouras/Parani, Lighting 1.
37 Paul the Silentiary, Ekphrasis, ll. 806-809. Transl. by Mango, The Art 89.
38 Xanthopoulou, Les lampes 68-69.
39 Μοναχός […] ἀπήτει τὰ πρὸς τροφὴν αὐτοῦ καὶ τὰ πρὸς φωταψίαν τοῦ εὐκτηρίου ναοῦ: Thauma de pastore furo 359.
40 Thauma de pastore furo 359.
41 Talbot, Founder's choices 51.
42 τόπον […] ἐπιτήδειον εἶναι πρὸς ψυχικὴν ὠφέλειαν: Anonymous, Life of Theophanēs I 8. – See Kaplan, Lieu saint 183-198.
43 For the social and political incentives for founding a monastery, see Kiousopoulou, Geōgraphia 95-106.
44 Τὸν τόπον ὃν ὁ λόγος ἐπεζήτει, φύσιν, θέσιν καὶ διατριβήν: Life of Makarios of Pelekete 144.30-31.
45 For the complex role undertaken by the monasteries in strategic locations, see Bakirtzis, Locating 113-132.
46 Especially those situated close to Constantinople: Kiousopoulou, Parousia 163-171.
47 Mango/Ševčenko, Some Churches 261-262. – Auzépy, Les monastères 441. – Belke, Bithynien und Hellespont 860-865.
48 Michael Psellos, Olympos 134-137.
49 Auzépy et al., Médikion 183.
50 Kountoura Galaki, Byzantine Clergy 173. 213. – Auzépy, Les monastères 438.
51 This description is found in the funeral speech for the patriarch of Constantinople Ioannes Xiphilinos: τὰ μὲν ἐν περιωπῇ ἱδρυμένα, τὰ δὲ ἐν ταῖς τῶν ὀρῶν ἀγκάλαις ἐξῳκοδομημένα λαμπρῶς, οἷά τινες πυρσοὶ μεγάλοι τε καὶ μικροὶ καταπεφυτευμένοι τοῖς ὄρεσι: Michael Psellos, Epitaphios 16 line 49, p. 139. – Cf. Papaioannou, Michael Psellos 10.
52 Yannopoulos, Théophane 73-74.
53 τὰ κρημνώδη τοῦ τῆς Σιγριανῆς ὄρους παράλια: Anonymous, Life of Theophanes I 7. – See Mango/Ševčenko, Some Churches 260-264. – Belke, Bithynien und Hellespont 764-766.
54 Methodios, Life of Theophanes 11. – Anonymous, Life of Theophanes III 28.
55 Mango/Ševčenko, Some Churches 261.
56 Anonymous, Life of Theophanes I 10: οὐρανομίμητον μοναστήριον. ὥσπερ γὰρ ἐν οὐρανῷ ἥλιος σὺν ἄστροις δᾳδουχεῖ τὴν σύμπασαν καταγλαΐζων γῆν τῷ φωτὶ τῆς ἐλλάμψεως.

Fig. 2 The Bithynian coast at Trigleia (today Zeytinbağı). – (Photo Bynalcin, trilye bursa türkiye, CC by 3.0).

with the monastery's site, which is »situated in a picturesque spot in the foothills of the Sigriane mountains«[57], according to C. Mango and I. Ševčenko, provide a basis for considering that the monastery functioned as a lighthouse for the sailors and that it played a complex role in its difficult maritime environment.

The site of the monastery of Pelekete may be considered from the same perspective. The hagiographer of Makarios, abbot of Pelekete, gives a full account of the natural features of this monastic area, which perfectly match either to a lighthouse in concept or to a lighthouse in use: »A rock rises to a height on both sides and is reached by a single ascent which is not easy. Standing on higher ground than all the adjoining valleys, it enjoys a purer air; and it is smooth all around and well-turned as if (?) hewn with an axe«[58]. As specified by the recent research, the monastery of Pelekete was located on the coast of Trigleia, from where someone »could watch the movement of boats coming out of the Gulf of Kios and follow what was happening in front on the shore« (**fig. 2**)[59].

Another monastery in the same area which according to its description »could control the surrounding marine traffic«[60] was the first monastery that Nicephorus[61], a scion of a wealthy Constantinopolitan family and later abbot of Medikion[62] had erected on his estates (»in one of his parental proasteia«). It was situated some distance west of Pelekete, west of Katabolos, a coastal area immediately west of Kios[63] and of great commercial importance[64]. According to an *in situ* archaeological investigation, the site of this first monastery of Nicephorus is definitely placed near the coast[65] »on the coast west of Trigleia« from where someone »could control the maritime traffic«[66]. Examination of its particular location near Katabolos shows that this monastery could also serve as a lighthouse.

One of the most »typical« maritime regions of the Byzantine realm was Lycia, an area with a well-known nautical

57 Mango/Ševčenko, Some Churches 261.
58 εἰς ὕψος μὲν γὰρ ἑκατέρων τῶν μερῶν ἦρται πέτραν μίαν τὴν ἄνοδον, καὶ ταύτην οὐκ ἄμοχθον ἔχουσα, ἀνῳκισμένη δὲ πάντων πρὸς αὐτὴν κοίλων, ἀκραιφνέστερον τὸν ἀέρα εἰσδέχεται λεία τε τὰ πέριξ τυγχάνουσα καὶ εὔτορνος πελεκητήν: Life of Makarios of Pelekete 145,5-8 Translation by Mango/Ševčenko, Some churches 244; for the location of the monastery of Pelekete, see 240-248. – See also Auzépy, Les monastères 437-438.
59 Auzépy et al., Médikion 185. – Belke, Bithynien und Hellespont 903-904.
60 Belke, Bithynien und Hellespont 185.
61 PmbZ nr 5280.
62 Medikion was the second monastery that Nikephoros had established in the same area, not far from the coast in the hills above it: Auzépy et al., Médikion 185. – Belke, Bithynien und Hellespont 762-763.
63 Mango/Ševčenko, Some Churches 274-276. – Auzépy, Les monastères 447-448. – Belke, Bithynien und Hellespont 651-652.
64 Lefort, Les communications 210.
65 Life of Nikephoros of Medikion 408,17-18; 413,3-6.
66 See Auzépy et al., Médikion 185-187.

tradition since ancient times. As described by Strabo, this famous maritime area combined rough and steep coasts, as well as good ports[67]. Lycia became a core region of the maritime *thema* of Kibyrrhaioton[68] established by Emperor Leo III (717-741) before 732. The area was the homeland of Saint Nicholas (4th c.), the patron saint of local sailors; the development of his cult coincides with the creation of theme of Kibyrrhaioton[69]. It was also a place of strategic importance as a gathering point of Byzantine ships for war operations in the eastern Mediterranean[70]. Close to Myra, where modern Alacahisar-Karabel is situated[71], the monastery of Sion was built after the definitive loss of the real Sion at Jerusalem in 638, which was connected with the 6th century Saint Nicholas of Sion, coming from Pharroa in Lycia. The hagiographic text of Saint Nicholas of Sion refers to the monastery as »shining throughout the whole land all day and all night«[72], or mentions that it resembled a »burning lantern illuminating the whole mountain like a sun«[73]. Such references correspond with the meaning of the name Sion, which in Hebrew means light[74], as well as with the significance of Jerusalem as a centre of the Christian cult. However, there is one more aspect of the monastery's radiance, which is implied in the wording of the Life of Saint Nicholas of Sion. It is worth mentioning that a large number of *polykandela* and lamps belonging to the monastery has been found at the location identified with the monastery of Sion[75]. The light, which constantly illuminated the monastery, warned seafarers about the danger of coasts and indicated the safe harbour of Andriaki[76].

Another hazardous area of the Eastern Mediterranean is Cape Maleas at the southern tip of the Peloponnese, also known as Xylophagos, which means »wood-eating«, because of the numerous shipwrecks that have happened there. In his historical work of the late 13th-early 14th century, George Pachymeres mentions such an accident. Referring to the Byzantine representatives who had taken part in the Synod of Lyon (1274), the historian vividly described the sinking of the ship carrying all the precious gifts of the Byzantine emperor for the Latin members of the Synod; due to a storm, it was shipwrecked sailing the passage of Maleas[77]. Saint Thomas *in Maleo* was active at this particular point. According to the Synaxarion of Constantinople, the saint was a military officer[78] who certainly lived before the 10th century, and at some point, received the tonsure and lived on the steep rock of Cape Maleas, a site of great strategic importance for navigation. The Synaxarion of Constantinople refers to Thomas as a »column of fire, visible during the night«, who »ascended a mountain called Maleos, from where he was visible as a star shining on the surrounding area«[79]. This emphasis on lighting in combination with the strategic position that Saint Thomas chose for his seclusion makes us think that possibly, along with his monastic tasks, he had undertaken, as a former military officer[80], the task of continuously preserving the light in his hermitage. Thus, through the illumination of his monastic site, he could warn sailors about the hazards of the area. Thomas' vita is reminiscent of another monk who lived in an inhabited rough place outside the trading centres of Constantinople, some of them on the Bithynian coast[81], therefore with strategic importance for the commerce (ἔξω τῶν ἐμπορίων τῆς βασιλίδος τῶν πόλεων)[82]. His only concern was also to keep the lamps lit at all times (μὴ ἐάσω τὸν ἁπτόμενον λύχνον […] σβεσθῆναι)[83].

Another crucial location was Kythera, an island lying opposite the south-eastern tip of the Peloponnese. The site of the church of Saint George of the Mountain is located on the top of the eastern side of the island. The site had acquired particular importance since prehistoric times due to its strategic position because it controls all naval passages from North to South and from East to West. On a clear day, not only Antikythera but also the mountains of Crete can be seen in the south, which is of great importance for navigation, while to the east the islands of Milos and Santorini can also be seen[84]. The site of Saint George of the Mountain has been a sacred space for 3500 years dominating the inaccessible south-eastern side of the island and providing an important point for navigation. Archaeological finds, such as a seal dating from the time of Leo V (813-820) and (monastic?) settlements around the church of Saint George, attest to the presence of the Byzantines. It is a typical example of a

67 ὁ παράπλους ἅπας ὁ Λυκιακός, […] , τραχὺς δὲ καὶ χαλεπός, ἀλλ' εὐλίμενος σφόδρα […] ἀλλ' ἐκεῖνοι μὲν ὁρμητηρίοις ἐχρήσαντο τοῖς τόποις πρὸς τὰ λῃστήρια, αὐτοὶ πειρατεύοντες ἢ τοῖς πειραταῖς λαφυροπώλια καὶ ναύσταθμα παρέχοντες· ἐν Σίδῃ γοῦν πόλει τῆς Παμφυλίας τὰ ναυπήγια συνίστατο τοῖς Κίλιξιν […] : Strabo VI, 14.3.2.

68 Constantine Porphyrogenitus, De Thematibus 14.39-42 (p. 79). – For the Kibyrrhaioton theme, see Ahrweiler, Mer 46. – Grēgoriou-Ioannidou, Kibyrrhaiotai 207-218. – Hellenkemper/Hild, Lykien 116-125. 729. – Recently, Brubaker/Haldon, History 730-732 considered the issue of the origins of Kibyrrhaiotai enigmatic. – For the formation of the thema of Kibyrrhaiotai in relation to the Arab-Byzantine condominium on Cyprus, see Lounghis, Eastern Mediterranean 25-28. – Kountoura Galaki, Crete.

69 Kountoura Galaki, Saints Nicholas 91. 104-105.

70 Theophanes, Chronography 465,14-16. – Hellenkemper/Hild, Lykien 121.

71 Hellenkemper/Hild, Lykien 454.

72 τὸ γὰρ φῶς τῆς ἁγίας Σιὼν προέλαμπεν ἐν τῷ τόπῳ ἐκείνῳ καὶ ἐν ἡμέρᾳ καὶ ἐν νυκτί: Life of Nicholas of Sion 42.

73 καὶ φῶς μέγα ἔλαμψεν ἐν τῷ ὄρει τούτῳ […] ὥσπερ λύχνον καιόμενον […] καὶ ὅλον τὸ ὄρος λάμπον […] καὶ φῶς μέγα ἔλαμψεν ἐν τῷ ὄρει τούτῳ: Life of Nicholas of Sion 42.

74 Foss, Sion.

75 Boyd, Sion 191-202. – Boyd, Treasure 10-11.

76 Life of Saint Nicholas of Sion 40. – See Kountoura Galaki, Saints Nicholas 102-103.

77 Pachymeres, History II, 507: ἀπέπλεον πρὸς αὐτῷ τῷ Μαλέᾳ, ὃν καὶ Ξυλοφάγον καλεῖν εἰώθασι.

78 Synaxarion of Constantinople 803.

79 στύλος πυρός ἐν νυκτί ὁρᾶται φαινόμενος καὶ πρός τι ὄρος ἀνῆλθε Μάλεων λεγόμενον. ἐκεῖθέν τε ὡς ἀστὴρ ἀναφανεὶς καὶ αὐγάζων τὴν περίγειον: Synaxarion of Constantinople 803. I express my thanks to my colleague Dr Anna Lampropoulou for the information related to this Peloponnesian space.

80 Synaxarion of Constantinople 803.

81 Gerolymatou, Emporion 106-107.

82 Ἔξω τῶν ἐμπορίων τῆς βασιλίδος τῶν πόλεων ἐν ἀοίκῳ τόπῳ εὐκτήριος ἦν οἶκος τοῦ θείου Νικολάου, ἐν ᾧ καί τις μοναχὸς παρέμενε, ὃς καὶ ἐν τῇ πόλει καὶ ἐν τοῖς χωρίοις ἀπήτει τὰ πρὸς τροφὴν αὐτοῦ καὶ τὰ πρὸς φωταψίαν τοῦ εὐκτηρίου ναοῦ: Thauma de pastore furo 359.

83 Thauma de pastore furo 359.

84 Sakellarakis, Kythera 78.

Fig. 3 The island of Pseira in the gulf of Mirabellou in Crete. – (Photo A. Skudder, Psira Island, Crete, Greece, CC BY-2.0).

place that is not only place of worship, but also perfect for monitoring and controlling the surrounding area and as a landmark for sailors, allowing easy access to the anchorage in the gulf of Aulaimon[85].

The island of Amorgos is located at the south-eastern part of the Cyclades and characterized by the abrupt shores of its southeastern side, considered risky for navigation[86]. The monastery of Panagia Chozobiotissa was built on this spot, nested in menacing rocks and visible only from the sea. According to tradition, the first monastic nucleus was founded in the 8th century and is linked with the monastic communities of Choziba (modern Wadi Qilt) close to Jericho in the Holy Land[87]. Thanks to sigillographic evidence, we know that Amorgos, together with other Cycladic islands, Melos, Andros, Thera, Anafi, and Ios, were vital for the nautical activity of the 8th century[88]. The only available written evidence for Amorgos is provided on an inscribed exapterygon mentioning that the monastery was renovated during the reign of Alexius I Comnenus (1081-1118)[89]. I think that based on its special location in the Aegean, the monastery of Choziba betrays its function as a lighthouse for seamen, as a point that indicated the dangers of the shores in the surrounding area.

So far, this paper has focused on textual evidence; however, one must also take into consideration some examples from the archaeological material. The case of the islet of Pseira is very indicative of this subject. The island Pseira, also characterized by its steep coastline, is located within the gulf of Mirabellou in Crete. A monastic complex was recently excavated there and dated to the 8th century (**fig. 3**)[90]. The location of the monastic foundation at the deepest point of the peninsula could serve, in addition to its spiritual needs, also its practical purposes by pointing out the islet to the sailors and facilitating access to the protected gulf of Mirabellou.

It is unclear whether there was imperial care for the role that coastal monasteries played within their marine environment. A vague testimony mentioning the correlation between ecclesiastic/monastic foundations established on coastal areas with strategic importance and the concept of naval operations is provided by Procopius of Caesarea. In his panegyrical work on Justinian's building activity, he described

85 Sakellarakis, Kythera 98. 122. 147. – Cf. Malamut, Les îles I, 189-190.
86 Malamut, Les îles I 60.
87 Marangou, Chozōbiotissa 17-19. 24.
88 Antoniadis-Bibicou, Recherches 8 (photograph). – Zacos/Veglery, Seals nr 242. – It is significant to notice that the dwelling core of Chora, the subsequent capital of the island, has been dated to the 8th to 9th centuries: Marangou, Chozōbiotissa 13-14.
89 Marangou, Chozōbiotissa 26-27.
90 Poulou-Papadimitriou, Les plaques 687-704.

Fig. 4 The Arsanas of the Monastery of Megiste Laure on Mt. Athos. – (Photo S. Šljukić, Манастир Велика Лавра – Арсана, CC BY-3.0)..

the creation of the new harbour of Hiereia in Constantinople. Having stressed that it was a dangerous spot for the sailors, Procopius catalogued the works necessary for port security done by the emperor, which were completed by establishing there ecclesiastical (monastic?) foundations (ἱερὰ τεμένη). The same procedure was followed in the harbour of Eutropius: »he (Justinian) skilfully contrived a sheltered harbour which had not existed before. Finding a shore, which lay open to the winds from two directions and to the beating of the waves, he converted it into a refuge for voyagers in the following way (…). In that place, also he erected holy shrines (…). And he also constructed another harbour on the opposite mainland, in the place which bears the name of Eutropius, not far distant from this Heraeum, executed in the same manner as the harbour which I have just mentioned«[91]. We do not know whether the existence of this ecclesiastic (monastic?) foundation in a port served only matters of worship or whether it was part of a practical service by providing lighting for those on sea.

Centuries later, Emperor Constantine V (741-775) developed a particular relationship between monasteries and imperial administration, when monasteries forcibly ceased to be autonomous centres of worship and deprived of the ability to act independently[92]. Within the framework of the implementation of iconoclastic policy, sources of the time mention the »sacrilegious« decision of the iconoclast emperor Constantine V to convert the monasteries into military camps[93], thus changing their purely religious and spiritual character.

Could the iconoclastic emperor's decision conceal a systematic attempt to use specific monasteries of the Aegean and other coastal areas of the Byzantine seascape as lighthouses? Would the iconoclast emperor have initiated such reforms? Would he have undertaken an »official transformation« of the coastal monasteries? One could interpret such actions within the framework of the administrative re-organization of the Byzantine maritime space at the time[94]. Such a reform would have undoubtedly have served the needs of the Empire for safe navigation at a time characterized by the intense activity of the Byzantine fleets. Emperor Constantine V, the first to convey the message for radical changes he wished to bring to the Empire, founded the church of the Virgin of the Pharos in Constantinople, which took its name from its proximity to the famous lighthouse of Constantinople and the Chrysotriklinos[95]. An action by which Constantine V attempted to promote his piety to his opponents, and at the same time perhaps to introduce the function of coastal shrines for the rescue of sailors, not from a spiritual point of view, but in practice through their operation as lighthouses. Of particular interest here is the following observation by P. Magdalino: »the churches and monasteries which the iconoclast emperor Constantine V is said to have converted to secular use were all on the south coast, and most were in the vicinity of the Harbour of Julian«[96].

91 Procopius, De Aedificiis 1.11.18-22: ἐνταῦθα δὲ καὶ λιμένων σκέπας ἀποτετόρνευται οὐ πρότερον ὄν. ἀκτὴν γὰρ εὑρὼν ἑκατέρωθι τοῖς τε ἀνέμοις καὶ ταραχῇ τοῦ ῥοθίου ἀποκειμένην, σωτήριον εἶναι τοῖς πλέουσι κατεστήσατο ὧδε […] ἐπὶ τὸν λιμένα τοῖς πλοίοις εἰσόδου. ἐνταῦθα δὲ καὶ ἱερὰ τεμένη πεποίηται […] For the English translation, see Procopius, Buildings. Ed. H. B. Dewing / G. Downey. VII (Cambridge MA 1961) 93-94. – See Janin, Constantinople 239.

92 Kountoura Galaki, Kleros 177-180. – Hatlie, The Monks 358-365.

93 Theophanes, Chronography 443. – Nikephoros Antirrhetikos III 493 D. – See Brubaker/Haldon, History 237-247.

94 Kountoura Galaki, Crete.

95 Theophanes, Chronography 414. – Janin, Constantinople 232. – Magdalino, L'église 15-30. – Müller-Wiener, Bildlexikon 388.

96 Magdalino, The Maritime 213.

Several years later Nicephorus II Phokas (963-969), a soldier-emperor[97], like his predecessor Constantine V invested the steep south-eastern tip of Athos with spiritual light[98], by actively contributing to the foundation of the monastery of Megiste Laura (see **fig. 4**). Megiste Laura's Typikon is an extremely valuable document from the viewpoint of the topography and its function in the maritime space. Indeed, a careful examination of the text reveals the aims of the Laura's founder: the monastery stood »like a goal, drawing and attracting people as the light of a beacon fire or a magnet«.

Among the reasons given by the author of the Typikon for the foundation of the monastery – which in any case are subject to various readings and complex approaches[99] –, one is immediately appealing because the author of the Typikon mentions that the south-eastern steep end of Athos needed special care for the sailors: »Many reasons, though, led my lowly self to this decision. The seashore along the mountain was precipitous and without any harbours on both sides, to the north, that is, and to the south, for more than eighty miles. The mountain resembles a peninsula, which extends toward the sea in the shape of a cross. The islands in the sea, Lemnos, Imbros, Thasos, and the rest are a great distance away. Because of this, when winter comes, a ship is unable to sail from the mountain to the mainland to procure necessary provisions or to sail back from there to the mountain. It cannot find any sort of anchorage because the seashore on both sides provides no shelter«[100]. I think that it is no coincidence that the Laura monastery on Athos, built on a steep coast, where a small, protected harbour is formed, includes twice in its Typikon the clause that »the supply of necessary goods is not hindered to those seeking refuge and to spend the winter in the protected harbour of the monastery«[101]. Therefore, we can say that the Laura Monastery, in addition to its spiritual pursuits, was also founded for the benefit of the seafarers and it served as a type of warning sign or landmark. The foundation of the monastery fulfilled the emperor's intention to help seafarers and to create a safe place on a dangerous coast, as numerous travellers from all over the world visited the monastery. The passage in question from the two versions of the Life of Athanasius is initiative[102] of the considerable prestige that the Laura Monastery had acquired immediately after its foundation.

Many more examples can be cited, but the textual evidence discussed so far shows that the sites where monasteries were built were not only intended to provide tranquillity and solitude, i.e. the elements associated with the spirituality of a monastery, but also to influence the space through their other functions. Monasteries built in strategic locations and in steep coastal regions seem not only to have served to control the environment, but also to have served as very real lighthouses for rescuing seafarers, indicating the dangerous nature of the coasts. Further progress in the study of the maritime history of Byzantium depends on the cooperation between experts from various fields of history. For seafarers, lighthouses are the happy end of a voyage, but for us they are also an incentive for new research projects.

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97 For the confluence of religious and political ideals in the time of Nikephoros Phokas, see Laiou, The General 399-412.

98 In the prologue references to the spiritual light of the monastery are emphasized: »Those who exert themselves in journeying along the single-minded way of the solitary life and who do not deviate in striving to attain its holy goal, who by purity of mind and soul and body have conditioned themselves for the brilliant enlightenment which comes from the Holy Spirit, end up by suffusing not only themselves with light, or, to put it more correctly, a godlike appearance, but also everyone in the world with whom they converse. They enlighten other people of any rank or calling whatever. They challenge them and incite them on to a like goal, drawing and attracting them as the light of a beacon fire or a magnet«: Typikon Lavras 102. Engl. Transl. by Dennis, Ath. Typikon 250.

99 Papachryssanthou, Athōnikos 207-221. – Morris, The origins 37-46.

100 Typikon Lavras 105. Transl. by Dennis, Ath. Typikon 253.

101 »You will not hinder the provisioning with necessities of those spending the winter in the hospice by the harbour for as many days or months as they may need«. Typikon Lavras 114. Transl. by Dennis, Ath. Typikon 260.

102 Life of Athanasios I, 43,13-18:176; II, 158,3-10: 74-75. – For the prestige of Mount Athos, see Oikonomides, Patronage 100. 111.

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Summary / Zusammenfassung

A light in the darkness: monastery lighthouses in the Aegean Sea and surrounding coastal regions

While the amount of evidence for lighthouses in the Byzantine Empire is small, this article explores the possibility that monasteries served as beacons at important crossroads of sea routes and on dangerous coasts. In some cases, their location was apparently also deliberately chosen with a view to such a function for shipping. Practical aspects were combined with the symbolic meaning of monasteries as places of enlightenment and orientation.

Ein Licht in der Dunkelheit: Klöster und Leuchttürme in der Ägäis und den umliegenden Küstenregionen

Während die Anzahl der Belege für Leuchttürme im Byzantinischen Reich sehr überschaubar ist, erkundet dieser Beitrag die Möglichkeit, dass Klosteranlagen an wichtigen Kreuzungspunkten von Seerouten und an gefährlichen Küsten als Leuchtfeuer dienten. Teilweise erfolgte ihre Standortwahl auch offenbar bewusst im Hinblick auf eine solche Funktion für die Schifffahrt. Dabei verbanden sich praktische Gesichtspunkte mit der symbolischen Bedeutung von Klöstern als Stätten der Erleuchtung und Orientierung.

Andreas Külzer

Harbours, Landing Places and Communication Routes in North-Western Anatolia. The Gulf of Adramyttium (Edremit körfezi) in Late Antiquity and Byzantine Times

The Gulf of Adramyttium represents a significant incision in the coastal line of Western Anatolia: from the southern end of the Dardanelles onwards, the Aegean coast of Asia Minor runs about 60 km more or less consistently in south-south-western direction, before a striking change in direction occurs after the passage of today's Babakale. From this point onwards, the coast runs about 80 km equally in an east-western direction, only to turn back to a south-western direction after passing the modern villages of Akçay and Dalyan. The island of Lesbos or Mitylēnē with an area of more than 1,630 km² dominates the northern entrance of the Gulf, which the Greeks call Adramyttēnos kolpos since Antiquity, while its Turkish name is Edremit körfezi[1]. Both terms refer to the most prominent settlement in the region, to Adramyttium, modern Edremit, an old city, which existed since the 6th century BC; it was slightly relocated from the coast to the interior of the country in the 2nd century AD[2] (see **fig. 1**).

According to the Roman geographer Strabo of Amaseia in Pontus (63 BC - AD 23), the term Adramyttēnos kolpos, Gulf of Adramyttium, had a double meaning: in a broad sense, it described the whole area between Cape Lekton, modern Babakale in the north and Cape Kanē, a promontory near the small village of Bademli in the south (Strabōn 13,1,51). The linear distance between these two toponyms is more than 80 km; the real distance is more than twice as large due to the subdivided coastline with its numerous bays. In a narrower sense, Adramyttēnos kolpos was, following Strabo, only the area between Gargara near modern Nusratlı burnu in the north and Cape Pyrrha, nowadays Boz burnu in the south. The linear distance is around 27 km or about 60 km following the coastline[3]. The famous Mount Ida (Homer, Iliad 14, 282), nowadays Kaz dağları, extends diagonally to the northern shore of Edremit körfezi for more than 30 km; its summit is at Karataş tepesi, where it rises to 1,774 m. This mighty mountain range was responsible for the alternative term Idaios kolpos; common in ancient times as well (Strabōn 13, 1, 6). Most probably, it was congruent to Adramyttēnos kolpos even in its broad sense. The landscapes in the Deep South of the Gulf, in the region between modern Ayvalık and Bademlı, were sometimes connected with the Gulf of Elaia, modern Çandarlı körfezi, as well; to a certain degree, both toponyms covered identical landscapes. However, these Greek terms were not very precise. If we understand Strabo's description correctly, we have to notice different overlaps. This was usual in Antiquity. In general, space and landscapes themselves were not important as objects; people mostly mentioned them casually and inaccurately, but rarely exactly and scientifically. Therefore, minor variations in geographical designations were more a rule than an exception[4].

As in many other coastal regions of Asia Minor, the local residents have used the Gulf of Adramyttium since ancient times for fishing, trade, and the transport of different goods. Furthermore, the bay was part of the transregional sea route between the Dardanelles and the Levant. The importance of this route grew immensely after Constantinople became the capital of the Byzantine Empire in 330; until the year 641, for example, numerous trade and supply vessels transported grain from Egypt to the Bosporus for the benefit of the local inhabitants[5].

If the ships, following this route, circumnavigated the island of Mitylēnē on its western shore, they would use in particular the ports of Eressos and Sigri as supply points[6]; in this case, the contact with Adramyttēnos kolpos was limited to a small section in the north of the island and rather low. However, if the ships used the route along the eastern shore of Mitylēnē, passing through the 10 km wide Poros Muselimē or Müsellim Boğazı and the 20 to 25 km wide Strait of Lesbos, the Stenon Mitylēnēs or Mıdıllı kanalı, then the Edremit kör-

1 Gk 1:200.000 Nomos Lesbou. – Tk 1:200.000 Edremit. – Heikell, Pilot 60. – Horn/Hoop, Nordägäis 124. – Koder, Aigaion Pelagos, Karte. – Philippson 1:300.000 Blatt I. – Talbert, Atlas 843, Map 56. – Yaman, TYA 70f.

2 Hansen/Nielsen, Inventory 1038. – Külzer, Assos 194f. – Stauber, Adramytteion I 48-63. 127-154. – Tomaschek, Kleinasien 23f. see below.

3 Stauber, Adramytteion I 334-336.

4 Stauber, Adramytteion I 334-336. – Concerning the southern part of the Gulf see Heinle, Landeskunde 18. 26-31. 69-71 Karten I, II and more. – Heikell, Pilot 74-76. – Horn/Hoop, Nordägäis 142-146. – On space and spatial concepts, see della Dora, Landscape 1-31. – Lefebvre, Production. – Veikou, Space in Texts.

5 Kislinger, Verkehrsrouten 153-155. 174. – Kislinger, Verkehrswege und Versorgung 76-81. – Müller, Getreide 2-11. – Teall, Grain Supply 91-98.

6 Koder, Aigaion Pelagos 161f. 209-213. 277 Karte.

In: Johannes Preiser-Kapeller · Taxiarchis G. Kolias · Falko Daim (eds), Seasides of Byzantium. Harbours and Anchorages of a Mediterranean Empire. Byzanz zwischen Orient und Okzident 21 (Mainz 2021). DOI: https://doi.org/10.11588/propylaeum.910.c12053

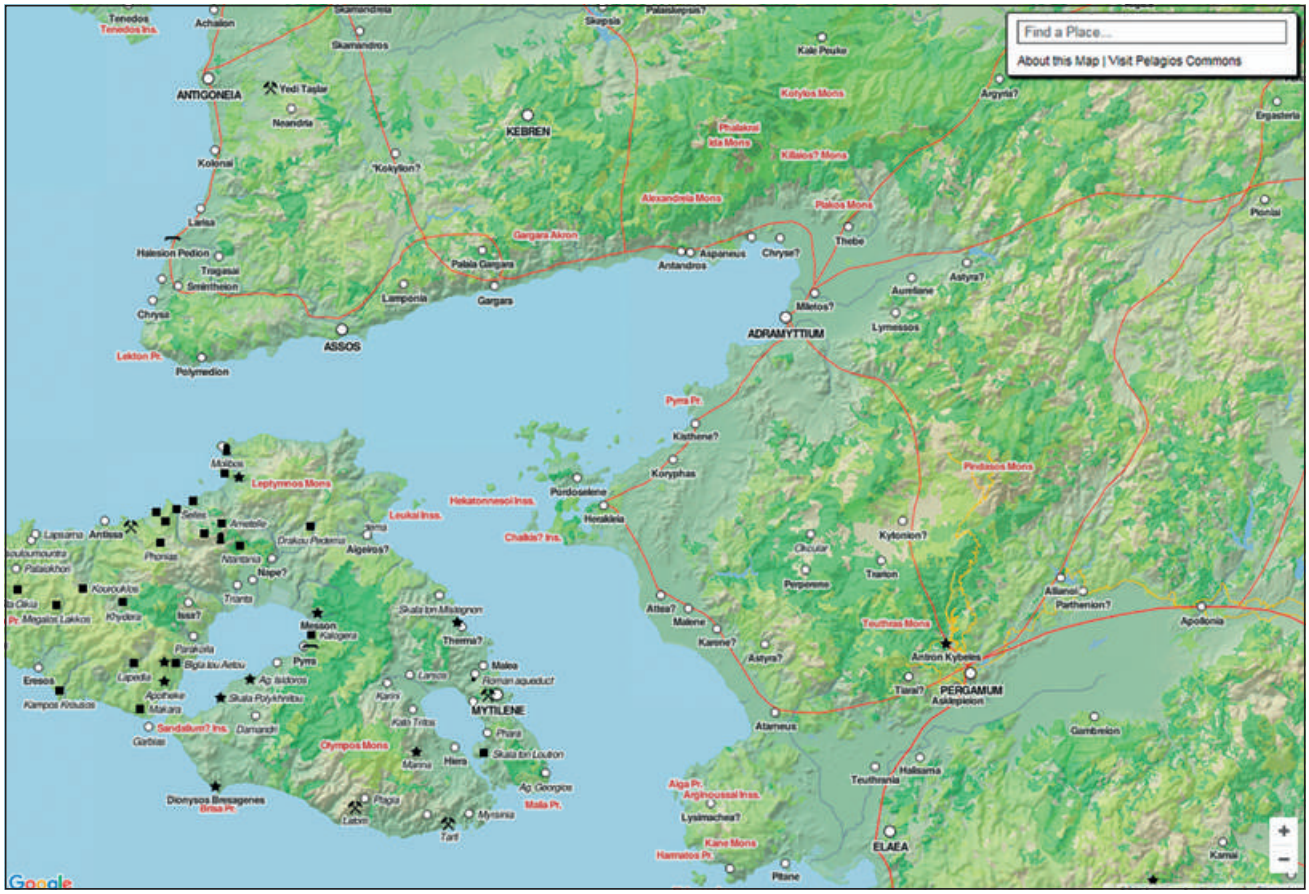

Fig. 1 The Gulf of Adramyttium in Antiquity. – (From Digital Atlas of the Roman Empire, https://dh.gu.se/dare/ [public domain]).

fezi was a substantial part of the Levant route. After passing through the Gulf, the ships got access to the anchorages near Aspropotamos at Makrygialos-Bay, to Mēstigna or the two harbours of the city of Mitylēnē, all of them excellent places for accommodation[7]. In the past as well as today, the currents and wind conditions are changing in this part of the Aegean Sea during the year; and these issues were essential points for the choice of the individual itinerary along the western or the eastern coastline of Mitylēnē. If the latter was chosen, the port of Nasos at Poroselēnē, modern Cunda, or different anchorages on the smaller islands of the Hekatonnēsoi, such as Poyraz adası, represented further logistical alternatives for the sailors[8] (see **fig. 2**).

In addition, the numerous settlements at the Anatolian coast of the Adramyttēnos kolpos offered good opportunities to provide food and fresh drinking water; there were also suitable places to carry out maintenances and repairs which would be necessary for example as consequences of storms and disturbances. During Antiquity and the Middle Ages, the usual itinerary for vessels was about 30 to 50 km a day. Therefore, the sea traffic was dependent on a comparatively regular sequence of supply points[9]. This requirement existed in the whole region around the Gulf of Adramyttium; the local conditions were excellent for trade and travelling.

Hereinafter, there will be a brief discussion of the history of the landscape around the Gulf, starting in Roman times. Afterwards, a description follows of the important harbours and settlements at the Anatolian shore of the Aegean as interfaces for the communication between land- and sea traffic. The paper is a result of various methodological and theoretical considerations, of intensive studies of relevant literary sources and academic literature as well as of a field trip undertaken in summer 2016 in the framework of the Vienna research project *Tabula Imperii Byzantini*.

The Gulf of Adramyttium in History

The hinterland of the Gulf of Adramyttium was part of ancient Mysia; in late Hellenism, it belonged to the kingdom of Pergamum. After the death of the childless king Attalus III (138-133 BC), his empire fell by bequest to the Romans. However, Aristonicus, a half-brother of the devisor, started a revolt, which took several years; only in 129 BC, after the

7 Koder, Aigaion Pelagos 65 f. 227 f. 230. 284.
8 Heikell, Pilot 66 f. – Horn/Hoop, Nordägäis 130. – Koder, Aigaion Pelagos 266.
9 Avramea, Communications 79.

Fig. 2 Map of the Adramyttēnos kolpos. – (QGIS 2.18. A. Külzer, 2017).

rebel had been defeated, were the Romans able to establish their first province in Anatolia, which they henceforth called *Asia*. Ephesus became the capital, while the former residence of the Attalid dynasty, Pergamum, lost its privileged position, possibly due to its inland location[10]. In addition, the landscapes in North-Western Asia Minor, formerly close to the capital, fell into the shadow of history. Some minor territorial changes took place in the province *Asia* in the following decades, but these measures were dedicated to territories further in the east of Anatolia; they remained meaningless for the region around Adramyttēnos kolpos. Nevertheless, at the beginning of the 4th century, the late Emperor Diocletian (284-305) divided the huge province of *Asia*, originally with a size of almost 180,000 km², into seven smaller units. One of these new provinces, which remained together in a diocese *Asiana*, continued to bear the name *Asia*; Ephesus persisted as its capital. This province covered only an area of 19,100 km²; however, the Anatolian landscapes around the Gulf were part of this administrative unit[11].

This administrative system existed for several centuries, but in the course of the 7th century, new reforms took place. At that time, the Byzantines decided to create larger units again, whose commanders combined civil and military power to fight more effectively against the enemies who invaded their territories on the Balkan Peninsula as well as in Asia Minor. Due to a lack of appropriate sources, the geographical extent of these new units, which were called *themata* (the etymology is uncertain, maybe »placement«) from the 9th century onwards, is not exactly known[12]. The first four *themata* or themes were *Armeniakon* (established before 667) and *Anatolikon* (before 669) in Central and East Anatolia, *Thrakēsion* (before 680) in Western and *Opsikion* (before 680) in North-Western Asia Minor[13]. Most of the landscape around the Gulf of Adramyttium was part of the *thema Thrakēsion*, but the hinterland of Cape Lekton in the extreme north-west belonged to *Opsikion*[14]. The theme system shared the fate of its Roman predecessor: like the ancient provinces, the themata were repeatedly reduced to restrict the power of their commanders. In this case, as well, many details remain unknown, especially concerning historical data and the concrete geographical extent of the single units. Definitely, the theme of *Thrakēsion* was significantly reduced during its existence, large parts of its coastal zones got lost: Emperor Michael III (842-867) for example created a new theme *Aigaion Pelagos*, which incorporated seaboards and wide landscapes of the Troad[15]. Adramyttium held an important position in the theme of *Samos*, which appeared in the late 9th century (between 889 and 893): just like Ephesus, it was the seat of a *tourmarchēs* (vice-admiral)[16]. The ascend of Adramyttium continued in the following centuries, despite the great destructions caused by the Seljuk Emir Tzachas (Çaka) who invaded North-Western Asia Minor in the year 1091 and plundered the landscapes around Edremit körfezi. However, when Emperor Alexios III Angelos (1195-1203) gave a charter to the naval power of Venice in 1198, the document mentioned the *prouincia Atramyti* – thus, Adramyttium and its hinterland formed a separate theme in those days[17]! A few years later, the so-called *Partitio Romanie* confirmed the issue: in the year 1204, the *provincia Atramyttii* was mentioned as an area of interest of the Latin Emperor of Constantinople[18].

10 Daubner, Bellum Asiaticum. – Magie, Roman Rule I 3-158. – Mitchell, Administration 17-46. – Sartre, L'Asie Mineure 113-117.
11 Beloch, Bevölkerung 507. – Honigmann, Synekdémos 21-33. – Koder, Urban Character 183.
12 Brubaker/Haldon, Byzantium 744-755.
13 Haldon, Palgrave Atlas 68. 77. 128. 130. – Koder, Historical Geography 14. – See also Brubaker/Haldon, Byzantium 723-729.
14 Haldon, Palgrave Atlas 58 f. 70. – Koder, Historical Geography 15.
15 Koder, Aigaion Pelagos 55 f. 78 f. – Külzer, Assos 186 f.
16 Haldon, Palgrave Atlas 60 f. 71. – Koder, Historical Geography 21.
17 Tafel/Thomas, Urkunden 271.
18 Tafel/Thomas, Urkunden 491. 495.

Fig. 3 Gulf of Adramyttium, view from Assos in the direction of Mitylēnē. – (Photo A. Külzer, 2016).

Nevertheless, the Latins' rule was short; after two decades, the whole area fell under the dominion of the Greek Empire of Nicaea in 1224. After 1261 again dominated by Constantinople, the landscapes around the Adramyttēnos kolpos finally slipped away from Byzantium at the beginning of the 14th century. At the end of 1304 or beginning of 1305, the Turks dominated the entire region. In 1402, the Mongols invaded the hinterland of Edremit körfezi and reached even Assos (see **fig. 3**) in the far west, but this was just an intermezzo without any significant political impact.

Roads and Routes around the Gulf of Adramyttium

Communication roads and smaller routes connected many settlements, harbour places and anchorages around the Gulf of Adramyttium already in the time of the Attalid dynasty, though sometimes being dust roads in a simple condition. However, immediately after the establishment of the province *Asia*, the Romans started to develop and extend the network of communications in the whole area. As we know by milestones, one of the four transregional roads, which connected Ephesus with its wider hinterland, led northwards close to the coastline via Smyrna to the landscapes around the Gulf of Adramyttium. In the regions of Smyrna as well as of Pergamum, different junctions were leading into the Anatolian hinterland. The coastal road touched Atarneus in the north of Dikili and led in a north-western direction to Hērakleia and the countryside opposite of the island of Poroselēnē. There it changed its course to the north-east and run via Cape Pyrrha and the settlement side of ancient Adramyttium near Ören to the area of the villages of Akçay and Dalyan. In this region, further interregional communication routes started to open the way to landscapes in different parts of Anatolia, just to mention Cyzicus near the southern shore of the Propontis or Prusa, modern Bursa, in Bithynia.

The coastal road turned westward, following the seaside for some kilometres; in the area of Gargara near modern Arıklı, it changed into the interior of the country, passing the western foothills of Mount Ida. After crossing the Troad, the road reached the Dardanelles. At Lampsacus, today's Lapseki, there was a ferry service, which ensured the connection to the road network in Thrace and on the Balkan Peninsula[19].

Despite the main road leading into the interior of the Troad, a small but well-viable route led from Gargara to the west; it touched the areas of Lampōneia near Kozlu dağı and of Assos (Behraim kale); afterwards, it led via Bademli to Sminthē, modern Gülpınar. A few kilometres north of Assos, a Roman bridge shows that the river Satnioeis (Tuzla çay) has slightly shifted its course in recent centuries. Cape Lekton was connected to this route only by an intersection because taking advantage of the favourable geographical conditions, the street run about 6 km further to the north without passing the hills along the coast, modern Babakale tepeler.

The *Antonine Itinerary*, written in the late 3rd century, describes among others the road from the Dardanelles to Pergamum[20]. Starting in Lampsacus, the road led via Abydos (Maltepe) and Dardanos south of Kepez to Ilion (Hisarlik,); there it turned to the Aegean coast to Alexandria Troas, modern Eski İstanbul. The distances mentioned in the text are generally correct. The next station mentioned after Alexandria is Antandros, a coastal city south-west of modern Avcılar, in the very east of Edremit körfezi. The distance from Alexandria is 35 miles; it is not clear if the itinerary led along the coast via Assos or through the interior of the Troad. The distance between Antandros and Adramyttium is 31 miles; afterwards, the itinerary led to Pergamum, obviously by using the coastal road via Ayvalık and Atarneus, and then into the inner parts of Lydia and Phrygia[21].

The *Peutinger Map*, in its last ancient version composed in the year 435[22], marked the road as well. Due to its greater accuracy, one can realize an itinerary along the seaside of the Aegean and the Gulf of Adramyttium: between Alexandria Troas and Antandros, the map mentioned the stations *Sminthium*, ancient Sminthē, which was connected to the sea due to its harbour Chrysa, *Assos* and *Gargara*. From *Adrimitio* listed afterwards, two roads led to *Pergamo*, one along the coast, the other through the steep and troublesome peaks of Mount Pindasos, today's Madra dağı[23].

The development of the road-system in Western Asia Minor took mainly place in Roman times, partly by using an existing infrastructure from older periods, partly in a complete reorganization. In later centuries, during late Antiquity and

19 French, Milestones I, 12-18. 45. – French, Milestones II 23-25. – Külzer, Tabula 51-55. – Külzer, Verkehrsrouten 52. 54.
20 Cuntz, Itineraria 50, 333,9-335,3. – Külzer, Assos 194 f. – Külzer, Tabula 59 f.
21 French, Milestones I, 12; III, 11-14.
22 Weber, Datierungen.
23 French, Milestones III, 24. 32-34. – Külzer, Assos 195 f. – Külzer, Tabula 61.

the Byzantine period, the further expansion of the transport network was limited to the construction of smaller road sections, individual bridges and selective repairs[24]. Concerning the settlements and harbour places around the Adramyttēnos kolpos one can emphasize a general connection to the transegional communication system, starting in Antiquity and still in use in the Middle Ages. The coastal settlements were linked to their hinterland; they could make use of the local resources, of agricultural products, livestock, building materials as well as other goods. On the other hand, they could provide the villages with special products procured by sea.

Harbours and landing places at the Anatolian shores of the Gulf of Adramyttium

The westernmost point of the Gulf of Adramyttium lies in the area of modern Babakale: today an Ottoman fortress dominates the place, which was built between 1725 and 1728. Regardless of some unspecific stones, there are no ancient or medieval remains to be seen; but at the beginning of the 20th century, there still existed an ancient harbour construction. The modern local harbour is well suited to the prevailing north-east winds; but if the wind comes from the south, there is no protection at all[25]. Due to its prominent geographical position, the place is identified with Cape Lekton since the late 19th century. Already Homer mentioned this cape (Homer, Iliad 14.283), Herodotus appreciated its protective function (9,114). Other authors described the cape as border between the Aeolis and the Troad (Pliny, Nat. hist. V 32, 123) or as a prominent place between Alexandria Troad and Assos (Ptolemy V 2, 4). The cape belonged to the theme *Aigaion Pelagos* in the 10th century (Constantine Porphyrogenitus, De thematibus 83); maps and portolan charts from the late and post-Byzantine period mentioned the place as Santa Maria[26]. The famous Piri Reis mentioned the cape in his *Kitab-ı Bahriye* in 1521[27]. Interestingly, Cape Lekton was differently localized in the past: in the year 1881, Heinrich Schliemann identified Cape Lodos or Deve burnu 5 km further east with Lekton, based on the distances to Polymēdeion, Assos and Gargara mentioned by Homer. This happened irrespective of the fact that there were no settlement remains at all at Cape Lodos. For several years, this place remained afflicted with the ancient tradition, until it fell back to ahistoricity due to an altered identification, which preferred Babakale.

About 9 km east of Babakale, 4 km east of Deve burnu there is an anchorage at Acıdere Mevkii, which was already used in middle- and late-Byzantine periods due to the archaeological remains. The port was connected with the medieval settlement at Palamut harabesi, located about 1,5 km further north in the interior of the country. Ceramic fragments show that the place was inhabited already in the 12th and 13th centuries. A paved road connected both places; some remains are still preserved[28]. The nearby Bademli lays at the side-road, which connected Assos with Sminthē; therefore, the harbour place was well connected with its hinterland. Due to the archaeological material, it remained important for the western part of Edremit körfezi until the Ottoman era, although written sources did not mention the place at all. Some scholars searched the ancient city of Polymēdeion in this area, a city, which according to Strabo was located on a hill near the sea (13, 1, 51) and which according to later authors was dedicated to the doom already in the 1st century AD (Pliny, Nat. Hist. V 32, 123; Ptolemy V 2,4)[29]. However, this localization is wrong; according to archaeological data, the real place of Polymēdeion was further east at Asarlık tepe at the western edge of the bay of Sivrice[30].

East of Polymēdeion there is the wide bay of Sivrice, which is still today, despite some minor shallows and cliffs, mentioned in modern sailing manuals as an excellent anchorage[31]. Especially in its eastern parts, the ships are sheltered from the frequent and dangerous winds from the north-east. At Gümrük burnu, there are small remains from an early Byzantine church; older publications also mention a settlement place there[32]. Above the bay, there are further settlement remains and ceramics fragments, which belong to the early Byzantine period. In 1521, Piri Reis mentioned a ruined fortress and a silted port at Sivrice bay[33]. Some smaller villages in the hinterland of the bay, among them Balabanlı and Bergas, modern Korubaşı, contain various settlement remains from Roman and medieval times; both places are also listed in an Ottoman tax list of the 16th century.

About 8 km east of the bay, there is a small harbour place at Biber deresi; at a distance of 80 m from today's coast, there are remains of an early Byzantine settlement including a three-aisled basilica. Furthermore, the Byzantine settlement near İminikayalar 3 km further to the north was supplied by the port[34]. From Biber deresi, one can already see the impressive settlement place of Assos at today's Behraim kale. The place was inhabited since the Bronze Age; in the 2nd century AD, it was like Alexandria Troad and Cape Lekton part of *Phrygia mikra* (Ptolemy V 2, 4). Assos was a bishopric already in 431; in the Byzantine period, the city was part of the province of *Asia*, in the 9th century it belonged to the theme of *Aigaion Pelagos*. The early Byzantine settlement was still inside the ancient fortifications; in later centuries, however,

24 Külzer, Assos 187-194.
25 Cook, Troad 227 f. 237 f. – Heikell, Pilot 60. 64. – Horn/Hoop, Nordägäis 122.
26 Kretschmer, Portolane 652.
27 Pīrī Re'īs 309. 311.
28 Böhlendorf-Arslan, Naturraum 281-283.
29 Talbert, Atlas 851, and Map 56. – Digital Map of the Roman Empire*: https://dh.gu.se/dare/* (23.10.2017).
30 Böhlendorf-Arslan, Siedlungen 156. – Böhlendorf-Arslan, Naturraum 296 fig. 11. – Cook, Troad 283 f.
31 Heikell, Pilot 64. – Horn/Hoop, Nordägäis 122 f.
32 Böhlendorf-Arslan, Naturraum 297. – But Böhlendorf-Arslan, Siedlungen 155 f.
33 Pīrī Re'īs 311. 313. – Böhlendorf-Arslan, Naturraum 283. 296 f. – Cook, Troad 239 f.
34 Böhlendorf-Arslan, Naturraum 297.

people inhabited mainly parts of the acropolis and an area west of the old fortifications[35]. Most probably, the famous periplous of Pseudo-Skylax, written before 293 BC, mentioned Assos and its harbour; however, this results only from the context, because the main manuscript, codex *Parisinus suppl. graecus* 443 from the 13th century, owns a *lacuna* just there (see chapter 96). Apostle Paul used the city's harbour in the year 57. One of the originally two harbour basins silted up already in the early Byzantine period; this meant a significant restriction. The existing basin shelters only from the north winds; but if the wind comes from south or south-west, which is more common in this area, then landing in the harbour of Assos becomes dangerous[36]. Therefore, the place lost its importance since the 10th century; consequently, late and post Byzantine portolan charts only scarily mention the city and its harbour.

On the other hand, the bay of Kadırga burnu, which is adjacent to the east, offers much better protection to the vessels up to now[37]. At this place, one can find rich archaeological material from the Hellenistic and Roman periods up to the 15th century; furthermore, a pier and an anchorage have survived[38]. Analysing these remains, some scholars connected the place with the Byzantine bishopric of Gargara in the 19th century[39]; certainly, this was a mistake, but the idea survived for decades. Once again, historically documented events were attributed to wrong places and false stones.

However, the city of Gargara was not only identified with Kadırga burnu, but also with the archaeological remains at Kozlu dağı, a hill above the village of Kozlu, 4 km north of the coastline of Edremit körfezi. In reality, however, this was the place of ancient Lampōneia, still mentioned as a *polis Trōados* by Stephanus of Byzantium in the 6th century, with reference to older sources (Steph. Byz. L 32 [410]). Only 2 km east of Kozlu, in the south of modern Sazlı, there is another settlement place with a small harbour, which was used in Roman and early Byzantine times. Its importance remained only local.

Already in the 4th century BC, the old city of Gargara (Palaia Gargara) was relocated from its place at Koçakaya to the coast; in the 12th century, the *Etymologicum Magnum* remembered this act (221, 26-37). The new place of the city was at Nusratlı burnu 2 km south-east of Ariklı, as we know today. A paved road led to the coast, but the place of the late antique and medieval harbour remains unidentified yet. Just like Assos, Gargara is not expressly mentioned in the periplous of Pseudo-Skylax, which is disfigured by a text gap. Nevertheless, it is obvious, that the ancient author referred to the city and its port because the manuscript mentioned immediately after the *lacuna* the cities of Kebrēn, Skēpsis, Neandreia and Pithyeia in the inner parts of the Troad, places, which were easily accessible from the landing places at the Adramyttēnos kolpos (chapter 96). The *Peutinger Map* highlighted Gargara – in contrast to Assos – with a special signature; this fact underlines its excellent traffic connections by land and by sea. The city was a regional market centre, well connected to similar places[40].

The port of Küçükkuyu, which is about 6 km to the east and prominently highlighted in actual sailing manuals, is of modern origin[41]; however, 2 km north of this landing place there was a Byzantine place near the village of Adatepe. Like Kadırga burnu and Kozlu, also this place was associated with Gargara by scholars of the 19th century[42]. Only 12 km east of Küçükkuyu there is another harbour, which is appreciated today, the landing place of Altınoluk[43]. The port is modern, too; generally, it is a safe place, but it suffered sometimes from the winds from the north-east. Numerous houses in the older part of the village have *spolia* in their walls; these old architectural remains reveal the existence of an ancient or Byzantine settlement somewhere in the area.

Maybe these materials came from a place in the neighbourhood, still undiscovered; maybe its origin was in Antandros, a famous ancient harbour town 4 km further to the east. Pseudo Skylax described this settlement in its border situation between Lydia and Aeolis (chapter 98). Timber, cut in Mount Idē, was processed here for ships and vessels during Antiquity (Thucydides 4, 52). Like Gargara, the *Peutinger Map* highlighted Antandros by representing the town through a special signature. Since the 5th century, Antandros was a bishopric. In our days, the settlement hill is overgrown, mostly with olive trees – we should keep in mind, that the shores of Edremit körfezi are popularly called »Olive Riviera«[44]. Nowadays, a highway leads through the municipal area; it separates the ancient port area at *Avcılar Iskele* from the rest of the city and provides a deceptive picture of the former settlement conditions[45]. Not far away from the village of Avcılar, which is near Antandros inside the country, one can find the place of ancient Aspaneus; Strabo mentioned here a stacking place of wood (Strabōn 13, 1, 51). However, the local capitals and other architectural remains from the Byzantine period reveal the survival of the settlement during the Middle Ages[46].

The landing place of Astyra is mentioned by Pseudo-Skylax next to Antandros (chapter 98); it can be found in the innermost north-eastern edge of Adramyttēnos kolpos. In this area, there are two well-known anchorages today, on the one

35 Böhlendorf-Arslan, Assos.
36 Böhlendorf-Arslan, Assos 123 fig. 1. – Heikell, Pilot 64. – Horn/Hoop, Nordägäis 123.
37 Cook, Troad 251. 253f. – Horn/Hoop, Nordägäis 123.
38 Böhlendorf-Arslan, Naturraum 283.
39 Cook, Troad 253.
40 Cook, Troad 255-261. – Concerning the market centres, see Koder, Urban Character 159-164.
41 Heikell, Pilot 65. – Horn/Hoop, Nordägäis 125f.
42 Judeich, Bericht 542. – Judeich, Gargara 114f.
43 Cook, Troad 266f. – Heikell, Pilot 65. – Horn/Hoop, Nordägäis 126f.
44 Horn/Hoop, Nordägäis 125.
45 Cook, Troad 267-271. – Polat, Antandros 209-230. – Stauber, Adramytteion I, 355 *sub voce*.
46 Cook, Troad 267. – Stauber, Adramytteion I ,15.

hand Ilica Koyu, a place with hot springs nearby, especially sheltered by north- and western winds, and, on the other hand, the adjacent place of Akçay[47].

Passing these landing places, the ships reach the place of old Adramyttium in Ören near Burhaniye. The city was founded in the 6th century BC; generations later, Pseudo-Skylax recalled to its harbour (chapter 98). In the Roman period Adramyttium was the capital of a special territorial organisation, a juridical district (*conventus iuridicus*); this one was one of the largest in the whole province of *Asia* stressing this way the importance of the city (Pliny, Nat. hist. V 32, 122). In the time of Emperor Trajan (98-117), the city was dislocated from the coast to the former settlement place of ancient Thēbē in the inner parts of the country, about 12 km further to the north-east. Archaeological testimonies as well as the report of John Lydus, a historian of the 6th century, who was familiar with the whole region, confirm the date of the city's dislocation. A relocation during the reign of the Byzantine Emperor Alexius I (1081-1118) as some scholars believe is more than unlikely; the relevant literary sources do not confirm this theory, as an accurate philological analysis shows[48].

In the south of Ören, the remains of an ancient harbour place have been found below the hill of Bergaz tepe. The existence of another landing place slightly further north is generally accepted. Pseudo-Skylax referred to these places in his periplous (chapter 98). Sailing manuals mention an anchorage at Burhaniye Iskele[49], but this one is classified as sandy and unprotected; this is the result of geomorphological phenomena, which probably stimulated already the decision to relocate the city in the 2nd century. Adramyttium was a transregional market centre and a bishopric already in 431. In addition, the church hierarchy documented its important position; Adramyttium hold the fifth position among 37 bishoprics in the metropolis of *Asia*, according to the first *notitia episcopatuum*, composed in the reign of Emperor Heraclius (610-641)[50]. This position hardly changed in the following centuries[51]. Due to its administrative, economic, and political importance, travellers and merchants used to visit the attractive city. They used both communication systems, the roads as well as the sea, the latter regardless of the fact, that the city's position was about 6 km away from the waterfront. The ships anchored probably in the area of Akçay or further to the south; unfortunately, archaeological remains to determine the concrete position of the main harbour place are not discovered yet. Smaller vessels were pulled ashore, bigger ones anchored near the coast. The sailors left their vessels and put their goods on beasts of burden or on wagons to reach the local markets in the interior. One must remember that the mentioned distance of 6 km between the coast and the city-areal is not substantial; for example, the metropolis of Ephesus, always regarded as a coastal town, hold exactly the same position from the seaside.

Nautical charts and portolan charts of the 13th, 14th, or 15th centuries like the Atlas of Tammar Luxuro (13th century), the map of Petrus Vesconte (1311/1320), the Catalan map from 1375 or the Atlas of Andreas Bianco from 1436, mention the city as *Landermiti* or in a similar way[52]. In these sources, Adramyttium was the first important harbour station after the passage of Cape Lekton. This manifests the importance of transegional maritime traffic for the city. Moreover, the references show that the Edremit körfezi was by no means a cut off corner of the Northern Aegean. On the contrary, the political and economic importance of Adramyttium and its position at a traffic intersection with different roads leading to the inner parts of Asia Minor caused a lively maritime traffic in the bay with numerous ships and vessels transporting various goods and people.

Cape Pyrrha, the southern border mark of the Adramyttēnos kolpos in its narrower sense, is 16 km south-west of Burhaniye. Small ceramic finds bear witness to only insignificant use of the site in the Byzantine period. In the neighbouring bay of Gömeç was the site of the ancient Kisthēne, already described by Strabo as an abandoned harbour town with a copper mine in its hinterland (Strabōn 13, 1, 51). In the village of Gömeç itself, milestones from the late 3rd and 4th century AD were discovered, which belonged to the old coastal road[53]. Various medieval capitals and different architectural remains in the village bear witness to a longer settlement continuity.

The next important harbour places to the south were located at the Ayvalık Archipelago; this one is formed by 23 small and smallest islands. In portolan charts, it is sometimes mentioned as *Santa Ana*[54]. Ships and vessels used its copious anchorages; even today, the archipelago is very attractive for sailing boats and yachts, regardless of its cliffs and shallows[55]. Numerous bays offer shelter from the dominant winds from north-east, for example near Ayvalık[56], ancient Hērakleia, but also in the more southern bays of Cennet kuyu and Paşa kuyu as well as in the wind shadow of the islands Pınar adası and İncirli adası located further to the west[57].

In the periplous of Pseudo-Skylax, these excellent anchorages remained, surprisingly, unmentioned; the next important harbour south of Adramyttēnos kolpos in its wider meaning (chapter 98)[58]. The city of Atarneus was located on modern Kale tepe, about 4 km

47 Cook, Troad 267. – Stauber, Adramytteion I, 16-26. – Horn/Hoop, Nordägäis 127.
48 Külzer, Assos 194 f. – Stauber, Adramytteion I, 48-50. 145-147.
49 Heikell, Pilot 65. – Horn/Hoop, Nordägäis 128.
50 Darrouzès, Notitiae 206.
51 Darrouzès, Notitiae 219. 233. 252. 274. 296. 310. 354.
52 Kretschmer, Portolane 652 f.
53 Cook, Troad 251. 254. – French, Milestones II 71-73.
54 Kretschmer, Portolane 653.
55 Heikell, Pilot 65-70. – Horn/Hoop, Nordägäis 129-136.
56 Heikell, Pilot 66. – Horn/Hoop, Nordägäis 131 f.
57 Horn/Hoop 130. 134. 136.
58 Heikell, Pilot 60. 70 f. – Horn/Hoop, Nordägäis 138-140. – Heinle, Landeskunde 27-29. 31-33. 140. 144. 192. 226. TYA 71.

inside the country. In the 5th century BC, it was a transregional marketplace, especially for grain (Herodotus 6, 28, 2); but in the 1st century AD it was largely deserted (Pliny, Nat. Hist. V 32, 122; XXXVII 56, 156). However, in the late Byzantine period, there was a small renaissance; according to ceramic fragments and settlement remains, the place was inhabited again.

The landscapes around the Gulf of Adramyttium were easily accessible in late Antiquity and the Middle Ages, due to numerous harbours and landing places at its shores and expanded transregional communication roads on the countryside near the sea. The well-developed communication network favoured trade and the exchange of goods; it ensured a certain degree of affluence and prosperity to the local population. This also explained the important position of Adramyttium as a central market town and a leading community in the Byzantine administrative hierarchy. At the northern shore of the Edremit körfezi, four bishoprics were concentrated, three of them holding a leading position in the ecclesiastical hierarchy of the province of *Asia*: according to the first *notitia episcopatuum* from the 7th century, which will be quoted here as pars *pro toto*, Adramyttium holds the fifth rank, Assos the sixth, and Gargara the seventh rank. Only Antandros was inferior, holding just the 34th position. Nevertheless, also this bishopric, and even more so the others, has a well-developed infrastructure and was a market centre for the villages in its hinterland.

There are only rare and occasional reports concerning the landscapes around the Gulf of Adramyttium in literary sources of late Antiquity and the Middle Ages; essentially, it is archaeological evidence that informs us about the living conditions of the local population in the centuries before the Ottoman occupation. Archaeology shows the reality of life of those people, who lived far away from Constantinople in the vast coastal regions of North-Western Anatolia.

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Summary / Zusammenfassung

Harbours, landing places and communication routes in North-Western Anatolia. The Gulf of Adramyttium (Edremit körfezi) in Late Antiquity and Byzantine times

The Gulf of Adramyttium (today Edremit) has been an important crossroads of sea and land routes since ancient times, which made connections between the Aegean Sea in the south and the central area around Constantinople in the north and between the sea and the interior of Western Asia Minor, also in combination with the nearby island of Lesbos. The article offers a systematic investigation of the densification of these functions in larger and smaller port towns along the coast between Cape Lekton in the north and Kanē in the south.

Häfen, Landeplätze und Kommunikationswege in Nordwestanatolien. Der Golf von Adramyttium (Edremit körfezi) in der Spätantike und byzantinischen Zeit

Der Golf von Adramyttion (heute Edremit) stellte seit der Antike einen wichtigen Kreuzungspunkt von See- und Landrouten dar, die Verbindungen zwischen der Ägäis im Süden und den Zentralraum um Konstantinopel im Norden bzw. zwischen dem Meer und dem Landesinneren Westkleinasien herstellten, auch im Kombination mit der nahe gelegenen Insel Lesbos. Der Beitrag bietet eine systematische Untersuchung der Verdichtung dieser Funktionen in größeren und kleineren Hafenorten entlang der Küste zwischen Kap Lekton im Norden und Kanē im Süden.

Maria Leontsini · Eleni Manolessou · Angeliki Panopoulou

Harbours and Anchorages in Corinthia and Argolis (North-Eastern Peloponnese) from the Early to the Middle Byzantine Period

The account of the miraculous sailing of Saint Gregorios Dekapolites (797-842) from Corinth to Reggio Calabria indicates that Corinth was a station on the saint's journey to Italy (833) and a regular hub for maritime communication in the early decades of the 9th century when Arab seafaring was still on the rise[1]. The episode is placed in the period of the reopening of the Gulf of Corinth, and this particular reference probably concerned Lechaion, the western harbour of Corinth. This harbour together with Kenchreai in the east of Corinth contributed in certain respects to the city's financial and commercial growth (see **fig. 1**)[2]. Corinth's location on the Isthmus, where land and sea routes meet, was also extraordinarily favourable for its vitality. Maritime traffic in the Saronic and Argolic Gulfs, which became increasingly intense as a result of the lack of investment in the overland road system and its maintenance in the Late Roman times, continued well into the Middle Byzantine period[3]. This micro-region's small coves and bays facilitated coastal sailing and the landing and beaching of lateen-rigged ships[4]. Sailing along the coast is well documented by archaeological remains revealed to date in key marine locations extending from the Isthmus of Corinth to Nauplion and to the fringes of the Myrtoan Sea[5] in the period between the Early and the Middle Byzantine period. Such data also confirm the exchanges between the coasts and the adjacent islands that served local or regional exigencies[6], motivated and reinforced by the large-scale maritime movements[7]. The present analysis follows the development of harbour operations which granted special prosperity to the region before the 7th century and attempts also to sketch the naval traffic shaped locally by the subsequent strategic adaptations supported by the state defence and stabilising policies. The inhabited areas on the shores and the islands that were gradually subjected to defensive measures in which the presence of the state was evident, seemed to have adapted to circumstances which, in some cases, shifted the placement of harbours to new landing locations. Inland fortifications and defensive works in certain islands were securing the sighting of the coasts and covered the protection imperatives of the period. Civilian and military authorities gained preponderance in the control of transactions and travel, supplanting the earlier practices of movement and individual voyages.

Travel accounts provide a rough idea of the movement along the north-eastern coast of the Peloponnese, although they deliver scattered and inconclusive data on official control or seaport topography. On his pilgrimage to Jerusalem, Willibald, Bishop of Eichstätt, travelled from Sicily via Methoni and *Manafasiam* and thereafter *demittebant Chorintheos in sinistra parte*, then crossing the Aegean Sea before reaching several seaports on the coastline of Asia Minor (722-723)[8]. The same itinerary was later followed by the Carolingian ambassador Amalarius, Bishop of Metz (c. 775-c. 850), who sailed down to the Adriatic, navigated along the southern littoral of the Peloponnese to Aegina, possibly aboard a warship, and, eventually, reached Constantinople (813)[9]. Corinth was also mentioned later in the pilgrimage of Saewulf to Palestine (1102) and on the return sea voyage of two monks who used a Corinthian port, arriving from Smyrna and heading to Taranto (1126)[10]. The above examples illustrate the long-term maritime mobility in the region, without, however, specifying the means of transport or the actual conditions of the maritime way stations, while local features and topography are mentioned in passing.

Material evidence identified along this coastline, on the other hand, vividly testifies to the development of prosperous settlements with basilicas or residential ensembles, some of luxurious setting (villas), during the Early Byzantine period. These monumental and residential remains were either abandoned or reshaped to conform to the more degraded conditions after the 6th century, but their sites remained associated to a great extent with coastal mobility supported by structured administrative or commercial networks. The records of the status of this region's maritime centres registered in

1 Vita s. Gregorii Decapolitae (BHG 711) 22.9-13 (Makris 88). – Kislinger, Verkehrsrouten zur See 151-152. 173.
2 McCormick, Origins 198-203. 531-537. – Caraher/Pettegrew, Imperial Surplus and Local Tastes 165-171.
3 Gagtzēs/Leontsine/Panopoulou, Pēloponnēsos 477-478. – McCormick, Origins 67-77. – Veikou, Mediterranean Byzantine ports 43.
4 Makris, Ships 95-96. – McCormick, Origins 419-421. – Cosentino, Mentality 72.
5 Koder, Der Lebensraum 16. 29. 72. – Malamut, Les îles 34-35.
6 Preiser-Kapeller, Harbours and Maritime Networks 2. 18-19.
7 Avraméa, Le Péloponnèse 108. 130-132. 140-142. – Caraher, The Ambivalent Landscape 157-159.
8 Vita Willibaldi 93.12-18. – McCormick, Origins 130-131.
9 Amalarius versus marini 427.28. – McCormick, Origins 138-143. 146.
10 Saewulf, Peregrinatio 59,25-29. – Epistola Mauritii Catanensis episcopi 54-55.

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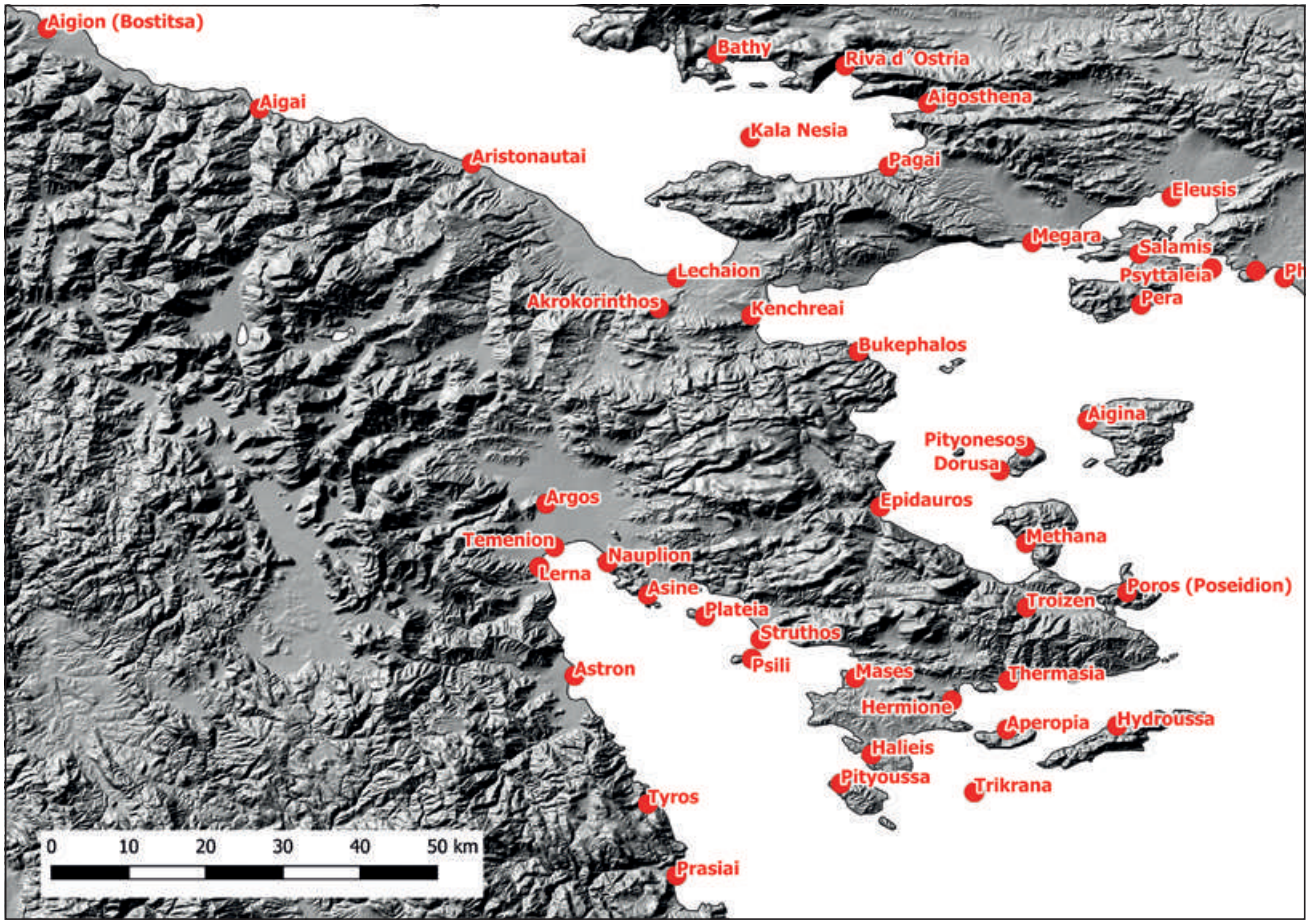

Fig. 1 Map of selected localities mentioned in the text. – (J. Preiser-Kapeller, 2020).

official lists are, in fact, consistent with the spatial distribution of these settlements as documented in the field. The *Synekdemos* of Hierocles and the *Notitia* 3 (the so-called Iconoclast *Notitia*) depict the urban dynamics of this province between the 6th and the 8th centuries[11]. Kenchreai is absent from the catalogue of Hierocles, which cites only Corinth, as well as the island of Pityoussa (*Poityoussa*, Spetses) and the coastal sites of Argolis: Methana, Troizen (*Tryzena*), Epidaurus (*Pilaura*) and Hermione (*Hiera Mionē*)[12]. *Notitia* 3 possibly adds Kenchreai (*Kiknipeos*) and, except for Hermione, lists the same sites of Argolis, including also very likely Halieis (*Selikou*)[13]. Because of its importance as a highly frequented centre of the Eastern Mediterranean, Kenchreai was recognized as an episcopal see in Early Christian times[14], which led to its later inclusion in the Iconoclast *Notitia*[15]. Thereafter Kenchreai, overshadowed by Corinth, disappeared permanently from the official lists even when the site was again more frequented in the 11th century. Antiquarian references of the Cosmographer of Ravenna (AD 700) and Guido Pisano (12th c.) recording *Cenchris* and *Epitauron*, obviously marked the two known harbours of the district in ancient times[16]. Their absence from the administrative records of the region suggests the shrinking of their functions and hence their limited role in transport. Only the episcopal see of Troizen was recorded anew in the Middle Byzantine episcopal lists, under the name of Damalas. This latter name of ancient Troizen was confused with Epidaurus in the *Vita* of Hosios Nikon[17], who landed there travelling directly from Crete (968). The hagiographer used this anachronism probably to recall the landmark of the ancient harbour in the area. The emergence of Troizen-Damalas and Nauplion, in the Middle Byzantine period, and the rise of their rank was apparently connected to the reorganisation of the maritime activities in the Argolic Gulf. This new hierarchical ranking was indicative of these harbours' position and the mobility dynamics shaped under the new circumstances[18]. Similar imperatives led to the establishment and the function of settlements on the islands,

11 Kountoura-Galake, Eikonoklastike Notitia 60-61. 68-71.
12 Hierokleous Synekdemos 646,1; 646,7; 646,11; 647,1-3 (Honigmann 17-18).
13 *Notitia 3* 45,732. 736-741. 751; 46,771 (Darrouzès 244-245).
14 *Diatagai tōn hagiōn apostolōn*, VII 46.10 (Metzger 110,10).
15 Rife, Religion and Society at Roman Kenchreai 425.
16 Ravennatis Anonymi Cosmographia V 13,2-3, V 22,10-11 (Schnetz 94,13; 99,53). – Guidonis geographica 111.8-9 (Schnetz 136,73).
17 Vita s. Niconis (BHG 1366. 1367) 21.51-53 (Sullivan 88-89). – Konti, Αργολικά 249-258.
18 Loseby, The Mediterranean economy 617-618.

Fig. 2 Remains of the early Christian basilica in the harbour of Kenchreai. – (Photo C. Raddato, Remains of an early Christian Basilica and Temple of Isis at the ancient harbour at Kenchreai, one of the two ports of the inland city-state of Corinth, Greece, CC BY-SA 2.0).

which presupposed proper berthing facilities and infrastructures, as is acknowledged by field research. Except for the reference to the flight of the Argives to the island of Orovi and of the Corinthians to Aegina by the end of the 6th century, according to the Chronicle of Monemvasia[19], written sources do not provide explicit information on population movements and the shifting of settlements.

Maritime connectivity corresponded to the prosperous conditions prevailing in the coastal settlements and on the islands until the end of the 6th century, as is well-illustrated by archaeological evidence. Religious monuments of the Early Byzantine period were solid markers of growth and movement. The founding of most of these monuments and the construction of residential facilities near the shores or on the islands fit into communication practices dating back to the Roman period. One well-documented case is Kenchreai, where the Early Christian basilicas ceased to function after the 7th century (see **fig. 2**). The later erection of a chapel to the west of the basilica on the south mole of the harbour in the 9th century shows that there were adjustments to the degraded conditions that would also involve the use of the harbour. The second basilica discovered in the location of Bourtzi (1,5 km north-east of the harbour), had fallen into ruins by the end of the 7th century[20]. All the Early Christian monuments of the area had the same fate: the basilica close to the shore on the hilltop of the peninsula; others excavated in Methana (Palaiokastro, Kounoupitsa, Makryloggos); a probable one on the island of Poros; one along the shoreline of Hermione with a baptistery; one in Dalamanara (ancient Temenion); one in Asine (Kastraki or Palaiokastro of Tolo); one in Drepanon; and the basilicas on the island Spetses and the islets of Daskaleio, and Modi[21] (**Tab. 1**).

The quality of these religious monuments was connected to the living standards of the coastal villas which took over

19 Chronicon dictum Monemvasiae 12,93-95.112; 18,141-142.166. – Veikou, Byzantine Histories 179.

20 Kislinger, Die Chronik von Monembasia 81-82. – Rife, Religion and Society 425-431.

21 Avraméa, Le Péloponnèse 175-177 (Epidaurus-Nesi peninsula, Spetses). – Bowden/Gill, Late Roman Methana 88-89 122-127. – Mee et al., Catalogue 132-133. 160. – Koukoulis, Catalogue 211-214 (Palaiokastro, Kounoupitsa, H. Nikolaos, Makryloggos). – Delvoye, Historique sommaire 1946, 259 (Poros). – Jameson/Runnels/van Andel, A Greek Countryside 110-111. 591 (Hermione). – Piteros, Άγιος Παντελεήμων 242-247 (ancient Temenion). – Piteros, Εξωκκλήσι 253 (Hagios Panteleimon). – Piteros, Ασίνη 266 (Asine). – Piteros, Δρέπανο 290-292 (Drepanon). – Avraméa 1997, 76. – Koilakou, Ζογεριά 269-271 (Spetses, Zogeria). – Kyrou Περιπλανήσεις άγίων λειψάνων 108-118. – Blackman, Archaeology in Greece 36. – Kyrou, Νησιωτικὰ καταφύγια 511 (Daskaleio). – Konsolaki-Giannopoulou, Ερημονησίδα Μόδι 172. 176 (Modi). – On the prosperity of the Early Byzantine settlement of Spetses cf. Chrysos, Πιτυούσα-Σπέτσες.

Early Byzantine Coastal Sites / Islands	Basilicas
Kenchreai	•
Methana	•
Hermione	•
Poros	•?
Koronis islet	•
Daskaleio	•
Modi	•
Spetses	•
Drepanon	•
Asine	•
Temenion	•
Kounoupitsa	•
Hydra	•

Tab. 1 Islands and Early Byzantine coastal sites of the Corinthia and the Argolis possessing churches (basilicas).

the locations of sea-marks and exploited the physical visibility of the maritime landscape to control naval passages[22]. Excavated remains of the sea-oriented villas show that their activities were maintained as late as the 7th century and were largely assisted by the local communications capacities. Villas and other residential installations established close to the coasts of Corinthia and Argolis exploited, moreover, the ease of access to the terrestrial road network in the interior[23]; however, this pattern did not apply in the same way to settlements situated on the littoral of Argolid (Epidauria, Troizenia and Hermionis). Especially regarding this region, connections were developed largely between the central and southern zones of southern Argolid[24]. A large residence situated to the north of Cape Sophia, to the south of the eastern end of the Hexamilion Wall, between Isthmia and Kenchreai had easy access to the sea from a private jetty and the ability to maintain contact with the hinterland of Korinthia. The owner may have been either a military officer in charge of the protection of the Isthmus area or a wealthy ship-owner, who possibly used the place for recreation[25]. This complex resembled the *villa maritima* located in Phourkari (in the far south-east section of the coastlines of the Argolid, opposite the island of Soupia). Both complexes seemed prosperous while similar establishments have been identified on the coasts of Argolis: at Nesi and in the region of Metochi; at Methana, south-east of Cape Pounta-Methana; at the port of Vathy and in Vromolimni of Methana, also in Thermesia and Kaimeni Chora; at the cove of Ververonda, north of the lagoon; at Hermionis, on a hill north-west and on the east side of the Gulf of Dardiza, as well at Gializa (north-west of the Gulf of Flamboura); at Halieis (Porto Cheli, Southern end of the Argolic peninsula, see **fig. 3**), at the cove of Kouverta, south-east of Kineta; at the Monasteriaka site; at Alonia Thynni and Hagios Panteleimon in Kranidi; (see **Tab. 2**)[26].

The settlements and baths discovered near the shore are further evidence of the activities in this coastal zone. The well-built bath in Spetses was not the same as the posterior roughly built one on the opposite shore of Halieis, but its modest construction is indicative of the new circumstances prevailing in the region[27]. The survival of certain parts of these complexes and the development of storage and industrial operations on the littoral front are eloquent testimonies to the resilience and adaptations that followed the activities in the area. Storage facilities and pottery workshops, identified on docking places, supported the refuelling needs of passing by ships or served the demands of inter-regional trading of local products at a regular pace. Their development was, as proposed, stimulated by the shipping movement that served the systematic provisioning of troops stationed in remote regions like the Danubian frontier. To these transportation activities, one should probably connect the shipwreck in Porto Cheli, containing LR2 type amphorae which could be part of a wider development of exchanges, as is acknowledged during this period[28] (**Tab. 2**). Such installations have been identified in Kalamianos (north of Cape Trelli, in the steep coastal zone of the Saronic Gulf), in Ancient Epidauros, on different locations of Methana peninsula, in Lorenzo (Kosta), Kounoupi (Hermionis), in Halieis, also in Drepanon and Asine; on the islet of Chenitsa and in the islands of Spetses, Korakia and Poros[29]. Similar operations have been identified in a building complex excavated north west of the harbour of Kenchreai. It was destroyed at some point in the 6th century and was reoccupied for more utilitarian or industrial purposes until the 7th century[30]. The findings from this site offer new insights into local vitality, long-distance exchanges, and dynamic communications in the north-eastern Peloponnese during the

22 Horden/Purcell, The Corrupting Sea 125-126.
23 Wiseman, The Land 64. – Veikou, Mediterranean Byzantine ports 45. – Pettegrew, The Isthmus 48-50.
24 Jameson/Runnels/van Andel, A Greek Countryside 48-53.
25 Gregory, An Early Byzantine Complex 412-413. 420. 423. – Avraméa, Le Péloponnèse 127-128.
26 Frost, Phourkari. A villa complex 233-238. – Jameson/Runnels/van Andel, A Greek Countryside 108. 402 (Phourkari, Poros). – Bowden/Gill, Late Roman Methana 84. 88. 90 (Halieis and Vathy, port of ancient Methana). 89 (Palaiokastro, Methana). 86. 87. 88 (SE of cape Pounta-Methana, Vromolimni). – Foxhall, Ancient Farmsteads 262. 264. 265 (north and north-east of Vromolimni). – Sarri, Αγροτικές εγκαταστάσεις 229-230 no. 12a-b (Hagios Panteleimon, Alonia); 251-252 no. 23 (Taxiarches); 252 no. 23 (Ververouda); 252-253 no. 23 (Nesi of Cheli); 254 no. 23 (Metochi); 256-258 no. 23.1-4, 6-8 (Yaliza); 259-260 no. 23 (Monasteriaka, Kouverta); 261 (Thermesia); 264-265 no. 23 (Dardiza Ermionis). – Mee et al., Catalogue 131-132 (Kaimeni Chora).
27 Kyrou, Νησιωτικὰ καταφύγια 504 (Spetses). – Sarri, Αγροτικές εγκαταστάσεις 227 no. 11α (Halieis); 224-225 no. 9α (Asine). – Piteros, Δαλαμανάρα 189-191 (Dalamanara).
28 Karagiorgou, LR2 140. 145. 149.
29 Konti, Βιοτεχνικὴ δραστηριότητα 339-341. 344. 345-349. – Tartaron et al., The Saronic Harbors 576. 577. 579. 608. 610 (Kalamianos). – Mee et al., Catalogue 129. 130-131. 146-148. 157-158 (Kypseli, Methana). – Mee et al., Catalogue 133-134 (Methana). – Sarri, Αγροτικές εγκαταστάσεις 210-211. 226 no. 9γ (Asine); 227-228 no. 11α (Halieis); 228-229 no. 11β. 268 no. 23 (Lorenzo/Kosta); 244-245 no. 23.5 (Chenitsa); 246 no. 23; 267-268 no. 23 (Kounoupi); 247 no. 23 (Korakia). – Piteros, Δαλαμανάρα 189-191 (Dalmanara). – Piteros, Οικόπεδο 130-131 (Drepanon). – Koilakou, Σπέτσες 69 (Spetses, Zogeria). – Piteros, Επίδαυρος 186-187 (Ancient Epidauros). – Giannopoulou, Πόρος 237 (Poros).
30 Heath et al., Preliminary Report.

Fig. 3 View of the harbour bay of Porto Cheli (Halieis). – (Courtesy of GoogleEarth).

Tab. 2 Islands and Late Roman/Early Byzantine coastal sites of the Corinthia and the Argolis possessing buildings, villas, storage, and manufacturing units, correlated with harbor facilities and anchorages.

Late Roman / Early Byzantine Coastal Sites / Islands	Anchorages	Harbor facilities	Villas/Buildings/Baths	Storage/Manufacturing units
Kavos Akra Sophia	•	•	•	•
Kenchreai	•	•	•	•
Korfos (Kalamianos)			•	•
Poros (Phourkari)	•?		•	
Epidauros-Nesi	•	•	•	•
Methana (Pounta, Vathi, Vromolimni)	•?		•	•
Hermione		•	•	
Kouverta			•	
Petrothalassa			•	
Metochi (Nesi)			•	•
Hermionis (Kounoupi)	•	•	•	•
Yaliza			•	•
Halieis	•	•	•	•
Ververonda (H. Nikolaos)			•	•
Korakia			•	•
Alonia-Thinni			•	
Koiladha (Monasteriaka)			•	
Dardiza	•?		•	
Thermesia			•	
Kaimeni Chora		•	•	
Asine	•		•	•
Kranidi (H. Panteleimon)			•	
Spetses	•?			•
Poros	•?			•
Chinitsa islet	•?			•
Drepanon	•?			•
Kosta (Lorenzo)	•?			•

Fig. 4 View of the Kounoupi islet, to the south of the Gulf of Kranidi. – (Courtesy of GoogleEarth).

Location	Lead seals
Chinitsa	7th-9th c.
Daskaleio	6th-8th c.
Kounoupi	8th c.
Orovi	8th-9th c.
Plateia	7th c.

Tab. 3 List of islets where lead seals, mainly of the transitional period (7th-9th c.), have been discovered.

Early Byzantine period. Therefore, transport safety, storage capacity and other operations of a more day-to-day nature were amplified by maritime mobility in the region during the Middle Byzantine era. This survival pattern is impressively evidenced by the operations in the harbour of Kenchreai. In addition, the downgrading of the harbour should be taken into account, due to the intense seismic activity of the late 4th century, which led to a subsidence by *c*. 2 m, affecting also the adjacent shores. The dating of the submerging of moles and waterfront buildings is still not well-established[31]. Damages to harbour's facilities and other coastal infrastructures across the coastline of the north-eastern Peloponnese have also been attributed to erosion or aggradation[32].

The revitalization of maritime activities took place within the state's initiatives to strengthen the defence system and support the provincial administrative services. State intervention justified the presence of secular and ecclesiastical agents involved either in local affairs or using the region as an intermediate post. The passage of these officials or the circulation of their correspondence was served by the squadrons stationed, patrolling, and securing communications in the area. State-controlled mobility can be sketched behind the maritime traffic observed in the region. Lead seals, dating from the 6th to 8th century, and buckles discovered on islands and islets indicate the special importance of smaller mooring places: on Chenitsa islet (off the coast of Halieis), on Kounoupi islet, to the south of the Gulf of Kranidi (see **fig. 4**); on Romvi (Romvi, in the Tolos Gulf), further south on the islet of Daskaleio, further east on the islet of Plateia (**Tab. 3**). A specimen, found on the islet of Orovi, belonged, in all probability, to a bishop, who obviously had under his jurisdiction a population that had settled there and the adjacent inland areas; this maritime space might have also functioned as a base of civil and military administration in the 8th century[33]. Orovi was even suggested as a possible base for the warships that attacked Comacchio (north of Ravenna) in 809[34]. The movement of people and goods became more pronounced from the 9th century onwards as is implied by the lead seals that came to light, not only in urban centres like Corinth and

31 Rothaus/Reinhardt/Noller, Earthquakes and Subsidence at Kenchreai 63. – Kolaiti/Mourtzas, Sea Level Changes 75-77. 87.

32 Avraméa, Le Péloponnèse 47-49. – Sanders, Problems 170-172. – Preiser-Kapeller, Harbours and Maritime Networks 4-5.

33 Pennas, The Island of Orovi 171-173. – Avraméa, Le Péloponnèse 76. 99-101.

34 Vlyssidou, Η υποχώρηση 278 (with bibliography).

Fig. 5 View from the fortress of Akrokorinthos towards the sea. – (Photo Vancouverquadra, Akrokorinth Looking North).

Argos, but also in interior communication points such as the Kokkinia castle (on top of Mount Adheres, near Troizen), where a seal of a *basilikos spatharios* and *kommerkiarios* of the West was found (10th c.)[35].

The repairs of the fortifications and the development of the insular settlements strengthened with defensive works (islands of Ovrios, Dokos, Orovi, Plateia) has been rightly considered a result of the central government's strategies aiming to secure anchorage places. The shift of urban or rural settlements to inland defensive sites after the recession of activity of the coastal areas in the 7th century was followed by the effort to bring under control the naval way stations functioning as refuelling posts or shelters[36]; coastal control is better documented after the 9th century, and population movements related to the Slavic raids were considered as possible results of such strategies in small islands[37]. The enhanced functionality of the fortifications in the interior was a measure progressively advantageous not only to inland activities but also to the protection of maritime mobility. Acrocorinth's capacities for inspection and advance warning of invasions (see **fig. 5**) protected the Kenchreai harbour and smaller berths as well as the area of Isthmus. It seems that these defence measures promoted maritime mobility, supporting primarily the movements of Byzantine fleets in the area. This is perceived in traces (burials, coins and pottery finds) found in different locations within the Kenchreai district[38].

Naval activities were essentially revitalized by the expeditions organized by the capital. This is evident in the expeditionary missions of the Byzantine fleets to Italy which motivated the activation of the naval forces belonging to the themes of the Peloponnese, Hellas and Kephallenia[39]. Constantinople encouraged the operation against the emir of Tarsos Esman in Euripos (880)[40]. Warships sent directly from Constantinople under the command of the *patrikios* and *droungarios* of the fleet, Niketas Ooryphas, according to the narrative of the *Vita Basilii* (879/880), were anchored at a harbour near Kenchreai, recalling its ancient military function. The location of the warships' way station is not recorded

35 Penna, Two rare Byzantine lead seals 147-150.
36 Koder, Der Lebensraum 71-72. – Preiser-Kapeller, Harbours and Maritime Networks 8. – Veikou, Mediterranean Byzantine ports 39-40.
37 Gregory, Byzantine »Isles of Refuge« 195. – Lambropoulou et al., Συμβολή 196. 204-205. 220-223. – Kyrou, Νησιωτικὰ καταφύγια 515-519. – Veikou, Byzantine Histories 177-188. 205-206.
38 Rife, Πρόγραμμα 939. – Rife, Kenhreai Cemetary Project 348-349.
39 Vlyssidou, Η υποχώρηση 278. 318. 352. – Pryor/Jeffreys, The Age of the Δρόμων 46-50.
40 Theophanes Continuatus Chronographia V 59 (212 Ševčenko). – Kislinger, Verkehrsrouten zur See 164. – Leontsini, The Byzantine and Arab navies 195-197..

Early Byzantine Coastal Sites / Islands	Fortifications / towers
Asine	•?
Bourtzi (east of Poros)	•
Daskalio	•
Dokos	•
Epidauros-Nesi	•
Evraionisos	•
Halieis	•
Hermione	•
Isthmus	•
Kavos Akra Sophia	•
Kenchreai	•
Korakia	•
Methana	•
Nauplion	•
Plateia	•
Soupia	•
Spetses	•

Tab. 4 List of islands and Early Byzantine coastal sites with a tower or ruins of fortification.

explicitly, and information on the harbour is completely absent from the account[41]. This narrative is well-known for describing a surprise attack on the Arab ships, ravaging the western coasts of the Peloponnese. The account, which was repeated by later Byzantine historians, referred also to an overland dragging of the warships to the Gulf of Corinth; the trackway of the Diolkos however, was not operational during the Middle Byzantine period, according to archaeological investigation[42]. The mooring place existing to the south of the present canal or another site located close to Kenchreai would likely have been used for the operation. The portage of ships from the Saronic Gulf to the Gulf of Corinth is once again referred to as a commonplace transport practice for small ships in the area by the 12th-century Arab geographer Al-Idrisi, without specific reference to Diolkos[43].

The state planning of safeguarding the region against external attacks is further documented by an inscription which, according to all indications, comes from Acrocorinth and commemorates the establishment of a fire-signal communication by an emperor Leo, most probably Leo VI (886-912). Its operation was associated with a rectangular tower dated the earliest to the 7th and perhaps to the 8th century. The fire-signalling post could transmit signals to the inner regions of the Peloponnese and other observation points, including the harbour of Kenchreai[44], as part of a system protecting the local populace and guarding strategic roads and routes[45]. This defensive arrangement was part of state-run policies applied in the framework of Constantinople's military actions to confront Arab attacks. The safeguarding of coastal sites was thus dependent on inland fortifications. The Acrocorinth's defences, according to recent research data, were enhanced at that time to ensure effective supervision of Corinth and to control the vital coastline sites[46]. Similarly, the Kastron (Acronauplia) was closely connected with Nauplion's harbour, a point of growing importance after the 9th century, which gradually proved to be a vital communication berthing position for the inland centre of Argos[47]. Reconstructions or fortification repairs carried out in the Middle Byzantine period were associated with the new defence-related priorities[48]. Although it is not clear, the fortifications of Corinthia and Argolis may have constituted a defence network. To the monumental defensive works of Corinth and Nauplion (Acrocorinth, Acronauplia), one must add the small fortresses identified in areas vital for safe traffic, such as the islands of Spetses, Dokos, Orovi (Romvi) and Ovrios (Evraionissos), as well as atop the heights of the Epidaurus-Nesi peninsula, and on the Bourtzi islet[49] (**tab. 4**).

It is therefore assumed that the defensive positions played an essential role in protecting the seafront. Defensive strategies were amplified in the 10th century by the reorganisation of the local naval forces[50]. A naval squadron belonging to the Peloponnese theme was able to intervene on the spot, and, although we have no accounts of its bases, its operational character is confirmed by other sources. This flotilla was under the command of an officer subordinate to the *strategos* of the Peloponnese, called the *tourmarches tes paraliou* (τουρμάρχης τῆς παραλίου), commanding four *chelandia*, according to the list of the naval forces planned to take part against the Arabs of Crete in 949[51]. This unit is also mentioned in other sources describing 10th-century events, such as the *Lives* of Saint Peter and Saint Theodoros, the patrons of Argos and Kythera, respectively. Both *Lives* refer to Nauplion's prosperity; the former *Life* also offers evidence for the surveillance of the eastern shores of the Peloponnese by regular naval forces[52]. Saint Peter of Argos intervened miraculously in the chase of an Arab pirate ship with captives on board. After being captured by a Byzantine trireme using liquid fire, the enemy ship appeared the next day in the port of Nauplion, towed by the trireme,

41 Theophanes Continuatus, Chronographia V 61 (Ševčenko 216-219). – Savvides, Prosopographical Notes 84-96. – Pryor/Jeffreys, The Age of the Δρόμων 61. 385.
42 Pettegrew, The Isthmus 61-62. 113-134. 241-242.
43 Al-Idrīsī, IV 150 (Jaubert 123).
44 Rife, Leo's Peloponnesian Fire-Tower 281-306. – Athanasoulis, Acrocorinth 41-42.
45 Haldon, Information and war 384. 387.
46 Athanasoulis, Acrocorinth 42-44.
47 Savvides, Nauplion in the Byzantine and Frankish Periods 112-119.
48 Konti, Συμβολὴ 194-195. – Athanasoulis, Acrocorinth 26-28. – Armstrong, Trade 176-177. – Athanasoulis/Manolessou, Ἡ μεσαιωνικὴ Κορινθία 537-538.
49 Konti, Βιοτεχνικὴ δραστηριότητα 345-347. – Kardoulias/Gregory/Sawmiller, Bronze Age 14-17. – Tartaron et al., The Eastern Korinthia Archaeological Survey 481-483. – Kardoulias, From Classical to Byzantine 53. – Kislinger, Die Chronik von Monembasia 77-78.
50 Ahrweiler, Byzance et la mer 90. 111.
51 Kōnstantinos Porphyrogennētos, De cerim. (Haldon) 220, 221.32. – Ahrweiler, Byzance et la mer 51 n. 7. – Nesbitt/Oikonomides, Catalogue of Byzantine Seals 62.
52 Vita s. Theod. Cyth. (BHG 2430) 287.186-189. – μία τῶν φυλακίδων τριήρης cf. Vita s. Petri episcopi Argivorum (BHG 1504) 15 (Kyriakopoulos 246,55) . – Konti, Το Ναύπλιο 131-132. – Caraher, Constructing memories 269-271.

which had probably been patrolling the area and attacked the ship from an ambush on an island. The saint knew in advance that the pirate ship would anchor at the cape, which suggests the existence of an early warning system between the coast and the hinterland of Argolis. Messengers who announced the matter to the saint were obviously in charge of and sustained such duties. Nauplion is also mentioned as an anchorage where captives were ransomed annually under the charitable protection of Peter of Argos[53]. Its harbour must have become an important operating space. The horizontal fragmentation of the coasts of Argolis favoured safe landing and facilitated manoeuvres and tactical surprise attacks, as set out in Byzantine naval war manuals, which underline the crucial importance of the distance between the coasts and the spots of the naval conflicts[54].

By the 11th century, Nauplion was among the privileged centres for Italian traders, along with Argos and Corinth[55]. The development of Nauplion's harbour was also associated with the economic growth of Argolis and the emergence of local authorities enhanced with political and military power[56]. The topography of increased maritime traffic is marked in an 11th-century Arab geographic treatise which records also Corinth, Poros-Kalavreia, Argos, Damalas, Nauplion, and Pityoussa; a Latin portolan of Pisa (c. 1200) refers also to the maritime space on the eastern shores of Corinth[57]. The prosperity and the maritime dynamics of this latter part of the Middle Byzantine period is attested to by an incident mentioned in a transaction document that refers to a Venetian ship, carrying at least 43 000 litres of oil and cured olives on its way from Nauplion to Constantinople. After its operators were informed of the Latin's massacre in the capital in the spring of 1182, they directed eventually the ship to Alexandria[58].

The episode shows that the area functioned again as an intermediate bridge in the communications with the coasts of Asia Minor and the islands of the Aegean Sea, having surpassed the functions of the more dispersed and smaller scale marine transactions of the Early Byzantine period. The marked posts of the north-eastern Peloponnesian harbours in the nautical guides of this period indicate the region's improved position in the Mediterranean marine movement. The vitality of the area's harbours increased in the time interval between the voyage of St. Gregorios Dekapolites (833) and the naval operation of *patrikios* Niketas Ooryphas (879/80) and testifies to the strengthening of the local but also the inter-regional naval dynamics which was based on the earlier distribution of port operations and was prioritizing Corinth. The economic growth of Nauplion which became the region's new maritime centre during the Middle Byzantine period, altered this equilibrium, taking the lead from Corinth and Kenchreai and offering a sign for changes in spatial structures and transactions.

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53 Vita s. Petri episcopi Argivorum (BHG 1504) 14-15 (Kyriakopoulos 244. 226-246. 265).
54 Naumachiae Syrianou magistrou 9.12; 9.42-44 (Pryor/Jeffreys 466. 478. 480).
55 Chrysobullum 1082 2.8 (Pozza/Ravegnani 40). – Privilegium Alexii Constantinopolitani imperatoris 11.15 (Pozza/Ravegnani 130).
56 Anagnostakis, »From Tempe to Sparta« 146-147. 155.
57 Book of Curiosities 2.16 (Rapoport/Savage-Smith 486. 487). – Liber de existencia riveriarum 112.68; 113.84; 145.1156.1161; 149.1295.
58 Documenti del commercio veneziano no. 331. 326-327. – Jacoby, Rural Exploitation 235. – The coin finds in the Saronic Gulf region both in the islands (Spetses, Hydra) and in the coastal settlements of the north-east Peloponnese attest also to the recovery of the trade: Galani-Krikou, Ακροναυπλία 211.

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Summary / Zusammenfassung

Harbours and Anchorages in Corinthia and Argolis (North-Eastern Peloponnese) from the Early to the Middle Byzantine Period

Historical sources mention the existence of harbours in the north-eastern Peloponnese from the Early to the Middle Byzantine period, but do not provide information on their facilities. Roads departing from the coastline ensured access to inland urban centres and other settlements in the interior of the Peloponnese and facilitated regional or long-distance exchanges. Defensive strategies, storage needs, and population movements are suggested as factors that dictated the creation of various settlements and infrastructures of different types and quality on the coastal areas and the islands. Anchorages have been more clearly identified in some cases (e. g., Kenchreai, Halieis, Chenitsa), while in others they are recognized based on the relation of the fortress and harbour connections resulting from the combination of written testimonies and archaeological evidence (e. g., Nauplion). Sailing along the shorelines took advantage of infrastructures created during the Roman era. In the Early Byzantine period, the existence of basilicas and residential and production units (villas) close to the shores was related to a prosperous way of living, a situation that changed in the 7th century. The increasingly difficult conditions, which were also affected by the change of the coastline, by erosion or deterioration, influenced navigation and the use of the organized harbours as way stations or communication points. The limited number of harbours or anchorages in Corinthia is also connected to the geomorphology of the area. Berths on islands and islets near the coastlines may have served as refuge, offering protection from raids, but also functioned as way stations for the Byzantine navy. A turning point in the direction of a revival in relatively steady coastal shipping came with the strengthening of the inland fortifications and the local presence of naval forces.

Häfen und Ankerplätze in Korinth und Argolis (Nordostpeloponnes) von der Spätantike bis zur mittelbyzantinischen Zeit

Historische Quellen erwähnen die Existenz von Häfen auf der nordöstlichen Peloponnes von der Antike bis zur mittelbyzantinischen Zeit, geben jedoch keine Auskunft über ihre Einrichtungen. Von der Küste ausgehende Straßen sicherten den Zugang zu städtischen Zentren und anderen Siedlungen im Inneren des Peloponnes und erleichterten den regionalen Austausch sowie den Fernhandel. Verteidigungsstrategien, Speicherkapazitäten und Bevölkerungsbewegungen werden als Faktoren vorgeschlagen, die die Entwicklung verschiedener Siedlungen und Infrastrukturen unterschiedlicher Art und Qualität an den Küstengebieten und auf den Inseln beeinflussten. In einigen Fällen (z. B. Kenchreai, Halieis, Chenitsa) wurden Ankerplätze deutlicher identifiziert, in anderen Fällen werden sie anhand des Verhältnisses der Festungs- und Hafenstrukturen ermittelt, das sich aus der Kombination schriftlicher Zeugnisse und archäologischer Beweise ergibt (z. B. Nauplion). Der Seeverkehr entlang der Küste nutzte die während der Römerzeit geschaffenen Infrastrukturen. In der frühbyzantinischen Zeit war die Existenz von Basiliken sowie Wohn- und Produktionseinheiten (Villen) in Küstennähe mit einem prosperierenden Wirtschaftsleben verbunden, das sich im 7. Jahrhundert änderte. Die zunehmend schwierigeren Bedingungen, die auch durch die Veränderung der Küste, durch Erosion oder Degradation beeinflusst wurden, beeinflussten die Navigation und die Nutzung der Häfen als Zwischenstationen oder Kommunikationspunkte. Die begrenzte Anzahl von Häfen oder Ankerplätzen in Korinth hängt auch mit der Geomorphologie des Gebiets zusammen. Liegeplätze auf Inseln und Inselchen in Küstennähe dienten möglicherweise als Zuflucht und boten Schutz vor Überfällen, fungierten aber auch als Zwischenstationen für die byzantinische Marine. Ein Wendepunkt in Richtung einer Wiederbelebung der relativ stabilen Küstenschifffahrt kam mit der Stärkung der Binnenbefestigungen und der lokalen Präsenz der byzantinischen Seestreitkräfte.

Katerina Manoussou-Ntella

Byzantine Rhodes. The Evolution of a Fortified Harbour-city in the Eastern Mediterranean (4th to 12th c.)

Rhodes is one of those ancient cities that has survived under the same name and at the same location through successive urban planning transformations[1]. Continuous habitation throughout centuries[2] has left indelible marks on the urban fabric, still traced nowadays during a systematic documentation and study of structures of all periods (**fig. 1**).

The »Hippodamean« urban planning system of ancient times is a decisive feature for the development of the town[3], in that it determined the urban fabric of the residential sector and the design of the medieval fortification (**fig. 2**). Another determining factor was the strategic location of the town, at the crossroads of the ancient maritime routes of the Mediterranean[4]. The great economic floruit of ancient times led to the rise of the cosmopolitan metropolis of the Hellenistic period, which transformed gradually after Late Antiquity into the robust fortress – military base – of the Knights of St. John in the east Mediterranean[5].

Recent research brought to light important evidence related to the gradual shrinking of the particularly extended Hellenistic metropolis, which during the period the *Pax Romana* was imposed on the wider geographical area[6] (**fig. 3A**).

At the end of the 2nd-beginning of the 1st century BC there is no solid evidence for the function of the Hellenistic fortification works of Rhodes, which appear to have been gradually abandoned at least in some sections[7], most probably as part of the process of radical transformation both at the east mole of the great harbour and at the southern landward fortification wall (**fig. 4**). An attempt to repair and reinforce the ancient walls and towers is clearly attested in view of the imminent siege during the Mithridatic Wars[8] in 88 BC, while after 46 BC there is some form of encroachment over parts of the fortifications to the east of the great harbour and in the area of the Akandia harbour[9] (**fig. 3A**).

Similar evidence is attested also in the strategic area between the two central harbours, the great and the military harbour[10] (**fig. 3A**). The integration of a transverse wall curved at an obtuse angle signifies the existence of an ancient passage between the harbours, protected from the north by this massive wall[11] (**fig. 5**). Following the disastrous earthquake in 227 BC, the elegant amphiprostyle Temple of Aphrodite was constructed[12]. The erection of the temple at this particular location disrupted the route of the ancient wall of the harbour which turned at a right angle to the east, as is documented by the excavation in progress at about 20 m to the south, a fact that also corroborates the argument for the existence of an intervening passage (**fig. 3A**, **fig. 5**).

In the year 42 BC, the town of Rhodes was occupied and plundered by the Romans[13], and the slow process of abandoning its great ancient fortifications began during the period of *Pax Romana*. However, as documented by ancient texts[14], large sections of the monumental ancient fortifications, as well as massive, huge towers were preserved into Late Antiquity, as urban elements, and important landmarks of the town, causing the admiration of the citizens. It is characteristic that, in describing the earthquake of AD 155 by Ailios Aristides (AD 129-189), the city's walls received the greatest praise[15]. The walls seem to have been repaired, in part at least, by the Roman emperor Antoninus Pius, and it was probably at this time that the major urban modernisations in the main area of the city began[16]. Strong earthquakes occurred in AD 344-345 and AD 515, after which it was reported that Emperor Anastasios I made great donations to those who lived there and repaired large buildings in the city, walls and pipelines, harbours, and public baths[17].

The final abandonment of the ancient fortification of Rhodes dates to the period that followed the great earthquake of the 2nd century AD, most probably in AD 142. Until that time, writers of the Roman period, and Aelius Aristides in particular, praise »the circuit of the walls and the height and beauty of the interspersed towers.« It is obvious that

1 Manoussou-Ntella, Poli.
2 Papachristodoulou, Istoria. – Karouzos, Rodos. – Konstantinopoulos, Rodos.
3 Kontis, Symvoli. – Konstantinopoulos, Rymotomiko. – Hoepfner, Poleodomia 32-34. – Manoussou-Ntella, Stoichia. – Michalaki-Kollia, Ellinistiki 76.
4 Avramea, Epikoinonies 162-167. – Belavilas, Limania. – Braudel, Mnimes.
5 Gabriel, Cité I. – Manoussou-Ntella, Poli.
6 Kollias, Antistasi.
7 Manoussou-Ntella, Diacheirisi.
8 Peyras, Siege.
9 Manoussou-Ntella, Akandia.
10 Blackman, Limenes. – Manoussou-Ntella, Paysage.
11 Manoussou-Ntella, Topografia.
12 Rocco, Afrodite 31-33.
13 Papachristodoulou, Istoria 138-139.
14 Papaioannou, Keimena 375-413.
15 Papachristodoulou, Istoria 143.
16 Loungis, Koinonia.
17 Papachristodoulou, Istoria 143-144.

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Fig. 1 View of the city of Rhodes in 1486, Woodcut by Erhard Reuwich in Bernhard von Breydenbach's Die heyligen reyßen gen Jherusalem zuo dem heiligen grab (Mainz 1486) [fig. 7].

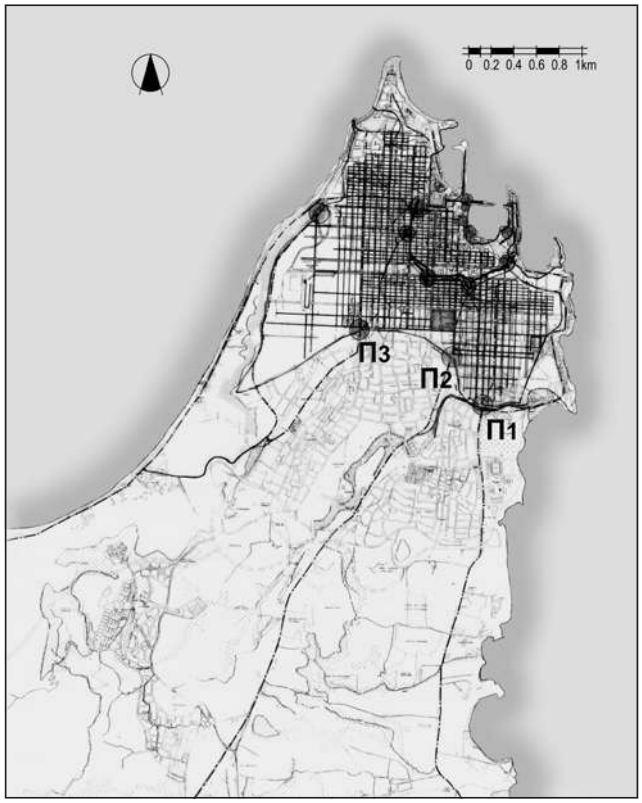


Fig. 2 The »Hippodamean« urban planning system of ancient Rhodes. – (K. Manoussou-Ntella, 2018).

the damage inflicted by the earthquake, on the walls, in particular, was significant and Aristides argued in favour of their reconstruction.

After the earthquake and the gradual abandonment of the ruinous walls, a contradictory picture emerges by the growth of the central and peripheral parts of the Hellenistic metropolis. At the end of the 2nd and beginning of the 3rd century AD, the monumental tetrapylon was erected[18], partly over the ancient shipyards, and the central »street of the Roman period« with colonnades and shops was laid out (**figs 3A**; **5**). This North-South axis was set as a cardo[19], with vertical intersecting *decumanus* and led to the ancient Agora. During that period, remains of the collapsed Colossus were visible to the numerous visitors of the town and were considered as one of the most important pilgrimages in the wider geographic area.

The integration of the tetrapylon between the two central most frequented harbours of the town, exactly at the crossroads of cardo with the northernmost *decumanus* (P6), most probably accentuated, in accordance with the urban planning principles of that period, the location of the holy pilgrimage to which it led[20]. At that same time, the branch of the ancient fortification wall with the two horseshoe towers, which expanded over the *choma* between the great harbour and the Akandia harbour[21], was covered by waste and gradually turned into a cemetery[22] (**fig. 3A**). In my opinion, it is highly possible that the adaptation of the axes of the rationalist Roman urban plan marginalised the outer parts of the great Hellenistic metropolis with the free outline[23].

Radical socio-economic changes led to the disruption of urban structures since the prevalence of Christianity beginning at the end of the 3rd to the beginning of the 4th century AD[24]. In this form of the town, the east mole of the great harbour, after the abolition of the monumental fortification with the two massive towers, operated exclusively as a mole[25] (**fig. 7**). The excavation testified the great commercial significance of the harbour, as indicated by the great number of coins, amphoras and vases. To facilitate the transport of goods and all kind of works at the harbour, a massive stone

18 Cante, Arco. – Cante, Tetrapylon.
19 Manoussou/Papavasileiou, Archeologiki.
20 Manoussou-Ntella, Palati.
21 Kontis, Teixi. – Filimonos-Tsopotou, Ochyrosi. – Manoussou-Ntella, Ellinistiki.
22 Psarri, Neotera.
23 Manoussou-Ntella, Poli.
24 Loungis, Poli. – Bouras, Village. – Bouras, Poleis.
25 Manoussou-Ntella, Thalassies.

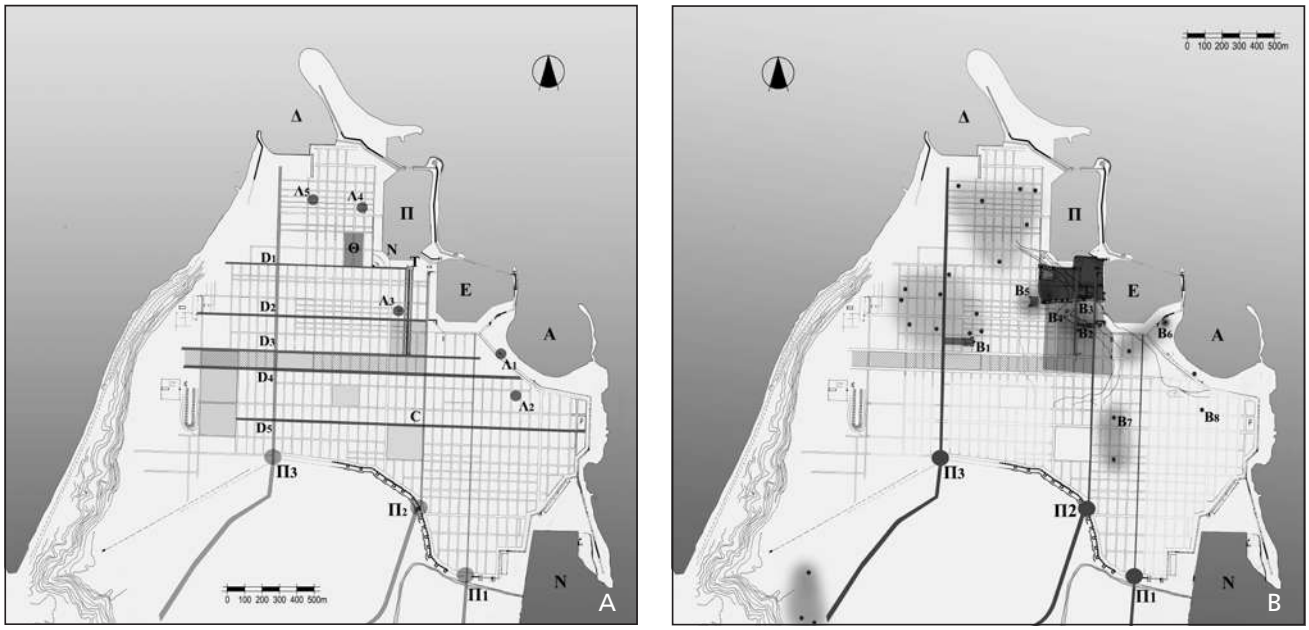


Fig. 3 **A** Modifications of the Hellenistic metropolis of Rhodes during the Roman period. – **B** Transformations from Roman to Byzantine city of Rhodes. – (K. Manoussou-Ntella, 2018).

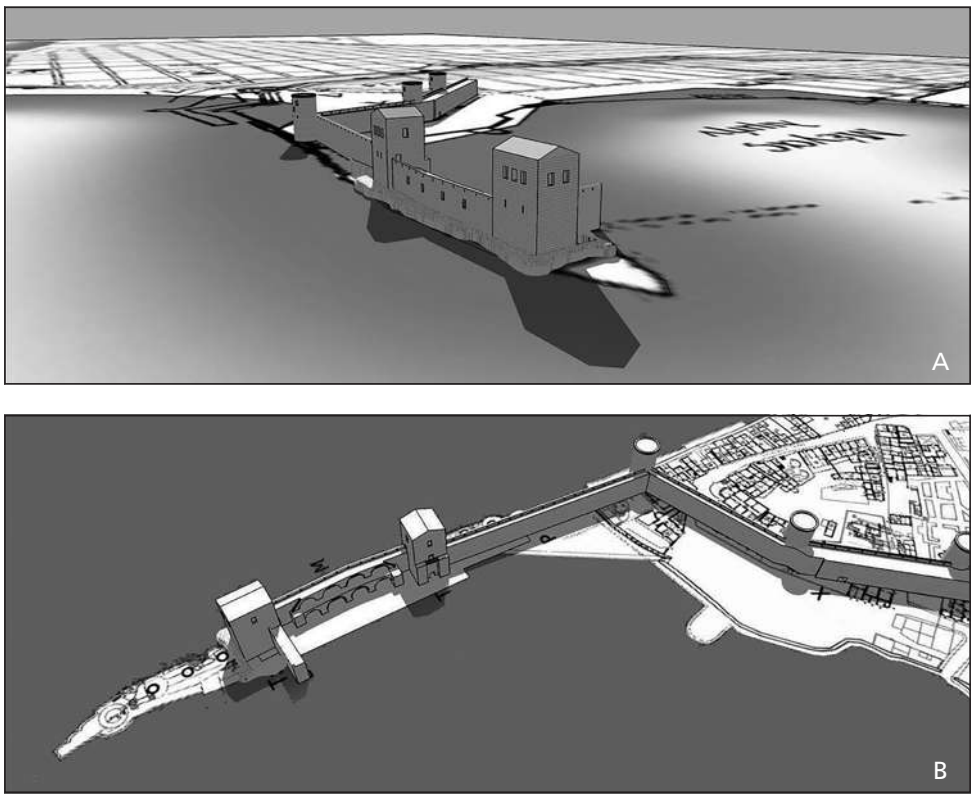


Fig. 4 Graphic restitution of the east mole of the great harbour and the south landward fortification wall of the ancient city of Rhodes. – (K. Manoussou-Ntella, 3D presentation V. Kasseri, 2018).

dock was added[26], which embraced from the west and the north the ancient mole and preserves traces of the foundation of light wooden shelters. The vital area of the unfortified town during the following centuries (4th-7th c.) consists of *insulae* of residential clusters, which expand mainly in contact with the ancient harbours and the trade transaction area, and on the foot of the ancient acropolis, surrounded by the extended ruins of a once illustrious town in decline. The reference points for these clusters are the imposing early Christian churches[27]. The existence of at least eight early Christian basilicas is documented in the city of Rhodes, of which four have been uncovered in their largest part during systematic

26 Kollias, Chamena.

27 Lavvas, Poleis. – Bouras, Cities.

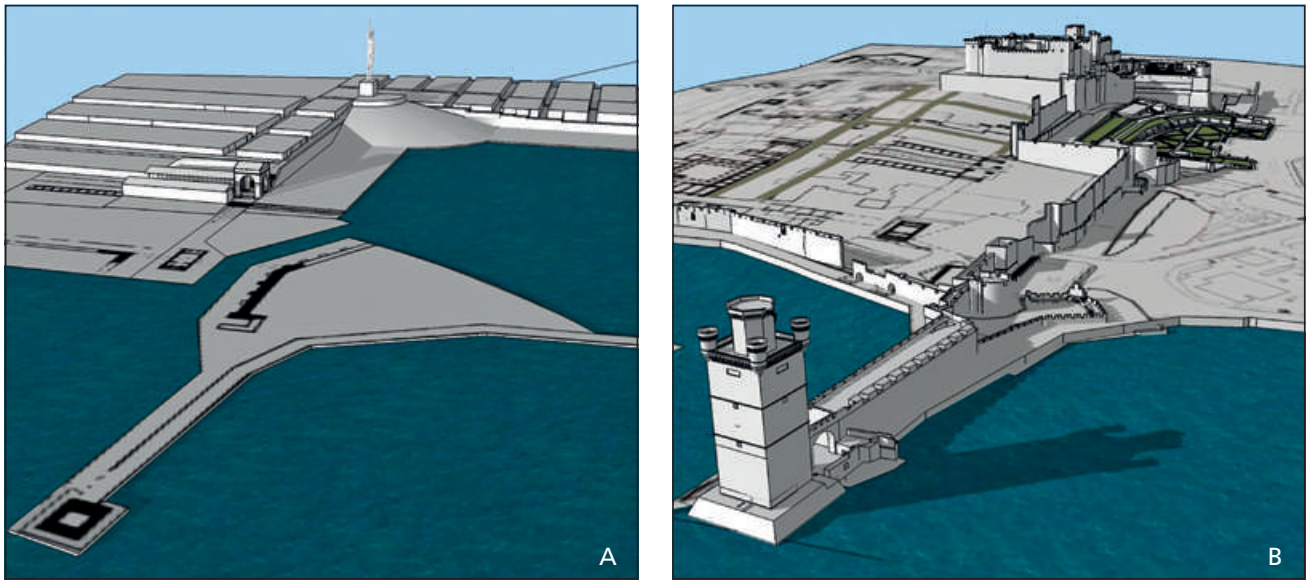


Fig. 5 Graphic restitution of the urban transformations of the area between the two central harbours of the city of Rhodes. – (K. Manoussou-Ntella, 3D presentation V. Kasseri, 2018).

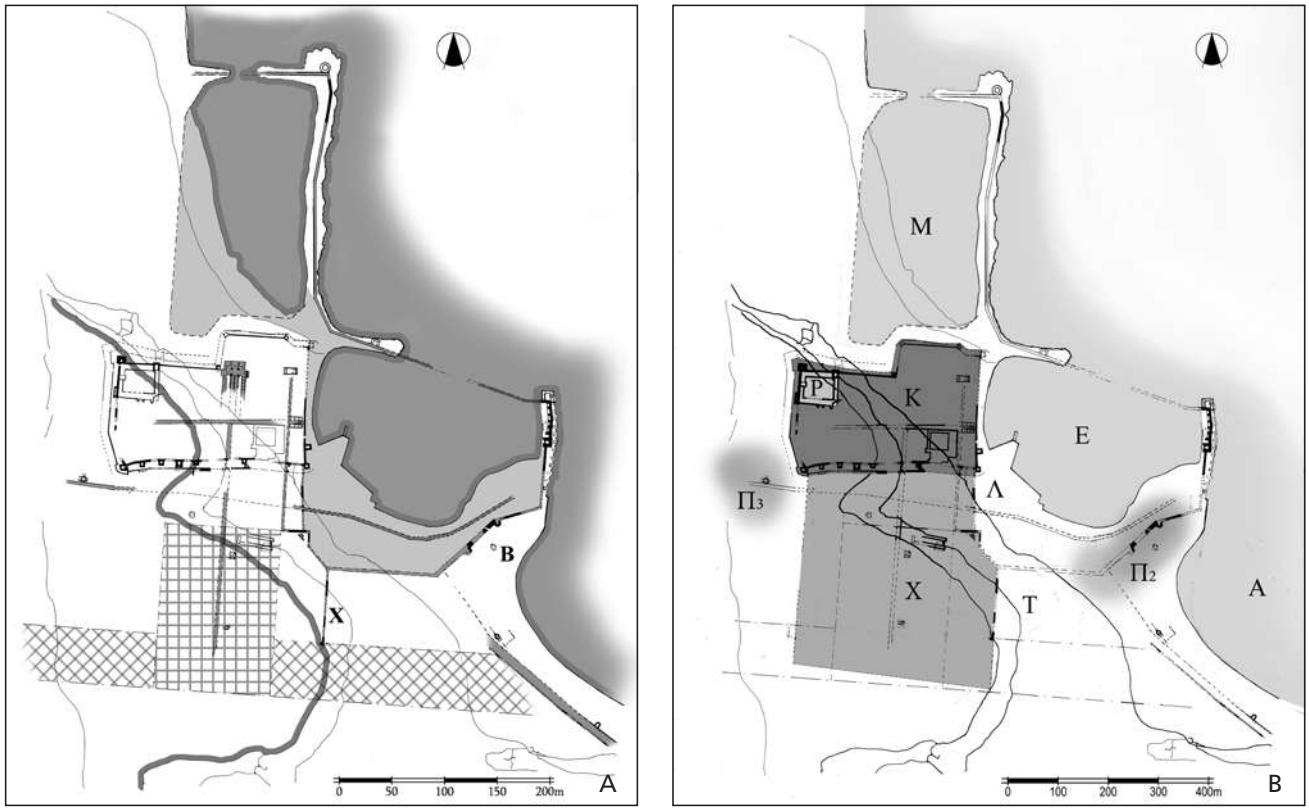


Fig. 6 **A-B** Development of the central area of the walled town of Rhodes from Late Antiquity to Byzantine period. – (K. Manoussou-Ntella, 2018).

archaeological excavations. For the first time, deviation from the axes of the Hippodamean urban planning system is attested in the design of those massive buildings, and even encroachment in some cases over main or secondary ancient roads[28] (**fig. 3B**). The renowned ancient buildings, and mainly the fortification walls, literally turned into quarries for the provision of building material. The great early Christian basilicas of the city of Rhodes date from the 5th century until the

28 Manoussou-Ntella, Stoicheia.

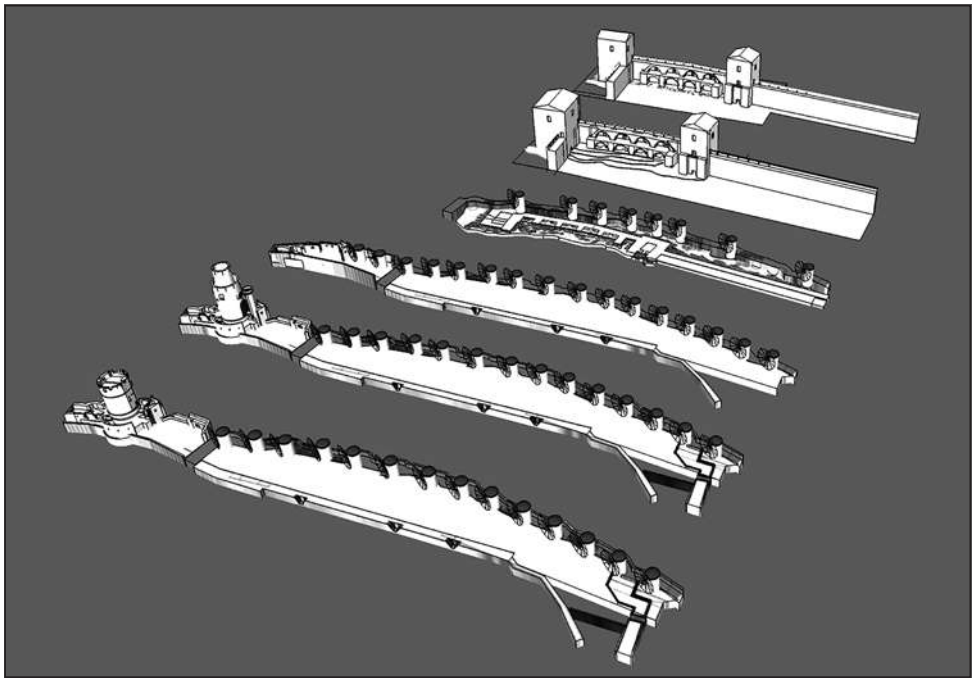


Fig. 7 Transformations of the east mole of the great harbour of the city of Rhodes since antiquity. – (K. Manoussou-Ntella, 3D presentation V. Kasseri, 2018).

Justinian era, while the mid-seventh century witnesses the »end of the basilicas« in the Aegean.

During the Middle Ages, Rhodes was an important »transit town« (»Ville d'accession«)[29] on the route of the pilgrimage to the Holy Land. The very fact that Rhodes was forced to resist the increasing threat of the Egyptian Mamluks and the Ottomans in the 14th and 15th centuries contributed to its becoming a »military town«[30] par excellence. In terms of urban planning, the walled town developed in direct correspondence to the layout and expansion of the successive fortifications that surrounded the town[31] (**fig. 6A-B**).

The main Byzantine nautical route in the north-south direction connects Constantinople with the eastern Mediterranean, Egypt and the coasts of North Africa[32]. The ships sailed alongside the islands of the Aegean – Mytilene, Chios, Samos, Kos – and then reached Rhodes, which was always a major port and a hub for the sea routes that crossed the Mediterranean. From Rhodes, the route system led west to Crete and east to Cyprus, while in the south it followed the course of the high seas to the destination of Alexandria or led east along the coasts of Syria and Palestine[33]. The traffic on this nautical route was particularly intense in the centuries before the appearance of the Arabs in the 7th century AD, which led to the occupation of the southern Byzantine provinces. From the earliest Christian times, a wide network of nautical routes connected Constantinople and the west coast of Asia Minor to the West. The flow of pilgrims and travellers from the West to the East increased from the onset of the Crusades. From the 11th century onwards, there is a strong presence of the great naval forces of the West in the Mediterranean and later in the Black Sea. It is well known that Constantinople was dependent on the Egyptian cereals for feeding its growing population up to the 6th and 7th centuries. The Byzantine State had organized the appropriate services and infrastructure to facilitate the transfer of this valuable cargo[34]. It is natural, therefore, that the main ports on this route, Cyprus, Rhodes, Chios, Tenedos received special care and attention from the administration.

Until the mid-seventh century, all settlements on the islands of the Aegean were unfortified, and Muawiyah's army landed on Rhodes in 653-654 and conquered an unfortified town[35]. It was then that the pilgrimage to the Colossus came to an end and the bronze of the statue was sold to a Jew from Edessa in Syria, who transported it away on 900 camels[36]. Arab historians mention that in 60 AH, which is around AD 682, Gunada, son of Umaya, »conquered Rhodes and built the town«. It is obvious that he means that he fortified the already existing town. Again, according to Arab historical sources, it is then that »an Arab garrison and a colony of 10000 souls who took refuge in its fortress« settled in Rhodes.

29 Lavedan/Hugueney, Urbanisme. – Manoussou-Della, Zones.
30 Fara, Citta.
31 Gabriel, Cité. – Manoussou-Ntella, Poli. – Michaelidou, City 242. – It should be noticed that the »topographical map« (**fig. 12**), that I have already published in Manousou-Ntella, Palati, is republished in this paper without reference to my name.
32 Antoniadis-Bibicou, Études. – Avramea, Epikoinonies. – Karagianni, Ports.
33 Makris, Ploia.
34 Moniaros, Epidromes.
35 Savvides, Rodos. – Papachristodoulou, Istoria 249. – Kasdagli, Nomismata.
36 The events of the sale of the Colossus are described in various source such as Theophanes, Constantine Porphyrogenitus and others.

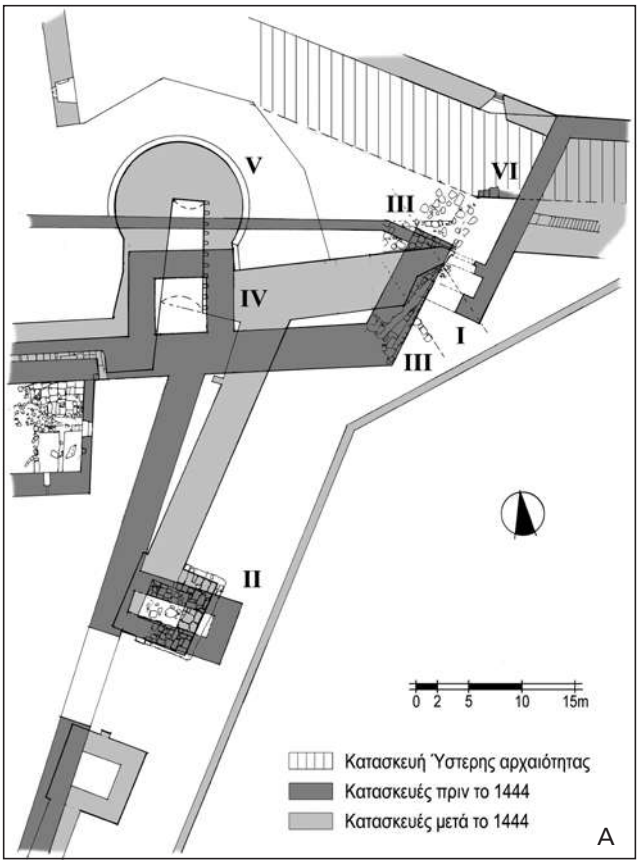


Fig. 8 **A** Graphic restitution of the successive building phases of the NE area of the walled city of Rhodes. – **B** General view of the excavations at St. Paul's Bastion. – (K. Manoussou-Ntella, 2018).

For the first time, it is mentioned that in early Byzantine years Rhodes was furnished with a fortress, obviously in the form of a fortified acropolis, where the population took refuge under threat (fig. 6A). This is the fortress that extended in the strategic location of the Roman town, between the commercial and the military harbour, including the fortified hill on which lay the remains of the Colossus[37].

The integration of the northern wall of the Early Byzantine fortifications disturbed the perceptual image of the region of the ancient »small port« – Mandraki – and was a break in the city's evolution[38], its important functions being now turned to the commercial »great port« of antiquity. To the west, the wall is founded on the enclosure wall of the ancient shipyards, while to the east it shifted in parallel to include the central area of the Roman city's opening to the sea (fig. 6A). Its alignment was identified with the aforementioned section of an ancient wall in the straight line of the central mole of the harbours, the medieval »mole of Naillac«[39]. In this area, the sea could penetrate at least until the end of the 15th century as it appears from the configuration of the Tarsana Knight's Gate[40]. The Byzantine complex of the Arsenal, according to all indications, was included in the walled section of the town, This suggestion is reinforced by the scarce remnants of port installations revealed during the excavations in the wider region: a. in the interior of the Knight's Arsenal warehouse[41], b. in the site of the northern tower of the »Tarsana gate«[42] and c. in the area of the early gateway[43] connecting the two central ports, to the west of the mole of Naillac (fig. 8A-B). A common finding of these excavations is that the fortifications in this area were reconstructed in a totally transformed way during the early period of the knights after a major catastrophic event, most probably an earthquake that resulted in landslide phenomena in this geologically highly vulnerable region.

According to the findings of recent building research, the north-western corner tower, the Akropyrgos (fortress) of the early Byzantine castle, contained in its core a compact stone structure from the Hellenistic period, most probably the base of the Colossus, which thus disappeared forever[44]. We would like to draw attention to the particular morphology of the Early Byzantine towers, whose sides converge slightly upwards, a feature probably due to their Arabian origin[45] (fig. 9A-B). The towers of the castle were built with ancient building material in secondary use, which abounded in the vast area where the ruins of the town of Rhodes lay. As is evident from a Hospitaller document from 1491[46], the basic principle stated in the *Strategikon* of Kekaumenos was applied, according to which there was a perimeter *pomoerium* inside the walls, towards which the entrance gates of the ground floor areas of the towers opened. The scale of the Castle was determined by the need to maintain a small garrison for protection[47], while there were certainly one or more unfortified residential clusters whose inhabitants fled to the Acropolis in times of danger. It is possible that a per-

37 Manoussou-Ntella, Poli. – Gabriel, Colosse. – Hoepfner, Hêlios.
38 Manoussou-Ntella, Thalassies.
39 Manoussou-Ntella, Thalassies fig. 2.
40 Manoussou-Ntella, Thalassies fig. 3.
41 Manoussou-Ntella, Thalassies fig. 3. – Pitilakis et al., Oplothiki.
42 Manoussou-Ntella, Mnimeiaki.
43 Manoussou-Ntella, Mnimeiaki fig. 7.
44 Manoussou-Ntella, Palati.
45 Manoussou-Ntella, Poli. – Moutsopoulos, Poli.
46 Roger, Regards 406-407.
47 Evgenidou, Dokimio.

manent market was still operating along the central Roman axis (*cardo*), to which the central Byzantine gate opened, and continued further south[48]. In the zone free of buildings, outside the gate and the early Byzantine walls (»terra deserta«), there was space available for temporary installations for commercial transactions, later included in the walled late Byzantine »Chora« and developed in the Hospitaller town as »a great public square« (»magna et communis platea«)[49]. Nevertheless, it is certain that along the pre-Hospitaller street axis, known during the Hospitaller period as »via circa mare«, which connected the Byzantine »Marine Gate« with the east mole of the commercial harbour, the trade and financial centre of the 13th century operated, outside the walls of the »Chora«[50] (**fig. 6A-B**)

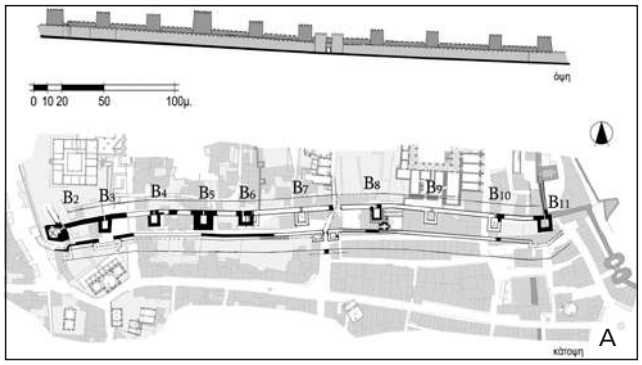
The expansion of the Byzantine town to the south is a result of the era of the Crusades when the strategic location of Rhodes was upgraded. It can be dated with certainty to the end of the 12th or the beginning of the 13th century. The late Byzantine fortification was particularly strong, with abundant use of spolia, even intact ancient walls in great height, and included the central functional zone of the town, with the hill of the ancient agora, into the walled town. It expanded, therefore, within a square measuring 400 m on each side and used the boundaries of ancient streets as foundations[51] (**fig. 6B**). Ancient buildings or statues were preserved in the Byzantine town of Rhodes, as reference points and testimonies to the illustrious past. According to written sources, the Crusaders mentioned in 1191 the preservation of the ancient relics of the town of Rhodes with enthusiasm, comparing it to Rome[52].

Alongside the construction of the fortification wall of the Chora, it seems that during the late Byzantine period the central fortified palace[53] was constructed in the north-west corner of the Acropolis, which served as the administrative seat, the residence of the ruler and the ultimate resort for the civilian population in case of an attack.

Moreover, it is notable that along the seafront wall of the Castle, and also its south landward branch, interventions are evidenced from excavation research that date to the end of the 11th or during the 12th century (**fig. 6A**) These date the construction of the Byzantine Cathedral church of the Virgin of the Castle[54] and the »outer wall« possibly before the construction of the wall of the Chora. This fact also conveys the dynamic character of the Byzantine fortification works, which were transformed and adjusted according to specific needs and requirements of military techniques.

The living space in front of the eastern wall of byzantine Chora was in the immediate vicinity of the end of the monumental zone of the Hellenistic city towards the bay of Akandia[55] and the eastern smooth coast, where the products were easily transported (**fig. 3A**). On the northern front of this area to the centre of the »great port«, probably outside of the ancient fortification, was possibly located the ancient »Deigma«[56], as a place of exhibition of products and all kinds of financial transactions.

In this zone probably some of the necessary installations of the Byzantine harbour had been included, suggestion



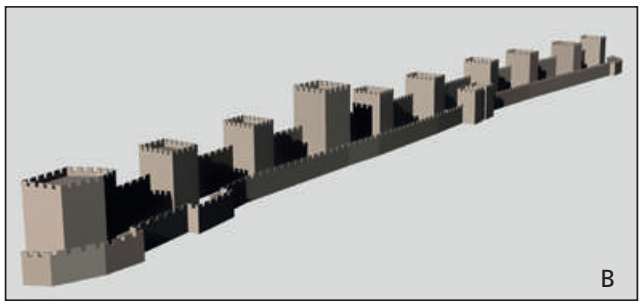


Fig. 9 **A-B** Plan and graphic restitution of the south section of the early Byzantine Acropolis (Collachio) of the city of Rhodes. – **C** View of the remains of the SE early Byzantine tower of the medieval harbour. – (K. Manoussou-Ntella, 3D presentation A. Ntella, 2018).

48 Manoussou/Papavassileiou, Archeologiki.
49 Kollias, Topographika.
50 Manoussou-Ntella, Zones.
51 Manoussou-Ntella, Poli.
52 Torr, Rhodes 6.
53 Manoussou-Ntella, Ochyroseis.
54 Kollias, Ippotes. – Acheimastou-Potamianou, Ekklisia.
55 Manoussou-Ntella, Akandia.
56 Konstantinopoulos, Rodos. – Konstantinopoulos, Plastiki.

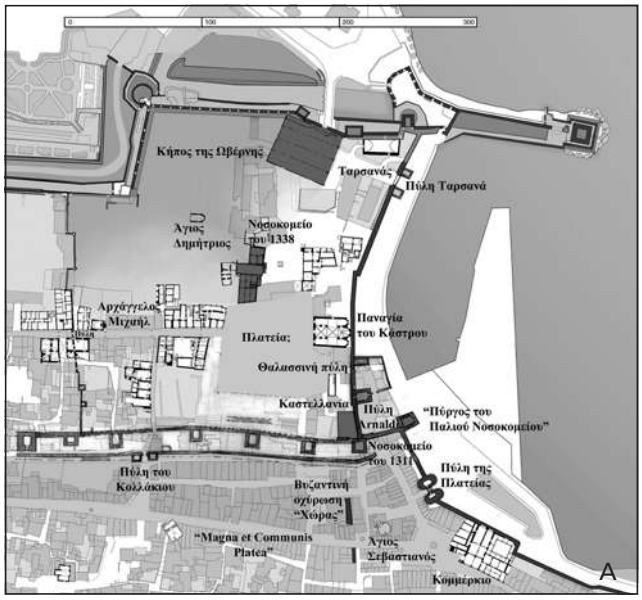


Fig. 10 **A** Plan of the main features of the central area of the city of Rhodes, during the period of the Knights Hospitallers. – **B** View of the actual situation of the *Commerchium*. – (K. Manoussou-Ntella, 2018).

which is reinforced by the integration in this area of the Knight's *Commerchium*[57] (**fig. 10A-B**), the construction of which clearly precedes the expansion of the Medieval Marine Wall around the harbour (**fig. 6A**). The extension of the, initially outside of the fortifications lying commercial axis to the Windmills pier, was attributed mainly to the period of prosperity during the 13th century[58].

In the new form of the town, the eastern pier of the great harbour, after the abandonment of the monumental ancient fortifications with the two massive towers, became exclusively a pier[59].

With reference to the function of the harbour at its east mole, its continuity is documented after the construction of a stone-built dock which surrounded the ancient fortification on the west and the north[60] (**fig. 7**). Wooden quays and stairs as well as wooden shelters were used for the safe anchoring and unloading of the small Byzantine ships. Even in the Byzantine period, particularly after the Crusades, the traffic in the harbour was busy and there was also a second anchorage in the inner part of the large harbour[61], exactly in front of the Byzantine marine gate of the Castle, which is still in use today, known as the »Kolona harbour« (**fig. 10A**). The vital area that was formed at the exterior of the front of the east wall of the »Chora« possibly already included some of the necessary installations for the functions of the harbour, a fact that is also corroborated by the preservation at exactly this spot of the Hospitaller *Commerchium*. Moreover, at the end of the seafront street, which was obviously of commercial character furnished with warehouses, shops etc., is attested the existence of a monumental, pre-Hospitaller or early Hospitaller building (**fig. 4**). Its construction predates the wall[62], while there is evidence for its continuity to the north and a connection to the function of the harbour through a pointed gate that led to the harbour. This is most probably the early building of the customs, the existence of which is testified in a document dating to 1332[63], or an important storage area related to the function of the harbour and the transport of merchandise. The immediate connection of the Byzantine harbour with the production process resulted in the construction of a series of windmills[64] as early as the mid-thirteenth century, founded on the rock configuration protecting the ancient wall, whereupon the mole has been called »mole of the windmills« (**fig. 7**). The circular enclosures of the windmills were connected with arched crossings and formed a strong, fortified front on the eastern, vulnerable side of the pier. An extremely reinforced, 8.00 m thick wall[65] or berth ran in a westerly direction, and initially limited the entrance to the Byzantine harbour. This massive masonry from the early knight's period was »cut« in the straight line of the new west front of the pier from the mid-fourteenth century. During the period of the Grand Master Philibert de Naillac (1396-1421), the fortification of the fixed end of the chain that controlled the entrance to the harbour was integrated at this exact spot.

Finally, in November 1309, three months after the surrender of the town to the Knights of St. John, a notarial deed for the shipment of cloth to Chios was signed on the mole (»apud mod'«)[66], confirming its significance and its constant function.

57 Manoussou-Della, Zones.
58 Gounaridis, Rhodos.
59 Manoussou-Ntella, Thalassies.
60 Anoiktes imeres, Anaskafi. – Platon/Stalidis, Limani.
61 Newton, Travels 149-150. – Gabriel, Cite I 5-6.
62 Manoussou-Ntella, Proimi.
63 Luttrell, Town 183-184.
64 Ntellas, Anemomyloi. – Dimitrokalis, Anemonyloi.
65 Manoussou-Ntella, Thalassies. – Kollias, Chamena.
66 Luttrell, Town.

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Summary / Zusammenfassung

Byzantine Rhodes. The evolution of a fortified harbour-city in the Eastern Mediterranean (4th to 12th c.)

Already with the transformation of Rhodes from the centre of an independent sea power to a Roman provincial city, a significant modification of the Hellenistic urban organisation began. Although the settlement shrank and this process continued after the crisis of the Byzantine Empire in the 7th century, the port of Rhodes remained important and was also secured with appropriate fortifications. On this basis, the Knights Hospitaller were able to expand the city again from the 14th century onwards to the centre of their naval power in the Aegean. Based on new archaeological findings, the dynamics of the structures of the port of Rhodes are discussed.

Byzantinisches Rhodos. Die Entwicklung einer befestigten Hafenstadt im östlichen Mittelmeerraum (4. bis 12. Jh.)

Bereits mit der Verwandlung von Rhodos von Zentrum einer eigenständigen Seemacht zur römischen Provinzstadt begann eine signifikante Transformation des hellenistischen Stadtplans. Wiewohl die Siedlung schrumpfte und sich dieser Prozess nach der Krise des byzantinischen Reichs im 7. Jahrhundert fortsetzte, blieb der Hafen von Rhodos bedeutend und wurde auch mit entsprechenden Befestigungen gesichert. Auf dieser Grundlage konnten die Johanniter ab dem 14. Jahrhundert die Stadt erneut zum Zentrum ihrer Seemacht in der Ägäis ausbauen. Auf der Grundlage neuer archäologischer Befunde wird die Dynamik der Strukturen des Hafens von Rhodos diskutiert.

Marina Papadimitriou

The Harbour of Piraeus in Late Antiquity. New Archaeological Evidence*

Piraeus is a small rugged peninsula jutting into the Saronic Gulf on the north-western coast of Attica, about 11 km to the southwest of Athens (**fig. 1**). According to the previous and present state of scholarship[1], the urban planning of Piraeus as a harbour city was completed in the early 5th century BC (**fig. 2**). Themistocles' urge to establish Piraeus via the erected Long Walls as a major *epineion* of Athens alongside Phaleron[2] (**fig. 3**), capitalized on the physical proximity of the Aegean islands. The Athenian policy from the 5th century BC onwards, including various governing entities until the Roman occupation, aimed for the harbour of the Piraeus to operate as a control post of the Aegean, from the Saronic Gulf up to the Hellespont, from not only a military but also from a financial perspective[3].

The distinctive feature of the topography of the harbour city of Piraeus consists of three natural harbours, all identifiable by their ancient Greek names: Kantharos, the great harbour or the »Megas Limen«, bears a name deriving probably from the basin's shape[4]. On the west side of the Kantharos harbour, a narrow isthmus connects the Megas Limen to Zea, a circular, smaller harbour. On the north-eastern side of the peninsula stands Mounichia, the smallest of the three harbours[5] (**fig. 4**).

According to ancient texts, Zea and Mounichia housed mainly military equipment[6]. In contrast, the Kantharos harbour seems to have served a range of functions over the centuries (**fig. 5**). It displayed major naval infrastructure, including military installations, such as shipsheds, near its entrance at the southeast, as well as facilities for the trade market and active commercial operations. The Kantharos trade facilities (Emporion) consisted mainly of five porticoes (stoas) within the northern and southern parts of the eastern shore of the harbour's basin[7]. The storage and commerce facilities included the Long Arcade (Makra Stoa), the Alphitopolis, a grain-storage and transaction area, and the Diazeugma, an artificially raised, open pier structure used for the ships' unloading, by separating the shipsheds from the main dock and the mooring sites. The north-western bay might be identified with the shallow swampy area described in the texts as the »still harbour« (»Kophos Limen«), which contained the Choma, an assembly place for the crews. Another area reserved for public display of commodities and sampling of products was the Deigma. The north-western side of the basin was enclosed by the fortified promontory of Hiaetionia[8].

All the above-mentioned areas and facilities' names, appear almost exclusively in the written sources[9], since they are seldom visible in the archaeological record, except for a handful of inscribed stones (»Horoi«) determining the area of the mooring sites.

In concordance with the scholarship[10], and considering the archaeological data from the excavation of the Dikastikon Megaron plot[11] (**fig. 6**), the Kantharos was reorganized as the main harbour of the Piraeus after Sulla's sack of the city of Athens in 87/86 BC. This development is attested in an inscription from the Athenian Acropolis, dated to the 1st century BC[12]. The text of the inscription refers to an extensive restoration project of sacred lands and public properties in Athens, Piraeus and Salamis. In the section of the inscription dedicated to the lands and properties of Piraeus, the text mentions that the Deigma had already been restored by a certain Magnus (**fig. 7**). In the same text, reference is made to several facilities related to the function of the harbour, apart

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1 Milchhoefer, Piräeus 23-71. – Judeich, Topographie 375-403. – Panagos, O Peiraieus. – Garland, The Piraeus. – Travlos, PDAA 158. 160. 161. 163 fig. 213. – Eickstedt, Beiträge. – Steinhauer, Arsenal 471-480. – Steinhauer, Archaios Peiraias 9-123. – Løven, Ancient Harbours. – Baika, AHC 447. 455. 478-483. – Grigoropoulos, The Piraeus. – After submitting this paper, the Danish Institute at Athens published a re-evaluated study on the architecture and topography of the shipsheds in the Piraeus: Løven, AHP II.

2 Travlos, PDAA 160.

3 Travlos, PDAA 53. 158. 161. – Bouras, Harbour Network 203. 205 fig. 1.

4 Eickstedt, Beiträge 9-15.

5 Chrysos, ΛΙΜΗΝ – P – H 31-40.

6 Paus. I 1, 2. – Plut., Phocion 28, 3. – Cf. also Culley, Restoration 214. 220-223.

7 Steinhauer, Emporiko 481-487.

8 Hoepfner/Schwandner, Haus und Stadt 12-20, especially 18-20.

9 Garland, The Piraeus. – Eickstedt, Beiträge. – Grigoropoulos, After Sulla 31-38. – Steinhauer, Emporiko.

10 ADelt 30(1975)/Chronika 41-44. ADelt 36(1981) / Chronika 34,36. – Garland, The Piraeus. – Eickstedt, Beiträge. – Grigoropoulos, After Sulla. – Steinhauer, Ippodamos 191-209. – Steinhauer, Emporiko. – Grigoropoulos, Population 164-182. – Grigoropoulos/Tsaravopoulos, Quartier 277-298. – de Graauw APH 246-247.

11 Hoepfner/Schwandner, Haus und Stadt. – Grigoropoulos, After Sulla 261-272 (Appendix 3).

12 IG II² 1035: Culley, Restoration 211-215, especially 214 pl. 49.

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from the stoas in Kantharos, including the dry docks, where ships were hauled to land to be caulked, and the chain barriers, which were used to cordon off the harbour entrances. Reference is also made to the existence of Neoria in the Kantharos harbour, though, since this is, according to Grigoropoulos[13], an umbrella term used in antiquity for facilities of variable function, it is not clear whether this refers to shipsheds or shipyards. Rescue excavations have brought to light part of the commercial neighbourhood near the presumed Deigma area[14], providing substantial evidence that this aspect of the character of the main Athens out-port was not passive throughout the Roman and Late Roman periods (**fig. 8**)[15].

During the excavations (**fig. 9**) of the Ephorate of Antiquities of Piraeus and Islands for the construction of the TRAM line in Piraeus (**fig. 10**), running out from March until June 2016, we detected archaeological remains within a plot at Ethnikis Antistaseos 2 Street and Makras Stoas Street (**fig. 11**). According to the stratigraphic record, the archaeological data are as follows:

a. Inside the plot, a line of three (**figs 10-11**) undisturbed stone blocks was found with pottery sherds dated to the 4th and 3rd centuries BC.
b. Two disturbed stone blocks (**fig. 12**) formed Walls 9 and 10, respectively. In the area between them, 14 coins assigned to Constantine I and Gratianus were found, along with parts of bronze objects. Their current state of preservation does not allow us to present them here in full.
c. In the southern outer perimeter of the remaining architectural structure a coin of Julian was found (**fig. 13**), dated AD 362-363 (Antioch mint).
d. A well that served as a deposit and contained pottery vessels from the Hellenistic to late Roman period was found on the mounting of an oblong stonewall (**figs 14a-c**). The well was sealed at the top with pottery from the Roman/Late Roman period (**figs 15a-c**).

In this context, the following findings were also stratigraphically detected:

a. A part of a cistern at the west end of the excavated plot, with an extant height of 1.63 m (**fig. 16a**). The cistern consists of middle-sized limestones, plaster, and mortar, and bears traces of trowel use. It was disturbed from drain works in the 1950s (**figs 16b-d**).

According to Koder's definition[16], the discovery of a cistern is one of the elements of a qualitative Byzantine port facility; a cistern serves to collect and store a sufficient amount of water to replenish the water supply for the crews. The layout of the construction of this cistern correlates with that of the cistern found during the excavations for the New Acropolis Museum dated to the 6th century AD.

b. An oblong stonewall was directed north-west to south-east (**figs 17a-b**).
c. A second stonewall was found on the south-east end along the axis east-west.

These two walls consist of limestones, plaster, and sporadic bricks impact into the masonry, forming a Gamma-shaped type of construction. The layout of the walls shares common features with the stone work at Zachloritika of Aigialeia in Achaia (**fig. 18a-b**)[17].

d. A semi-circular wall (**fig. 19**), consisting of limestones, plaster, and bricks impact into the masonry.

The examination process of the plaster samples (**fig. 20**), taken to the Laboratory of the Department of Technical Research for Restoration[18], revealed that the compound between the inert material and the plaster is rated fulfilling (1 to 3 ratio).

According to the existing plans, the archaeological remains stand at the north-eastern corner of the Kantharos basin, close to the land-boundary enclosure of the ancient Kantharos harbour (**fig. 21**).

Within the Gamma-shaped enclosure formed by the limestone walls, an extensive destruction layer was discovered (**fig. 22**); the overarching category of the archaeological material belongs to pottery sherds of Late Roman/Early Byzantine date. Overall, the material is comprised of the following categories:

- copper coins,
- small handleless bowls[19],
- one cross-type handle of a multi-nozzled lamp (**fig. 23**)[20],
- parts of iron nails,
- glass sherds, not only from vessels, but also from windows[21], and
- cover of amphorae[22].

One amphora find (OM 3119: **figs 24a-b**) shares common features with amphorae types[23]. Its most distinct features

13 Grigoropoulos, The Piraeus.
14 Steinhauer, Archaios Peiraias 9-123.
15 Eickstedt, Beiträge 62-68. 278. 285.
16 Koder, Byzantio 104.
17 Koumousi/Theodoropoulou, Zachloritika 39 fig. 18.
18 Ministry of Culture and Sports, Directorate of Restoration of Byzantine and Post-Byzantine Monuments, Laboratory of the Department of Technical Research for Restoration, Themistoklis Vlachoulis, Director, Aikaterini Kastelanou, Head of the Department of Technical Research for Restoration, Ourania Tserpeli, Chemical Engineer, Department of Technical Research for Restoration.
19 Similar bowls have been found in Zachloritika of Aigialeia/Achaia (Greek Ministry of Culture and Sports, Ephorate of Achaia, formerly Sixth Ephorate of Byzantine Antiquities, »Eleusis-Corinth-Patras Road Axis«-Project: Koumousi/Theodoropoulou, Zachloritika 129-130.
20 A stone mold bearing a similar motif was found during the excavation of an Early Christian (5th to 7th century AD) settlement at Kardamaina, on the southern shore of the island of Kos: Kalopissi-Verti, Kardamaina 245-252.
21 Similar fragments of windows have been found in Gortyn: Baldini et al., Gortina 587 fig. 2.
22 For similar covers from sites in Albania and Italy see Pieri, Commerce 78.
23 Pieri, Commerce 78.

are the acute arched handles and the short neck, which are observed among the group of amphorae type LRA 2. Based on typological parallels[24], this type of amphora is dated from the 4th to the 6th century AD. In a preliminary examination, the amphora from the Piraeus excavation comes close to the LRA 2A amphora type. LRA 2 amphorae were produced in the Aegean islands and the Saronic Gulf (Halieis and Kounoupi in the Hermionid[25] (**fig. 25**), and range in date from the 4th to the 6th century AD.

Apart from Argolis, the existence of pottery workshops is attested in the town of Dilesi on the east coast of Boeotia[26]. A possible local pottery production for LRA 2B amphorae has also been suggested for the city of Megara[27]. More specifically, the stratigraphical data indicate that the amphora from the Piraeus can be dated not later than AD 530, due to the finding of a half *follis* coin of Emperor Justinian I (**figs 26a-b**).

The use of this particular type of amphora for the transport of goods, both for regional trade and for non-commercial purposes, such as the *annona militaris*[28], increased from the 5th to the mid-6th century AD, especially within the Lower Danube area (as it is attested in cities and fortifications), Britain (in fortifications), on the Crimean peninsula, and in the Aegean Sea[29]. Another example of this particular type of amphora, recently presented at the Symposium of the Christian Archaeological Society, comes from the excavation undertaken by the Ephorate of Antiquities of Larisa in collaboration with the University of Thessaly at the fortified settlement of Velika in Larisa, Thessaly[30].

Findings in this area of Piraeus (**fig. 27**), dating from the 4th to the 6th century AD, were discovered in the past during rescue excavations by the Greek Archaeological Service, namely in Kolokotroni 118 Str. (part of a bath installation), and in Vassileos Konstantinou and Philellenon Str. (the Dikastikon Megaron plot)[31]. The extension of the excavation in Poseidonos Shore (Akte Poseidonos) and in Miaoulis Shore (Akte Miaouli), where a platform was discovered, shed light on the function of the harbour of Piraeus during the period examined and after. The findings in the area of the platform should be re-evaluated concerning the text of St. Nikon the Metanoeite[32] (10th century AD), upon his arrival (κατάπλους) in Athens and Piraeus travelling from Damala, Troizen[33].

The extant stratified archaeological remains from the excavations for the construction of the TRAM line in Piraeus are oriented towards the sea, at the cove of one of the oldest harbours of the Mediterranean Sea[34]. The type of evidence, unearthed at this part of the Piraeus harbour, enables us not only to map the duration and extension of the use of the harbour of Kantharos in Late Roman times, but also to constitute parts of the monumental topography of Piraeus in Early Byzantine times. The mention of the harbour of Piraeus in the written sources[35] establishes one more focal point for its function from the 4th century AD onwards.

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24 Pieri, Commerce fig. 45.
25 Zimmermann Munn, Hermionid 342-343.
26 Gerousi, Dilesi figs 5-8.
27 Korosis, Transport 305-311.
28 Rizos, Centres 687-689 fig. 29.
29 Karagiorgou, LR2 129-166. – Goutziokostas/Moniaros, Quaestura esp. 18. 25. 110-125.
30 Sdrolia, Velika. I would like to thank Sofia Didioumi, for allowing me to refer to this find.
31 ADelt 36(1981)/Chronika 34. 36. – See also ADelt 30(1975)/Chronika 41-44.
32 Life of Nikon 27-270. – Cf. also Lampsides, Nikon 14-158. 161-240.
33 Oikonomidis, Monachismos 29-35.
34 Baika, AHC 447. 455. 478-483. – Sophou, Chartis 255-258, pls. 112-113.
35 Zosimus Hist., Historia nova Book 2, Chapter 23, Section 2, Line 2: Τοῦ δὲ ναυτικοῦ, καθάπερ εἴρηταί μοι, τοῦ μὲν Πειραιῶς ἐκπλεύσαντος εἰς δὲ Μακεδονίαν ὁρμιζομένου μεταπέμπεται τοὺς ναυάρχους ὁ Κωνσταντῖνος, […] – *op. cit.* Book 5, Chapter 5, Section 8, Line 5: […] ῥᾷστα τὴν πόλιν οἰόμενος ἑλεῖν διὰ τὸ μέγεθος παρὰ τῶν ἔνδον φυλαχθῆναι οὐ δυναμένην, καὶ προσέτι τοῦ Πειραιῶς ἐχομένου σπάνει τῶν ἐπιτηδείων μετ' οὐ πολὺ τοὺς πολιορκουμένους ἐνδώσειν. *op. cit.* Book 2, Chapter 22, Section 3, Line 4: ἐκ τοῦ Πειραιῶς τὰς ναῦς μετεπέμπετο, κατὰ τὸ πλέον ἐκ τῆς Ἑλλάδος οὔσας, […] – Const. VII Porph. De virtutibus et vitiis Vol. 2, Page 277, Line 25: τοὺς δὲ ὑφ' αὑτῷ διαφθείρων καὶ παρασκευάζων χρημάτων δεῖσθαι πολλῶν, καὶ μάλιστα καὶ ἐς τὴν πολιορκίαν τοῦ Πειραιῶς. – Niceph. Gregoras, Historia Romana Vol. 1, Page 311, Line 13: ὥσπερ ἂν εἴ τις ἐκ τοῦ Πειραιῶς τὸν ἀπόπλουν ἐς τὸν Αἰγαῖον ποιεῖσθαι ἐβούλετο, […].

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Summary / Zusammenfassung

The Harbour of Piraeus in Late Antiquity. New Archaeological Evidence

While the harbours of Piraeus constituted one of the most impressive port complexes of antiquity, its significance changed with the transformation of Athens to a Roman provincial town. New archaeological evidence, however, presented in detail in the present paper, allows for a re-evaluation of the dynamics of Piraeus and its harbour facilities in the early Byzantine period between 4th and 6th centuries AD.

Der Hafen von Piräus in der Spätantike. Neue archäologische Befunde

Während die Häfen von Piräus einen der beeindruckendsten Seeverkehrskomplexe der Antike darstellten, änderte sich seine Bedeutung mit der Umwandlung Athens in eine römische Provinzstadt. Neue archäologische Belege, die in der vorliegenden Arbeit vorgestellt werden, ermöglichen eine Neubewertung der Dynamik von Piräus und seiner Hafenanlagen in frühbyzantinischer Zeit zwischen dem 4. und 6. Jahrhundert n. Chr.

Fig. 1 Drawing map of the Piraeus peninsula. – (From Milchhoefer, Piräeus pl. III).

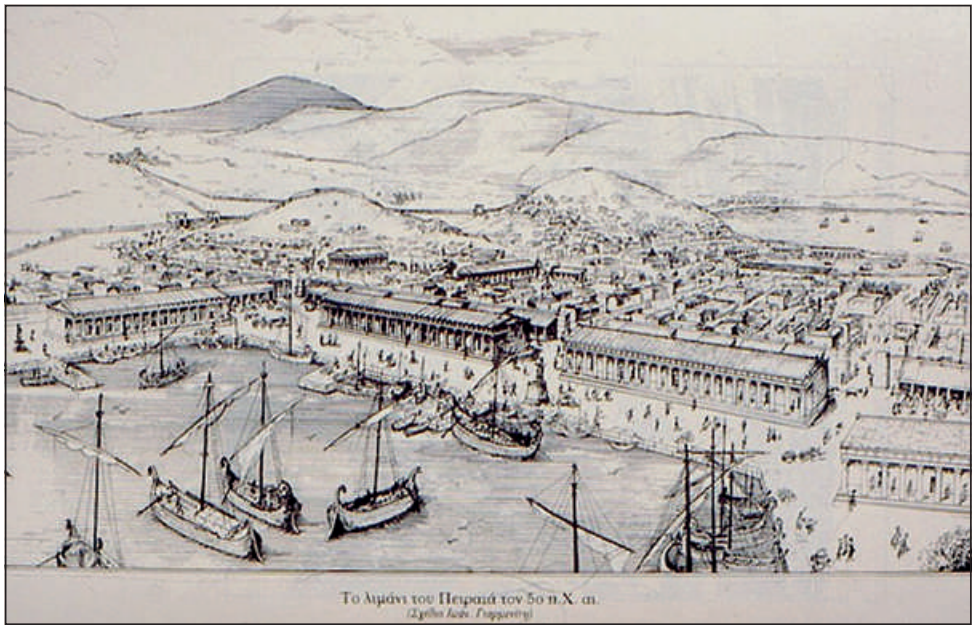

Fig. 2 Reconstruction of the merchant harbour-emporion at the Kantharos in the 5th century BC. – (From Panagos, O Peiraieus 1968).

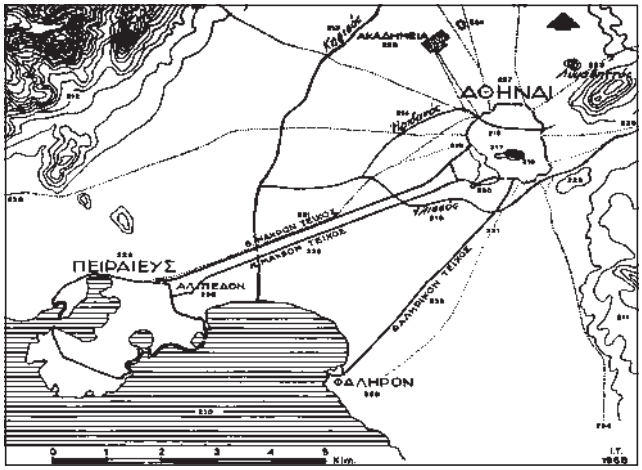

Fig. 3 The Long Walls between Athens and Piraeus in the 5th century BC. – (From Travlos, PDAA fig. 213).

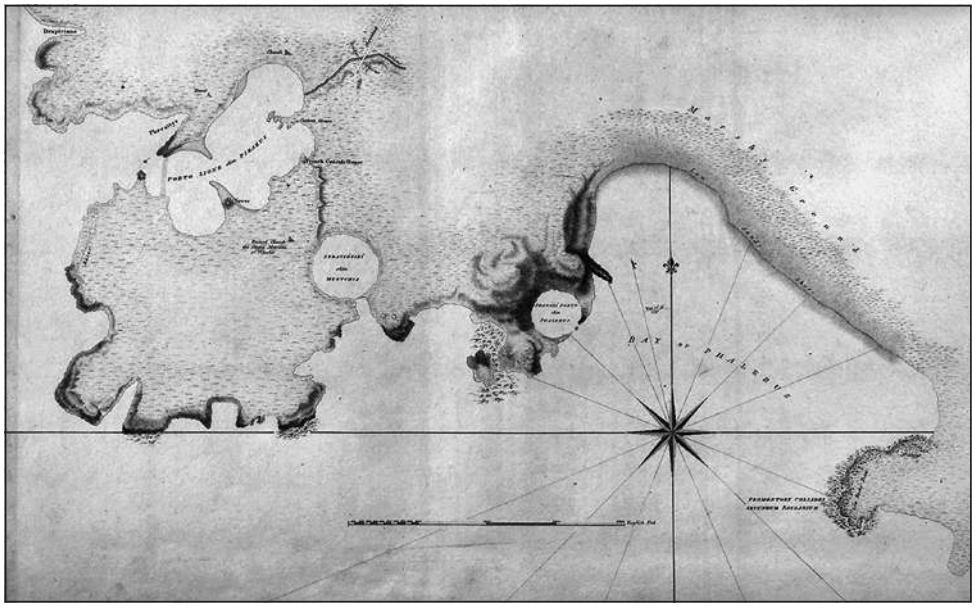

Fig. 4 Map of Piraeus by Stuart & Revett. – (From Stuart/Revett, Athens 61).

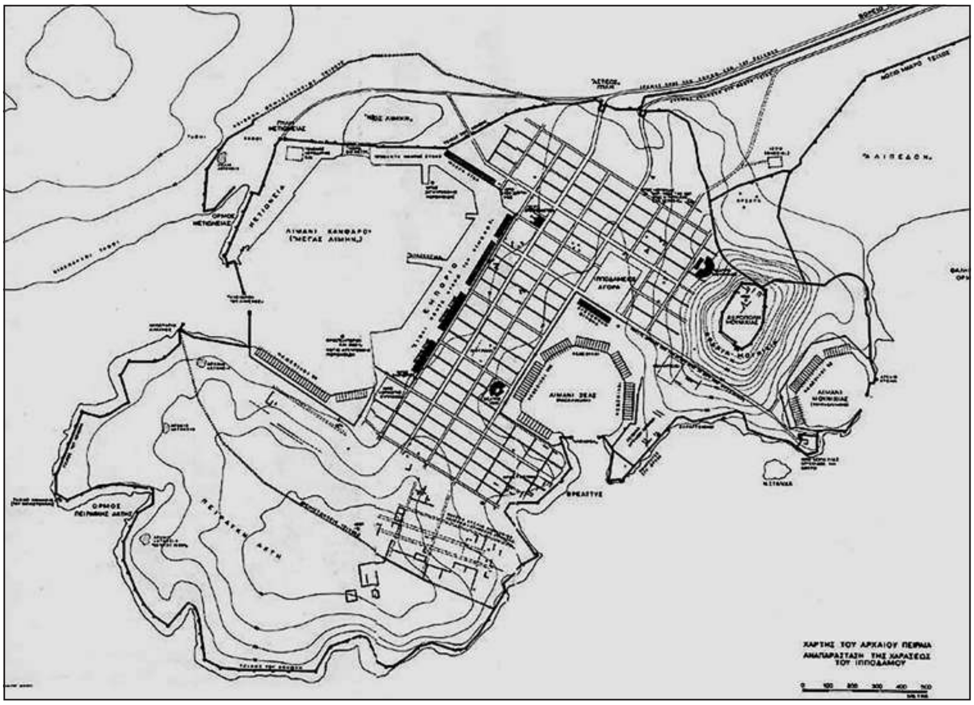

Fig. 5 Plan of the ancient city of Piraeus. – (From Papachatzis, Ta Attika 100-101).

Fig. 6 General view of the Dikastikon Megaron site from the East, shortly after the excavation (Vassileos Konstantinou and Philellenon Street). – (Courtesy of the Archive of the Ephorate of Antiquities of Piraeus and the Islands).

[– – – – – – –] Π[ειρ]αιέως παρ' ἱπποσίας τὰς π[ρ]ὸ[ς] τὴν 'Ακτήν · ' ψιλὰ [τὰ π]ροσόντα τῶι Διονυσιείωι καὶ τὰ προσόντα

[– – – – – – –] τὸ ἀρχαῖον βουλευτήριον · ' ψύκτρας τὰς πρὸς τ[ο]ῖς νεωρίοις τοῦ λιμένος τοῦ ἐν Ζέαι πρὸς τοῖς κλεί-

[θροις – – – – – – –] στρατήγιον τὸ ἀρχαῖον · ' τέμενος 'Αγαθῆς Τύχης · ' ψιλὸν τὸ ἀνειμένον τῶι ἀρχαίωι θεάτρωι · ' ψιλὰ τὰ

[προσόντα – – – – – – – ἱερὸν 'Αθηνᾶς? 'Ε]ρκάνης ὃ ἱδρύσατο Θεμιστοκλῆς πρὸ τῆς περὶ Σαλαμῖνα ναυμαχίας · ' ψύκτρας τὰς ἐν τῶι μεγάλωι

[λιμένι – – – – – – – ἀπὸ τοῦ μέρους] τοῦ περικλειομένου τοῖς νεωρίοις καὶ τῶι 'Αφροδιτίωι καὶ ταῖς στοαῖς μέχρι τῶν κλείθρων · '

[– – – – – – – –] ἀπὸ τοῦ δείγματος τοῦ ἀνατεθέντος ὑπὸ Μάγνου καὶ τὸ προσὸν ὕπαιθρον, ὅπου τύποι καὶ '

[μέτρα καὶ σταθμὰ κεῖνται – – – – – – τέμενος τὸ π]αρὰ τὰ μακρὰ τίχη 'Αθηνᾶς Πολιάδος . ' τέμενος 'Αγαθῆς Τύχης · ' τεμένη Θησέως · ' τέμενο-

[ς – – – – – – – – –] πρὸς 'Υμηττῶι καὶ τὰ προσόντα μέταλλα καὶ τὸ διόδιον τῆς λιθοτομίας · '

[– – – – – – – – – –] ἀφέσεις τὰς ἀπὸ τῶν ὑσπλήγων τοῦ Παναθηναϊκοῦ σταδίου καὶ τὰ ὑπὸ

]– – – – – – – – – – τ]έμενος 'Αθηνᾶς [Λ]αμπτρᾶσι τὸ λεγόμενον Δορύκλειον · vacat

[– – – – – – – – – καθιερωθ]ὲν κατὰ χρησμὸν καὶ τὸν οἰκοδομηθέντα τόπον πρὸς τῶι βωμῶι · ' 'Υακίνθιον

[– – – – – – – – – – ὅπου] πρὸ τῶν προβολῶν θύουσιν ἥρωι Στρατηγῶι · ' ἱερὸν Εὐκλείας καὶ Εὐνομίας ·

Fig. 7 Inscription IG II², 1035. – (From Culley, Restoration 214).

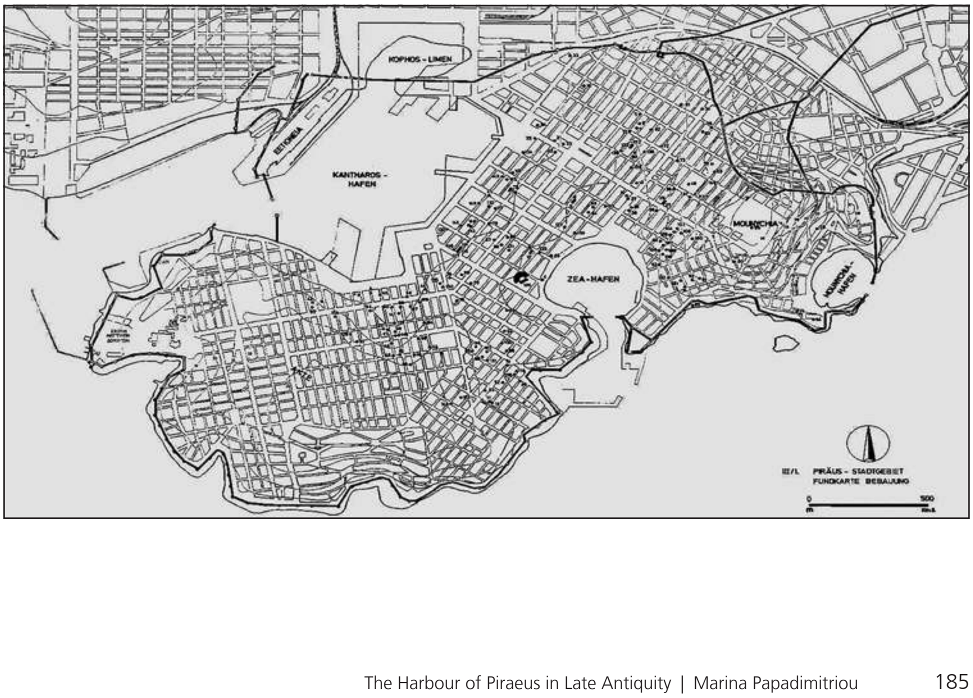

Fig. 8 Plots/sites with building remains dating between the Classical and the Late Roman period from Piraeus. – (From Eickstedt, Beiträge folding map 2).

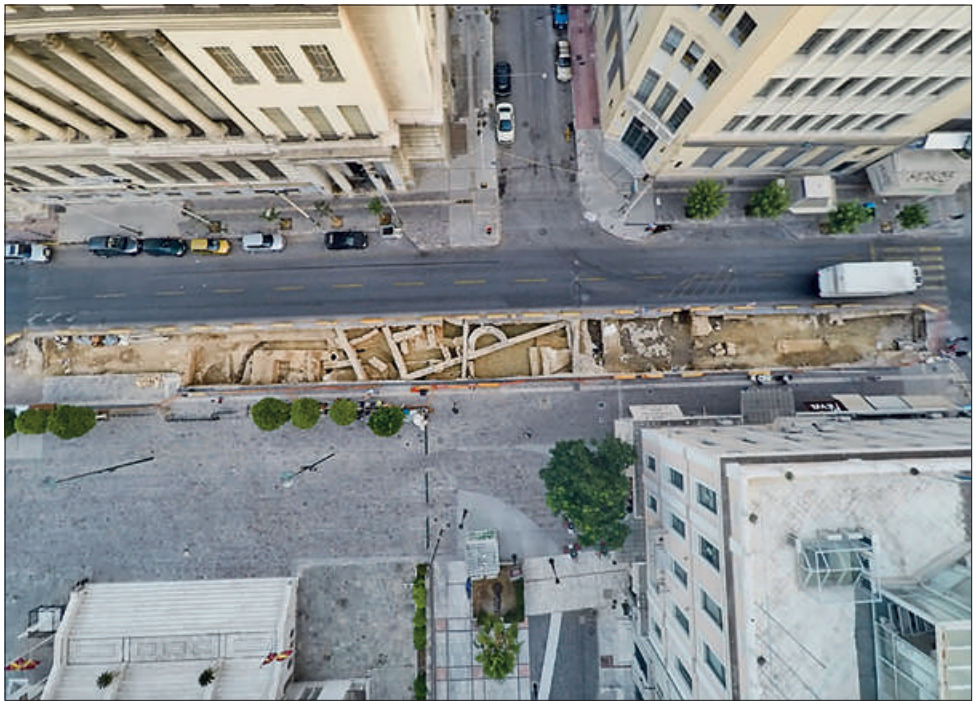

Fig. 9 Aerial view of the Ehtnikis Antistaseos 2 Street and Makras Stoas Street excavation site. – (Courtesy of the Ephorate of Antiquities of Piraeus and Islands / All drone photographs were taken by G. Asvestas).

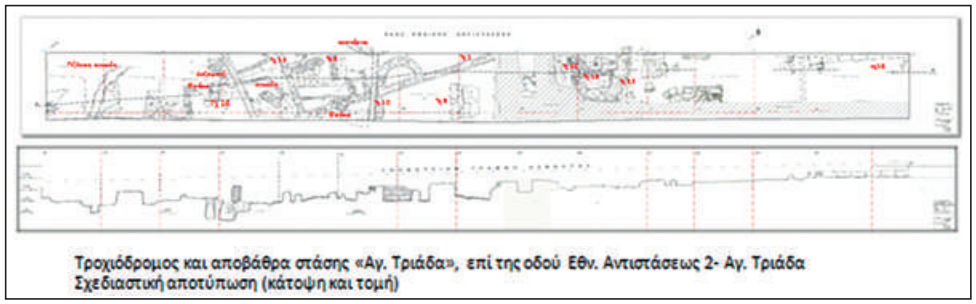

Fig. 10 General site plan drawing of the Ehtnikis Antistaseos 2 Street and Makras Stoas Street site. – (Courtesy of the Ephorate of Antiquities of Piraeus and Islands / Architects Ph. Apostolika, Th. Ioannidou / Drawer A. Mavraki).

Fig. 11 General view of the Ehtnikis Antistaseos 2 Street and Makras Stoas Street excavation site. – (Courtesy of the Ephorate of Antiquities of Piraeus and Islands).

Fig. 12 Wall 15. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018).

Fig. 13 **A** coin of Julian, AD 362-363, Mint of Antioch (obverse). – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018). – **B** coin of Julian, AD 362-363, Mint of Antioch (reverse). – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018).

Fig. 14 **A** well. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018). – **B** well, wall 1. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018). – **C** architectural drawing of the well. – (M. Papadimitriou / I. Lassithiotake, Architect / Ephorate of Antiquities of Piraeus and Islands, 2018).

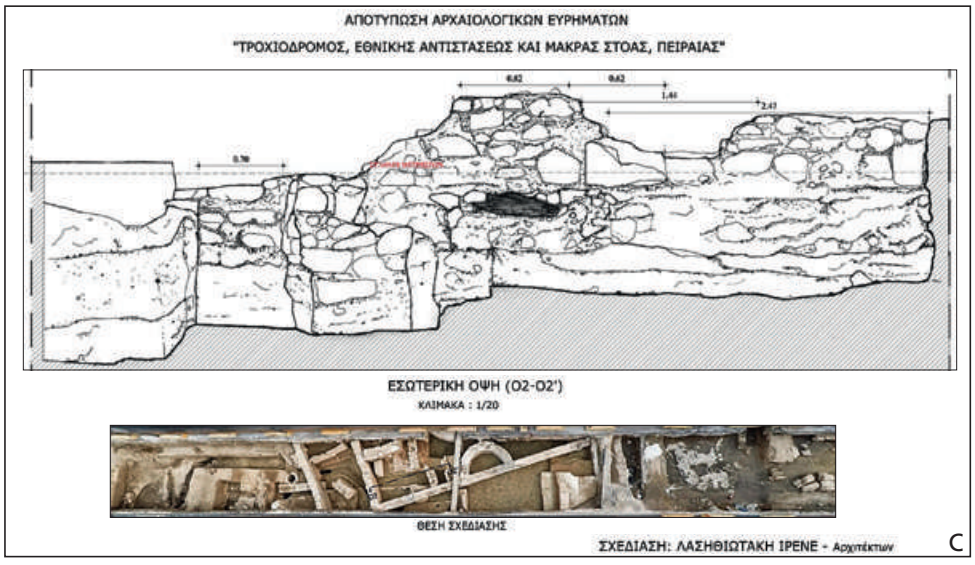

Fig. 15 **A** Well and deposit. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018). – **B** Well and deposit (detail). – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018). – **C** Pottery sherds of Roman/Late Roman period. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018).

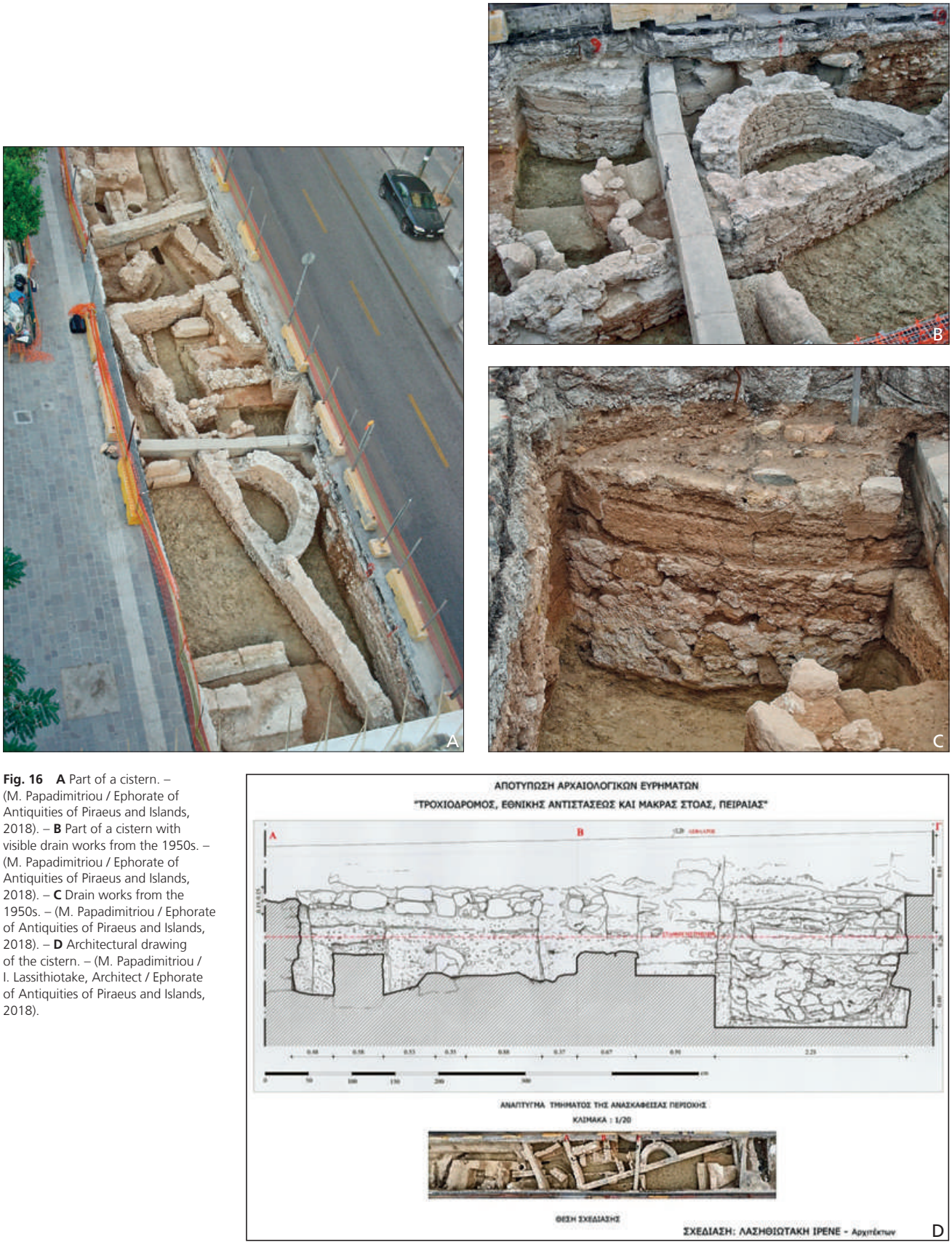

Fig. 16 **A** Part of a cistern. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018). – **B** Part of a cistern with visible drain works from the 1950s. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018). – **C** Drain works from the 1950s. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018). – **D** Architectural drawing of the cistern. – (M. Papadimitriou / I. Lassithiotake, Architect / Ephorate of Antiquities of Piraeus and Islands, 2018).

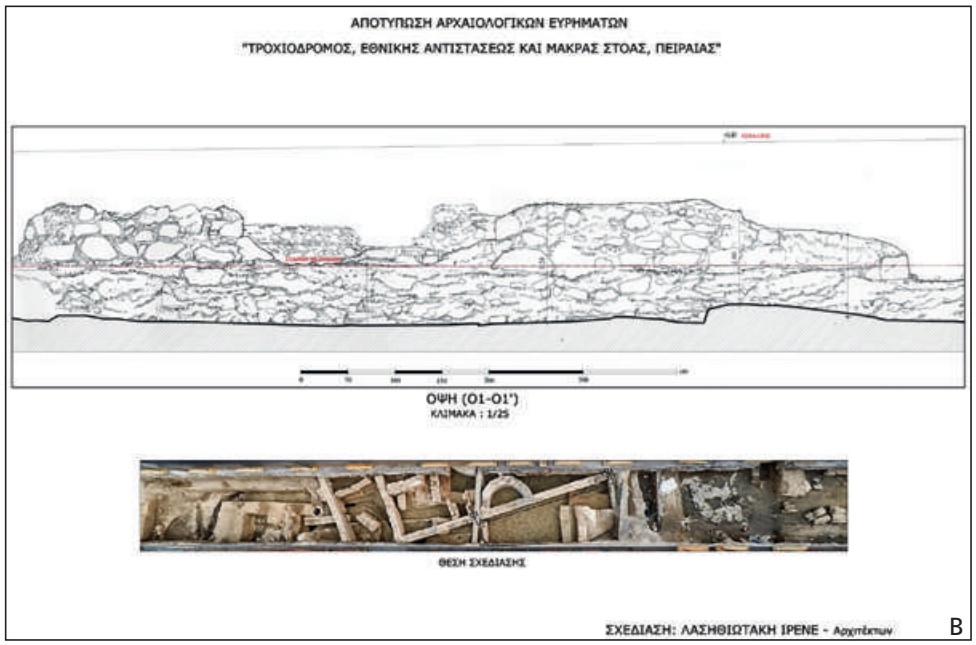

Fig. 17 **A** Oblong stone wall. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018). – **B** Architectural drawing of the oblong stone wall. M. Papadimitriou / I. Lassithiotake, Architect / Ephorate of Antiquities of Piraeus and Islands, 2018).

Fig. 18 **A** Oblong stone wall. Extant length 16,80 m. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018). – **B** Zachloritika of Aigialeia, Achaia, stone work (detail). – (From Koumousi / Theodoropoulou, Zachloritika fig. 18 / Ephorate of Antiquities of Achaia (formerly 6th Ephorate of Byzantine Antiquities).

Fig. 19 Semi-circular wall. Width 0.65 m, extant height 1.31 m. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018).

Fig. 20 Plaster samples. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018).

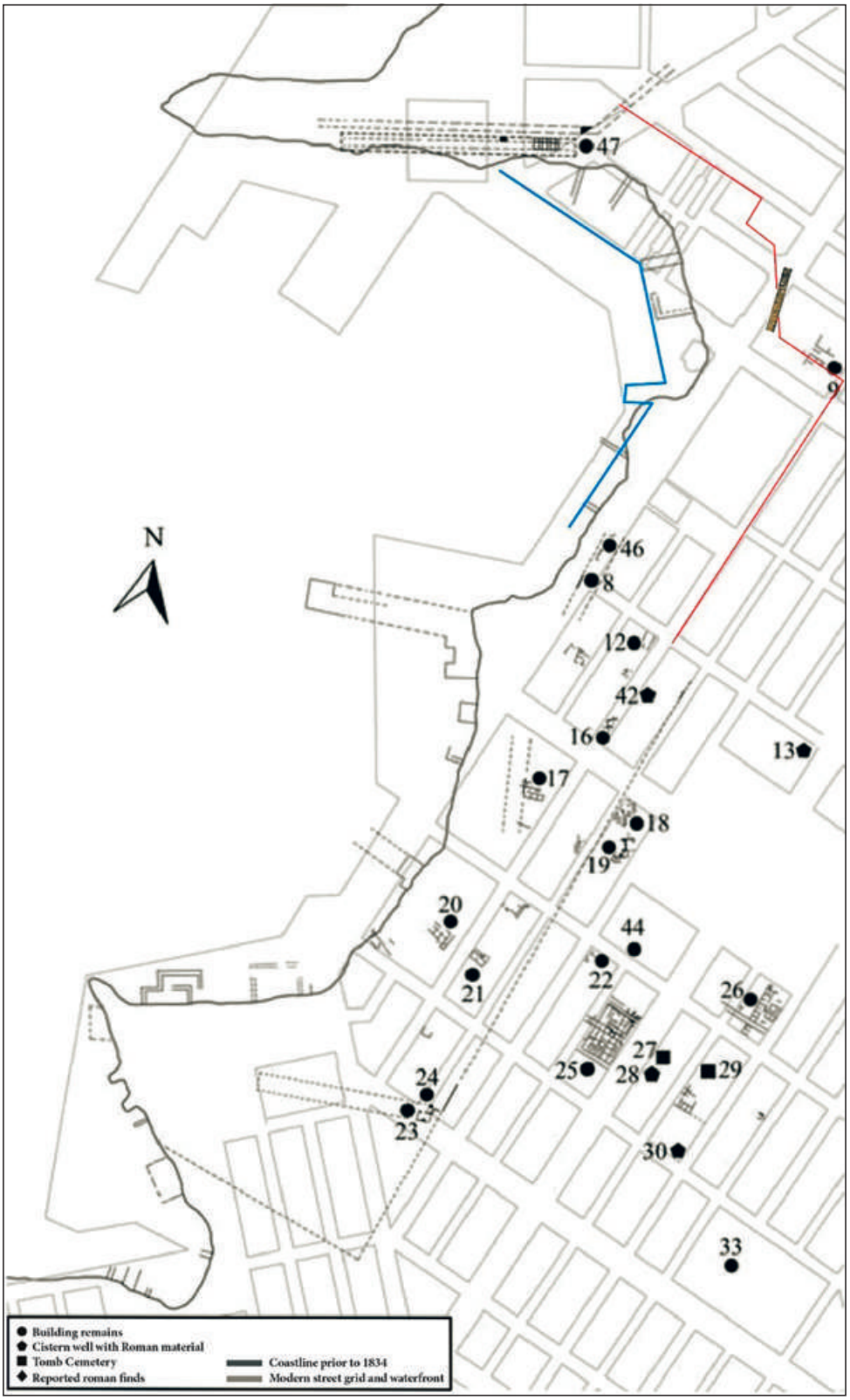

Fig. 21 Architectural remains in Ethnikis Antistaseos 2 Street. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018, after Grigoropoulos 2016, 251 fig. 5, based on Steinhauer, Archaeios Peiraias).

Fig. 22 The destruction layer. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018).

Fig. 23 Cross-type handle of a multi-nozzled lamp. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018). – Scale 1:1.

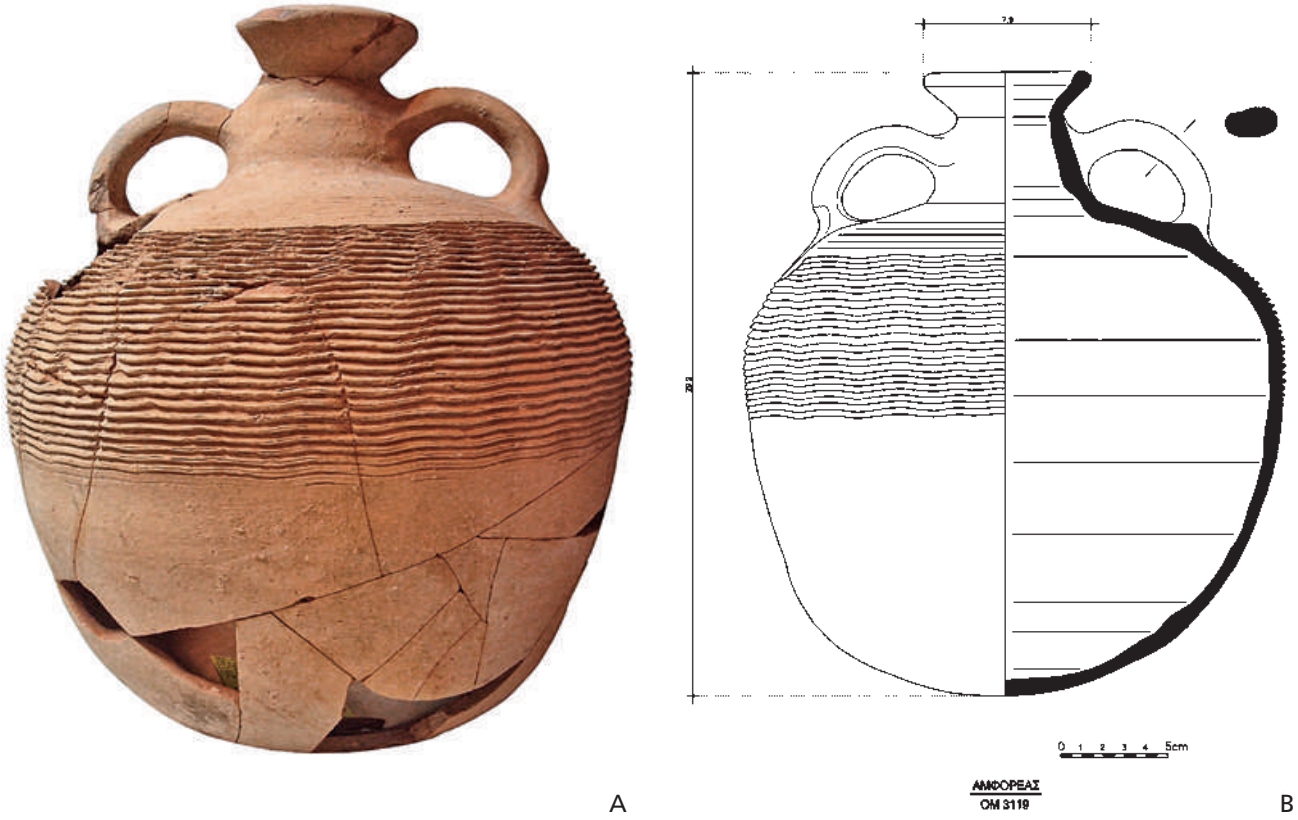

Fig. 24 **A** The OM 3119 amphora. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018). – **B** Drawing of the OM 3119 amphora. – (Courtesy of Anastasia Mavraki / Ephorate of Antiquities of Piraeus and Islands).

Fig. 25 Map. – (M. Papadimitriou, 2018).

Fig. 26 **A** The Justinian half follis (obverse). – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018). – **B** The Justinian half follis (reverse). – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018).

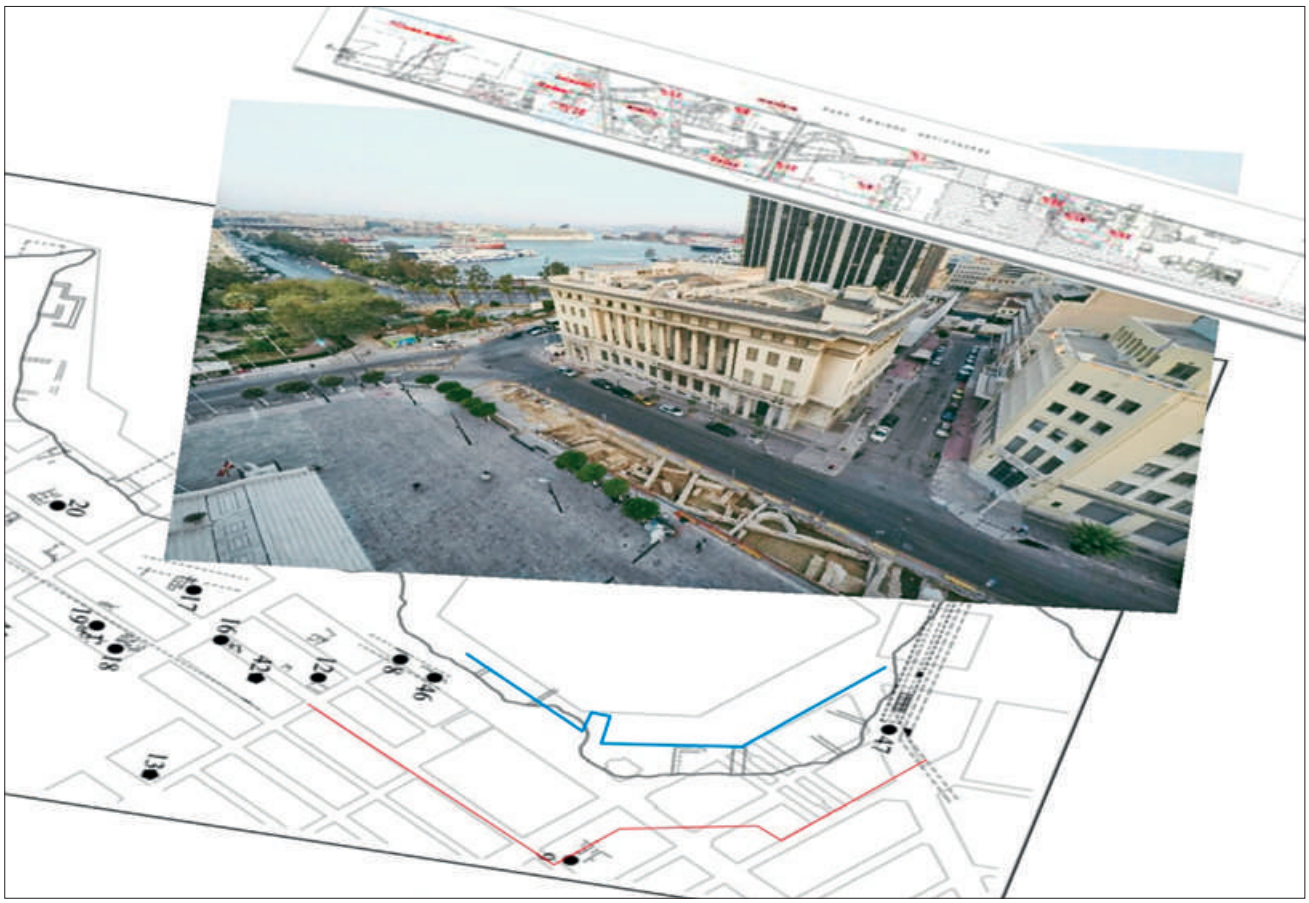

Fig. 27 Digital reconstruction of the Ethnikis Antistaseos 2 Street and Makras Stoas Street excavation plot. – (M. Papadimitriou / Ephorate of Antiquities of Piraeus and Islands, 2018).

Max Ritter

Naval bases, Arsenals, Aplekta: Logistics and Commands of the Byzantine Navy (7th-12th c.)

ὁ στόλος ἐστὶν ἡ δόξα τῆς Ῥωμανίας – this famous bon mot of Kekaumenos[1] amply demonstrates an obvious fact, namely, that mid-Byzantine rule was largely based on its navy not at least due to its geographic scope on islands, coastal regions, and their respective hinterlands. In a recent study, Ewald Kislinger highlighted that Kekaumenos wanted to signal the former glory of the navy which had dramatically decayed in his lifetime[2]. Ultimately, this statement relies on the notion of thalassocracy, most elaborately developed in Pericles' speeches about the Athenian navy, forged by Thucydides: μέγα γὰρ τὸ τῆς θαλάσσης κράτος[3] and ἐγὼ δὲ ἀποφαίνω δὺο μερῶν τῶν ἐς χρῆσιν φανερῶν, γῆς καὶ θαλάσσης, τοῦ ἑτέρου ὑμᾶς παντὸς κυριωτάτους ὄντας, ἐφ᾽ ὅσον τε νῦν νέμεσθε καὶ ἢν ἐπὶ πλέον βουληθῆτε καὶ οὐκ ἔστιν ὅστις τῇ ὑπαρχούσῃ παρασκευῇ τοῦ ναυτικοῦ πλέοντας ὑμᾶς οὔτε βασιλεὺς οὔτε ἄλλο οὐδὲν ἔθνος τῶν ἐν τῷ παρόντι κωλύσει[4]. This notion contains a strong idea insofar as only the sea allows to expand unrestrictedly over a vast space and adjacent territory, which in turn is a very interesting aspect for every empire throughout history.

Yet even before the mid-11th century, thalassocracy was not an objective of Byzantine politics[5], if it ever was an objective of any pre-modern political entity. Instead, Byzantium was interested in maintaining the sea-lanes between the various parts of the empire and protecting crucial points of strategic or economic importance at the coast. This alone was a tremendous task in times of the Arab advance till the 10th century and the subsequent emergence of the competing navies of the Italian »sea-republics«. It is dubious if the navy was deployed by the empire for promoting or facilitating maritime commerce[6] although both spheres were consciously connected, although usually naval power and the volume of maritime trade grow and fall together over the centuries[7]. Far more convincing seems to be the evaluation of Kolditz that commercial ports and commercial maritime routes cumulated and expanded in areas of tighter naval covering[8] because security was of paramount importance for merchants.

In the last decades, enormous research progress has been accomplished in manifold aspects of the Byzantine navy, be it its creation in the mid-7th century[9], its changing command structure, the types of ships used[10], its terrifying weapon – the so-called Greek fire[11] (ὑγρὸν πῦρ: strictly speaking, liquid fire) –, navigation[12] and much more. Surprisingly, one essential aspect escaped attention in these studies, namely how the war fleet and the ports of the empire interacted. Since Ahrweiler's *opus magnum* no major study has been undertaken on this subject[13]. In an appendix devoted to this aspect,[14] she claimed that we cannot derive any information about the actual fleet bases from the source texts[15]; a statement appearing correct regarding the main sources for the Middle Byzantine navy (*De ceremoniis* and several military *tactica*). Nevertheless, we may gain skeletal information about relay ports in the context of fleet operations from historiographical sources.

From the opposite perspective, every study on the Byzantine war fleet should consider the port system of Byzantium, in other words, the interface between sea and land-based military forces and the hierarchy between the navy's ports[16]. Ahrweiler limited her efforts to listing coastal towns where state officials are documented[17], while most other studies did not at all consider this aspect of the interaction between navy and ports. This, in fact, forms a stark contrast to the schol-

1 Cecaumeni tactici Vademecum, cap. 87 (Litavrin 308. – Beck 147): »The navy is the glory of the Rhōmania.« In similar veins, Emperor Nikephoros II purpotedly claimed to have supreme naval power in 968: »navigantium fortitudo mihi soli inest« according to Liudprandi episcopi Cremonensis Relatio de legatione Constantinopolitana, cap. 11 (Chiesa 192).
2 Kislinger, Ruhm.
3 Thucydidis De bello Peloponnesiaco I 143,5: »The rule of the sea is indeed a great matter«. – For this topic, see latest: Kopp, Das Meer.
4 Thucydidis De bello Peloponnesiaco II 62,2: »The visible field of action has two parts, land and sea. In one of these you are completely supreme, not merely as far as you use it at present, but also to what further extent you may want to: there's nobody able to stop you going with your naval vessels, neither the [Persian] king nor any other nation on earth.«
5 Ahrweiler, L'escale 161-164.
6 Ahrweiler, Les ports 267. Yet this has been the case for the sea-republics of Genoa, Pisa and Venice because merchants had a great deal of influence on naval policy: Tangheroni, Economia.
7 McCormick, Origins 438.
8 Kolditz, Horizonte 72-75.
9 Cosentino, Constans II. – Zuckerman, Learning from the Enemy.
10 Pryor/Jeffreys, Age of the δρόμων. – Concerning the Late Antique navy, preference should be given to the rectifications by: Zuckerman, Byzantine Dromon.
11 Bryne/Haldon, A Possible Solution.
12 Arnaud, Les routes.
13 A minor exception is Alkiviadis Ginalis in his PhD thesis, who outlines in a very general way the features of naval bases: Ginalis, Byzantine Ports 57-64.
14 Ahrweiler, Byzance et la mer 419-439.
15 Ahrweiler, Byzance et la mer 427-428.
16 The issue to investigate hierarchy instead of size of ports was highlighted by Kolditz, Horizonte 89-90, based on Schörle, Constructing Port Hierarchies.
17 Ahrweiler, Byzance et la mer 90-91.

In: Johannes Preiser-Kapeller · Taxiarchis G. Kolias · Falko Daim (eds), Seasides of Byzantium. Harbours and Anchorages of a Mediterranean Empire. Byzanz zwischen Orient und Okzident 21 (Mainz 2021). DOI: https://doi.org/10.11588/propylaeum.910.c12057

arship on the Roman navy, e. g.: »étudier l'infrastructure de système naval romain supposer naturellement qu'on établisse une carte des ports que la marine impérial a utilises au cours de son histoire«[18]). As Reddé has stressed regarding Antiquity, there are no obvious termini for military ports in neither Greek nor Latin: »la création de ports exclusivement militaires est extrêmement rare dans l'Antiquité, ce qui explique peut-être qu'il n'existe pas de vocable grec ou latin pour désigner de telles installations«[19]. Keeping this observation in mind, military functions of certain ports have to be surmised by circumstantial evidence, especially because exclusive military ports were almost non-existing[20]. Thus, the opposite perspective must be taken: Ports could generally serve three different needs for pre-modern war fleets.

First, there are ports where warships could anchor for a certain time to be equipped or to collect an armada for an orchestrated operation. These ports usually had specific storage and repair facilities and may be called relay stations, in Byzantine texts very often coined as ναύσταθμοι. As a specific derivate of relay stations – which, though, constituted no ports – we can consider ἀπλήκτα for mooring (ὁρμεῖν, ὁρμησία)[21], which served to gather a larger fleet that could neither be supplied by a port nor anchored in a harbour due to a size of more than 100 ships.

Because warships[22] had to be put ashore in winter times (from November to February: see McCormick's exhaustive treatment of the phenomena of *mare clausum* and *mare navigationis* in the period considered here)[23] and when not being in operation, for preventing an attack by the *teredo navalis*, rotting, and to extend their overall longevity by regular breaming[24], a permanent fleet base had to have shipsheds: »to ensure an ancient warship's effectiveness, it had to be kept as dry as possible. And so, the principal features of an ancient naval base were the shipsheds where the galleys with their wooden gear were kept under cover, and the sheds where their sails and rigging were stowed away.«[25]. The average lifetime of antique and medieval warships we know of was between 13 and 26 years; Venetian galleys endured approx. 20-26 years[26]. The main feature of shipsheds in Antiquity and the Middle Ages was the stone slip on which the boat rested. Hellenistic shipsheds – being 6.2 to 6.4 m wide – most often housed two bi-/triremes under one roof[27], as was the case also in 11th-13th-century Amalfi where the building's length was much increased in comparison to that, though[28]. By constrast, later Italian (Venetian as Ligurian alike) as well as Seljuk and Ottoman shipsheds were, according to early lithographic depictions, single facilities[29]. At the moment, we do not know how Byzantine shipsheds looked like due to the lack of any archaeological evidence.

A port appropriate for the wintering of vessels, which was consequently equipped with shipsheds, feature in Greek sources rather as λιμήν (Latin *portus*), while a harbour without any kind of installation was usually called ναύσταθμος (Latin *statio*)[30]. In other words, unlike harbours, ports had and have man-made installations like moles and marine terminal facilities and provide shelter to ships also in winter times. Consequently, the many ναύσταθμοι considered by Ahrweiler as naval bases or even as arsenals have to be dropped when further evidence is lacking (e. g., Nicomedia, Kios), regardless of whether government officials are attested there.

The third possible use of a port for a war fleet is as site of construction which is commonly expressed by the term *arsenal* since the Late Middle Ages. As I want to argue, Ahrweiler came to assailable conclusions because she equated all these port functions, especially in her study on the maritime offices[31]. Actually, it is not even certain whether ships were built in ports: »das räumliche Verhältnis zwischen Häfen und Werften gehört zu den wenigen weiterhin ungeklärten Fragen der Forschung, da unsicher ist, ob der Bau von Schiffen direkt in den Häfen stattfand oder völlig getrennt von diesen«[32]. Particularly in regard to warships, doubt can be cast on the assumption that they were built in public ports due to security issues (fire, espionage) and the more refined timber supply needed for them.

Relying on the Byzantine testimonies on warship-building, we may surmise that the construction of Byzantine warships was concentrated on a few selected and secure ports as we can observe later in Venice and the Ottoman empire. Were there even provincial arsenals operating in Byzantium? Ahrweiler and Letsios arrived at a affirmative response without

18 Reddé, Mare nostrum 145.
19 Reddé, Mare nostrum 148.
20 Reddé, Mare nostrum 145-147.
21 Leonis VI imperatoris Naumachica 30 (Jeffreys 496). – cf. Carile/Cosentino, Storia della marineria 247; Haldon, Constantine Porphyrogenitus, Three Treatises 155. – Haldon, A Critical Commentary 404. – For terrestrial *aplekta* cf. Kolias, Peri aplēktou. – A natural bay suitable for mooring is called ὁρμισία. Such a bay is mentioned in the *Life* of Pancratius of Tauromenion: after sailing to Naxos, the saint disembarked in Phalkoni, which is styled as bay for mooring without a harbour (Ps.-Euagrii Siculi Vita Pancratii episcopi Tauromenii [Stallman 40]): […] κατήχθημεν ἐν τόπῳ ἐπιλεγομένῳ Φάλκονι. οὐ μέντοι ἦν λιμὴν ἐν τῷ τόπῳ, ἀλλ' ὁρμισία τις·
22 Concerning commercial ships this did not have to be the case, cf. Blackman, Ancient Harbours 204. – In general cf. Wawrzinek, Tore zur Welt 182-192.
23 McCormick, Origins 450-468. – Of note, March, 5 was regarded as the traditional beginning of Roman commercial shipping according to John Lydus: Ioannis Lydi De mensibus IV 45 (Wuensch 101; Hooker 94). – According to the mid-9th to mid-10th century Mardaïte calendar, *chelandia* and *galeai* [γαλλοίες] were not supposed to enter the sea between 14th Nov (St. Philipp) and 15th Feb, cf. Lampros, Τρία κείμενα 173, lin. 13-4. – Dagron, Firmament 148. This text was previously dealt with by Dolley, Meteorology, as well.
24 The burning of the weed and barnacles growing at the hull, see: Kemp/Dear, Oxford Companion to Ships 106.
25 Casson, Ships and Seamanship 363.
26 Casson, Ships and Seamanship 90. – Lane, Navires 259-260. This is mainly because the Venetians used seasoned timber to provide maximum stability of the overall construction.
27 Lehmann-Hartleben, Die antiken Hafenanlagen 111-114. – Blackman, Ancient Harbours 205-206. – Blackman, Double Shipsheds. – Hurst, Exceptions 31-34.
28 Gargano, Arsenali e scaria 133-134.
29 Venice: Giapitsoglou, Les arsenaux Vénitiens. – Alanya: Johns, Tersana at Alanya.
30 Isidori Hispalensis Etymologiae XIV 8, 39-40: *Navalia sunt loca ubi naves fabricantur. Hoc et textrinum vocatur. Statio est ubi ad tempus stant naves; portus, ubi hiemant* […]. – Ashburner, The Rhodian Sea-Law 77. – Letsios, Seegesetz 104. – Rougé, Ports et escales 69-70. – Blackman/Rankov, Shipsheds 17.
31 Ahrweiler, Fonctionnaires 244.
32 Wawrzinek, Tore zur Welt 107-108.

any hesitation and assumed many provincial arsenals operating in close combination with mercantile shipbuilding[33]. This postulated diffusion relied also on the terms of ἐγχώρια and τοπικά [πλοία: ships] found in the sources, clearly relating to provincial ships operating in a restricted area but not necessarily being built there, opposed to what Ahrweiler implied (»En général, la flotte construite par les moyens procurés par la population des régions constituent des thèmes maritimes[34]«). At any rate, we need to reconsider the evidence on warship-building[35] to get a better understanding of the Byzantine navy and its peculiarities in comparison to the navies of their adversaries.

In modern terminology, a military port that is used to station and repair warships and also the facilities to build them is designated as dockyards[36]; it is established that there were no dockyards before the 15th century according to a strict application of the English term. Instead, the term shipyards should be preferred, which designates foremost a place of shipbuilding that is also used for maintenance and dismembering of disused vessels to salvage timber and fittings[37]. The latter two activities could easily be carried out also outside of shipyards, however.

Source terms

To establish a differentiation between the various ports serving the Byzantine navy, some terminological investigation is due. There were different missions war vessels were conducting[38]. Not only warfare, but also combatting piracy, transferring land forces, blocking troops while trying to traverse rivers and straits, and diplomatic missions were conducted with squadrons of the Byzantine navy[39].

While Ahrweiler, Letsios and Pryor understood ναυπήγησις as a general term for the construction of ships (regardless of whether for the navy, fishery, or trade)[40], it features also, as Haldon has recently stressed, as a term designating the repair of ships[41]. However, the term may also designate the construction of warships, like in Syrianos' strategicon of the 10th century[42] and a few other instances[43]. Italian *naupegio* derived from it[44]. An oarsman with training in the profession of a ship's carpenter/shipwright (ναυπηγός) had to be present on every operating vessel according to the Rhodian sea-law[45] and several *tactica*[46], for repairing the ship after an eventual incident.

The armament of warships was usually described by the terms ἐξάρτυσις [ἐξάρτησις being a common iotacized variant[47]] and later by the term ἐξαρτισμός. As such it is used in the *tactica*[48], lexica[49], and it was also in use to denote the proper outfitting and loading of cargo for a merchant vessel[50]. It was – like the similar terms of ἐξόπλισις and ἐξέλασις [πλωΐμων][51] – actually never used for the actual shipbuilding[52]. The imperial office of the ἐξαρτιστής belonged to the bureau of the βεστίαριον and was responsible for »fitting out« the central fleet based in Constantinople in the mid-Byzantine period[53]. The χαρτουλάριος τῆς λεγομένης ἐξαρτήσεως mentioned in the late-9th century fabricated so-called synodical letter to Emperor Theophilos may refer to the same office. According to the text, it was being held by Basileios, a close associate of Emperor Leo V[54].

Ahrweiler presumed that also the office of the ἐπεικτής was involved in the construction of the central fleet.[55] However, the office was not directly linked to the navy but rather to imperial grand projects[56], be they construction works of buildings or in rare cases also warships as it had been the specific case in 714 when the Arab siege fleet was expected to attack the capital[57]. In unspecified mentions we cannot know what a ἐπεικτής was appointed for; like in Thessalonica at the turn of the 9th/10th century[58], in 10th-century Abydos[59], in 10th-century Thrakesion[60] or in Lemnos in 1016[61]. There

33 Ahrweiler, Byzance et la mer 425. – Letsios, Seegesetz 84.
34 Ahrweiler, Byzance et la mer 135.
35 Rose, Medieval Naval Warfare 7: »There were also [not only Arab], of course, dockyards or ship building and repair facilities in the later Byzantine Empire particularly in the immediate vicinity of Constantinople itself. Very little is known about their organisation or their working methods.«
36 Kemp/Dear, Oxford Companion to Ships 255-256.
37 Moser, Shipyard Archaeology 838-839.
38 For the Roman period cf. Reddé, Mare nostrum 323.
39 The seminal study of Drocourt, L'ambassadeur byzantin 191-195, highlights that the texts rarely detail the ship type used, and that, if the diplomatic business was not considered most urgent, also merchant vessels were used for the transport of envoys.
40 Ahrweiler, Byzance et la mer 426. – Pryor/Jeffreys, Age of the δρόμων 152. – Letsios, Seegesetz 83. Example in Michaelis Pselli Chronographia IV 26 (Reinsch 65) concerning civilian shipbuilding in Paphlagonia.
41 Haldon, Theory and Practice 230 n. 99. – Letsios, Seegesetz 128-129.
42 Syriani magistri Strategicon, cap. II 4 (Dennis 12): Τὸ δὲ χρηματικὸν ἔστι μὲν ὅτε καὶ ἄλλων ἕνεκεν κοινωφελῶν πραγμάτων ἐπινενόηται, οἷον ναυπηγίας, τειχοποιίας, μάλιστα δὲ διὰ τὰ ἀναλώματα τῶν στρατιωτῶν· τῶν γὰρ κατ' ἔτος δημοσίων εἰσόδων ἐνταῦθα τὰ πλεῖστα καταναλίσκεται.
43 Letsios, Seegesetz 83.
44 Carile/Cosentino, Storia della marineria 29.
45 Lex Rhodia II 4 (Ashburner 1). The date of the law collection is controversially debated, cf. Troianos, Pēges 175-178.
46 Leonis VI imperatoris Tactica XIX 5 (Dennis 504). – Leonis VI imperatoris Naumachica § 5 (Jeffreys 486).
47 DuCange, Glossarium coll. 394-395 differs the two terms on semantic grounds: the first meaning an activity, the latter a locality.
48 Leonis VI imperatoris Tactica XIX 23 (Dennis 512) and XX 170 (Dennis 594-596). – Leonis VI imperatoris Naumachica § 5 (Jeffreys 484).
49 Suidae Lexicon s. v. ἐξάρτυσις (Adler II 302).
50 Lex Rhodia III 11 (Ashburner 19).
51 Letsios, Seegesetz 54. – Antoniadis-Bibicou, Études 39.
52 Therefore, taking *exartysis* and arsenal as synonymous terms is debatable, *pace* Oikonomides, Listes 316.
53 Philothei protospathari Cleterologion (Oikonomides, Listes 121, 21). – Georgii Pachymeris Relationes historicas XII 34 (Failler 607). One of them is documented by a seal: Eustratios (turn 9th/10th c.), cf. Zacos/Nesbitt, Byzantine Lead Seals II no. 150. – Duran Duelt, Métiers et travaux (in press).
54 Epistula ad Theophilum imperatorem, cap. 39 (Munitiz 115). – Epistula synodica ad Theophilum, cap. 18 (Munitiz 179).
55 Ahrweiler, Byzance et la mer 422. The recent study by Leveniōtis, Epeiktēs, arrives at similar conclusions like those presented here.
56 That is already explained by Reiske as comment in: Constantini Porphyrogeniti imperatoris De ceremoniis (Reiske II 495). Further mention of another one in Theophanis continuati Historia VI 15 (Bekker 362).
57 Theophanis confessoris Chronographia a. a. 6206 (Boor 384. – Mango/Scott 534).
58 Zacos/Nesbitt, Byzantine Lead Seals II no. 96.
59 Nesbitt/Oikonomides, Byzantine Lead Seals III no. 40.2 (Stephanos).
60 Nesbitt/Oikonomides, Byzantine Lead Seals III, no. 2.8 (Michael).
61 Acta monasterii Laurae 20, 79 (Lemerle et al. I 160).

is no indication to allow generally pocketing the ἐπεικταί in the navy.

At any rate, related to the construction of ships is the general term πλοιοποιΐα[62] and the more specific one καραβοποιΐα employed in Emperor Leo VI's *tactica*, which designates the construction of ships for the state[63], in other words, of warships (καραβός used in the latter case for the Late Antique war vessel[64]).

More valuable ships of any kind were caulked with pitch at their rump because of their frame-based hull design. That process was called καλαφάτησις[65] (Latin: *stuppare*) and is also mentioned regarding dromones[66]. Emperor Michael V's (1041-1042) father was supposedly working as καλαφάτης which was deemed disgraceful ancestry[67]. The origin of Greek καλαφατίζω is controversially discussed in scholarship[68] (in Venetian adopted as calafai[69]). Byzantine building held its superiority in many regards till the fall of Constantinople as can be seen in the attempts of the Italian sea-republics to attract Greeks in their respective arsenals[70].

Around 1200 CE the relevant Italian terminology entered Greek by the new ship type Tarida[71], i. e. the Italian improved transport war galley (derived from Arabic tarrīda), as τάριτα and κάτεργον/α[72] (Ottoman Kadırga) with the effect of the new term of the κατεργοκτισταί which signals constructors of these warships[73]. Somewhat later, the word arsenal made its appearance in Greek. The Arabic term dâr al-siṇa'a (»house of work«)[74], followed by dâr sinâ'at al-bahr, entered Greek as ταρσανάς[75] and ἀρσανάς[76], either directly, or indirectly via Italian *darsana/dàrsena* testified somewhat earlier[77]; its most prominent examples are the *arzanà* of Venice established in ca. 1104[78], the *tersanaie* in Pisa from 1159-1161[79], the 11th-century *tarziena* in Amalfi[80] with its access via the »Porta de Sandala« (a very telling toponym from the Greek χελάνδια), and the *darsana* in Genoa of 1163 (near S Marco)[81]. On Hospitaller Rhodes, in turn, it became known as *tersanal*[82], and the Turks called their warship construction sites *tersana*[83]. For these reasons, the alleged inscription mentioning a ἀρσινάλης supposedly built by Emperor Theophilos (829-842)[84] is inconceivable[85], because this Greek term relies on the French variant *arsenal*[86] and is far too early, as well.

Still prevalent in Palaiologan time, though, are the Classical terms νεώριον (whole port complex) and νεώσοικος (shipshed), sometimes being taken as synonymous terms, because νέωσοικος is taken as *pars pro toto*[87], which roughly corresponds to Latin navale/navalia[88]. The terms refer to a port area designed for ship construction by a public body in separation to private shipbuilding[89], whether for trade or fishing.

The origin of νεώρια is closely linked to the phenomenon of functional segregations of ports, which can be traced back to Hellenistic times[90]. Coastal cities with more than one port divided the functions between them, while those with only one port created functional distinctive port areas. This phenomenon is attested so far for the Hellenistic period in Syracuse[91], Carthage[92], Cnidus[93], Rhodes[94], Cyzicus, Tyre,

62 Theophanis confessoris Chronographia a. a. 6146 (Boor 345. – Mango/Scott 482).
63 Leonis VI imperatoris Tactica XX 71 (Dennis 560).
64 Letsios differentiates between the Late Antique warship of that name and of the general term designating a small ship, cf. Letsios, Seegesetz 96. – Miracula Demetrii, mir. II 4 (Lemerle I 213, 22: γοῦν δέκα ἐνόπλους καράβους and 221, 10).
65 Some scholars supposed to set *kalaphates* and *naupegos* equal, cf. Letsios, Seegesetz 128 n. 349. – Makris, Studien 157 n. 7. Pitching was applied on warships already in Antiquity, see Blackman, Context 13.
66 Constantini Porphyrogeniti imperatoris De ceremoniis II 44 (Flusin/Zuckerman 307.144).
67 Michaelis Pselli Chronographia IV 26 (Reinsch 65), (without actually using the term but circumscribing it).
68 Arabic origin from qalafa / قلف argued by Christides, Two Parallel Naval Guides 94. The first attestation of the term in 566 indicates a different origin: Oxyr. 55.3804.262; see also Bell (ed.), Greek Papyri in the British Museum V, no. 1852 (from Syene). Zervan, Die Lehnwörter im Wortschatz der spätbyzantinischen historiographischen Literatur, s. v. καλαφατίζω.
69 Ménard, L'arsenal 81.
70 Harris, Bessarion.
71 Bertoni, Tarida. – Manfroni, Storia I 454-455. – Antoniadis-Bibicou, Études 156.
72 Zervan s. v. τάριτα. – This ship type was strongly resembling the Italian *galee sottili* of the same period, see: Johns, Tersana at Alanya 186. In byzantine sources: Georgii Sphrantzae Chronicon VII 3 (Maisano 16) and IX 1 (Maisano 20), used by Emperor Manuel II in 1420/1421. In the chronicle of the Tocco (early 15th c.), it is occuring very often as κάτεργον. – In the 15th century, it is the most common Greek term, e. g.: Silvestri Syropuli Historia concilii Fiorentii II 13 (Laurent 114, 22).
73 Michaelis Choniatae epistola 65,8 (Kolovou 89). – Ginalis, Materielle Zeugnisse 61.
74 Fahmy, Muslim Naval Organisation 23. – Letsios, Seegesetz 84. – Makris, Studien 160-161. – Ahrweiler, Byzance et la mer 420. 425. 432. – Magoulias, Lives of the Saints 329.
75 First testimonies: Acta monasterii Castamoniti 18 and 90 (19th-c. copy of a 15th-c. document issued by Manuel II), there as the shipbuilding spot of the monastery at the Athos peninsula.Insofar, Zervan, s. v. ἀρσανᾶς, is misled in designating Venetian as the origin of the Greek term.
76 DuCange, Glossarium col. 125 s. v. ἀρσενὰς. First testimonies: Acta monasterii Cutlumusii 56, 12 (Lemerle 176), there in a document of the Abbot Sophronios of 1547, where this beach site is in the property of the monastery of Koutloumousion.
77 Bertoni, Dàrsena.
78 This date is disputed, though, cf. Ménard, L'arsenal 64; Lane, Navires 125-127. It is mentioned as ἁρσανᾶς in: Silvestri Syropuli Historia concilii Fiorentii XI 4 (Laurent 526).
79 Redi, Tersana di Pisa.
80 Gargano, Arsenali e scaria 133. – Grossi Bianchi, La costruzione 288.
81 Manfroni, Storia I 472-473. Testified for the first time in 1276 and later, the *darsena nuova* west of the city, cf. Balard, Les arsenaux génois 54.
82 Rossi, Hospitallers 318.
83 E. g., Alanya in 1229-1231, see: Johns, Tersana at Alanya. – Lloyd/Storm Rice, Alanya 16-20.
84 Makris, Studien 159. – Antoniadis-Bibicou, Études 170. – Müller-Wiener, Häfen 8 n. 19. – Ahrweiler, Byzance et la mer 432. – Guilland, Les ports 231-232.
85 The inscription is nowadays regarded as fictional, see Heher, Julianoshafen 58.
86 Kriaras, Lexiko II 219 s. v. ἀρσενάλιν/ἀρσενάς.
87 Photii Lexicon s. v. νεώρια (Theodoridis III 20) and Suidae Lexicon (Adler III 453): νεώρια καὶ νεώσοικοι. Μήποτε νεώρια λέγεται ὁ τόπος ἅπας, εἰς ὃν ἀνέλκονται αἱ τριήρεις καὶ πάλιν ἐξ αὐτοῦ καλέλκονται, ὡς ὑποσημαίνουσι Λυκοὺργός τε καὶ Ἀνδοκίδης; Suidae Lexicon s. v. νεώσοικοι (Adler III 454): οἰκήματα παρὰ τῇ θαλάσσῃ οἰκοδομούμενα εἰς ὑποδοχὴν νεῶν, ὅτε μὴ θαλαττεύοιεν[…]. See also Letsios, Seegesetz 83-84. – For the Classical usage see: Blackman/Rankov, Shipsheds 16-17.
88 Redde 160-163. – Blackman/Rankov, Shipsheds 30.
89 Areas for these activities were usually called – derived from Latin *scala* (landing stage) – ἐσκάριον and depending on that term in turn again, *scarium* in Latin, see: Gargano, Arsenali e scaria 137 with refs.
90 Some scholars tend to believe that this separation already took place earlier, at the turn from the Archaic to the Classical period in Greece, see e. g.: Baika, Early Naval Bases.
91 Wawrzinek, Tore zur Welt 171.
92 Blackman, Ancient Harbours I 79-80. Phoenician Carthage's naval port exhibited ca. 150 shipsheds; the later Vandal war wharf was situated elsewhere, though, cf. Wawrzinek, Tore zur Welt 56-58.
93 Wawrzinek, Tore zur Welt 169.
94 Wawrzinek, Tore zur Welt 69-71.

Caesarea maritima[95], Acre/Ptolemais[96], Piraeus[97] and Alexandria[98]. For instance, Alexandria's main port (portus magnus) had shipyards[99], but not its western port Eunostos; at Piraeus, the Kantharos port for commercial shipping was segregated from the one of Zea[100]. The main reason for this appears to have been concerns of security from fire/arson, and secrecy[101] from enemy espionage targeting the navy, its facilities and construction techniques[102].

Unlike commercial ports or – more specifically – their particular port areas (i.e., ἐμπόριον[103]), which usually were furbished with roofed sections for trading activities, cranes, and warehouses[104] where cargos were landed (in Alexandria called ἐξαίρεσις[105]), warship construction sites lacked such installations but were often enclosed by walls. The enclosure was built for reasons of espionage[106] and was guarded[107]. The port exhibited armories and storehouses (σκευοθήκαι), caserns and the indispensable shipsheds (νεώσοικοι) from which the name derived (as *pars pro toto*). The seclusion of war port areas had a tradition long before the Venetian paragon[108]. Warship-building was considered as a state secret and espionage and intrusion in the respective ports was punishable by death in Hellenistic Rhodes (τῷ δὲ κατοπτεύσαντι ἢ παρελθόντι εἴσω θάνατος ὥριστο ἡ ζημία[109]) and Byzantium alike[110]. Such an enclosure is also depicted in the 6th-century mosaic of the port of Classe in Sant'Apollinare Nuovo[111].

A Greek term which might have a relation to the phenomenon of enclosed ports might be μανδράκι(ον), designating a certain kind of port or harbour. Considering the spatial and structural differences between commercial ports and naval bases, especially regarding the enclosure, one may wonder why no explicit nomenclature evolved in the Antiquity and the Middle Ages. Regarding Greek, this phenomenon might be explained by to the persistent use of Classical Greek terms by the authors, whereas in Latin an evolvement may be traced. In the western Mediterranean naval bases have sometimes been coined as mandracchio since the High Middle Ages, even before the term arsenal was introduced, which had designed the construction facilities next to a mandracchio.

The first time the term is detectable, the μανδράκιον/mendracium was the name of a chained-off port district of Carthage that Belisarius conquered in September 533[112] and that was also the location of a monastery of the same name built after the conquest by the prefect Solomon[113]. Its etymology is unknown but in all likelihood, it is as ancient as the Phoenician port area designations and derives from the Semitic *mandra* (fold, enclosure: usually for sheep and cattle). How the word *mandracium* proliferated is untraceable but it reappears in Medieval Italy. It is attested in Genoa as mandràccio[114], in Naples as mantracchio[115], and in Ancona as mandràchio[116], as well as in the Renaissance era in Livorno (mandraccio), Venice (mandràcio), Kerkyra (mandraggio), and Zara (mandraccio)[117]. In 14th-century Hospitaller Rhodes, the western port »of galleys became known as μανδράκι[118] and resembled a small port housing no more than 20 warships which were constructed in the West, however[119]. This port in turn was replicated by the mandraggio in Malta, when the island's first exclusive military port was built there immediately after the siege of 1565. Surprisingly, there are very few testimonies of μανδράκια in Byzantine texts which may be accounted for its late entry into Greek, borrowed from Romance languages in Italy. In Modern Greek, μανδράκι has lost its specific meaning and is conceived as a small harbour of any kind[120].

In sum, I want to suggest that, considering the etymology of *mandracium*, the topographical situations of the ports in question, and the so-far lack of a term for enclosed ports may warrant an educated guess. A port enclosed by a fortification in contrast to an unsecured port may have been called man-

95 Raban/Oleson, Harbours of Caesarea 95-101. – Oleson et al., Harbours of Caesarea.
96 Fahmy, Muslim Naval Organisation 51.
97 Wawrzinek, Tore zur Welt 175-178.
98 Casson, Ships and Seamanship 366. – Viereck, Die römische Flotte 267. – Wawrzinek, Tore zur Welt 65-68.
99 Latest study on topography and organisation of the port, which in fact contained several smaller ports: Fabre/Goddio, Portus Magnus.
100 Blackman, Ancient Harbours 189.
101 Therefore the recurrent designation as »secret port« (κρυπτὸς λιμήν), e.g. in Aegina: Pausaniae Graeciae Descriptio II 29, 10-11 (Rocha Pereira I 176). – Blackman/Rankov, Shipsheds 191 and 215.
102 Blackman, Ancient Harbours 189-194. – Blackman/Rankov, Shipsheds 211: Arson was committed by the Athenians on the Spartan fleet at Gytheion in 455 BC, by Tarent in Rhodes during the First Cretan war, and King Philipp II of Macedonia took a stab at committing it in Piraeus.
103 Letsios, Seegesetz 108-109.
104 Casson, Ships and Seamanship 365.
105 Fabre/Goddio, Portus Magnus 67. Location mentioned in a decree of Ptolemy VIII: Grenfell/Hunt/Smyly, Tebtunis Papyri I 5, lin. 26 and BGU VIII 1742, lin. 16-7.
106 Lehmann-Hartleben, Die antiken Hafenanlagen 106-107. – Wawrzinek, Tore zur Welt 168-169.
107 Reddé, Mare nostrum 153-158. – Baika, Greek Harbours 435-436.
108 Ménard, L'arsenal. – Bellavitis, L'arsenale di Venezia.
109 Strabonis Amaseni Geographica XIV 5 (Radt IV 56).
110 Eisagoge legis Basilii I imperatoris 40 § 40 (Zepos): ὁ διδάσκων τοὺς βαρβάρους ναῦς κατασκευάζειν κεφαλικῇ τιμωρίᾳ ὑπόκειται. Based on the Synopsis minor N 15 (Zepos VI 471), we may surmise that the Rhodian sea-law was still in force at the turn of the 13th/14th century, cf. Troianos, Pēges 382. – Makris, Studien 155.
111 Gelichi, Porti nel Mediterraneo 113 fig. 4.
112 Pringle, Byzantine Africa 171.
113 Procopii Caesarensis De bellis III 20 (Haury/Wirth 396). – De aedificiis VI 5,11 (Haury 180). – Carile/Cosentino, Storia della marineria 29 n. 50. – Rougé, Ports et escales 97.
114 Schmiedt, I porti italiani 135. – Canziani/Mannoni/Pittaluga, Dati 163 make a very peculiar statement in relation to this issue: »[…] this discovery has made it possible to locate the medieval military harbour in the area of Mandraccio«.
115 Mauro/Iuliano, Napoli 318-323. In 1278, a *tarsionatus* facility is recorded in a document of King Charles I d'Anjou near Castel Nuovo: significantly, at a date before the loss of Sicily for the *Regno*.
116 Carile/Cosentino, Storia della marineria 80.
117 For the testimonies, see: Bertoni, Mandracchio.
118 Rossi, Hospitallers 322. – Bouras takes this evidence down to the Hellenistic era which is impossible, *pace* Bouras, On the Urbanism 670-673. But it is righteously highlighted in her study that the relevant port area has always been assigned to the navy.
119 Butler, Port of Rhodes 339-340.
120 Kriaras, Lexiko IX 317 s.v. μανδράκι. Early testimonies: Acta monasterii Laurae 74, 18 (Lemerle/Guillou/Svoronos II 24), a praktikon of 1284 on a harbour »of Kalekros« in northern Lemnos as a confine of landed property; and 99, 18.23 (Lemerle/Guillou/Svoronos II 44), 136, 46 (Lemerle/Guillou/Svoronos III 62), and 139, 24.30 (Lemerle/Guillou/Svoronos III 77), repeating it. For the approximate location, consult Kondyli, Lemnos.

dracium/μανδράκιον. However, the term was apparently not widely used in Byzantium. In the case of two connected port areas, it is the one behind the commercial one, being usually smaller and enclosed, to be entered only after passing the commercial port.

Additional to a fortification wall, a port could be screened in respect to the entrance from the open sea. Apparently, naval ports were built with a narrower entrance than commercial ports which could be entered by several ships at the same time. The approximate average width for ports with a minimized entry is about 20 meters[121].

Some ports were closed off towards the sea by a chain, to deter naval attacks on the port and the anchoring ships[122]. Such a port is called λιμὴν κλειστός in the sources[123]. This term is recorded by epigraphy and in literary sources for ancient Miletos (ca. 85 BCE), and by the archaeological record in Aegina, Kerkyra, Thasos, Sicilian Naxos, Eretria, Syracuse, Mitylene, Rhodes, Kos, Piraeus, Cyrenaic Apollonia, Carthage, Massalia and Abdera[124], with high likeliness also Knidos[125]. However, its occurrence has only an indirect relation to the navy, although warships needed specific precautions against enemy attacks from the sea, since commercial ports evenly profited from the installation of a port control. Insofar, a λιμὴν κλειστός did not necessarily point to its function as a naval station, in my point of view.

The Roman and Late Antique navy

To fully comprehend tradition and innovation of the Byzantine navy, the developments since the Principate and Dominate must be considered, especially regarding the sites for the construction of warships, which are closely related to the organisation of the navy[126]. As a matter of fact, our knowledge on Neoria and shipsheds in Antiquity has seen large progress in the last decades[127], but the issue of continuity to and naval logistics in the medieval period is still a big unknown, as was recently stressed by David Blackman[128].

Augustus is regarded as the founder of the Misenian fleet based in Portus Iulius (then Misenum[129]) and the Ravennate fleet in Ravenna[130]. Both together constituted the imperial (i. e., praetorian) central fleet, whose activity radius extended over the entire Mediterranean Sea[131]. Local navies of some *poleis* and provinces continued to exist under their own command; their main task was to guard their respective coasts against piracy. Thanks to the epigraphic record we know of war squadrons of the *poleis* of Nicomedia, Sinope, Cyzicus[132], and Perinthus[133]. The last is the well-attested *classis Perinthia*[134]. Those squadrons vanished only in the course of the 3rd century. Roman provincial fleets were created by the emperors sequentially in the 1st and 2nd centuries with one respective base each. Already Augustus incorporated the remnants of the Ptolemaic navy in the *classis Alexandrina* which persisted to the Arab conquest[135], although during the civil war between Emperor Phocas and the eventual successful pretender Heraclius, there appears to have been no effective flotilla present in Alexandria[136]. Emperor Nero was the founder of the *classis Pontica* which also continued to exist to the 7th century[137] and Emperor Vespasian founded the *classis Syriaca* which was apparently stationed in Seleucia Pieria and later in Tyre or Laodicea or both[138]. Marcus Aurelius created the *classis Mauretanica* in Caesarea Mauretaniae[139] and Commodus the *classis nova Lybica* in Cyrene[140]: in both cases by splitting up Alexandrian squadrons formerly responsible for those areas[141]. The latter two commands vanished already in the 3rd century. Due to Diocletian's reforms affecting the administration of Italy, the central command in Misenum was dissolved. Instead, provincial squadrons were created in Italy, namely the *classis Ravennatium*, also called *classis Venetum*, responsible for the Adriatic Sea[142]; the *classis Comensis* for the Ligurian Gulf, and the *classis Misenatium/Misenatis* for the Tyrrhenian Sea[143] (maybe with a further base also in

121 Wawrzinek, Tore zur Welt 171.
122 Kedar, Prolegomena.
123 Oleson, Technology 148. – Simosi, O ›kleistos‹ polemikos limenas. – Blackman/Rankov, Shipsheds 212-213.
124 Blackman/Rankov, Shipsheds 186-188 with refs. – For some of them see also: Hurst, Exceptions.
125 Blackman/Rankov, Shipsheds 218.
126 General overview provided by: Pitassi, Navies and Pitassi, Roman Warships.
127 An overview of archaeologically testified shipsheds of Antiquity is given by: Blackman, Progress and – restricted to the Greek period – Baika, Greek Harbours.
128 Blackman, Context.
129 Starr, Roman Imperial Navy 11-21; on this port, see: Benini/Lanteri, Il porto romano, and De Rossi, Il porto di Miseno.
130 Starr, Roman Imperial Navy 21-26. – Mauskopf Deliyannis, Ravenna 26-31.
131 Reddé, Mare nostrum 164-171.
132 Kienast, Untersuchungen 105-108. – Reddé, Mare nostrum 254-255.
133 Reddé, Mare nostrum 255-256. – Starr, Roman Imperial Navy 126-127 considers this fleet as being the provincial fleet of Thrace created after its annexation in 46 A.D.
134 Kienast, Untersuchungen 109-110.
135 Kienast, Untersuchungen 82-87. – Reddé, Mare nostrum 605. – Starr, Roman Imperial Navy 109-114.
136 Ioannis episcopi Nicionensis Chronicon CIX 1-3 (Charles 174).
137 Kienast, Untersuchungen 115-117. – Starr, Roman Imperial Navy 125-129.
138 Kienast, Untersuchungen 92-97. – Reddé, Mare nostrum 236-241. – Viereck, Die römische Flotte 256. – Starr, Roman Imperial Navy 114-117.
139 Reddé, Mare nostrum 244-248. – Starr, Roman Imperial Navy 117-120.
140 Reddé, Mare nostrum 249 and 566-567.
141 Kienast, Untersuchungen 103-105.
142 The relation between the *classes Ravennatium* and *Venetum* are not entirely clear; apparently Aquileia served as a naval base, as well; cf. Reddé, Mare nostrum 213-218.
143 Kienast, Untersuchungen 125-129. – de Rossi, Il porto di Miseno 839-845. De Rossi's study gives attention to the fact that the port, but not necessarily the naval command, was still mentioned as operating by Pope Gregory I in one of his letters, written in May 599: Gregorii I papae epistolae IX 145 (Norberg II 696). The pottery finds on the ground suggest a commercial use of the port in Late Antiquity, with a rich viticultural hinterland owned by the papacy since the 6th century as attested by the Liber pontificalis (Duchesne I 182).

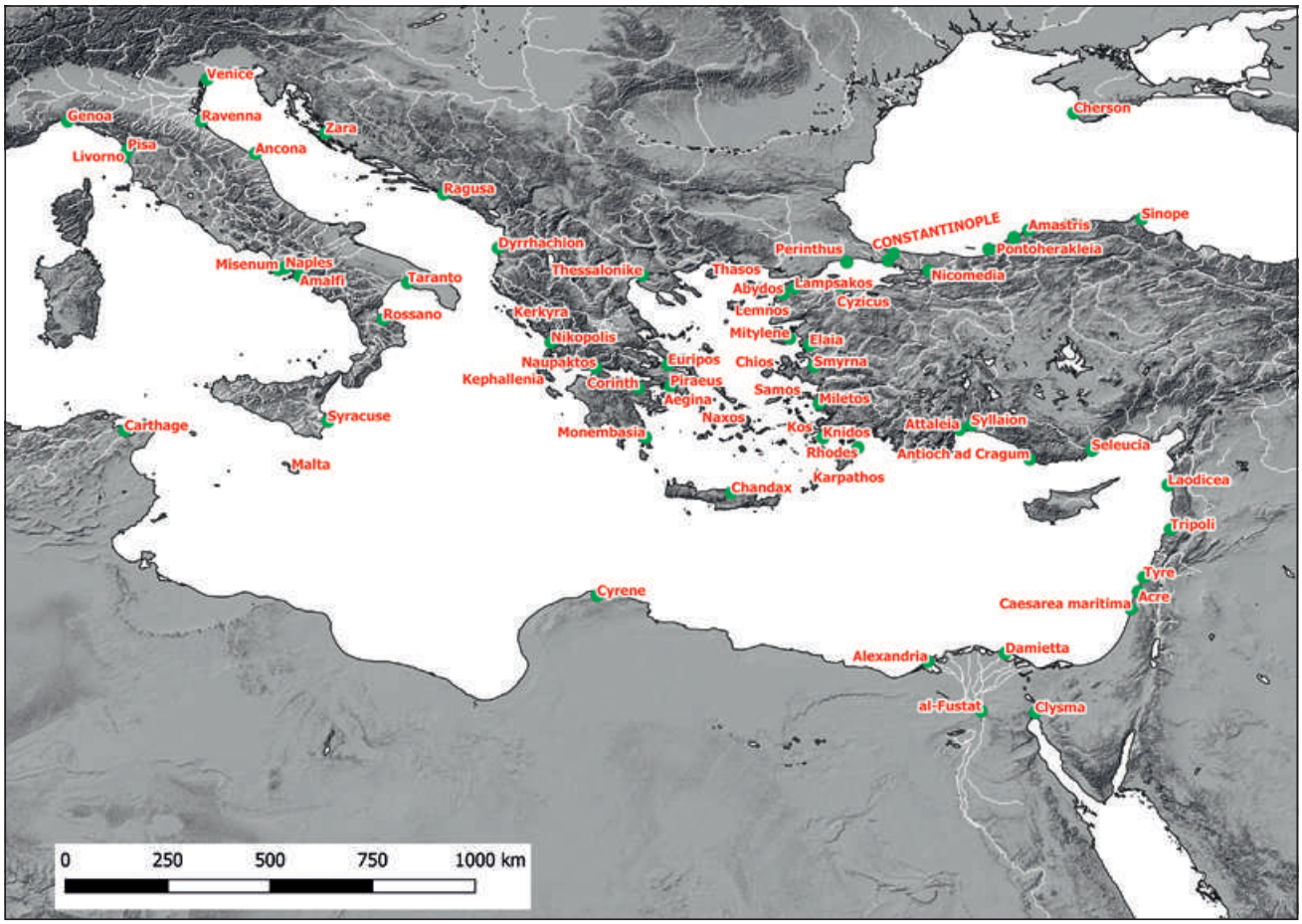

Fig. 1 Localities mentioned in the text. – (J. Preiser-Kapeller, 2020).

Calaris/Cagliari[144]). For similar reasons provincial navies in Cyprus, Caria and Asia came into existence at about the same time[145], restricting the area of activity of the *classis Syriaca*, consequently. Considering this trajectory, it is also not surprising that the later Balkan coasts' share on the Byzantine war fleet's construction can be considered insignificant, as it was already negligible in Roman times.

In sum, during the Principate there was a dichotomy between the central fleet command in Misenum and local fleets which in turn had its effect on a different command structure, and divergent activity areas (and different ship types: quadriremes in the central fleet). In the period of the Dominate, there was no central fleet anymore and all war fleets (except of the ceremonial imperial ships) were maintained by the provinces. This remained the situation till the 7th century[146].

Before turning to the Byzantine navy, it may be enlightening also to consider the evidence of the Arab war fleets in the 7th and 8th centuries, because they had to rely on their Late Antique predecessors in every regard, like the Byzantines. For Umayyad Egypt, *the classis Alexandrina*[147] and a smaller Red Sea squadron in Clysma[148] (of whose Roman origins basically nothing is known[149]) are attested. Because of the exposure of the Alexandrian ports to Byzantine attacks, a further shipyard was established in Babylon/Fustat/al-Rawda/Al-Jazîra at around 700 CE[150]. Only in the 8th/9th centuries, shipyards were also set in operation in Damietta and Rosetta/Rashīd[151]. Regarding the Syro-Palestinian coastline, shipyards of some importance were located in Tyre, Tripoli[152] and Laodicea according to the sources of the Umayyad period[153]. Contrary to Egypt, these shipyards were established anew since 669 CE because they had no Byzantine precursors[154]. In the Abbasid

144 This is based mainly on a heavily emended 6th-century inscription of a dromonarius Gaudiosus, in: Cosentino, Gaudiosus. – Carile/Cosentino, Storia della marineria 201. – See also Reddé, Mare nostrum 207.
145 Kienast, Untersuchungen 130-131.
146 For this esp. Zuckerman, Byzantine Dromon 57-72. I rather follow him, *pace* Carile/Cosentino, Storia della marineria and Pryor/Jeffreys, Age of the δρόμων 7-34. The debate may still be open, but Zuckerman's arguments are more straightforward.
147 Fahmy, Muslim Naval Organisation 27-30.
148 Fahmy, Muslim Naval Organisation 23-27.
149 For the few indications for the Early Byzantine period cf. Christides, Martyrdom of Arethas.
150 Fahmy, Muslim Naval Organisation 35-50.
151 Fahmy, Muslim Naval Organisation 30-35.
152 Theophanis confessoris Chronographia a. a. 6146 (Boor 345. – Mango/Scott 482).
153 Fahmy, Muslim Naval Organisation 51-55.
154 Al-Balādhurī, Kitāb futūḥ al-buldān (al-Munağğid 117-118. – Hitti 179-180) and al-Munağğid 126-128. – Hitti 193-196.

period, Laodicea lost its importance, and the main arsenal was definitely based in Tyre[155]. Acre's port was established only in 878 CE by Ahmad ibn Ṭūlūn and served commercial purposes alone[156], while Tyre's port was extended in the same year (remaining a naval base)[157].

Also, in the Maghreb the Arab conquerors relied on Roman installations and the seafaring local populace. Due to Vandal rule (439-533), Carthage had become a naval centre[158] also being used by the Byzantines thereafter (533-698). After the Arab conquest, due to an almost successful attempt of Byzantine re-conquest, it was immediately replaced by the less exposed Tunis in 699 CE with the establishment of its arsenal in 703[159] in a secure landlocked position[160]. It seems as if Cyrene's/Barqua's military port of the former *classis nova Lybica*[161] was also continued by the Arabs. Of the shipbuilding in Muslim Crete (822/827-961), which presumably centred on Khandaq/Chandax, we have no knowledge at all[162].

The Byzantine navy organisation

When the Byzantine navy under the command of the Καραβισιανῶν came into existence under Constans II in the 660's, its warships were apparently constructed in Constantinople alone[163]. His successors seem to have continued unchanged, as can be seen by the chronicle entries on Justinian II's expedition against Cherson[164]. When the command of the Karabasianoi was dissolved or sent into oblivion by Emperor Leo III, the navy was divided in the so-called central fleet (actually called the imperial one, βασιλικὸν πλόϊμον) and regional commands, indiscriminately called the thematic fleet by scholars regardless of the date they refer to (θεματικὸς στόλος)[165]. The thematic fleet as such came into being only in the mid-9th century when the fiscal and administrative structure of the themes designed in the first decade of the 9th century[166] was expanded onto the maritime sphere. To this part of the navy Theophanes cont. and Genesios refer verbatim[167] and it comprised vessels from both the naval themes and those ordinary themes which had warships at their disposal. The major difference of the central fleet in comparison to the thematic fleet lied in their command structure. This is made explicitly clear by Leo VI in his *tactica*: while the droungarios of the central fleet gave direct orders to »his« fleet, the thematic fleet (here: θεματικῶν δρομώνων) was commanded by their respective droungarioi (for the naval themes) or tourmarchoi (for the ordinary themes) who were in turn subordinated to the δρουγγάριος τοῦ στόλου or δρουγγάριος τοῦ πλωΐμου (the chief of the central fleet[168]) in a combined operation[169]. In such a concerted command, the δρουγγάριος τοῦ πλωΐμου was usually temporarily appointed δρουγγάριος τῶν πλοΐμων[170]. However, the narrative sources sometimes confuse the two terms due to their phonetic similiarity or hedge around the office by simply calling the commander-in-chief ναύαρχος.

There is the minor problem that the δρουγγάριος τοῦ πλωΐμου is not yet attested in the 8th century[171], and features for the first time in the Taktikon Uspienskij[172] (dated to 842/843 by Oikonomides or – more convincingly – to 812/813 by Živković[173]). Ahrweiler suggested that the office was created by Emperor Michael II in relation to the fights for Crete[174], while Cosentino argues for the 760s[175], but there is no evidence for this and we thus cannot infer whether a command of the central fleet existed in the 8th century whatsoever[176]. Since the 9th century, the command of the central fleet encompassed the whole Propontis, since the Archon of Abydos (i.e., *abydikos*) with his ships was directly submitted to the command of the δρουγγάριος τοῦ πλωΐμου[177].

This twofold divisional organisation was in force from the mid-9th to the end of the 11th century when the thematic fleet as an organisational unit perished and only the central fleet survived[178]. The first μέγας δούξ is attested in 1092 with John Doukas who probably was the supreme commander of the entire navy[179]. It thus seems doubtful that Alexios I

155 Gertwagen, Harbours 113-114. This continued under Fatimid rule, with only Tripoli having still a functioning naval construction site, cf. Bramoullé, Activités navales 261.
156 Al-Muqaddasī, Kitāb Aḥsan (de Goeje 162-163. – Ranking/Azoo 269).
157 Bramoullé, Activités navales 265.
158 Reddé, Mare nostrum 649-652.
159 Fahmy, Muslim Naval Organisation 69-72.
160 For the Fatimid arsenal in Al-Mahdiyya, see: Lev, Fatimid Navy 245-246.
161 Kienast, Untersuchungen 103-105.
162 Fahmy, Muslim Naval Organisation 72-74.
163 Ahrweiler, Byzance et la mer 429.
164 Theophanis confessoris Chronographia a. a. 6203 (Boor 377. – Mango/Scott 527).
165 Ahrweiler, Byzance et la mer 31. In the 10th-century naumachica, the thematic fleet is represented as πλώϊμοι θέματα as in Leonis VI imperatoris Naumachica, cap. 27 (Jeffreys 494) or as coming from the πλευστικά θέματα as in Nicephori Urani Naumachica, cap. 25 (Jeffreys 582).
166 Haldon, Evil Deeds.
167 Theophanis continuati Historia II 13 (Featherstone 84). – Iosephi Genesii Historia II 5 (Lesmüller-Werner/Thurn 26-27).
168 Guilland, Études 213 n. 1; an extensive but somehow out-dated survey in Guilland, Recherches I 535-562. Furthermore, Zacos/Nesbitt, Byzantine Lead Seals II no. 341 with commentary.
169 Leonis VI imperatoris Tactica XIX 26 (Dennis 512).
170 Guilland, Recherches I 552 n. 10.
171 Béhier was wrong in seeing [Tiberios] Apsimaros, called droungarios by Nikēphoros, as the first holder of this office as he merely commanded a part of the Kibyrrhaiote force: Nicephori patriarchae Breviarium, cap. 41 (Mango 98). *Pace* Béhier, La marine 3.
172 Tacticon Uspenskij (Oikonomides, Listes 53, 16).
173 Živković, Uspenskij's Taktikon.
174 Ahrweiler, Byzance et la mer 73-74.
175 Cosentino, Naval Warfare 323.
176 Lounghis, Byzantine War Navy 23-25 and 38, has refuted the existence of a central command from the early 8th to the mid-9th century.
177 Ahrweiler, Fonctionnaires 243.
178 Malamut, Les îles 602. Thematic squadrons are for the last time mentioned during the rule of Emperor Michael IV, at: Ioannis Scylitzae Synopsis historiarum (Thurn 398-399), and Emperor Constantine IX (stratēgos of Kibyrrhaiotōn, Kōnstantinos Kaboullarios) at: Ioannis Scylitzae Synopsis historiarum (Thurn 432) and Michaelis Attaliatae Historia (Tsolakis 16,17-17,21). – In total accord with Kislinger, one may doubt that there was anything left of the navy – neither thematic nor central squadrons – after the 1040's; the later testimonies up to the first half of the 12th century point to a small squadron for the use of the emperor and court only, see: Kislinger, Ruhm 50-52.
179 Revanoglou, Paratērēseis 76.

Fig. 2 View of the city of Monembasia by F. de Witt. – (After Peloponnesus hodie Moreae Regnum Distincte Divisum, in Omnes suas Provincias, Hodiernas atque Veteres, cui et Adiunguntur Insulae Cefalonia, Zante, Cerigo et St. Maura, Amsterdam, c. 1680).

re-established the thematic fleet[180] which was no more in any case during the reign of his successor John II as the sources amply demonstrate. John II is most famous however for his cuts in the navy which were implemented on the advice of the *megas logaristes* John Poutzes in the 1130's (most probably in 1135-1137[181]). This reform, although its impact, aims and scope are hard to grasp based on the little information provided by Nicetas, has recently been interpreted as a package of measures gathering fiscal strength and focusing it on the central fleet only in order to cope with the navies of the Italian maritime republics and the kingdom of Sicily[182]. In any case, the cutbacks postdated[183] the hostilities with Venice (1122-1126)[184] which most probably triggered the reform. Anyway, since then there was only the central fleet left in operation, having squadrons in provincial ports, though. There is no reason to think of provincial warship-building after that time, as Ahrweiler has righteously stressed[185]. However, mercantile shipbuilding continued in Monemvasia (see **fig. 2**), Rhodes, and Smyrna etc. in and after the 12th century[186].

The Byzantine navy's commands

How did the organization of the navy develop and how did its activity relate to the ports? As is now acknowledged, the stratēgis (sic: no theme) of the Karabisianōn was the supreme naval command created *ex novo* in the 660's and settled in Constantinople[187]. Under its auspices, regional squadrons headed by droungarioi were operating at their coasts, only ordered to leave their waters for greater naval expeditions like the ones designed to deliver Thessaloniki (ca. 680-685)[188] and Carthage (697)[189] from the threat of

180 This is stated by Malamut, Les îles 604. Beforehand, Guilland had already suggested that Emperor Alexios I abolished the thematic fleet and placing at the head of the central fleet the new office of the μέγας δρουγγάριος τοῦ στόλου (unofficially μέγας δούξ which became the official title only later), cf. Guilland, Études 219 and Guilland, Recherches I 540. Regarding the centralisation, see: Ahrweiler, Byzance et la mer 199. Regarding the evolution of the title of the naval commander-in-chief, see: Böhm, Flota 237-238.

181 Nicetae Choniatae Historia (Dieten 54-55). – Theodori Scutariotae episcopi Cyzicensis Synopsis chronike (Sathas 220-221). – Ahrweiler, Byzance et la mer 230-231. – More convincing and with a modified evaluation of this policy: Lilie, Handel 625-628.

182 Lau, The Naval Reform 120-121. Regarding Sicily, there is clear evidence for a naval effort in John II's late reign (1138-1143) to cope with the Norman navy, see: Nicephori Basilacae Oratio fragmenta in Ioannem Axuchum, cap. 3 (Garzya 118): Τί φὴς ὁ τῶν Σικελῶν ἀρχηγέτης, ὁ διαπλοϊζόμενος κιβδήλοις βουλαῖς καὶ ἀδοκίμοις ἐννοίαις ἐπινηχόμενος; ὁρᾷς τὸ τοῦ βασιλέως προβούλιον, τὴν ἑτοιμασίαν τὰς τριήρεις τοὺς στρατιώτας.

183 Herrin, Realities of Provincial Government 86 n. 144. – Lau, The Naval Reform 117.

184 Devaney, Like an Ember Buried in Ashes.

185 Ahrweiler, Byzance et la mer 436.

186 Ahrweiler, Byzance et la mer 437.

187 Cosentino dates it after the first Arab attack on Constantinople in 654 till 663; but assuming its headquarters in Samos at that early time does not convince in regard to its port and the command's importance, *pace* Cosentino, Constans II 602-603 and Cosentino, La flotte 6. For this, see also: Pryor/Jeffreys, Age of the δρόμων 25. – Zuckerman, Learning from the Enemy 117-121. – Prigent, Adriatique 394.

188 Testimonies of their strategoi Sisinnios (some when in 680-685) and Theophilos (710) are respectively to be found in Miracula Demetrii, mir. II 5 (Lemerle I 230-1) and Liber pontificalis (Duchesne I 390). – Winkelmann, Rang- und Ämterstruktur 96. – Haldon gives the research history on this highly-debated topic with an inclination towards the theory that the Karabisianōn developed from the Quaestura Exercitus: Brubaker/Haldon, Iconoclast Era 725 n. 4. Yet we disagree on the point that the Karabisianōn's purpose was not primarily to staff warships, because its appellation is clear enough, *pace* Brubaker/Haldon, Iconoclast Era 730.

189 Theophanis confessoris Chronographia a. a. 6190 (Boor 370. – Mango/Scott 517). – Nicephori patriarchae Breviarium, cap. 41 (Mango 98): ἅπαντα τὰ ῥωμαϊκὰ ἐξώπλισε πλοῖμα. – Leontsini, Les communications 109-110.

Fig. 3 View of the port city of Amastris (Amasra). – (Photo N. Dilmen, Amasra_1260739_nevit, CC BY-SA-2.5 / GFDL).

conquest; or (as reported by the spurious letter to Emperor Theophilos) against the Campanian cities Amalfi and Naples in order to force their alignment with the empire against the Beneventine Lombards (in ca. 705-713 with 120 warships)[190]. After the Karabisinioi's dissolution (in ca. 719[191] or somewhat later[192]), the regional commands continued to exist as before, but, due to having more autonomy now, they feature much more often in the sources because they received orders directly from the emperor and conducted missions in their own right[193]. Only in the Propontis, the central fleet's commander had been given full-blown authority also in the time thereafter. At that crucial time (ca. 720's-730's) there were no naval forces left in the central Mediterranean[194].

It has become ubiquitous to differentiate between naval themes and ordinary (land) themes. Yet this dichotomy has been overemphasized in scholarship, albeit some themes were more inclined to conduct naval operations, because only a few of the commands had naval forces at their disposal. Therefore, we may differentiate commands whose main power and capabilities rested on naval forces (who were commanded by the main commander, the stratēgos) from those which – due to having only a few warships – delegated their operation to a subaltern of the stratēgos.

The commands of the first category (we know of due to written sources and seals) are the following:

1) Kibyrrhaioton: Established as a sub-command of the Karabisianoi before 697[195] (that year constitutes the first unambiguous mention[196], but maybe even earlier than 668, in the aftermath of the first Arab siege[197]), becoming autonomous before 732/733 when it features as a stratēgis[198] with its own administrative apparatus from at least 739/740[199]. Its headquarters were located in Syllaion and Attaleia (see **fig. 4**), but it also encompassed the major port of Rhodes[200]. Further naval bases were in Karpathos and in Antioch ad Cragum[201]. Due to its name, a further base in Kibyra Minor may be assumed, as well[202]. For a certain time, Seleucia ad Calycadmum may also have been a naval base[203].

190 Epistula ad Theophilum imperatorem, cap. 11 (Munitiz 163). This force was supposedly led by the future Emperor Leo III, who according to Theophanes and Georgios monachos became strategos of the Anatolikon under Anastasios II and had possibly got this post due to his success in the naval operation. A possible sequence of the events is presented by Hendy, Studies 668-669.

191 Pryor/Jeffreys, Age of the δρόμων 32. – Ahrweiler, Byzance et la mer 50-51. Zuckerman rejects their dissolution at that time (based on dubious seals' dates), cf. Zuckerman, Learning from the Enemy 123-124.

192 The seals are listed in: Wassiliou-Seibt, Magister Militum to Strategos 795 n. 41.

193 Zuckerman proposed a different solution: according to him, the Karabisianoi covered the central Mediterranean, while the Kibyrrhaioton were responsible for the eastern seas, which in turn creates the problem that they are both never mentioned simultaneously although having much in common, see: Zuckerman, Learning from the Enemy 121-124. Problem covered also by Prigent, Adriatique 396-397.

194 Prigent, Adriatique 396.

195 Ahrweiler, Byzance et la mer 50-51. For its testified office holders, see: Savvides, Secular Prosopography.

196 Theophanis confessoris Chronographia a. a. 6190 (Boor 370. – Mango/Scott 517).

197 Ioannis Zonarae Epitome historiarum XIV 20, 18 (Pinder III 224). For the siege, see: Jankowiak, First Arab Siege.

198 Theophanis confessoris Chronographia a. a. 6224 (Boor 410. – Mango/Scott 568). Yet, the name Manes is not pejorative but a common and well-attested name in the Black Sea area of indigenous Phrygian origin, which, however, invited Theophanes to a play on words, *pace* Brandes, Phantomnamen 97-100. See, e. g.: Avram, Contribution à la prosopographie 289.

199 Winkelmann, Rang- und Ämterstruktur 96-99.

200 Constantini Porphyrogeniti imperatoris De thematibus, cap. I 14 (Pertusi 79).

201 Constantini Porphyrogeniti imperatoris De ceremoniis II 45 (Flusin/Zuckerman 319.71).

202 Constantini Porphyrogeniti imperatoris De thematibus, cap. I 14 (Pertusi 79). – Eickhoff, Seekrieg 83.

203 PmbZ 6772 (8th c.).

Fig. 4 Harbour of Attaleia (Antalya). – (Photo G. Dolgopskij, Гавань Калеичи [Анталья], CC BY-SA-3.0).

The droungariate of Kos is only known from seals[204] and seems to have been an ephemeral 9th-century sub-command of the Kibyrrhaiotōn[205].

2) »Dodecanese« (commanded by the δρουγγάριος τοῦ κόλπου): The designated area of the »droungariate of the gulf« is debated[206]. However, some indications point to the area of today's Cycladic islands, i. e., the South Aegean Sea, because its short-lived ephemeral appearance in the sources might be explained by its substitution by another command. The »droungariate of the gulf« was founded around 687. In the vernacular, this very area was called Dodecanese at that time, and as such it also features in the sources: for 780/781 in Theophanēs[207], and the first time under this name officially in the Taktikon Uspienskij (812/813, s. above)[208]. This parallel designation is also found on the seals of the *basilika kommerkia*[209]. The command disappears in the first half of the 10th century, having been substituted by either the theme of the Cyclades or the one of Samos[210].
3) Kephallēnia/Kephalōnia: Established in the aftermath of the loss of Ravenna and new challenges in the Adriatic Sea in ca. 765/770[211], the command is first mentioned in 809[212]. It also encompassed the port of Kerkyra[213] which may also have been its headquarters at least in the 10th century[214], when Kerkyra had become an archbishopric while Kephallēnia was downgraded to a suffragan bishopric of Corinth, thereby inversing the relation of the 8th century[215].
4) Aigaion pelagos: Created in around 687[216], its area of activities encompassed only the northern part of what is now regarded as the Aegean Sea. Its droungarios [hic: ἄρχων] Isaakios serving under Constantine V (741-775) had been the father of Theophanēs Homologetēs[217]. Still being a droungariate in 812/813[218], its elevation from a droungariate to a theme was maybe caused by the loss of Crete[219]. According to the Vita SS Davidis, Symeonis et Georgii the strategos' seat has been Mitylene on Lesbos, where also one anchoring dromon is referred to in the

204 Nesbitt/Oikonomides, Catalogue II 110-111. – Schneider, Samos 141.
205 Malamut, Les îles 303-304.
206 Bury and later Ahrweiler and Malamut identified Kolpos with the Propontis: Ahrweiler, Byzance et la mer 75 and 79-81. – Malamut, Les îles 301-305. Hild and Hellenkemper equated the Kolpos with the Kolpos (Bay) of Attaleia which was also postulated by Treadgold: Treadgold, Notes 278, followed by Hild/Hellenkemper, Lykien 300. Haldon is reluctant to take a stance, referring to the problem's complexity, see: Brubaker/Haldon, Iconoclast Era 740 and 758 n. 120. At the moment, this conundrum cannot be solved.
207 Theophanis confessoris Chronographia a. a. 6273 (Boor 454. – Mango/Scott 627). – Malamut, Les îles 301-305. – Ahrweiler, Byzance et la mer 73-75 and 80. – Brubaker/Haldon, Iconoclast Era 739.
208 Živković, Uspenskij's Taktikon 84-85. – Tacticon Uspenskij (Oikonomides, Listes 53, 19).
209 Malamut, Les îles 305. – Ragia, Apothekai of the Balkans 99-103.
210 Ahrweiler, Byzance et la mer 108. – Malamut, Les îles 311.
211 Kislinger, Dyrrhachion 331. – Kolias, Kriegsmarine 134. – Malamut, Les îles 307-309. – Tsatsoulis, Some Remarks 159-165. – Oikonomidès, Constantin VII Porphyrogénète 118-119. – Brubaker/Haldon, Iconoclast Era 757. Last study, followed here: Prigent, Adriatique 399.
212 Einhardi Annales a. a. 810 (Pertz 197): »Paulus, Cefalaniae praefectus«.
213 Constantini Porphyrogeniti imperatoris De thematibus, cap. II 7 (Pertusi 92).
214 Assumed by both Malamut, Les îles 309 and Gasteratos, To thema Kephallēnias 516. Tsatsoulis assumes that the strategos settled in Kephallēnia but travelled often to Kerkyra: Tsatsoulis, Some Remarks 155 and 162-163. Oikonomides made out the case for double headquarters, cf. Nesbitt/Oikonomides, Catalogue II 1-2. The main port of Kephallēnia has been Samos which does not feature in the sources, though. Leontsini's attempt to approach the matter by churches' remains in the Ionian islands does not bear definite fruit, neither: Leontsini, Ionian Islands 528.
215 Notitiae episcopatuum ecclesiae Constantinopolitanae, not. 7 and 8 (Darrouzès 274. 282 resp. 294).
216 Malamut, Les îles 304-305. – Ahrweiler, Byzance et la mer 80-81. For its fiscal apparatus and the righteous description of the confines of the unit, see: Ragia, Apothekai of the Balkans 103-105.
217 Vita Theophanis confessoris, cap. 1 (Krumbacher 389).
218 Tacticon Uspenskij (Oikonomides, Listes 53, 18). – Živković, Uspenskij's Taktikon 65.
219 Pryor/Jeffreys, Age of the δρόμων 47.

vita[220]. There is no agreement on the date of the Life's compilation; it could resemble the situation of the second half of the 9th century or the 11th century. At any rate, it is very unlikely to locate the theme's headquarters in Chios[221], which was part of the theme, though, with a subaltern archōn on its own[222].

5) Theme of Samos: Apparently created in the aftermath of the loss of Crete in the 850's-880's[223], the first strategos is mentioned for the year 893[224]. Contrary to its appellation, its headquarters were not located in Samos, but Smyrna[225]. Its predecessors seem to have been the stratēgiai of the Ploizomenoi[226], the latter one, in turn, might have been an ephemeral remnant of the former command of the Karabisianoi according to its name[227].
6) Theme of Cyclades: A new theme created in the 950's-970's[228].
7) Theme of Chios: Established between 971 and 1026/1028, when it is mentioned for the first time[229], it may be considered as an ephemeral naval command[230].
8) Theme of Kerkyra: Because it was to be established at the turn of the 10th/11th century (like Chios)[231], the stratēgos Michaēl Chersonitis who met Liudprand on the island in 968 most probably was the one of Kephallēnia[232].
9) There were further naval commands we virtually now nothing of, but only have seals at our disposal. Apparently, Malta may have had its own squadrons in the 7th/8th century[233]. The evidence regarding Sardinia[234] could rather point to land than to naval forces[235].

In contrast to the so-called »naval commands« (10th-century nomenclature: πλοϊμοθέματα[236] which in turn have the θεματατικὰ πλόϊμα[237]) some of the ordinary (land) themes did also have warships at their disposal which were commanded by a subaltern of the respective stratēgos, in most cases called tourmarchēs, in a few instances known as katepanō (i. e., Paphlagonia, Mardaïtes of the East, probably Ragusa although the latter one most probably was not a subaltern). Those commands were the following:

1) Hellas: The stratēgis of Hellas was established at the end of the 7th century and always possessed naval forces[238] headed by its tourmarchēs as we know from the revolt of Kosmas in 728 (office held by Agallianos)[239]. It also encompassed the islands of Aegina, Euboea, and those Cycladic islets close to the mainland[240] and its headquarters were relocated several times for strategic reasons[241]. It provided warships in the expedition of 911[242].
2) Sicily: Established at the end of the 7th century (in ca. 692-700)[243], its naval forces were led by a tourmarchēs[244]. Its most famous office holder was Euphēmios in ca. 826 who failed in his attempt to usurp the imperial throne[245]. Until 878 the main Byzantine port of the island had been Syracuse where the *Siculus classis* was stationed[246].
3) Peloponnese: Established in the 800's from reconquered territory adjacent to Hellas, its headquarters were based in Corinth[247], but there is good reason to assume that its naval forces were stationed in Monemvasia under the command of a tourmarchēs. It provided warships to the expedition of 949[248].
4) Crete: Being part of Hellas before[249], it maybe became a command in its own right, led by an archōn since 767[250], and was elevated to a theme under Emperor Nikephoros I

220 Vita Davidis, Symeonis et Georgii Mytilenae, caps. 32 and 37 (van den Gheyn 253 and 258. – Abrahamse/Domingo-Forasté 232 and 240).
221 Postulated by Eickhoff, Seekrieg 84.
222 Ahrweiler, Byzance et la mer 108.
223 Philothei protospathari Cleterologion (Oikonomidès, Listes 101, 29). – Pryor/Jeffreys, Age of the δρόμων 47. – Malamut, Les îles 312-313.
224 Ioannis Scylitzae Synopsis historiarum (Thurn 175).
225 Constantini Porphyrogeniti imperatoris De thematibus, cap. I 16 (Pertusi 82).
226 Constantini Porphyrogeniti imperatoris De thematibus, cap. I 16 (Pertusi 81). – Malamut, Les îles 304. – Carile/Cosentino, Storia della marineria 262.
227 Carile/Cosentino, Storia della marineria 262.
228 Tacticon Scorialensis (Oikonomidès, Listes 267, 31). – Malamut, Les îles 313. – Nesbitt/Oikonomides, Catalogue II 111.
229 Ioannis Scylitzae Synopsis historiarum (Thurn 373). – Felix, Byzanz 202 n. 43.
230 Malamut, Les îles 316. – Nesbitt/Oikonomides, Catalogue II 111.
231 Malamut, Les îles 316. – Ahrweiler, Byzance et la mer 51 n. 5. – Nesbitt/Oikonomides, Catalogue II 16-7.
232 Liudprandi episcopi Cremonensis Relatio de legatione Constantinopolitana, cap. 64 (Chiesa 217).
233 PmbZ 5358 (7th/8th c.). – Ahrweiler, Byzance et la mer 87.
234 Spanu, La Sardegna 92-5.
235 Leontsini argues for naval forces held by Sardinia in the 2nd half of the 7th century, which suppressed Mezezios' rebellion in 668, although there is no mention of ships referred to, at: Liber pontificalis (Duchesne I 346), see: Leontsini, Les communications 115.
236 Constantini Porphyrogeniti imperatoris De ceremoniis II 45 (Flusin/Zuckerman 323.123). For that expedition only three of them were participating: Aigaion pelagos, Samos, and Kibyrrhaioton.
237 Constantini Porphyrogeniti imperatoris De ceremoniis II 44 (Flusin/Zuckerman 315.1). – The same emperor promulgated a Novel at around 947/948, that refers to the naval themes of Aigaion pelagos, Samos and Kibyrrhaioton as receiving the same privileged treatment as the land themes whereas the other naval themes took no benefit from the Novel: Constantini VII imperatoris Nov. 3 cap. 1 (Svoronos 118). Dölger/Müller, Regesten 673.
238 Malamut, Les îles 314. For this creation, see: Brubaker/Haldon, Iconoclast Era 733.
239 Theophanis confessoris Chronographia a. a. 6218 (Boor 405. – Mango/Scott 560). Zuckerman postulates Kosmas being part of the Karabisianoi, but his post as *tourmarchēs* renders this solution unlikely, although a projection from 9th-century realities on the part of Theophanēs cannot entirely be ruled out, *pace* Zuckerman, Learning from the Enemy 124. Instead, I consider it is much more likely that the tourmarchēs led Hellas' troops into battle, because he was the one familiar with the main instrument of the revolt targeting the capital: the naval forces.
240 Constantini Porphyrogeniti imperatoris De thematibus, cap. II 5 (Pertusi 90).
241 Nesbitt/Oikonomides, Catalogue II 22-3.
242 Constantini Porphyrogeniti imperatoris De ceremoniis II 44 (Flusin/Zuckerman 299).
243 Brubaker/Haldon, Iconoclast Era 730-731.
244 Nichanian/Prigent, Les stratèges 97-99.
245 Theophanis continuati Historia II 27 (Featherstone 120). – Main study: Prigent, Euphèmios. – For Sicily's deposition as a cradle for rebellion, see: Kislinger, Elpidios 199.
246 Leonis III papae epistolae X 6 (Hampe 96) sent to Charlemagne in the reign of Emperor Michael I on 26th Aug 812.
247 Makrypoulias, Navy 153. – Nesbitt/Oikonomides, Catalogue 62. – Brubaker/Haldon, Iconoclast Era 757, n. 112, arguing for a creation in around 784-788. First mention of the theme (812/13): Tacticon Uspenskij (Oikonomides, Listes 49, 11).
248 Constantini Porphyrogeniti imperatoris De ceremoniis II 45 (Flusin/Zuckerman 321.74-5).
249 Tsougarakis, Byzantine Crete 23-24.
250 Tsougarakis, Byzantine Crete 40.

Fig. 5 View of the city of Dyrrhachion (Durrës) by Simon Pinargenti from 1573. – (After Isole, che son da Venetia nella Dalmatia, et per tutto l'arcipelago, fino a Costantinopoli, con le loro Fortezze, e con le terre più notabili di Dalmatia ; nuovamente poste in disegno a beneficio de gli studiosi de Geografia. In Venegia 1573, no. 6).

(802-811) or Michael I (811-813)[251], but it was lost for the empire in fights between 822/827 and the 850's[252]. Although it seems likely that it possessed warships, we dispose of no information. After its reconquest in 961, Crete immediately became a land theme again[253].

5) Nikopolis: When being raised from an *archontia* to a theme in the second half of the 9th century, its headquarters were relocated from Nikopolis to Naupaktos at the same time[254].
6) Dyrrhachion (see **fig. 5**): Before being elevated to a theme in the 800's[255] it had been led by an archōn (of Bagenetia)[256]. It is doubtful that it possessed warships on its own, instead, central fleet squadrons were sometimes operating from Dyrrhachion[257].
7) Dalmatia: Before being elevated to a theme in the 870's[258] it had been led by an archōn[259]. Although being a coastal territory, there is no evidence for warships maintained by the theme.
8) The Theme of Paphlagonia: Established in the 800's[260], its naval forces were led by a katepanō according to the written sources[261] and seals[262] ever since till the 11th century and they were most likely stationed in Amastris (see **fig. 3**)[263]. However, Sinōpē and Tios may have been relay stations. The fleet's area of operation encompassed the whole Black Sea. When the future Emperor Alexios I went to Pontoherakleia in ca. 1075 the local dynatos named Maurex was apparently also in possession of naval forces[264].

As said, the thematic fleet stemmed from both naval themes and those ordinary themes that disposed of squadrons. Its combined forces roughly matched the size of the central fleet, as can be seen by the reports for the expeditions of Michael II against Crete (headed by Krateros in ca. 827-829; 70 thematic warships)[265], Leo VI against the Syrian coast (headed by Himērios in 910; 67 thematic to 100 imperial warships)[266],

251 Tacticon Uspenskij (Oikonomides, Listes 49, 18). – Brubaker/Haldon, Iconoclast Era 761-762 n. 132.
252 Christides, Conquest of Crete.
253 Nesbitt/Oikonomides, Catalogue 94. – Malamut, Les Insulaires 65, and Cosentino, Naval Warfare 325, suggest that it had been a naval theme nonwithstanding the fact that no fleet is ever mentioned in relation to the theme of Crete.
254 Nesbitt/Oikonomides, Catalogue II 9-10.
255 Tacticon Uspenskij (Oikonomides, Listes 49, 17). – Kislinger, Dyrrhachion 313. – Živković, Uspenskij's Taktikon 84.
256 Kislinger, Dyrrhachion 337. – Ahrweiler, Byzance et la mer 87.
257 Constantini Porphyrogeniti imperatoris De ceremoniis II 45 (Flusin/Zuckerman 317-319). – Ioannis Scylitzae Synopsis historiarum (Thurn 342-343). – Kislinger, Dyrrhachion 351.
258 Kislinger, Dyrrhachion 313. – Brubaker/Haldon, Iconoclast Era 761. – Prigent, Adriatique 412-414.
259 Kislinger, Dyrrhachion 341-343.
260 Nesbitt/Oikonomides, Catalogue IV 25. – Brubaker/Haldon, Iconoclast Era 758. First mention (812/813): Tacticon Uspenskij (Oikonomides, Listes 49, 7).
261 Theophanis continuati Historia III 28 (Featherstone 176). – Constantini Porphyrogeniti imperatoris De administrando imperio, cap. 42 (Moravscik/Jenkins 182). – Philothei protospathari Cleterologion (Oikonomides, Listes 231, 25). – Ahrweiler, Byzance et la mer 110-111. It should be remarked, though, that the naval forces referred to were maybe part of the central fleet and in that case not belonging to the theme of Paphlagonia.
262 Zacos/Nesbitt, Byzantine Lead Seals II nos. 348 (a certain katepanō commanding the naval forces of both Boukellariōn and Paphlagonia in the first half of the 10th c.). 798 (second half 10th c.). 1060 (first half 11th c.).
263 Oikonomidès, Listes 349. – Belke, Paphlagonien 162. This infers from the imperial 8th/9th-century fortifications and the elevation to an autocephalous archbishopric in ca. 800: Notitiae episcopatuum ecclesiae Constantinopolitanae, not. 3, 329 and 4, 76 (Darrouzès 237 and 251). – Crow/Hill, Amastris 251-265.
264 Nicephori Bryennii Historia II 26 (Gautier 197-9).
265 Iosephi Genesii Historia II 5 (Lesmüller-Werner/Thurn 26-7). – Theophanis continuati Historia II 25 (Featherstone 116). – Ioannis Scylitzae Synopsis historiarum (Thurn 45). – Makrypoulias, Navy 157. – Tsougarakis, Byzantine Crete 43.
266 Constantini Porphyrogeniti imperatoris De ceremoniis II 44 (Flusin/Zuckerman 297-299). – Skopelites, Οι ναυτικές δυναμείς 109, surmises that Leo expanded the navy significantly in the aftermath of the sack of Thessalonica in 904.

and Constantine VII against Crete (headed by Kōnstantinos Gongylēs in 949; 55 thematic to 82 imperial warships)[267]. According to the numbers transmitted for the expedition of Himerios in 910, the central fleet had a total strength of 12 000 men without reserves; the Kibyrrhaiotōn 5600; Samos 4000; and Aigaion Pelagos 3000[268]. Although these numbers were certainly temporarily increased due to the planned offensive, the ratio between them indicates the approximate strength of the naval forces (central fleet matches thematic navy almost 1:1).

Due to the naval forces' almost equal size, it happened quite often during civil wars that the navies of the central fleet met the thematic fleets in battle. That occurred in 821 when Emperor Michael II blocked the Hellespont against the usurper Thomas with the central fleet[269]. And again in 977, when Michael Kourtikios, stratēgos of Kibyrrhaiotōn, while advancing to the Hellespont was defeated off the coast of Phokaia by the droungarios of the central fleet Theodoros Karantēnos[270].

Regarding other recorded major naval operations, we lack information on the origin of the warships. On 22 May 853, 85 Byzantine ships (*shalandiyah*) attacked Damietta according to Arabic sources, led by the δρουγγάριος τοῦ πλωΐμου Niketas Ooryphas[271]. In early summer 858 (sometime between April to August), a naval encounter between Arab and Byzantine fleets occurred in the Ionian Sea, in which 40 *chelandia* commanded by »the Cretan« took part. He is to be identified with John, the Byzantine stratēgos of Peloponnese[272].

When larger fleets were assembled in a combined fleet – then usually under the supreme command of the droungarios of the central fleet – the overhauling and outfitting of the ships were overseen by the *protonotarios*[273] of that very theme in which the assembly was taking place as is attested by by documents of the 10th century[274].

Operational sizes and internal command structure

While the army was organised in banda and tourmai, the mid-Byzantine navy used the standard detachment of a dromon, called οὐσία, numbering 108-110 men[275], and led by a kentarchos. Larger dromones could be manned by an augmented οὐσία, called the Pamphylian οὐσία (120-160 men), or even two ousiai[276]. The crew consisted of soldiers, and oaring the ship was their main occupation[277].

The extraordinary large naval operations recorded in the written sources may distort our view of the navy's everyday activities. Actually, the naval forces usually had a less imposing impact due to their operation in small units. To imagine the size of permanent thematic squadrons and the effort to maintain them, we need to reconsider the evidence.

At the turn of the year 885/886, Pope Stephen V requested Emperor Basileios I to send a single patrol chelandion off the papal coast in a regular manner from April to September to ward off Saracen pirates[278]. This demand was fulfilled. Far off from the theatre of war, a single warship may have been considered sufficient. Under Emperor John III six ships were sent against the Megale Vlachia (i.e. Thessaly) in 1239[279].

According to the 10th-century *tactica* of Leo VI, the smallest operational unit of warships in a regular mission was to be three to five ships[280] which were under the command of a κόμης[281], in other sources this office is sometimes circumscribed as ἀρχηγός. However, komētes can be found in every military unit, also in inland themes without any naval forces, where they appear as commanders of a bandon[282]. Consequently, not every komēs can be co-opted for the navy[283].

A somewhat different pattern emerges when considering the lead seals. Only the komētes of the central fleet are readily identifiable. According to a 9th-century lead seal, Andreas had been komēs of the 3rd bandōn of the central fleet[284]. A similar testimony belongs to Michaēl in the second half of the 9th century[285]. Further commands of the central fleet were stationed in Abydos and Hierōn. Although komētes controlled the sea traffic at either base since the 6th century, they were incorporated into the naval command seemingly only during the 8th century. For Abydos, a certain Nikētas is recorded at the turn of the 7th/8th century[286], Theodōtos in the first half of the 8th century[287], Paulos in the first half of the 8th century[288], Basileios in the first half of the 8th century[289], Kōnstantinos in the 8th century[290]. For Hierōn, Baanēs in the first half of the 8th century[291], Sergios in the second half of the

267 Constantini Porphyrogeniti imperatoris De ceremoniis II 45 (Flusin/Zuckerman 317-319).
268 Constantini Porphyrogeniti imperatoris De ceremoniis II 44 (Flusin/Zuckerman 295).
269 Iosephi Genesii Historia II 5 (Lesmüller-Werner/Thurn 26-27).
270 Ioannis Scylitzae Synopsis historiarum (Thurn 319-322).
271 Vasiliev/Canard, Byzance et les Arabes I 212-218. Aṭ-Ṭabarī, Ta'rīḫ al-rusul wa l-mulūk a. a. 238 (Yar-Shater XXXIV 124-127).
272 Vasiliev/Canard, Byzance et les Arabes I 219-220.
273 This office came into existence in the 810's, see Brubaker/Haldon, Iconoclast Era 764.
274 Ahrweiler, Byzance et la mer 424.
275 Haldon, Theory and Practice 281.
276 Cosentino, Naval Warfare 327-328.
277 Cosentino, Naval Warfare 328.
278 Stephani V papae epistola ad Basilium I imperatorem (Caspar/Laehr 374).
279 Georgii Acropolitae Historia 38.22-23 (Macrides 207).
280 Leonis VI imperatoris Tactica XIX 25 (Dennis 512). – Pryor/Jeffreys, Age of the δρόμων 268-269.
281 Basilii patricii Naumachica, cap. 4 (Jeffreys 538).
282 Kühn, Die byzantinische Armee 51.
283 In 812/813 they are specified as κόμητες τοῦ πλοΐμου in Tacticon Uspenskij (Oikonomides, Listes 63, 26). – In the 10th c., they are mentioned in De ceremoniis I 47 (Dagron/Flusin II 5). Béhier, La marine 4-5.
284 Laurent, Orghidan, no. 178. – PmbZ 417.
285 Zacos/Nesbitt, Byzantine Lead Seals II, no. 853. – PmbZ 5128.
286 Zacos/Veglery, Byzantine Lead Seals, no. 3039. – PmbZ 5326.
287 Zacos/Veglery, Byzantine Lead Seals, no. 2480A. – PmbZ 7926.
288 Zacos/Veglery, Byzantine Lead Seals, no. 3160. – PmbZ 5819.
289 Nesbitt/Oikonomides, Catalogue III no. 40.4. – PmbZ 852.
290 Nesbitt/Oikonomides, Catalogue III no. 40.6. = Zacos/Veglery, Byzantine Lead Seals, no. 1803. – PmbZ 3808.
291 Nesbitt/Oikonomides, Catalogue III no. 81.1. – Zacos/Veglery, Byzantine Lead Seals, no. 3212 (Hieron not preserved, but same official). – PmbZ 714.

Fig. 6 View of the city of Euripos (Negroponte, Chalkida) by Giovanni Francesco Camocio. – (Isole famose porti: fortezze, e terre maritime sottoposte alla Ser.ma Sig.ria di Venetia, ad altri Principi Christiani, et al Sig.or Turco nouamẽnte poste in luce. Venetia [1572]; Rare Book Division, The New York Public Library. »Isole famose porti« New York Public Library Digital Collections).

8th century[292], Kosmas in the 2nd quarter of the 9th century[293]. For both Abydos and Hierōn at the same time, Geōrgios in the 8th century[294], and Michaēl in the later 9th century[295]. Testimonies dry out during the ninth century, for reasons unknown, although the central fleet continued to operate from Abydos.

Apparently, although there is much more evidence of the komētes of the central fleet, the provincial fleets must also have had them. The sigillographic evidence indicates that the office went out of use in the course of the 10th century.

Yet, this Byzantine nomenclature spread to the West and was adapted accordingly. In the 12th-century Norman navy, each ship was commanded by two *comes galearum*[296]. Also in 16th-century Venice, warship commanders were called *sopracomiti*[297].

There is another office that has been co-opted for the navy. Ahrweiler suggested taking every testimony for an *archon* (ἄρχων) in a coastal city (like Smyrna[298]) or an island – which in turn very often are coined as *abydikos* probably related to the paragon of the archon of Abydos (as Ahrweiler suggested) or, alternatively, to the *paraphylax* of Abydos[299] – to postulate naval squadrons in many ports of the empire[300]. However, the assumption that every *archōn* of a coastal city disposed of warships under his command can be doubted, considering that his main tasks were rather overseeing taxation, especially collecting custom duties, controlling maritime traffic, ensuring order and performing general police functions, and that he was subordinate to the λογοθέσιον τοῦ γενικοῦ (therefore not organised within the military administration). Furthermore, archontes are found in many inland places[301]. The same can be said of the *paraphylax,* who is attested not only in port cities but also in inland cities such as Nicaea. Taken together *archontes* and *paraphylakes* previously considered to be in command of warships, may have had no connection at all with the navy.

Conclusion

The etymological survey undertaken forms the essential basis for an investigation of the Byzantine navy. Although the Byzantine written sources pay little attention to the operation and maintenance of the navy, surprisingly even in the naval *tactica*, comparative reflections on the Roman and Arab navies give indications of the Byzantine one. As a matter of fact, the Italian and Arab fleets were strongly

292 Nesbitt/Oikonomides, Catalogue III no. 81.3. = Zacos/Veglery, Byzantine Lead Seals, no. 2358. – PmbZ 6633.
293 Nesbitt/Oikonomides, Catalogue III no. 81.2. = Zacos/Veglery, Byzantine Lead Seals, no. 2077. – Lilie et al., Prosopographie der mittelbyzantinischen Zeit, nos. 4133 and 4144.
294 Zacos/Veglery, Byzantine Lead Seals, no. 1333. – PmbZ 2150.
295 Wassiliou/Seibt, Die byzantinischen Bleisiegel II no. 140. – PmbZ 25130.
296 Stanton, Norman Naval Operations 264-265.
297 Romano, Economic Aspects of the Construction of Warships 67.
298 Cheynet, La place de Smyrne 92. – Ahrweiler, Fonctionnaires 239.
299 Abydikoi are testified at different times in Thessalonica, Euripos, Attaleia, Amisos and Corinth and the office vanished during the 11th century, cf. Ahrweiler, Fonctionnaires 245-246 and Zacos/Veglery, Byzantine Lead Seals I no. 2173.
300 Ahrweiler, Byzance et la mer 54-61.
301 Ahrweiler's point of view has already been rejected by Oikonomides, Listes 342-343 n. 317.

influenced by the Byzantine navy until the 11th century, so that a comprehensive view can broaden our perspective on the functioning of the Byzantine navy. As it turned out, security aspects were of central importance for the ports of the navy, and that produced specific characteristics. »Closed ports« have to be differentiated in ports blocked seawards by a chain, and ports enclosed landwards by a wall. For military ports, both features were combined, this port type being tentatively called λιμὴν κλειστός in Greek, while derivatives of mandracium prevailed in Romance languages and were adopted in Greek only in the Late Middle Ages. Consequently, it is the design of a port that influences the appellation rather than the actual use by commercial ships or the navy.

Based on a survey in the sources, a tentative list and interpretation of the naval bases in the Byzantine empire can be proposed. With the creation of the central command of the Karabisianoi and the high esteem the command received in the administrative apparatus at the turn of the 7th/8th century, a naval network for extensive fleet operations evolved. Yet, previous installations and ports determined the pattern, with areas with a long tradition of high-quality shipbuilding, regardless of the fact that no imperial fleet existed anymore in Late Antiquity.

Due to the regionalisation of the commands during the 8th century, new minor naval bases developed and consequently surface in the sources. Every naval droungariate sustained and maintained its flotilla in at least one naval base in its area of control. Consequently, the creation and development of the naval themes and those themes with a naval force, indicate a shift to the particularisation of naval power. This process strengthened the military capabilities of the periphery at the expense of the central fleet. Since the 9th century at the latest, Taranto, Rossano, Ragusa, Kerkyra, Naupaktos, Monemvasia, Euripos (see **fig. 6**), Moudros (Lemnos), Antioch ad Cragum, Karpathos, Amastris and maybe Samos and Cherson can be accounted for being minor naval bases serving regional commands; in the later 10th century supplemented by Chios. Additionally, at certain times the central fleet used Abydos and Dyrrhachion as subordinated naval bases. The imperial authority was safeguarded against attempts after the grab for power on the part of the navy by a deliberate power balance between the central fleet and the combined thematic fleets.

As the sources reveal, Byzantine warships were constructed in specialised ports until the 12th century[302]. In the 7th/8th centuries, the navy was mainly built in Constantinople, but further major naval bases in the west were Ravenna, Carthage, and Syracuse. In the core areas of the empire, the central fleet operated from Thessalonica, Mitylene, Smyrna, Rhodes, and Attaleia. Their ports most probable represented the initial naval bases which had military installations, provided the necessary security for the fleet, and were spacious enough for a larger flotilla.

Ahrweiler suggested that a large part of the construction of the navy – both of the central and the thematic fleets – was conducted in provincial shipyards resp. arsenals close to civilian and mercantile shipbuilding[303]. She underlined that the use of the terms ἐγχώρια and τοπικά in three instances in relation to Ragusa, Lampsakos, and Paphlagonia points to locally constructed ships[304]. In fact, it seems much more likely to conceive both terms as referring to warships operating in distinctive nautical areas with regional crews.

Yet she pushed her conclusions even further. According to her, the autonomy of the naval commands since the mid-8th century included warship-building by each command on its own: »Pendant la période de l'existence parallèle de la flotte impériale et des flottes des thèmes (VIIe-XIe siècles), indépendamment des arsenaux constantinopolitains réservés à la flotte impériale, des arsenaux importants fonctionnaient dans les provinces, notamment dans celles qui formaient les thèmes purement maritimes«[305]. However, it seems as if most naval bases were restricted on repairing, outfitting, and wintering warships that had been constructed elsewhere. Although not every thematic naval command had an arsenal, the major naval themes created a construction site for warships. The commands of Aigaion Pelagos and Kibyrrhaioton foraged their own timber in 949 according to one of the excerpts in *De ceremoniis*[306]. This can only be interpreted in the sense that they had to supply themselves for the maintenance and renewal of their own ships[307]. Yet only a few of the naval bases presented above may have been construction sites for warships at that time. According to the indications presented above, Ravenna may have had a functional arsenal until the 7th century while Rhodes and Smyrna become one somewhat later. In continuity to their insignificance for the Roman navy, the Balkans parts of the empire contributed very little to the successive Byzantine navy.

302 In the Lascarid period this probably changed, when the harbour of Holkos/Olkos close to Lampsakos was used to construct the Propontic navy in a proper arsenal (νεώριον): Theodori Scutariotae episcopi Cyzicensis Synopsis chronikē (Sathas 470). – Georgii Acropolitae Historia, capp. 22 and 27 (Heisenberg/Wirth 36 and 45). – Ahrweiler, Byzance et la mer 437 and 315. – Macrides, George Akropolites 100-101.

303 Ahrweiler, Byzance et la mer 425.

304 Ahrweiler, Byzance et la mer 135.

305 Ahrweiler, Byzance et la mer 435 and 109.

306 Constantini Porphyrogeniti imperatoris De ceremoniis II 45 (Flusin/Zuckerman 319.57-67).

307 Haldon, Theory and Practice 263.

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Summary / Zusammenfassung

Naval bases, Arsenals, Aplekta: Logistics and Commands of the Byzantine Navy (7th-12th c.)

Based on a detailed examination of historiographical, administrative and sigillographic sources, the article reconstructs the maritime infrastructure of the Byzantine war fleet in its continuities and changes from the navy of the Roman Imperial period via late antiquity up to 11th/12th centuries, when the »pride of the Romans« (i. e. the fleet) began to wane.

Marinestützpunkte, Arsenale, Aplekta: Logistik und Kommandostruktur der byzantinischen Marine (7.-12. Jh.)

Auf einer Grundlage einer detaillierten Untersuchung historiographischer, administrativer und sigillographischer Quellen rekonstruiert der Beitrag die maritime Infrastruktur der byzantinischen Kriegsflotte in ihren Kontinuitäten und Veränderungen von der Marine der römischen Kaiserzeit über die Spätantike bis zum 11./12. Jahrhundert, als der »Stolz der Römer« (d. h., die Flotte) zu schwinden begann.

Thomas Schmidts

Fortifying Harbour Cities on the Southern Thracian Coast in the Early Byzantine Era – Case Studies on Ainos and Anastasioupolis

For a long time during the Roman Empire the southern part of Thrace was, thanks to the *pax Romana*, not involved in military conflicts. Along the coast of the northern Aegean, harbour towns like Abdera, Maroneia and Ainos had been continuously settled since the times of the Greek colonisation (**fig. 1**). Between the Rhodope Mountains and the coastline, the via Egnatia ran from the Adriatic Sea (Dyrrachium) to the Sea of Marmara (Perinthos). The peaceful era ended in the 3rd century AD, when coastal settlements became victims of Germanic raids by sea[1]. During the 4th and the 5th centuries, Thrace became a victim of several raids, especially by the Goths and Huns, but it is often impossible to identify which parts of the provinces were involved[2]. Also, the via Egnatia was used for mass migration such as the one of the Ostrogoths on their way to the West in 481[3]. The fortification measures during the reigns of emperors Anastasius I and Justinian I (which will be discussed below) were focussed on the endangered areas.

Ainos

Ainos, the modern Enez, is located in the West of Turkey, in Thrace, in direct vicinity to the mouth of the River He-

Fig. 1 Southern Thracian coast with Ainos and Anastasioupolis (Peritheorion) in Byzantine times. – (From Soustal, Thrakien).

1 Wolfram, Goten 62-65. – The sources do not mention destructions on the southern Thracian coast. The fleet passed Lemnos and anchored on the eastern coast of Athos.

2 Overviews on the history of early Byzantine Thrace: Soustal, Thrakien 62-74. Külzer, Ostthrakien 76-96.

3 In 481, the Ostrogothic king Theoderich Strabo died in Stabulum Diomedis. Cf. Wolfram, Goten 344 and n. 6. Pantos, Grab 488.

In: Johannes Preiser-Kapeller · Taxiarchis G. Kolias · Falko Daim (eds), Seasides of Byzantium. Harbours and Anchorages of a Mediterranean Empire. Byzanz zwischen Orient und Okzident 21 (Mainz 2021). DOI: https://doi.org/10.11588/propylaeum.910.c12058

Fig. 2 Ainos (Enez) with the river Hebros in the North and the surrounding lagoons. Satellite picture – (From Worldview 2).

bros which marks the border to Greece at present. It discharges into the Aegean Sea by creating an extensive deltaic floodplain. An up to 25 m high limestone promontory is surrounded by two lagoons, the Taşalıti Gölü and the Dalyan Gölü (**fig. 2**). The modern city is placed above parts of the ancient and Byzantine settlement. The sediments of the Evros caused a siltation process, as a result of which modern Enez is 4 km distant from the shoreline. If one considers the oldest known map of Piri Reis (**fig. 3**), the environmental change becomes obvious. Ainos had been situated on an open bay although it was already so shallow that bigger ships had to lighter in front of the coast. However, it was still a harbour city and had been one in earlier eras. Due to its position at the mouth of the river Hebros, it was a hub between the Mediterranean Sea and inland Thrace[4]. This is the main basis for its development and wealth.

History of Ainos

Ainos was at first founded by settlers from Alopekonnesos, a town on the west coast of the Thracian Chersonese, and later from Mytilene and Kyme, two Aeolean cities in Asia Minor. The original name of the city was Poltymbria. The Archaic and Classical periods were the focus of historical and archaeological research. Ainos, a member of the Delian league, is mentioned quite often in literary sources. The number of tributes and especially the extensive coin production from the late 5th century BC attest to the importance of the city. The production of wine and its export is proved by stamps on amphorae of the 5th and 4th centuries BC, when Ainos was counted amongst the wealthiest cities of the Northern Aegean[5]. The city's role as a hub to the interior in Classical times can be shown by the distribution of amphorae along the river Hebros and its tributaries[6]. In the Hellenistic Era, the city belonged to the sphere of influence of the Ptolemies and

4 The interdisciplinary research project »The Thracian harbor city of Ainos in Roman and Byzantine times« (2012-2018) was conducted by the author and Prof. Dr. Helmut Brückner (University of Cologne) within the DFG priority »Harbours from the Roman period to the Middle Ages«. – Results: Schmidts et al., Ainos.

5 History in Archaic and Classical times: May, Ainos. – Isaac, Settlements 140-157. – Brückner et al., Ainos 53-54.

6 Tzochev, amphorae 97-98 with pl. 55-56.

the Seleucids. It has been suspected that the city declined during this period according to the reduced coin production and during Roman Imperial times[7]. The foundation of Traianoupolis and the fact that Ainos was not located on the Via Egnatia as the main road in Roman Thrace were also blamed for this development. However, the archaeological evidence (see below) seems to prove a wealth that does not support the assumption of a radical decline. A further considerable point is an inscription from the Roman period that mentions a shipowner (*naukleros*)[8]. In the Roman province of Thrace, it is the only testimony with this occupational title; it hints at Ainos' role as a harbour city.

The city certainly boomed during early Byzantine times from the 4th to the 6th centuries[9]. Ainos' function as a bishop's see and the fact that it was mentioned first among the towns of the province of Rhodope in the *Synekdemos* of Hierokles may indicate its importance[10]. In the Middle and Late Byzantine eras, Ainos was still a trading hub. Late Byzantine sources, in particular, convey commercial activities across the river Hebros. For this period, Ainos was characterised as a medium-sized harbour city, comparable to Smyrna. The people of Ainos were involved in maritime trade[11]. From 1265, the Venetians maintained a trading post at Ainos, and between 1384 and 1453 it was ruled by members of the Gattilusi family from Genoa[12].

Fig. 3 Detail of the chart of Piri Reis from 1528 with Ainos and Samothrace. – (After Piri Reis, Kitab 1).

Procopius on Ainos

Procopius reports works on the fortifications of Ainos (translation H. B. Dewing): »The circuit-wall of this place was easy to capture not only because of its lowness, since it did not rise even to the necessary height, but because it offered an exposed approach on the side toward the sea, whose waters actually touched it in places. But the Emperor Justinian raised it to such a height that it could not even be assailed, much less be captured. And by extending the wall and closing the gaps on every side he rendered Aenus altogether impregnable. Thus, the city was made safe; and yet the district remained easy for the barbarians to overrun, since Rhodopê from ancient times had been lacking in fortifications.«[13]. Procopius thus describes the restoration of an older city wall and he also stresses the seaside. For this fortification he uses the Greek term περιβόλος.

Archaeological research

Archaeological research in Ainos began in the early 20th century and has been carried out continuously by Istanbul University since the 1980s[14]. The archaeological works focused on the cemeteries, which yielded remarkable burial objects, especially from the Archaic and Classical period. The development of the topography in ancient and Byzantine times is still unclear in many aspects (**fig. 4**). The traces of the ancient city are few. The so-called Roman villa (**fig. 4, 8**) an urban house with mosaics, and the well-built section of a street at least give an indication that the city was not such a poor place in Roman times as the study of the local coinage would suggest[15]. The fact that some large buildings were also erected in the Roman era can be proven by architectural elements that have been discovered in secondary use in recent decades[16].

7 Strack, Münzen 139-142.
8 IGR I 826.
9 Soustal, Thrakien 170-172 on the sources for Byzantine Ainos.
10 Hier. 634,5. – According to Soustal, Thrakien 170 »wohl nicht zufällig«.
11 Avramea, Communications 68. 85– Makris, Ships 97. – Matschke, Economy 468 (comparison to Smyrna). – Matschke, Commerce 796.
12 Cf. Wright, Gattilusio Lordship.
13 Proc. aed. 4, 11, 2-6: ταύτης ὁ περίβολος εὐάλωτός τε ἦν τῷ χθαμαλὸς εἶναι· οὐδὲ ὅσον γὰρ ἐς τὸ ἀναγκαῖον ἀνεῖχεν ὕψος· καὶ ἀναπεπταμένην τινὰ εἴσοδον κατὰ τῆς θαλάσσης τὸ γειτόνημα εἶχεν, ἀμηγέπη ἐπιψαύοντος αὐτοῦ τοῦ ῥοθίου. ἀλλὰ βασιλεὺς Ἰουστινιανὸς ἀνέστησε μὲν αὐτὸν ἐς ὕψος, μὴ ὅτι ἁλῶναι, ἀλλὰ καὶ ἀποπειρᾶσθαι ἀμήχανον. ἐπεξαγαγὼν δὲ καὶ πανταχόσε φραξάμενος ἀνάλωτον Αἶνον παντάπασι κατεστήσατο. καὶ ταύτῃ μὲν ἡ πόλις ἐν τῷ ἀσφαλεῖ ἐγεγόνει· ἔμεινε δὲ τοῖς βαρβάροις ἡ χώρα καταθεῖν εὐπετής· ἐπεὶ Ῥοδόπη ὀχυρωμάτων ἐκ παλαιοῦ ὑπεσπάνιζεν.
14 Overview on the archaeological research: Başaran, Excavations. Başaran, Ausgrabungen. – For the results of the annual excavations cf. the reports in the volumes of Kazı Sonuçları Toplantıları.
15 Başaran, Ausgrabungen 75. – Başaran, Excavations 221. – The excavations are not published in detail.
16 Schmidts et al., Ainos §§ 101-109. 357-358.

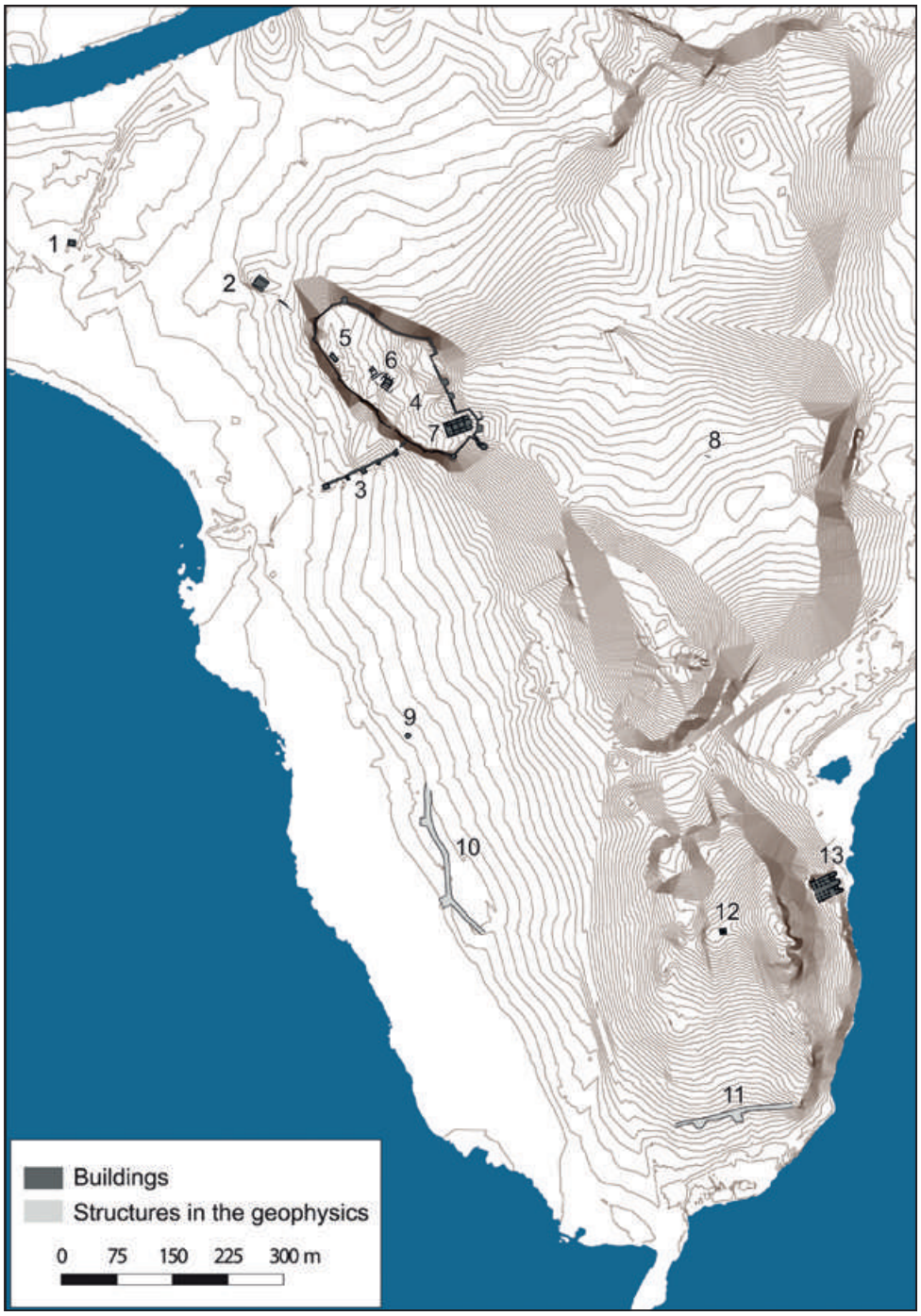

Fig. 4 Map of Ainos with selected remains: **1-3** Byzantine fortifications beneath the castle – **4** Byzantine castle. – **5-6** Byzantine churches. – **7** Byzantine church (Fatih camii). – **8** Roman villa. – **9** Byzantine church. – **10-11** Ancient city wall – **12** Byzantine tower. – **13** Byzantine church (Kral Kızı Kilisesi). – (A. Cramer / Th. Schmidts, 2018).

The multidisciplinary research project »The Thracian harbour city Ainos in Roman and Byzantine Times – Development of a hub in a changing environment« was conducted by the author and Prof. Dr Helmut Brückner (University of Cologne) and funded by the German research foundation (2012-2018) as part of Priority Programme 1630 »Harbours from the Roman Period to the Middle Ages«. It included an extensive survey of the shore areas, with geophysical and geoarchaeological prospections. Some of the major goals were the creation of a ground model and a plan of all ancient and Byzantine remains, the identification of the harbour sites and the reconstruction of the historical landscape and environment[17]

Byzantine Fortifications – the localisation of the Justinian building measures

The Byzantine castle (**fig. 4, 4**) was built on a hill near the lagoon on a place that was considered to be the ancient acropolis. The enclosing wall and the towers are well preserved and partly restored. The castle is situated on a rocky promontory. It therefore does not fit into the description of Procopius.

17 Preliminary results: Brückner et al., Ainos. – Schmidts et al., Ainos. – Heike Bücherl investigated the fortifications beneath the castle and will analyse them in the forthcoming final publication of the project.

Fig. 5 Ainos. View from the Byzantine castle to the East toward the Dalyan Gölü. Beneath the castle, the Byzantine wall with towers. – (Photo Th. Schmidts).

Fig. 6 Ainos. Byzantine Fortification near the Dalyan Gölü. – (Photo H. Bücherl).

Remains of fortifications are also located west and north-west of the castle, facing the larger lagoon, the Dalyan Gölü (**figs 4, 1-2; 5-6**). Their investigation was an essential part of the research project mentioned above. The southern wall faces the lagoon. It is 130 m long with five towers located at the outer southern side. About 300 m north of the end of the wall are remains of a large tower with indications of a connecting wall towards the citadel. Another tower near the Evros ca. 400 m north-west of the aforementioned tower was not part of the fortification facing the lagoon[18]. The area between the wall and the big Tower was interpreted as an inner harbour[19]. Consequently, the area up to the promontory hill of the Byzantine castle had to be filled with water. To prove this, geoarchaeological drillings have been carried out. However, this assumption could not be verified. According to the first analyses of the cores, the water was not located within the walls but in front of them[20].

18 Brückner et al., Ainos 57-63 and Schmidts et al., Ainos §§ 44-64 on the new investigations.

19 Başaran, Straßennetz 345. – Başaran, Ausgrabungen 72.

20 Brückner et al., Ainos 64. 72. – Schmidts et al., Ainos §§ 37-39.

Fig. 7 Ainos. Detail of a wall section of the Byzantine castle. – (Photo Th. Schmidts).

The south wall with five towers was a promising object for further investigation due to its state of preservation. The entire monument was documented digitally using the »structure from motion« method and sketches. The three round towers are connected to the wall; they belong to an earlier period. As the two large rectangular towers were attached to the wall, they belong to a later period. They are dated by an emblem of the Gattilusi family to the year 1413[21]. Parts of the wall were built from larger blocks that could have come from an earlier construction phase or were spolia. To decide this question, we made a small trench in a corner between one of the round towers and the wall. No evidence of older building activity has been found. The wall had been built in the Middle Byzantine era, probably not before the 11th century, according to the first analysis of pottery. This also fits with the results of the geoarchaeological survey that the site was filled up shortly before the wall was built. The large tower in the north is now also interpreted as a monument from the Middle and Late Byzantine period. An emblem of the Gattilusi of 1385[22] also proves building activities in the 14th century. Nevertheless, research on these monuments, which formed a protected area on the former shore of the lagoon below the castle, has not yet been completed. However, we can conclude that the buildings activities described by Procopius did not happen in this area.

An major result of the fieldworks is the evidence of an ancient city wall, which has been detected by geomagnetics south of the city in the southern part of the land tongue. Two sections of the wall are known until now (**fig. 4, 10-11**). The section in the south is 130 m long with two towers, the section in the west is approximately 200 m long and follows a zig-zag line with towers at the outer points. Drillings were conducted within the anomalies to show their state of preservation and to gain dating material[23]. Besides the described sections of the ancient city wall, we have no further evidence for its course. The main argument for a Hellenistic era is the zig-zag shape of the western section, which is known from several sites of this period[24]. This dating can also be confirmed by the analysis of the drillings. As a decline of Ainos was supposed in Hellenistic times, this building activity is remarkable and shows that a reassessment is necessary. At least the area of the western section is so low that Procopius' description that the water might have touched the wall is not unlikely. Some late Roman finds were discovered in the drill cores in the same layers as Hellenistic pottery. Without excavations, it is not possible to decide whether restauration or demolition work were done at this section of the city wall during the Late Roman or Early Byzantine era.

The position of the detected city wall segments could be an argument against their interpretation as the fortification mentioned by Procopius. If a reduction of the settlement area happened in Late Antiquity, it would be unlikely that the whole Hellenistic wall was restored in the 6th century. The distance from the approximate centre of the town, which was probably around and north of the castle and reached up to former bay, now riverbanks of the Hebros, must be taken into consideration. Rock-cut tombs on the tongue east and north-east of the sections of the city wall might support the

21 Asdracha, Thrace I 260-261 no. 30.
22 Asdracha, Thrace I 259-260 no. 29.
23 Seeliger et al., City Wall. – Schmidts et al., Ainos §§ 43. 83-85.
24 Winter, Fortifications. – Müth/Ruppe, Phänomene 238.

idea of a reduction of the urban space, but it is impossible to decide this question on the basis of the current state of archaeological research.

To conclude: We cannot prove where the fortification measures described by Procopius were carried out. Byzantine fortifications under the castle and, of course, the citadel itself can be excluded. The Hellenistic city wall in the south does not seem very likely either. An ancient city wall in the north of the city towards the sea, which has not yet been discovered, however existed according to a literary source[25].

Ainos in early Byzantine times beyond Procopius

The visible parts of the fortification of the Byzantine castle appear to have been built in the Middle Byzantine period. Inscriptions attest to restoration work in the late 13th century and early 14th century[26]. A section of the wall on the east front south of the main gate might have been erected in an early Byzantine or more likely in a Byzantine Dark Ages construction phase. The masonry of this section is characterised by a high proportion of spolia, blocks and column parts, which were integrated in the wall in its lowermost part (**fig. 7**). Above this follows a brick layer consisting of three ribs. Whether the larger blocks above the brick layer also correspond to this earlier phase is unclear. Nevertheless, the different construction of this lower section of the wall indicates an earlier date than the other visible parts of the fortification.

A large church building is situated south-east of the city near the Taşaltı Gölü (**fig. 4, 12**). It is known as Kral Kızı Kilisesi, which can be translated as »the kings' daughter church«. Excavations were carried out between 1984-1992 and from 2009 onwards. Results of the recent works are published as part of the annual excavation reports. Ousterhout dated the church to the period from the late 6th to the 9th century[27]. More recent excavations show that the building is larger than the Ousterhout's plan suggests, in which its lenght is given as 27 m. Earlier construction phases are attested, e. g., at the apses of the church. The architectural sculpture found inside the building can be dated to the Justinianic period, such as the fold and impost capitals with pinecone and vine leaf decoration and with zigzag ornamentation[28].

The best-known monument of Byzantine Ainos is situated inside the castle (**fig. 4, 7**). The church was used until the 1960s as a mosque (Fatih camii), when it was damaged by an earthquake. It is a large building of 21 to 38 m without the apses. According to Robert Ousterhout, the architecture closely relates to the developments in 12th century Constantinople[29]. It is larger than almost all Middle and Late Byzantine churches in Constantinople and probably served as the cathedral of Ainos. A fresco at the main entrance with the Virgin as a central figure contradicts the traditional view that it was a Hagia Sophia[30]. In 2017, the reconstruction of the mosque began, accompanied by excavation activities. Results have not been published until now, so it is not known whether there was an Early Byzantine predecessor building. At least the dimensions might be an indication for this assumption.

Fig. 8 Ainos, early Byzantine capital of the 5th century. Spoil exhibited in front of the Byzantine castle. – (Photo M. Dennert).

Architectural elements, especially capitals, indicate large and well-equipped churches of Early Byzantine times. Some are reused in later buildings like the Fatih camii inside the castle or stocked like in the Kral Kızı Kilisesi; other building elements have been discovered in modern Enez in secondary use (**fig. 8**)[31].

Moreover, public building activities are attested by an inscription from the 4th century[32]. It mentions a *pretōrion*, the *vicarius* of the diocese of Thrace and the governor of the province of Rhodopē. The meaning of the term *pretōrion* or Latin *praetorium* is not clear. The range of meanings comprises, e. g., residential buildings of a governor or high-ranking official or military commander as well as buildings for accommodation of authorised travellers[33].

The Late Roman pottery demonstrates that Ainos was part of long-distance trade networks. The range of pottery finewares consists mainly of Phocaean Red Slip and African Red Slip ware and shows a constant supply until the 7th century AD, as is common in cities of Asia Minor[34].

25 Polyaen. strat. 2, 22, 1. – Schmidts et al., Ainos § 122.
26 Asdracha, Thrace I, 254-257 no. 25-27.
27 Ousterhout/Bakirtzis, Monuments 42-44.
28 Cf. Schmidts et al., Ainos § 113 with notes 132-133 with further references to the excavation reports.
29 Ousterhout, Enez. – Ousterhout/Bakirtzis, Monuments 23-31.
30 Ousterhout/Bakirtzis, Monuments 31.
31 The documentation of the Byzantine architectural elements was conducted by Dr. Martin Dennert who will discuss them in the final publication of the project. – Cf. n. 28 for the capitals of the Kral Kızı Kilisesi. – Dating: Bulletin Épigraphique 2000, 810 (D. Feissel).
32 Kaygusuz, Inschriften 67 no. 4. – Asdracha, Thrace IV 287-289 no. 117.
33 Lavan, Praetoria 39-43 with further references.
34 Lätzer-Lasar, Handelsnetz.

Fig. 9 Satellite picture. **1** Anastasioupolis – **2** Silted harbor area – **3** fortification, aqueduct. – (From Google Earth).

Anastasioupolis

Anastasioupolis was located in the West of Thrace between Xanthi and Komotini, south-east of the village of Amaxades, on the northern shore of Lake Vistonis, which is now a lagoon connected to the northern Aegean (**fig. 1**). Its location and strategic function are obvious, considering that here was a narrow point of only 2 km between the Rhodope mountains and the shoreline on the course of the Via Egnatia. Due to a siltation process the remains of the city are today far from the shore of the lake (**fig. 9**). It is beyond any doubt that it once was a harbour City. Anastasioupolis was founded by Emperor Anastasius I. A foundation date after 498 has been proposed in consideration of the resettlement of the Isaurians in Thrace[35].

Procopius on Anastasioupolis

The description of Procopius is interesting because it portrays fortification works that are directly connected to the harbour: »The city of Anastasioupolis in this region was indeed walled even before this, but it lay along the shore and the beach was unprotected. Consequently, the boats putting in there often fell suddenly into the hands of the barbarian Huns, who by means of them also harassed the islands lying off the coast there. But the Emperor Justinian walled in the whole sea-front by means of a connecting wall and thus restored safety both for the ships and for the islanders. Furthermore, he raised the aqueduct to an imposing height all the way from the mountains which rise here as far as the city«[36]. Even Procopius cannot deny that this city was founded and fortified by Anastasius I. A main problem was the unprotected harbour area, but it is unclear if it was only a section of the shore or artificial installations. The fact that the episode of the robbery of the ships by the barbarians and the consequences were mentioned by Procopius shows that the importance of the harbour area and the number of ships should not be underestimated.

City wall, harbour fortification and the »aqueduct«

The city wall of Anastasioupolis is well preserved in a forest that was planted some decades ago. Until now, the site has not been in the focus of archaeological research[37]. There are only a few short articles or references in historical or archaeological publications. The most extensive work is an article by Kyriakides from 1931[38]. A small-scale ground plan of the fortifications (**fig. 10**) was published by Ch. Bakirtzis[39]. Most of the visible sections seem to be a result of building activities in Late Byzantine times during the reign of the Palaeologues. Brick monograms can be dated to 1341[40]. Traces

35 Soustal, Thrakien 401.

36 Proc. aed. 4,11, 11-13: Ἀναστασιούπολις δὲ ἡ τῇδε οὖσα τειχήρης μὲν καὶ πρότερον ἦν, ἐν δὲ τῇ παραλίᾳ κειμένη ἀφύλακτον εἶχε τὴν ταύτῃ ἠϊόνα. τὰ πλοῖα πολλάκις ἀμέλει ἐνταῦθα καταίροντα ὑποχείρια βαρβάροις Οὔννοις ἐξαπιναίως γεγένηται· ὥστε καὶ τὰς νήσους ἐνθένδε τὰς τῇ χώρᾳ ἐπικειμένας ἠνώχλησαν. Ἰουστινιανὸς δὲ βασιλεὺς διατειχίσματι τὴν παραλίαν περιβαλὼν ὅλην, ταῖς τε ναυσὶ καὶ τοῖς νησιώταις τὴν ἀσφάλειαν ἀνεσώσατο. ἀλλὰ καὶ τὸν τοῦ ὕδατος ὀχετὸν ἐκ τῶν ὀρῶν ἃ ταύτῃ ἀνέχει μέχρι ἐς τὴν πόλιν ἐς ὑπέρογκον ἀνέστησεν ὕψος.

37 I visited the site in 2016 and I thank the director of Antiquities of Rhodope Dr. Chryssa Karadima and her team for the support.

38 Kyriakides, Anastasioupolis.

39 Bakirtzis, Thrakien 164.

40 Asdracha/Bakirtzis, Inscriptions byzantines 246-250 no. 1-7. – Cf. Kyriakides, Anastasioupolis 205-209.

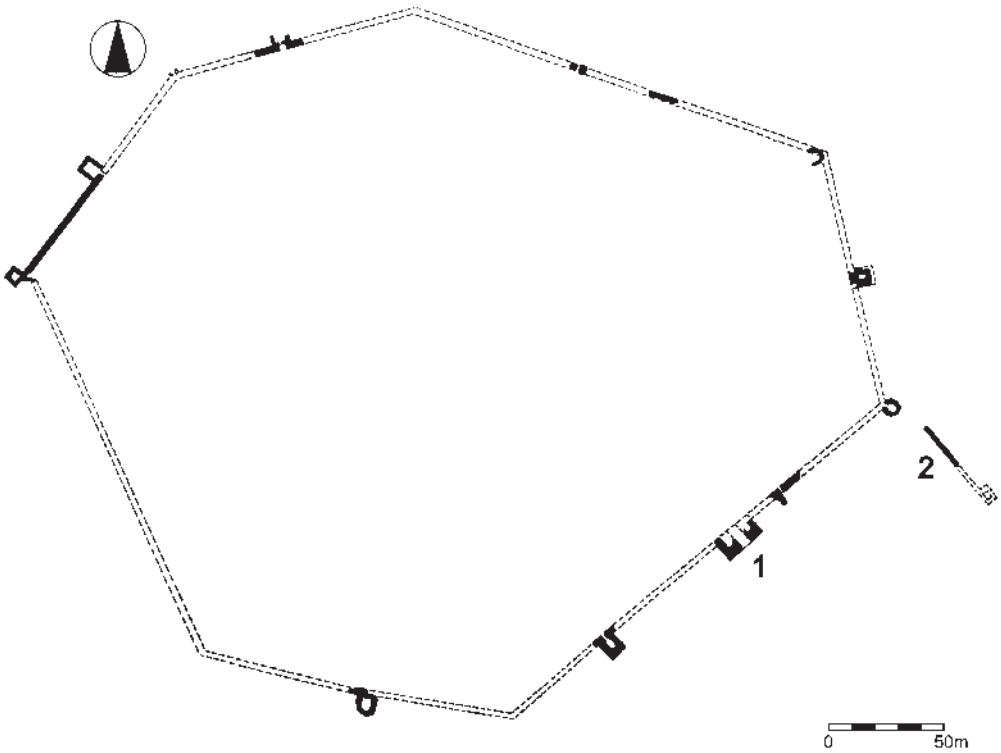

Fig. 10 Plan of Anastasioupolis. **1** Harbour gate – **2** Presumed harbour wall. – (After Bakirtzis, Thrakien).

Fig. 11 Anastasioupolis. Harbour gate from north-east. – (Photo Th. Schmidts).

of an older construction phase show that the course of the wall was probably unchanged since Early Byzantine times. They are characterized by regular brick lines. According to the documented sections of the wall (**fig. 10**) the size of the city is max. c. 330 m × 360 m and covers an area of c. 7.3 ha.

The harbour area can be located at the south-east side of the city. The gate is flanked by two towers (**fig. 11**). Tile monograms show that the visible part of the walls belongs to the Palaeologian construction phase. An earlier phase with a higher amount of tile is visible in parts where stones of the masonry shell have been removed. A section of a wall depicted in the ground plan (**fig. 10, 2**) is still visible today. It is 1 m high and ca. 9 m long, consisting of a double-leaf masonry system (**fig. 12**). It seems likely that this is a part of the fortification of the harbour area described by Procopius[41]. A. Regel's late 19th century description mentions two solidly built

41 Schmidts, Befestigung 295-296.

Fig. 12 Anastasioupolis. The presumed harbour wall after removing the vegetation in 2016. – (Photo Th. Schmidts).

walls and another gate[42]. The dimensions and the course of the walls are unclear, but it is likely that the harbour area must be located here. The dimensions of the gate and the orientation are arguments in favour of this interpretation.

A protected harbour, as described by Procopius, is an exceptional construction in the Early Byzantine era. Literary sources convey a few examples for the fourth to sixth century: Cyzicus[43], the Mandracium harbour in Carthage[44], as harbours closed by a chain, and Syracuse[45], which is generally described as a fortified harbour. However, it is unclear whether these were older constructions still in use or reused and maintained in the Early Byzantine era, which seems at least possible[46]. An iconographic source for a fortified early Byzantine harbour is the famous mosaic of Sant' Apollinare Nuovo in Ravenna which shows the harbour of Classis well protected by towers (**fig. 13**). The two towers are on land, which does not seem to be a realistic scenario[47]. Although an Early Byzantine construction seems probable, there are no hints to the exact date of this fortification. More common than a fortification in this period seems to have been the defence of a harbour by ships[48].

Procopius mentions an aqueduct leading from the mountain to the city, but he does not mention that it follows a fortification wall. It is still largely visible and covered by brushwood. Its course from the northern city fortification towards the flanks of the Rhodope Mountains is straight and 2.2 km long. The remains are up to 2 m high. Three towers, two facing east and one facing west, are visible in the course. According to the descriptions of Kyriakides in 1930, there were two walls with a space of 1 m between them[49]. He also interpreted the monument as a fortification wall built by Anastasios[50]. Apart from a brief notice, this fortification has not been mentioned in more recent times. We agree to the date of the wall to the Anastasian rather than the Justinian era and it seems likely that Procopius concealed the activity of Anastasios[51].

Taking into account the monuments and the descriptions of Procopius, Anastasios had probably built the fortified city and the fortification wall towards the Rhodope Mountains. A second building programme of Justinian comprised the protection of the harbour area as well as an aqueduct that followed the older fortification wall. Despite all these measures, Anastasioupolis was conquered in 562 by the Huns. It was one of the few cities for which a successful siege is attested during the reign ofJustinian I[52].

The fortification measures in context

The fortification measures in Ainos and Anastasioupolis are, of course, not unique (**fig. 14**). Following the Thracian coastline to the west and south of Constantinople, we can find further comparable building activities by Justinian that have been handed down by Procopius. In Selymbria (Silivri), which

42 Regel, Anastasiopole 149-150. – Schmidts, Befestigung 295 on the possible location of the second wall.
43 Amm. 26, 8, 8-9.
44 Prok. BV 1, 20, 15.
45 Prok. BG 3, 40, 12.
46 Schmidts, Befestigung 299.
47 Summaries of sources and archaeological records: Reddé, Mare 177-186. – Mauskopf Deliyannis, Ravenna 26-30.
48 Schmidts, Befestigung 299-300.
49 Kyriakides, Anastasioupolis 200-202.
50 Kyriakides, Anastasioupolis 205-207.
51 E.g. Meier, Anastasios 142 and 148-149 on the concealment of the performance of Anastasius by Procopius. – Especially on the province Rhodope: Soustal, Thrakien 72. – Haarer, Anastasius 230-245 on the building measures of Anastasios.
52 Sarantis, Wars 355.

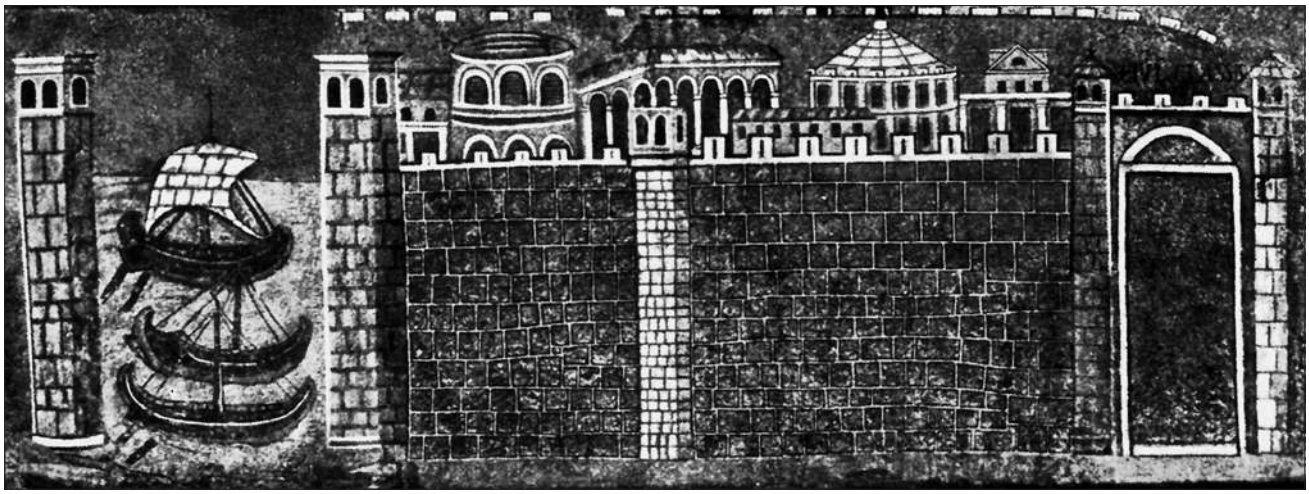

Fig. 13 Ravenna, Sant' Apollinare Nuovo. Mosaic depicting the protected harbour of Classis. – (After Deichmann, Ravenna fig. 100).

is located within the Long Walls, the Makrá Teichē, parts of the city walls were restored[53]. Procopius stresses the well-situated harbour of Rhaidestos (Tekirdağ) and its value for the commercial navigation. As it was not fortified, it fell victim to raids, so the merchants neglected and abandoned this port in view of the risks. So, a city was built with a strong wall of exceptional size[54]. On the Thracian Chersonesus, which was also protected by the Agoraion Teichos[55] in the north of the Peninsula leading from East to West, fortifications for three harbour cities are also mentioned. Kallipolis (Gelibolu) was fortified, and storage buildings were built to supply the army[56]. At Sestos, in the absence of older fortifications, a fortress was constructed on a hill, of which Prokop said it was inaccessible[57]. At Elaious, the city at the southern end of the Thracian Chersonesus, a fort was also built on a rock next to the sea[58]. It can be seen that the danger of raids by sea and the risks to maritime trade were perceived and the construction and reinforcement of fortifications were measures to protect harbour cities. As the supply of Constantinople depended on an effective functioning of commercial shipping, the harbours in the forefront of the capital played in important role. The importance of the agricultural production of the Thracian Chersonesus should also not be underestimated and the protection of the peninsula by the Agoraion Teichos tells its own tale[59].

It is obvious that work on the fortifications of Herakleia, the ancient Perinthos (today Marmara Ereğlisi) is not mentioned by Procopius. This important city had already been fortified in two steps in the first half of the 5th century and probably in the late 5th or early 6th century[60]. Considering that Selymbria had also been fortified after its foundation under Arcadius[61] and that the sea walls secured Constantinople since at least from the 5th century onwards[62], it is probable that the measures of Justinian could be seen in a context of enlargement of the fortified maritime landscape of the Constantinople front.

In contrast to the harbour cities on the Sea of Marmara, the fortification measures of those on the coastline of the Aegean are few and less dense, and it is doubtful whether they should be seen in context with those. The importance of Ainos is related to its role as hub between the river Hebros and the North Aegean. It is obvious that commodities of the fertile Thracian hinterland were shipped via Ainos. For Anastasioupolis, the situation was different. The reason for the construction of the city wall and the fortification across the strait towards the Rhodopes during the reign of Anastasios was the strategic position at a time of danger caused by barbaric raids via the Via Egnatia. The construction of the harbour fortifications was an attempt to eliminate a weakness in the existing local fortification system, which became apparent when the barbarians stole ships, as Procopius relates. That the safety of the other coastal cities should be improved is due to this event. However, the protection of the harbour itself is not common in Early Byzantine times. The preferred measures were to build or reinforce the city walls, as the other examples had shown.

53 Prok. aed. 4, 9, 12. – Crow, Cities 343 on the chronology of the walls. – Külzer, Ostthrakien 635 and 641. – Sarantis, Wars 183. – Rizos/Sayar, Dynamics 94.
54 Prok. aed. 4, 9, 17-21. – Külzer, Ostthrakien 607. Rizos/Sayar, Dynamics 98.
55 Cf. Külzer, Ostthrakien 238-239.
56 Prok. aed. 4, 10, 22-23. – Külzer, Ostthrakien 425-426.
57 Prok. aed. 4, 10, 24-25. – Külzer, Ostthrakien 646.
58 Prok. aed. 4, 10, 26-27. – Külzer, Ostthrakien 345.
59 Cf. Külzer, Chersones.
60 Crow, Cities 343. – Külzer, Ostthrakien, 405 dates according to Crow 2001.– Rizos/Sayar, Dynamics 89-90. – Westphalen, Basilika 40 (on the brick stamps). – The 5th century date for the walls in the lower town is verified by brick stamps. Crow proposed a later date for a section and tower of the inner wall of the acropolis because of a different construction.
61 Rizos/Sayar, Dynamics 94.
62 According to Mango, Shoreline 24 the entire seawall of Constantinople was not erected under the reign of Theodosius II. But it is in discussion whether sections of the seawall may already have been built in the Constantinian era. Cf. Asutay-Effenberger, Landmauer 2.

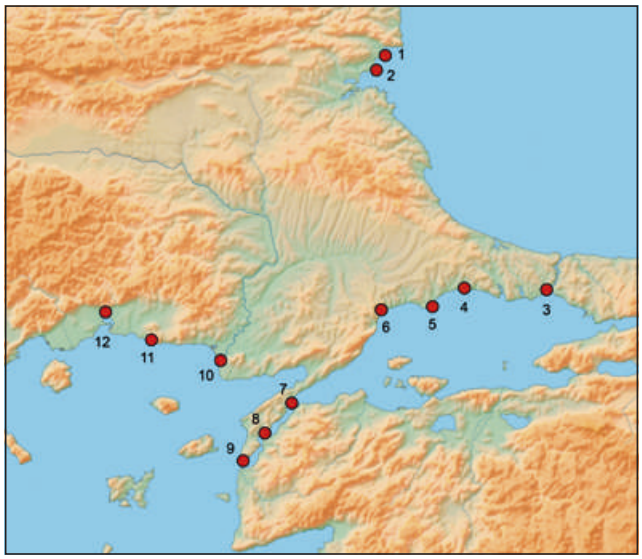

Fig. 14 Thracian seaports mentioned in the text: **1** Anchialos. – **2** Mesembria. – **3** Constantinople. – **4** Herakleia/Perinthos. – **5** Selymbria. – **6** Rhaidestos. – **7** Kallipolis. – **8** Sestos. – **9** Elaious. – **10** Ainos. – **11** Maroneia – **12** Anastasioupolis – (Graphics K. Hölzl, RGZM, 2018).

Far more harbour cities existed in Southern Thrace in Byzantine times than those named by Procopius[63]. A good example of a flourishing harbour city in the early Byzantine era which was not mentioned by Procopius was Maroneia, about 50 km north-west of Ainos. However, it is unclear whether fortification works were carried out in more port settlements than those mentioned by Procopius in the 6th century. Many of the settlements existed continuously until the Late Byzantine era, so that older structures might have been destroyed or overbuilt. A reassessment through archaeological research would be necessary to quantify the 4th to 6th century building activities in the harbour cities of southern Thrace. Nevertheless, it is obvious that the harbour cities were endangered and that fortification measures were undertaken to protect them.

The truthfulness of Procopius' descriptions will not be discussed here. Whether under Justinian or one of his predecessors – especially Anastasios – it is obvious that fortification measures of harbour cities in Thrace along the shores of the North Aegean and the Sea of Marmara had been undertaken in the early Byzantine period.

For two main Thracian harbour cities north of Constantinople on the shore of the Black Sea, Anchialos and Mesembria, no fortification measures are conveyed by Procopius. However, they are mentioned for Aquae Calidae, a nearby spa town[64]. At least at Mesembria, which had already been fortified in Antiquity, remains of Late Antique or Byzantine fortifications with walls reaching into the sea are known[65]. Perhaps there had been no reason to reinforce the fortifications in the 6th century. Building activities, especially concerning churches of the 6th century, can be documented by several inscriptions[66].

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63 The density of harbours and anchorages can be proved by the Tabula Imperii Byzantini volumes (Külzer, Ostthrakien; Soustal, Thrakien) with their excellent maps and the results of the project on »Harbours and landing places on the Balkan coasts of the Byzantine empire (4th to 12th centuries)«, published online: https://www.db-thueringen.de/receive/dbt_mods_00038384 (03.02.2021).

64 Proc. Aed. 3, 7, 18-23. – Soustal, Thrakien 175-177. Heher et al., Balkanküsten 107-110 zu Anchialos und den Thermen.

65 Soustal, Thrakien 355-359, esp. 357. – Heher et al., Balkanküsten 109-110 with fig. 13-14.

66 After Beševliev, Inschriften 102-116 no. 153a-g1 (brick stamps, Justinianic), no. 154-155 (brick stamps, 6th c.). 156. 161-162 (inscriptions, 6th c.). no. 166 (5th-6th c.). – Soustal, Thrakien 357-358 with a comment on the buildings and other datable features.

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Summary / Zusammenfassung

Fortifying harbour cities on the southern Thracian coast in the Early Byzantine Era – Case Studies of Ainos and Anastasioupolis

Procopius conveys building activities for Ainos and Anastasioupolis, two cities located at the coast of Southern Thrace. The harbour city of Ainos was settled continuously since Archaic times. It was important as a commercial hub because of the nearby mouth of the river Hebros. Also, in the early Byzantine era the settlement was still important. Procopius describes a restoration of the older city wall to protect the seaside of the city. Although traces of the ancient city wall were detected by geophysics for the first time within a research project financed by the German Research Foundation, it is not possible to locate this building measure. In contrast, Anastasioupolis was a small, fortified settlement founded by the emperor Anastasios around 500. It is located at a strait between the Rhodope Mountains and the lake Vistonis. This strait was closed by a wall which was also probably built by Anastasios. Procopius mentions the erection of a protected harbour as a building measure of Justinian. This was caused by barbarian invasions when ships were stolen and used for raids in the Northern Aegean. The harbour area can be located but only a small section remained of its fortification. Protected harbours are exceptional buildings in Early Byzantine times and can be found only in a small number. Further literary or archaeological evidence for fortification measures of Thracian harbour cities in the 5th and 6th exists especially for the Western coast of the Sea of Marmara.

Befestigungsmaßnahmen in Hafenstädten an der südthrakischen Küste in frühbyzantinischer Zeit – Fallstudien für Ainos und Anastasioupolis

Für die im südlichen Thrakien gelegenen Städte Ainos und Anastasioupolis werden von Prokop Baumaßnahmen Justinians überliefert. Ainos war eine seit archaischer Zeit kontinuierlich besiedelte Hafenstadt. Ihre Bedeutung als Knotenpunkt des Handels ergibt sich aus der Lage an der Mündung des Hebros. In frühbyzantinischer Zeit dürfte die Siedlung relativ bedeutend gewesen sein. Prokop beschreibt Restaurationsmaßnahmen an der alten Stadtmauer zur Sicherung der Seeseite der Stadt. Diese Maßnahme lässt sich allerdings momentan nicht eindeutig lokalisieren, obwohl Spuren der antiken Stadtmauer erstmals geophysikalisch durch neuere Forschungen im Rahmen eines von der DFG geförderten Projektes nachgewiesen werden konnten. Bei Anastasioupolis handelt es sich hingegen um eine relativ kleine, von Kaiser Anastasios um 500 gegründete befestigte Siedlung. Sie befindet sich an einer strategisch wichtigen Engstelle zwischen den Rhodopen und dem Vistonis-See, durch die die Via Egnatia verläuft. Diese wurde durch eine von der Stadt ausgehenden Mauer gesperrt, die mutmaßlich ebenfalls auf Anastasios zurückgehen dürfte. Prokop beschreibt als Baumaßnahme Justinians die Anlage eines befestigten Hafens, da zuvor bei barbarischen Einfällen Schiffe entwendet und für Raubzüge in der Nordägäis genutzt worden waren. Das Hafenareal lässt sich lokalisieren, von der Befestigung selbst sind aber nur geringe Reste bekannt. Befestigte Häfen bilden eine Besonderheit in frühbyzantinischer Zeit und sind nur selten nachweisbar. Weitere literarisch oder archäologisch nachweisbare Befestigungsmaßnahmen von thrakischen Hafenstädten sind vor allem an der Westküste des Marmarameeres für das 5. und 6. Jahrhundert nachweisbar.

Grigori Simeonov

The Region of the Danube Delta in the 7th to 10th Century and the Case of the so-called Lykostomion Maritime Province*

To the memory of Prof. Vasilka Tăpkova-Zaimova (1924-2018)

The Theory

The Avar and Slavic incursions starting at the end of the 6th century, followed by the foundation of the First Bulgarian state in 680, resulted in a loss of vast areas in the Balkans by the Byzantines whose authority was now limited to Eastern Thrace and the coastal regions of the peninsula[1]. In the 8th century, however, a Byzantine Reconquista started first on the Peloponnese, and then in Thessaly and Epirus, where the actions of the central government were favoured by the maritime location of the areas and the aid of the imperial navy[2]. Around the year 800, the creation of a *thema* in Western and Central Thrace under the name »Macedonia« marked the first important territorial gain towards the reconquest of the Eastern Balkans[3]. The northern regions of what was once the Byzantine West remained under Bulgarian domination until the campaign of Emperor John Tzimiskes against the Rus' in 971[4]. As one can see, the Empire could easily defend or regain those areas located close to the seashores compared to the Balkan hinterland. This was one of the reasons why some scholars thought that Byzantium was able to hold its territories in the former province of Scythia Minor from the reign of Constantine IV in the late 7th century until John Tzimiskes drove the Rus' of Svyatoslav back and conquered the Bulgarian capital Preslav in 971[5].

The view of the continuity of Roman (and Byzantine) administration and culture in the region between the Danube and the Black Sea, called by Ion Barnea a »mighty stronghold of Romanitas on the Lower Danube«[6], withstanding the assaults of Slavs and Bulgars, found broad support among the earlier generations of Romanian scholars. Some of these include Ion Barnea, Petre Diaconu, Radu Florescu, Radu Ştefan Ciobanu, Adrian Rădulescu, Octavian Iliescu (more cautious in his earlier works) and Dan Gh. Teodor, just to mention the most outstanding names[7]. Apart from those, some Bulgarian historians such as Ivan Dujčev, Velizar Velkov, Vasilka Tăpkova-Zaimova, Genoveva Cankova-Petkova and Vasil Gjuzelev thought that the coastal location of Varna made it easier for Constantinople to preserve its control over the ancient town of Odessos (Varna) until the second half of the 8th century[8]. Recent works on material culture and studies on the Byzantine political history in the 7th century have shown the collapse of the Danubian Limes in Scythia Minor starting in Phocas' and Heraclius' reigns (602-641), and the retreat of Byzantine administration and garrisons to the South in Thrace[9].

However, the lack of any opposition to the imperial navy in the Black Sea before the first attack of the Rus' against Constantinople in 860, whose maritime forces were no match for the Byzantine fleet, still leads some historians to the conclusion that, despite Bulgarian control over the mainland in Dobruja, the Byzantines were able to claim their supremacy in the region of the Danube Delta and even to organize an administrative unit called the *thema* of Lykostomion. This was the idea of Hélène Ahrweiler, presented in her famous book *Byzance et la mer. La marine de guerre. La politique et les institutions maritimes de Byzance aux VII^e^-XV^e^ siècles*[10].

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1 Lilie, Reaktion 18-20. – Haldon, Byzantium in the Seventh Century 65-66. – Ditten, Einwanderung der Slawen. – For dating the battle between Constantine IV and Asparukh, which resulted in the foundation of the First Bulgarian state to the south of the Danube, in 680, see De Gregorio/Kresten, Datierung des Bulgarenfeldzugs. – Božilov, Istorija I 212.

2 Kislinger, Regionalgeschichte 33-37. – Kislinger, Dyrrhachion 331-346. – Charanis, Nicephorus I.

3 Wassiliou-Seibt, Byzantine Frontier. – Ditten, Thrakien 160.

4 Božilov/Gjuzelev, Istorija na Dobrudža II 9-21.

5 Barnea, Dobrogea 207-208. – Florescu/Ciobanu, Problema stăpânirii bizantine 384-391. – Diaconu, La Dobroudja et Byzance 219-220. – Diaconu, La présence des Byzantins 367-369. – Damian, Prezența politică bizantină 298; 302; 313. – For a critical overview on this topic, see Harhoiu, Observații generale 349-350.

6 Barnea, Dobrogea 218. – The same notion can be found in Barnea, La Danube 583-584.

7 Barnea, Dobrogea 209. – Barnea/Ştefănescu, Din istoria Dobrogei III 7-31. – Barnea, La Danube 583-587. – Barnea, Periochē 83-84. – Diaconu, La Dobroudja et Byzance 218. – Diaconu, Kilia et Licostomo 250. – Florescu, Limesul dunărean 171-174; 177. – Florescu/Ciobanu, Problema stăpânirii bizantine 381-382; 384-391. – Rădulescu, Românii 77-80. – Iliescu, Licostomo 460. – Iliescu, Kilia 234, n. 34. – Iliescu, Nouvelles contributions 246-247. – Teodor, Quelques aspects 2; 9. – Teodor, Nouvelles considérations 100. – For further literature, see the bibliography in Madgearu, Byzantine Military Organization.

8 Cankova-Petkova, O territorii 142. – Gjuzelev, Mar Nero 16. – Dimitrov, Varna 56 and n. 9. – For Varna in the Early Middle Ages, see Pletnjov, Varna 56-74. – Pletnjov/Pusev, Istorija na Varna II 49-122.

9 Harhoiu, Observații generale. – Zahariade, Scythia Minor 231-236. – Pletnjov, Vtora Mizija i Skitija 111-135. – Madgearu, Continuitate şi discontinuitate culturală 138-144. – Madgearu, Downfall 315-324. – Madgearu, End. – Madgearu, Province of Scythia. – Fiedler, Studien.

10 Ahrweiler, Byzance et la mer 57-58, n. 2; 89. – See the book review of Petre Şerban Năsturel in Revue des Études Sud-Est Européennes 4/3-4, 1966, 649-651.

In: Johannes Preiser-Kapeller · Taxiarchis G. Kolias · Falko Daim (eds), Seasides of Byzantium. Harbours and Anchorages of a Mediterranean Empire. Byzanz zwischen Orient und Okzident 21 (Mainz 2021). DOI: https://doi.org/10.11588/propylaeum.910.c12059

Her main arguments were the existence of an important Genoese settlement Lycostomo within the Delta in the Late Middle Ages (most probably modern Periprava)[11], and the dedicatory preface in the *Lexicon* of Patriarch Photius from the second half of the 9th century. Since the work is dedicated to Thomas, *prōtospatharios* and *archōn* of Lykostomion[12], Ahrweiler considered it justified to identify the earlier settlement with the later one. From the scholars who criticized such argumentation two names deserve to be mentioned – Vasilka Tăpkova-Zaimova, who thought that the toponym in question might be a homonymous town in Epirus or Thessaly[13], where a Bishop of Lykostomion is attested at the beginning of the 10th century[14]; and Ivan Jordanov, who studied all known Byzantine coins and seals found in the region of Dobruja[15]. Nevertheless, some recent studies based predominantly on the analysis of sigillographic and numismatic data claim to have brought new arguments in favour of a Byzantine maritime and administrative presence at the Lower Danube in the three centuries preceding Tzimiskes' campaign of 971[16]. However, their conclusions differ from each other; while some of the scholars such as Damian and Busetto, who build on the works of Barnea and Diaconu, consider it impossible for the Byzantines to have organized all the campaigns starting in the late 7th century without the assistance of a fleet and administration in the area of the Delta[17], other historians such as Madgearu[18] and Mărculeț[19] argue in favour of the existence of a maritime province at the Lower Danube only in the second half of the 9th and perhaps at the beginning of the 10th century.

The present paper focuses mainly on the written sources complemented with results derived from the latest studies in geoarchaeology of the Danube Delta. As for existing numismatic and sigillographic data[20], the analysis of it sometimes seems to lack objectivity[21]. Up to present date, not a single seal of a Byzantine official bearing in their title the toponym of Lykostomion has been found. Finding scattered coins and seals that belonged to Byzantine officials from other parts of the Empire in Dobruja and the region of the Delta can hardly be accepted as proof of communication between the alleged Byzantine *stratēgos* of Lykostomion and his colleagues[22]. Coins for their part are an interesting source for tracing trade connections along the Western Black Sea coast, but as Harhoiu remarks, using them as evidence for political sovereignty as some earlier scholars did[23], should be supplemented by other data to avoid misinterpretations[24].

The wars between Byzantium and the Bulgars

The Seventh Century

Written sources dating from the two centuries after Theophylact Simocatta wrote his historiographical work can offer us little help if we try to answer the question of what happened in the Byzantine provinces of Scythia Minor and Moesia Inferior after the rebellion of Phocas in 602 and the fall of Emperor Maurice[25]. However, a brief discussion seems to be useful for the purposes of this study. The *History* of Theophylact Simocatta shows us that at the end of Maurice's reign Byzantium has already had difficulties in maintaining the defence line in Scythia Minor and keeping the Avars

11 Portulans grecs II (232, 11-22 Delatte). – Raiteri, Atti 203-205. – Iliescu, Licostomo 435-456.

12 Photius, Lexicon, Epistula dedicatoria (I 3, 4-5 Theodoridis): Φώτιος Θωμᾷ πρωτοσπαθαρίῳ καὶ ἄρχοντι τοῦ Λυκοστομίου φιλτάτῳ μαθητῇ χαίρειν. – Teodor, Quelques aspects 9 wrongly speaks about a seal of Thomas Prōtospatharios, which does not exist.

13 Tăpkova-Zaimova, Quelques observations 81-86. – Cf. Kostova, Settlement Patterns 33. – On Lykostomion in Thessaly, see Koder/Hild, Hellas und Thessalia 207-208.

14 Notitiae episcopatuum VII 307 (279 Darrouzès): ὁ Λυκοστομίου ἤτοι Θετταλικῶν Τεμπῶν. – For dating the note in the time of the first patriarchate of Nicholas I (901-907), see Darrouzès' commentary on page 55 of the edition.

15 Jordanov, Dobrudža 187-191; 199-200.

16 Madgearu, Byzantine Military Organization 17-21. – Madgearu, Marea Neagră 22-23. – Madgearu, Lycostomion Theme. – Mărculeț, Prōtospathariō kai archonti. – Mărculeț, Stăpânirea bizantină 7-17. – Damian, Prezența politică bizantină 284-313.

17 Damian, Prezența politică bizantină 286-287; 313. – Busetto, Presenza della flotta 222.

18 Alexandru Madgearu, to whom we owe a series of publications dealing with the history of the Lower Danube from Roman times to the Late Middle Ages, expressed his scepticism about Ahrweiler's interpretation in his work on continuity and discontinuity on the Lower Danube in the 7th and 8th century, cf. Madgearu, Continuitate şi discontinuitate culturală 147-149. In his recent monograph on Byzantine administration in the Northern Balkans in the 11th and 12th century, he tries to summarize all available data on the problem and concludes that a maritime province of Lykostomion, the aim of which was to protect Constantinople from the Bulgars and the Rus', did exist in the area of the Danube Delta in the second half of the 9th century, cf. Madgearu, Byzantine Military Organization 17-21. – Madgearu, Marea Neagră 22-23. – Madgearu, Lycostomion Theme.

19 In his first book on Byzantine domination on the Lower Danube the Romanian historian only points out the scientific debate in one of the footnotes, cf. Mărculeț, Imperiul Bizantin 6, n. 5. In the second one he deals with the problem in a separate chapter and concludes that a Byzantine »archontate« with a centre in Lykostomion did control the area of the Danube mouth in the second half of the 9th and perhaps during the 10th century, before Tzimiskes took possession of the north-eastern Balkans in 971; cf. Mărculeț, Stăpânirea bizantină 7-17. – Mărculeț, Prōtospathariō kai archonti.

20 For an overview of Byzantine coins found in Dobruja, see Mănucu-Adameşteanu, Monede byzantine I-V. – Mănucu-Adameşteanu, La diffusion 276-286. – Poenaru-Bordea/Ocheşanu, Probleme istorice. – On seals, cf. Jordanov, Dobrudža.

21 See Jordanov's critique and his remark that finding Byzantine seals dating back to the 9th and 10th century (before 971) in the region of Pliska and Preslav does not mean that the heartland of the Bulgars was under Byzantine control, cf. Jordanov, Dobrudža 187-191. 199-200.

22 Barnea, Sceaux byzantins 55-56. – Barnea/Ştefănescu, Din istoria Dobrogei III 15-19. – Madgearu, Byzantine Military Organization 17-19.

23 Cf. Condurachi/Barnea/Diaconu, Nouvelles recherches 179-181.

24 Harhoiu, Observații generale. – See also the remarks of Kostova, Settlement Patterns 22; 27 on distribution of coin finds from the 8th-10th century in the northern and southern part of Dobruja. – One of the most important issues concerning the history of Dobruja in Early Middle Ages relates to the three valla extending from the Danube to the Black Sea. These are the Small Earthen Dyke, the Large Earthen Dyke, and the Stone Dyke. The problem of their chronology and builders is still a matter of dispute which caused different interpretations and remains open for discussion. For the valla in Dobruja, see Madgearu, Byzantine Military Organization 9-15 (with further bibliography). – Rašev, Starobălgarski ukreplenija.

25 Since this is a huge topic more attention will be paid to this subject in the final publication of the project.

and Slavs beyond the borders of the province[26]. Barbarian raids may have even reached Marcianopolis (near modern Provadiya), but the Byzantine counter-attacks could easily force them to withdraw beyond the Danube[27]. Moreover, if we regard what Simocatta says about the campaigns of Priscus in 593 and Peter in 594, we can see that imperial authority was still present in the towns on the Lower Danube lying to the west of Dorostolon (modern Silistra)[28]. The situation changed drastically during the reigns of Phocas and Heraclius[29]. In the summer of 626, the Empire had to defend its own capital against the army of the Avar Khagan whose Slavic subjects had sailed along the western coast of the Black Sea and then transported their *monoxyla* (dugouts) over land straight to the Golden Horn[30]. There was obviously no power in the provinces of Scythia Minor and Moesia Inferior that could have prevented them from doing so. Moreover, the scarce archaeological and numismatic data from the 7th and 8th centuries in Romania and Bulgaria, compared to earlier and later centuries, seem to suggest a decline in urban life on the Daube and the northern areas of the Western Black Sea coast, as well as an end of Byzantine authority in the region between the Lower Danube and the Balkan Mountains[31].

Thus, the Avar and Slavic incursions in the first half of the 7th century had paved the way for the next invaders, whose aim was to cross the Danube and settle in Scythia Minor. After the dissolution of the so-called »Great Bulgaria« of Kubrat, his third son Asparukh headed to the West, leading part of the Bulgars and settling in the Onglos[32]. It would go far beyond the scope of this paper to present in detail the scientific debate considering the site of the Onglos[33], known only from the works of two Byzantine historians, Theophanes the Confessor and Patriarch Nicephorus, who used one and the same source for this part of their narratives[34]. Nevertheless, some brief remarks seem necessary because the location of the Onglos is closely connected to the site of the battle between the Byzantine army of Constantine IV and the Bulgars of Asparukh, which in turn had a crucial effect on the medieval history of the Lower Danube.

According to the accounts of Theophanes and Patriarch Nicephorus, we may assume that the Onglos was a region located to the north of the Danube[35], perhaps between the rivers Prut, Seret and Danube[36], or bounded by the Danube, the Prut, and the Dniester. The attempt of some, predominantly Bulgarian, scholars to identify the Onglos and the site of the battlefield with the rampart in Niculițel in Northern Dobruja seems not to stand its ground because the Byzantine historians clearly state that after their victory, the Bulgars crossed the Danube and reached the so-called Varna near Odessos[37]. The supporters of this hypothesis argue in favour of a fourth branch of the Danube Delta which may have flown to the south of the rampart in Niculițel[38], but such a statement finds no support in the recent studies on the history of the Danube Delta. The geoarchaeological data on the evolution of this area in the last 7500 years have shown that this process took place within the so-called Danube Bay (**fig. 1**). Due to this fact, the St. George branch (Brațul Sfântu Gheorghe) became a constant southern line for Delta's evolution from the Beştepe Hills in the west to the Dunavaț Promontory in the east[39].

To the east of this promontory and far away from the rampart of Niculițel, however, the St. George branch did build

26 For an overview of the history of Scythia Minor in the late 6th and the first half of the 7th century, cf. Zahariade, Scythia Minor 231-236. – Pletnjov, Vtora Mizija i Skitija. – Madgearu, Downfall. – Madgearu, End. – Madgearu, Province of Scythia.

27 Theophylact Simocatta, Historia VII 2, 1-2 (247, 8-18 de Boor/Wirth). – Madgearu, Province of Scythia.

28 Theophylact Simocatta, Historia VI 6, 1-6; VII 1-7 (230, 13-231, 3; 245, 21 – 256, 25 de Boor/Wirth). – Pohl, Awaren 136-143. – Nystazopoulou-Pelekidou, Symbolē 162-169. 195-197. – Goubert, Les guerres 116-124.

29 Haldon, Byzantium in the Seventh Century 41-48. – Lilie, Reaktion 197-199.

30 Simeonov, Kosmidion 231. – Simeonov, Belagerung.

31 Barnea, Dobrogea 206. – Fiedler, Studien. – Bounegru/Adumitroaei, Life. – Custurea/Nastasi, End of Urban Life. – Harhoiu, Observații generale 351. – Gândilă, Coin Circulation.

32 Cf. Ziemann, Großbulgarien for further bibliography on Kubrat's »Great Bulgaria«.

33 A good summary of written sources and scholarly works may be found in Ziemann, Onglos.

34 Besides the studies on Theophanes and Patriarch Nicephorus, which Ziemann, Onglos quotes, see Treadgold, Trajan the Patrician. – Howard-Johnston, Witnesses 237-312.

35 Theophanes, Chronographia A.M. 6171 (357, 27-358, 4 de Boor): ἔπειτα τούτων ὁ τρίτος, Ἀσπαροὺχ λεγόμενος, τὸν Δάναπριν καὶ Δάναστριν περάσας καὶ τὸν Ὄγλον καταλαβὼν βορειοτέρους τοῦ Δανουβίου ποταμοὺς μεταξὺ τούτου κἀκείνων ᾤκησεν, ἀσφαλῆ καὶ δυσμάχητον εἶναι τὸν τόπον στοχασάμενος ἐξ ἑκάστου μέρους· τελματώδης γὰρ ἔμπροσθεν, καὶ ἄλλοθεν τοῖς ποταμοῖς στεφανούμενος. – Nicephorus Patriarches, Breviarium 35 (88, 21-27 Mango): τούτων ὁ λοιπὸς τρίτος ἀδελφὸς ὄνομα Ἀσπαροὺχ τὸν Δάναπριν καὶ τὸν Δάναστριν ποταμὸν περαιωθεὶς περὶ τὸν Ἴστρον οἰκίζεται, τόπον πρὸς οἴκησιν ἐπιτήδειον, Ὄγγλον τῇ σφῶν καλούμενον φωνῇ, καταλαβόμενος, δυσχερῆ τε καὶ ἀνάλωτον πολεμίοις ὑπάρχοντα· ἀσφαλής τέ ἐστι τὰ μὲν ἔμπροσθεν τῇ τε δυσχωρίᾳ καὶ τῷ τελματώδης εἶναι τυγχάνων· τὰ δ' οὖν ὄπισθεν κρημνοῖς ἀβάτοις τετειχισμένα. – Moravcsik, Byzantinoturcica II 213. – Bănescu, Onglos 434-438. – Beševliev, Săobštenieto 34-38. – Gjuzelev, Asparuch 26 and 38. – The data in the chronicle of Michael the Syrian are ambiguous because he speaks about a Bulgar leader called Bulgarios who settled together with 10000 men south to the Danube with the permission of Emperor Maurice, cf. Michael the Syrian, Chronicle X 21 (II 363 Chabot). The only Bulgarian source dealing with Asparukh's conquest, the so-called Bulgarian Apocryphal Chronicle from the 11th century, known for omitting all wars and conflicts between Bulgaria and Byzantium, simply mentions the Danube river and the settlement of the Bulgars in the »Land of Karvuna« (Dobruja) without giving any further topographical details, cf. Tăpkova-Zaimova/Miltenova, Historical and Apocalyptic Literature 281, 13-24 (Slavonic text) and 291-292 (English Translation). – Biliarsky, Prophet Isaiah. – Ivanov, Bogomilski knigi 275.

36 For localizing the Onglos to the north of the Danube mouth, see the overview in Ziemann, Onglos. – Georgiev, Asparuhov Onglos. – Atanasov/Russev, Onglos 15-18. – Hälcescu, Despre Onglos. – On placing the Onglos between the rivers Prut, Seret and Danube, cf. Božilov, Istoričeskata geografija. – Madgearu, Onglos. – Božilov, Istorija I 208-213. – The location of the Onglos in Eastern Muntenia suggested by Diaconu, Localizarea Onglos-lui seems to be unconvincing due to many reasons.

37 For a review on this theory, see Rašev, Ezičeska kultura 33-37. – Rašev, L'Onglos 70-78. – Damian, Prezența politică bizantină 313. – Petre, Byzance et Scythie Mineure 562-566.

38 Rašev, Ezičeska kultura 36. – Baltakov, Paleogeografskata obstanovka.

39 Vespremeanu-Stroe et al., Holocene Evolution 49-51. – Panin, Danube Delta. – Romanescu, Island of Peuce. – For a review of historical sources, see also Himmler, Untersuchungen 29-33.

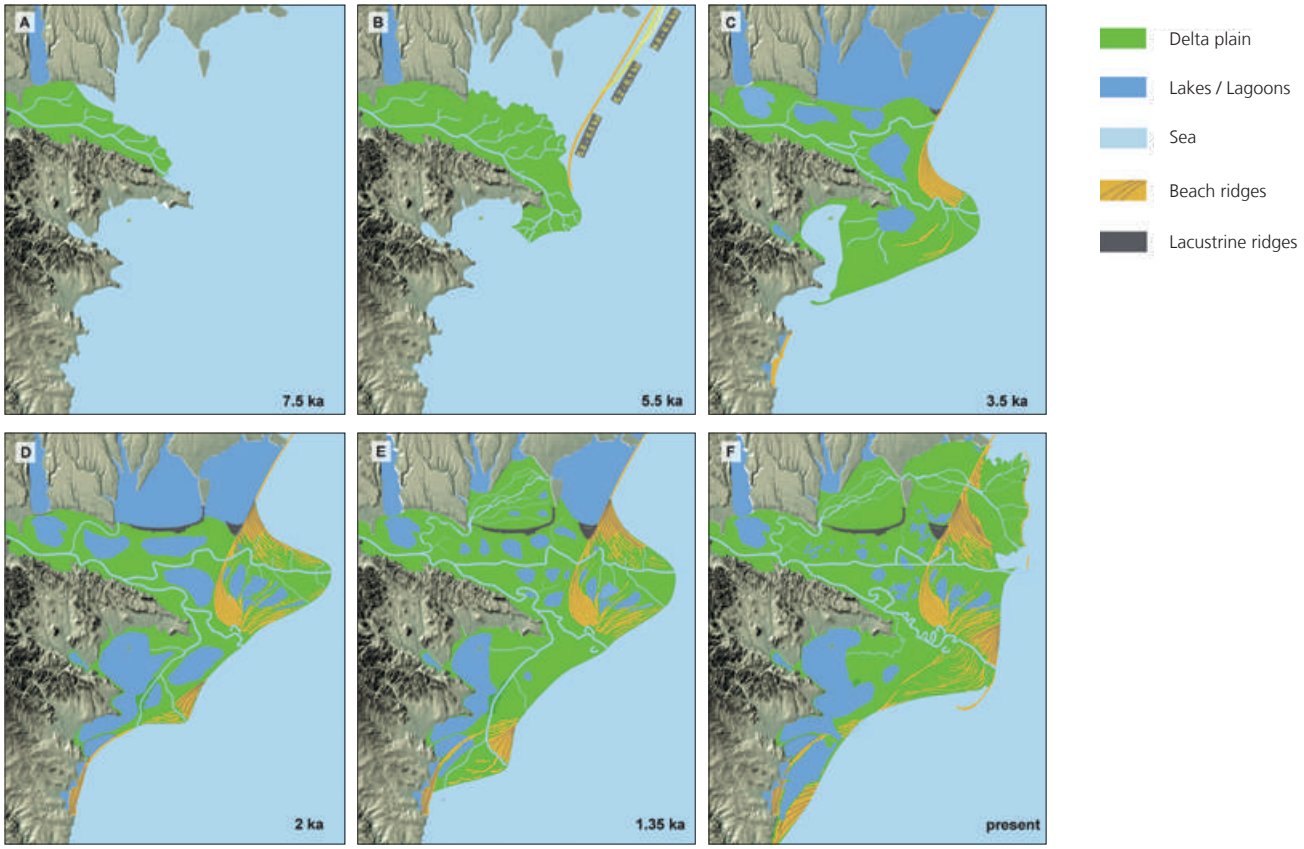

Fig. 1 Geological changes of the Danube Delta. – (From Vespremeanu-Stroe et al., Holocene Evolution 50).

another branch (modern Dunavaț, identified by some scholars with the ancient Hieron or Peuce branch[40]), which according to a recent study of Romanian and French scholars may have been the main distributary of the Delta for centuries[41]. Perhaps the area between it and the new St. George branch is where the ancient island of Peuce was located[42]. It is this island, which the Armenian geography of Anania Shirakatsi (called *Ašxarhac'oyc'*) states was the place where Asparukh, the Khan of the Bulgars, dwelled[43]. Peuce is known from other sources, such as the ancient *periploi*, a Claudian's panegyric on Emperor Honorius and a description of the Black Sea in the historiographical work of Ammianus Marcellinus, just to name some of them[44]. The Bulgars may have placed the area within the Danube branches under their control, something that is attested with other invaders coming from the North and reaching the Danubian Limes[45]. However, it would be hard to assume that the battle of 680 took place on this island. The reasons for this assumption may nonetheless be found in the work of Theophanes. The

40 Periplus Ponti Euxini IV-V 63-68 (135, 11-15 Diller): Ἀπὸ δὲ Ἀντιφίλου εἰς Ψιλὸν καλούμενον στόμα τοῦ Ἴστρου ποταμοῦ σταδ τ̄ μιλ μ̄… Ἀπὸ δὲ τοῦ Ψιλοῦ καλουμένου στόματος τοῦ Ἴστρου εἰς δεύτερον στόμιον σταδ ξ̄ μιλ η̄. Ἀπὸ δὲ τοῦ δευτέρου στομίου ἐπὶ τὸ Καλὸν στόμιον σταδ μ̄ μιλ ε̄ γ΄. Ἀπὸ δὲ τοῦ Καλοῦ στομίου ἐπὶ τὸν Ἄρακον (ὃδε ὀνομάζουσι) στόμιον τέταρτον τοῦ Ἴστρου σταδ ξ̄ μιλ η̄. Ἀπὸ δὲ τοῦ Ἀράκου ἐπὶ Ἱερὸν λεγόμενον στόμιον πέμπτον τοῦ Ἴστρου σταδ ρ̄ κ̄ μιλ ῑ ς̄… οὗτος ὁ Ἴστρος ποταμὸς ὁ καὶ Δανοῦβις λεγόμενος κατέρχεται ἀπὸ τῶν ἑσπερίων τόπων, τὴν ἐκβολὴν πέντε στόμασι ποιούμενος.

41 Vespremeanu-Stroe et al., Holocene Evolution 55-56. – See also Panin, Danube Delta 260.

42 A recently conducted interdisciplinary study was aimed at trying to find an answer to the question where Peuce was located. According to the scholars it was a part of the eastern Dunavaț promontory, cf. Romanescu, Island of Peuce.

43 Anania Shirakatsi, Ašxarhac'oyc' III 10 (48 Hewsen). – Ziemann, Onglos 35.

44 Periplus Ponti Euxini V 68 (135-136, 24-27 Diller): ἔχει δὲ καὶ νήσους ἐν αὐτῷ κειμένας πολλάς τε καὶ μεγάλας τοῖς μεγέθεσιν, ὡς λόγος, ὧν ἡ μεταξὺ τῆς θαλάσσης κειμένη καὶ τῶν στομάτων ἐστὶν οὐκ ἔλαττον μὲν τῆς Ῥόδου νήσου, Πεύκη δὲ λέγεται αὕτη διὰ τὸ πλήθος ὧν ἔχει πευκῶν. – Stephanus Byzantinus, Ethnica Π 131 (IV 64 Billerbeck/Neumann-Hartmann) Πεύκη· νῆσος ἐν τῷ Ἴστρῳ. οἱ οἰκήτορες Πευκῖνοι. – Ammianus Marcellinus, Res Gestae XXII 8, 43-45 (III 30, 28-32, 4 Seyfarth): *Cum autem ad alium portuosum ambitum fuerit uentum, qui arcus figuram determinat ultimam, Peuce prominet insula, quam circumcolunt Trogodytae et Peuci minoresque aliae gentes, et Histros quondam potentissima ciuitas et Tomi et Apollonia et Anchialos et Odessos, aliae praeterea multae, quas litora continent Thraciarum. amnis uero Danubius oriens prope Rauracos montesque confines limitibus Raeticis per latiorem orbem praetentus ac sexaginta nauigabiles paene omnes recipiens fluuios septem ostiis per hoc Scythicum litus erumpit in mare. quorum primum est Peuce, insula supra dicta ut interpretata sunt uocabula Graeco sermone, secundum Naracustoma, tertium Calonstoma, quartum Pseudostomon; nam Borionstoma ac deinde Stenostoma longe minora sunt ceteris, septimum caenosum et palustri specie nigrum*. – Claudian, IV Cons. 623-637 (II/2 47-48 Charlet): *Ausi Danubium quondam tranare Gruthung / in lintres fregere nemus; ter mille ruebant / per fluuium plenae cuneis inmanibus alni. / Dux Odotheus erat. Tantae conamina classis / incipiens aetas et primus contudit annus: / submersae cecidere rates; fluitantia numquam / largius Arctoos pauere cadauera pisces; / corporibus premitur Peuce; per quinque recurrens / hostia barbaricos uix egerit unda cruores, / confessusque parens Odothei regis opima / rettulit exuuiasque tibi. Ciuile secundis / conficis auspiciis bellum. Tibi debeat orbis / fata Gruthungorum debellatumque tyrannum: / Hister sanguineos egit te consule fluctus; / Alpinos genitor rupit te consule montes*. – However, it is difficult to say to what extent these texts represent the reality of the Late Antiquity or whether the authors simply copied the information from their sources, in this case Strabo and Pliny the Elder, cf. Romanescu, Island of Peuce 522.

45 Wolfram, Goten 422, n. 128.

Fig. 2 The Danube delta and adjacent regions in the Roman period. – (From Digital Atlas of the Roman Empire, https://imperium.ahlfeldt.se/ [public domain]).

Byzantine historian speaks about the mainland (ēpeiros) where Constantine IV arranged his land troops and in the vicinity of which the navy lied at anchor[46]. This indicates that the imperial army disembarked on solid ground, which can be identified with the southernmost regions of modern Budjak or Bessarabia and thus limits the possibility for localizing the battlefield on the island of Peuce in the marshy area of the Danube mouth.

Having placed the region to the north of the Danube and the area of the Delta under their control, the Bulgars of Asparukh started raiding the territories to the south of the river[47]. This resulted in the first Danubian campaign the Byzantines had organized in the previous 80 years[48]. Under the command of Emperor Constantine IV, the army crossed the Straits and headed to the Danube accompanied by the navy[49]. As already mentioned, the land troops were arranged on the mainland (ēpeiros) between the Onglos and the Danube, while the fleet was lying at anchor on the promontory nearby. Having seen the imperial forces, the Bulgars withdrew to a safe place but the Byzantines were unable to attack them because of the marshy area between the rivals[50].

46 Theophanes, Chronographia A.M. 6171 (358, 18-20 de Boor): καὶ διὰ μὲν τῆς πρὸς τῷ Ὄγλῳ καλουμένῳ καὶ Δανουβίῳ ἠπείρου τὰ πεζικὰ παρατάξας, διὰ δὲ τῆς πλησιαζούσης ἀκτῆς τὰς ναῦς προσορμίσας.

47 Ziemann, Wandervolk 161-167. – See also Petrov, Obrazuvane 179-287.

48 Theophanes, Chronographia A.M. 6149 (347, 6-7 de Boor) speaks about a campaign of Emperor Constans II against the *Sklauiniai* in 657. It is not clear whether these Slavs lived in Macedonia or between the Danube and the Balkan Mountains. On this topic, cf. Božilov, Istorija I 113. – Koledarov, Političeska geografija 8.

49 Theophanes, Chronographia A.M. 6171 (358, 11-18 de Boor): ὁ δὲ βασιλεὺς Κωνσταντῖνος μεμαθηκώς, ὅτι ἐξάπινα ἔθνος ῥυπαρὸν καὶ ἀκάθαρτον ἐκεῖθεν τοῦ Δανουβίου εἰς τὸν Ὄγλον ἐσκήνωσεν, καὶ τὰ πλησιάζοντα τῷ Δανουβίῳ ἐκτρέχει καὶ λυμαίνεται, τοῦτ᾽ ἔστι τὴν νῦν κρατουμένην ὑπ᾽ αὐτῶν χώραν, ὑπὸ Χριστιανῶν τότε κρατουμένην, ἡνιάθη σφόδρα· καὶ κελεύει περᾶσαι πάντα τὰ θέματα ἐν τῇ Θρᾴκῃ. – Nicephorus Patriarches, Breviarium 36 (88-90, 1-5 Mango): Κωνσταντῖνος δὲ ἐπειδὴ ἔγνω ὡς τὸ σκηνῶσαν παρὰ τὸν Ἴστρον ἔθνος τὰ πλησιάζοντα τῆς ὑπὸ Ῥωμαίων ἀρχῆς χωρία καταθέον διαφθείρειν ἐπεχείρει, στρατὸν ὁπλίτην ἐπὶ τὴν Θρᾳκῴαν διαβιβάσας χώραν, ἔτι τε καὶ στόλον ὁπλίσας κατὰ τοῦ ἔθνους ὡς ἀμυνόμενος ᾤχετο. – John Zonaras, Epitome XIV 21, 10 (III 226, 15 – 227, 3 Büttner-Wobst): Τὸ δὲ τῶν Βουλγάρων ἔθνος εἰς τὰς Ῥωμαϊκὰς χώρας τὰς πέραν τοῦ Ἴστρου γενόμενον ταύταις ἀκρατῶς ἐλυμαίνετο. ἐκστρατεύει τοίνυν κατ᾽ αὐτῶν ὁ βασιλεὺς Κωνσταντῖνος κατὰ γῆν τε καὶ θάλασσαν, στόλον πολὺν ἐκ τῆς θαλάσσης εἰσαγαγὼν εἰς τὸν Δάνουβιν. – Symeon Logothetes, Chronicon 113, 6 (168-169, 35-49 Wahlgren). – Georgios Monachos, Chronicon IX 25 (II 728, 18-729, 14 de Boor). – For Byzantine armed forces in the scond half of the 7th century and their engagement in the campaign of 680, see Leontsine, Konstantinos 219-244.

50 Theophanes, Chronographia A.M. 6171 (358, 20-26 de Boor): τοῦτο δὲ τὸ ἀθρόον καὶ παμπληθὲς τῆς παρατάξεως οἱ Βούλγαροι θεασάμενοι, τῆς ἑαυτῶν ἀπεγνωκότες σωτηρίας εἰς τὸ προλεχθὲν ὀχύρωμα καταφεύγουσι καὶ ἑαυτοὺς ἀσφαλίζονται. ἐν τρισὶ δὲ καὶ τέτρασιν ἡμέραις ἐκ τοῦ τοιούτου ὀχυρώματος αὐτῶν μὲν ἐξελθεῖν μὴ τολμησάντων, τῶν δὲ Ῥωμαίων πόλεμον μὴ συναψάντων διὰ τὴν προκειμένην τῶν τελμάτων πρόφασιν. – Nicephorus Patriarches, Breviarium 36 (90, 5-11 Mango): οἱ δὲ Βούλγαροι τῶν τε ἱππικῶν καὶ πλοΐμων τὰ πλήθη θεασάμενοι καὶ τῷ αἰφνιδίῳ καὶ ἀνελπίστῳ καταπλαγέντες πρὸς τὰ ἑαυτῶν ὀχυρώματα ἔφυγον, τέτρασιν ἡμέραις ἐκεῖσε ὑπομείναντες· καὶ τῶν Ῥωμαίων μὴ δυνηθέντων αὐτοῖς πολέμῳ συμμῖξαι διὰ τὴν δυσχωρίαν τοῦ τόπου, ἀνελάμβανόν τε αὐτοὺς καὶ προθυμότεροι ἐγίνοντο.

An interesting question on which the sources shed minimum light is the role of the navy within the Byzantine campaign of 680[51]. Since the expedition was carried out on land and sea, it was the fleet, which had to transfer the land troops from Scythia Minor to the northern bank of the Danube (**fig. 2**). It seems that the navy did not execute any further tasks in Byzantine strategy because of the natural conditions in and around the battlefield. We know from earlier sources that in the Late Antiquity the area of the Delta was hard to navigable for big vessels. When Emperor Valens started his campaign against the Greuthungi in 367-369, he ordered grain to be delivered to the Danube from Constantinople by transport ships that had to sail to the mouth of the river, where the cargo was loaded onto smaller vessels that were able to bring it to the harbours on the Lower Danube[52]. After Noviodunum (modern Isaccea), where the Roman Legio I *Iovia* was in camp and where a naval base was located[53], the Danube branches into three main distributaries which become narrower and shallower, thus building an obstacle for the movement of huge vessels[54]. However, Themistius' description of a not navigable Delta should be read with some caution. As the naval battle of 386 shows, almost 20 years after Valens' campaign against the Greuthungi military ships were able to sail through the southern branch of St. George and successfully repel an attack of sailors from the same tribe led by Odotheus[55]. Moreover, Roman, and Byzantine warships on the Lower Danube were smaller and did not have such a deep draught as the heavy cargo ships transporting grain[56]. Since the huge transport vessels had to rely primarily on their sails and the force of the wind, it is easy to understand why the supply of Valens' troops stationed in Scythia Minor took place during the winter when southern winds prevail in the region of the Black Sea[57].

If the Romans and their Byzantine successors wanted to operate within the marshy area of the Danube mouth, they had to construct special vessels. In Late Antiquity, the Empire had a naval base within the Delta, called in the *Notitia Dignitatum* Plateypegiis[58]. According to Octavian Bounegru, it was named after a special type of flat-bottomed vessel appropriate for service in shallow waters within river deltas such as those of the Nile and the Danube[59]. Both Menander Protector and Theophanes speak about a special type of »double-stern ship« (*amphiprymna* or *diaprymna ploia*), which in the second half of the 6th century had to operate in the area of the Lower Danube and the Delta where huge vessels were not efficient[60]. In 578, the Byzantine Danubian fleet transported 60 000 Avar horsemen by cargo ships (*holkades makrai*) from Pannonia to the Lower Danube, where they were supposed to fight against the Slavs. When the Avars arrived in Scythia, they had to get onboard two-stern vessels in order to reach the territories inhabited by the Slavs[61]. The same type of ship had to be built by order of Emperor Justinian I in 559 when the Byzantines tried to prevent the Kutrigurs of Zabergan from withdrawing back to Scythia after they had raided the region of Constantinople[62].

Obviously, no such vessels were present at the battlefield in 680 because the Byzantines could not reach the Bulgars due to the marshes, which laid in between, and so both

51 For Byzantine navy during Constantine IV's reign, see Leontsine, Konstantinos 150-158.

52 Zosimus, Historia nova IV 10, 3-4 (II/2 271, 20-272, 9 Paschoud): Διανοουμένους δὲ αὐτοὺς ἐπιέναι τοῖς Ῥωμαίων ὁρίοις αἰσθόμενος ὁ βασιλεύς, καὶ πρὸς αὐτὸ ἤδη συνειλεγμένους ἅπαντας σὺν ὀξύτητι πάσῃ, τὸ μὲν στρατόπεδον τῇ ὄχθῃ τοῦ Ἴστρου συμπαρατείνας, αὐτὸς δὲ ἐπὶ τῆς Μαρκιανουπόλεως, ἥ μεγίστη τῶν ἐν Θράκῃ πόλεών ἐστι, διατρίβων, τῆς τε τῶν στρατιωτῶν ἐν ὅπλοις ἀσκήσεως ἐπιμέλειαν ἐποιεῖτο καὶ μάλιστα τοῦ μηδεμίαν αὐτοῖς ἐπιλεῖψαι τροφήν. Ὑπαρχον μὲν οὖν τῆς αὐλῆς Αὐξόνιον ἀπεδείκνυ, Σαλούστιον ταύτης διὰ τὸ γῆρας ἀφείς, ἤδη δεύτερον ταύτην μεταχειρισάμενον τὴν ἀρχήν· Αὐξόνιος δέ, καίπερ ἐνεστῶτος οὕτω μεγάλου πολέμου, περί τε τὴν τῶν εἰσφορῶν εἴσπραξιν δίκαιος ἦν, οὐδένα βαρύνεσθαι παρὰ τὸ καθῆκον καὶ ὀφειλόμενον ἀνεχόμενος, καὶ ὁλκάδων πλήθει τὴν στρατιωτικὴν σίτησιν διὰ τοῦ Εὐξείνου πόντου ταῖς ἐκβολαῖς τοῦ Ἴστρου παραδιδούς, κἀντεῦθεν διὰ τῶν ποταμίων πλοίων ταῖς ἐπικειμέναις τῷ ποταμῷ πόλεσιν ἐναποτιθέμενος, ὥστε ἑξ ἑτοίμου γίνεσθαι τῷ στρατοπέδῳ τὴν χορηγίαν. – Themistius, Orationes 10 (I 206, 15-23 Schenkl/Downey): διὰ τοῦτο γὰρ καὶ τῶν φρουρίων τὰ μὲν ᾠκοδόμησεν ἐκ καινῆς, τὰ δὲ ἀνέστησε κατατετριμμένα, τοῖς δὲ προσέθηκε τὸ ἐνδέον, ὕψους μὲν ᾗ χθαμαλώτερον ἦν, πάχους δὲ ὅπου τούτου προσέδει, ὕδατος δὲ ἀφθονίαν, ᾗ ταύτῃ πρότερον ἐπιέζετο, τροφῶν δὲ θησαυροὺς ἀπανταχοῦ καὶ λιμένας τῆς γειτνιώσης θαλάσσης, καὶ στρατιώτας ἐκ καταλόγου, καὶ φρουροὺς τὸν ἀριθμὸν οὐ ψευδομένους, καὶ ὅπλα καὶ βέλη καὶ μηχανήματα, ἅπαντα εἰς τὸ ἔσχατον ἐξητασμένα. – Bounegru/Zahariade, Les Forces Navales 67. 105-106. – Barnea, Themistios. – Barnea, La Danube 578-579. – Bounegru, La flotte militaire et commerciale. – Chrysos, Byzantio kai Gotthoi 94-108. – Zečević, Vizantija i Goti 57-60.

53 Bounegru/Zahariade, Les Forces Navales 35. – Himmler, Untersuchungen 73.

54 Ammianus Marcellinus, Res Gestae XXII 8, 46 (III 32, 5-9 Seyfarth): *Omnis autem cicrumfluo ambitu Pontus et nebulosus est et dulcior aequorum ceteris et uadosus, quod et concrescat aer ex umorum spiramine saepe densetus et irruentium undarum magnitudine temperatur et consurgit in breuia dorsuosa limum glebasque aggerente multitudine circumuenientium fluentorum*. – Themistius, Orationes 10 (I 207, 21-208, 5 Schenkl/Downey): ἐρῶ δὲ οὐκ ἀκοὴν ἀλλοτρίαν, ἀλλ᾽ ὧν αὐτὸς γέγονα θεατής. ἴστε δήπου τοῦτο ὅσοι γεγόνατε ἐπὶ τῆς χώρας ἐκείνης, ἣ καλλίστη μέν ἐστι τῆς Σκυθικῆς τῆς ὑπηκόου, ἥκιστα δὲ ἀσφαλὴς πρὸς τοὺς βαρβάρους, οὐ καθαροῦ διαρρέοντος αὐτὴν τοῦ ποταμοῦ, ἀλλ᾽ ἀναπεφυρμένου τῇ γῇ, καὶ τενάγους κόλπον ποιοῦντος εἰσέχοντα ἐπιπολὺ τῆς ἠπείρου, οὔτε ναυσὶν ὄντα πλωτὸν οὔτε βατὸν πορευσίμοις.

55 Zosimus, Historia nova IV 35, 1; IV 38, 1-39, 3 (II/2 299, 6-15; 303, 14-305, 26 Paschoud). – Claudian, IV Cons. 623-637 (II/2 47-48 Charlet). – Himmler, Untersuchungen 151-156. – Bounegru/Zahariade, Les Forces Navales 106-107. – Wolfram, Goten 141.

56 For different types of warships, see Bounegru/Zahariade, Les Forces Navales 61-67. – Himmler, Untersuchungen 99-123. – Matei, Considerații 144-145. – For further details concerning ancient cargo and warships, see Höckmann, Antike Seefahrt 52-122.

57 Zosimus, Historia nova IV 10, 4; IV 11, 1 (II/2 272, 1-11 Paschoud). – On winds and hydrography of the Black Sea Region, cf. Valchev et al., Wind Wave Climate 233. – Caspers, Black Sea 808-820.

58 Notitia Dignitatum XXXIX 35 (88 Seeck): *Praefectus ripae legionis primae Iouiae cohortis… et secundae Herculiae musculorum Scythicorum et classis, Inplateypegiis*. – Cf. Bounegru/Zahariade, Les Forces Navales 27 for their suggestion for correcting the text to *et secundae Herculiae musculorum Scythicorum* [*et*] *classis in* [*loco*] *Plateypegiis.*

59 Bounegru, Ploia platypegia. – Bounegru, Tipuri de nave 273-275. – Bounegru/Zahariade, Les Forces Navales 27. 33-35. 69. – Himmler, Untersuchungen 121-122. – Chiriac, Notitia Dignitatum.

60 Bounegru/Zahariade, Les Forces Navales 67-69. – Himmler, Untersuchungen 124-126.

61 Menander Protector, Fragmenta 21 (192, 18-25 Blockley): οὗτος παραγενόμενος ἐν Παιονίᾳ τῇ χώρᾳ μετήγαγεν εἰς τὴν Ῥωμαίων αὐτόν τε τὸν Βαϊανὸν καὶ τὰς τῶν Ἀβάρων δυνάμεις, ἐν ταῖς δὴ λεγομέναις ὁλκάσι μακραῖς τὰ βαρβαρικὰ διαβιβάσας πλήθη· καὶ λέγεται ἀμφὶ τὰς ξ´ χιλιάδας ἱππέων θωρακοφόρων ἐς τὴν Ῥωμαίων διαπορθμευθῆναι. ἐνθένδε αὖθις διὰ τῆς Ἰλλυριῶν διαγαγών, εἶτα ἐς τὴν Σκυθῶν ἀφικόμενος, ἔμπαλιν διελθεῖν παρεσκεύασε τὸν Ἴστρον ἐν ταῖς καλουμέναις ἀμφιπρύμναις τῶν νεῶν. – Pohl, Awaren 67.

62 Theophanes, Chronographia A.M. 6051 (234, 7-11 de Boor): λοιπὸν ἐκέλευσεν ὁ βασιλεὺς γενέσθαι πλοῖα διάπρυμνα, ὥστε ἀπελθεῖν εἰς τὸν Δανοῦβιν καὶ ἀπαντῆσαι τοῖς βαρβάροις περνοῦσι καὶ πολεμῆσαι αὐτούς. τοῦτο γνόντες οἱ βάρβαροι παρεκάλεσαν διὰ πρεσβευτοῦ ἀκινδύνως ἐᾶσαι αὐτοὺς περᾶσαι τὸν Δανοῦβιν. – Ziemann, Wandervolk 99-100. – Kislinger, Angriff 51-58.

armies had to stand against each other for a couple of days, a fact which had a devastating effect on Byzantine morale[63]. The fleet that Constantine IV used against his enemy consisted of vessels, which had escorted him since the beginning of the expedition in Constantinople and had nothing to do with the former Danubian fleet, which would have come to an end due to the turmoil in the first half of the 7th century. As for the campaign of 680, at that time at least the southern branch of the Delta seems to have been navigable for battleships such as the dromons that accompanied the Emperor during the campaign and his departure to Mesembria (modern Nesebar)[64]. Moreover, the navy, anchored near the battlefield, could not prevent the enemy from crossing the Danube and reaching as far as the Balkan Mountains.

The Eighth Century

Constantine IV's defeat resulted in the migration of the Bulgars to Scythia Minor and the foundation of their new state in the Balkans. This fact did not change the significant role of the Danube river and especially of its mouth in the military strategy of the Byzantines. On the contrary, further naval campaigns, the destination of which was the Danube Delta, were to follow. Yet, the beginning of the next century saw this area as a place where one of the most famous alliances between a Byzantine emperor and a Bulgarian ruler started. After ten years in exile, in 705, the former emperor Justinian II escaped from Chersonesus. Theophanes and Patriarch Nicephorus relate that the exiled emperor got on a ship in Chersonesus and headed to the Danube[65]. He intended to ask for the assistance of Bulgarian Khan Tervel, whom he promised to wed his daughter to if he would help him regain the throne of Byzantium. According to Theophanes, Justinian entered the Danube and sent one of his supporters to Tervel[66]. For Ion Barnea and Petre Diaconu, the emperor's sail to the Danube Delta is proof that Byzantium had control over the area at the beginning of the 8th century[67]. However, it is difficult to accept such an interpretation, if we keep in mind that Justinian, who has just escaped from his exile, would have headed straight to another area controlled by the Byzantine government[68].

With Tervel's help, Justinian II did indeed succeed in regaining the throne of Byzantium. As a sign of his gratitude, the emperor proclaimed the Bulgarian ruler a *caesar*[69] and gave him the region of Northern Thrace known as Zagora[70]. Justinian soon recognized the mistake he had made and tried to re-establish his possession over this territory but was defeated in a battle near Anchialos (modern Pomorie)[71]. Driving Bulgaria out of Northern Thrace remained one of the tasks of Byzantine policy in the Eastern Balkans for the rest of the 8th century. However, during the reign of Emperor Constantine V, the ambitions of Constantinople went beyond the northern borders of Thrace. In the 760s and the 770s, this emperor tried to fulfil his plan to reconquer the area between the Balkan Mountains and the Danube for Byzantium[72]. The first campaign started in 760 (or in 756-757)[73]. According to Patriarch Nicephorus, Constantine sent 500 ships to the Danube where they devastated the »land of the Bulgars« and took many war captives[74]. In doing so, the emperor applied for the first time the strategy of using the fleet to divide the forces of the enemy and to divert their attention from the passes in the Eastern Balkan Mountains or Thrace[75]. Constantine's tactics proved to be successful – he defeated the Bulgars at Markellai (near modern Karnobat) and forced them into negotiations[76].

The next Byzantine naval campaign followed in June 763 after the Bulgars had broken the peace and had devastated the Byzantine villages and forts near the border. For his offensive, Constantine V prepared 800 horse-carrying ships

63 Theophanes, Chronographia A.M. 6171 (358, 18-26 de Boor). – Nicephorus Patriarches, Breviarium 36 (90, 5-11 Mango).

64 Theophanes, Chronographia A.M. 6171 (358, 27-30 de Boor): τοῦ δὲ βασιλέως ἐν ποδαλγίᾳ ὀξυπαθήσαντος καὶ ἐπὶ Μεσημβρίαν βιασθέντος ὑποστρέψαι διὰ συνήθειαν λουτροῦ ἅμα πέντε δρομώνων καὶ τῶν οἰκείων αὐτοῦ ἀνθρώπων. – Cf. Zuckerman, Byzantine Dromon 67-72, for the evolution of Byzantine navy in the 7th century.

65 Dimitroukas, Reisen und Verkehr II 435-436. – Head, Justinian II, 108-109. – Atanasov/Russev, Onglos 23-27 argue that Justinian's aim was to reach the rampart in Niculițel which might have been the residence of Tervel.

66 Theophanes, Chronographia A.M. 6196 (373, 28 – 374, 4 de Boor): καὶ ἀκινδύνως ἐκ τοῦ κλύδωνος ἐκείνου ἐξῆλθε καὶ εἰσῆλθεν εἰς τὸν Δανοῦβιν ποταμόν. ἀποστείλαντος δὲ αὐτοῦ Στέφανον πρὸς Τέρβελιν, τὸν κῦριν Βουλγαρίας, ἐπὶ τῷ δοῦναι αὐτῷ σύναρσιν, ὅπως κρατήσῃ τὴν προγονικὴν αὐτοῦ βασιλείαν, ὑπέσχετο αὐτῷ πλεῖστα παρέχειν δῶρα καὶ τὴν ἑαυτοῦ θυγατέρα εἰς γυναῖκα. – Nicephorus Patriarches, Breviarium 42 (102, 35-42 Mango): καὶ σὺν αὐτοῖς ἐκπλεύσας, τὰ λεγόμενα Νεκρόπηλα παρελθὼν πρὸς τὸν Ἴστρον ποταμὸν παραγίνεται. ἐκεῖθεν ἐκπέμπει τῶν συνόντων τινὰ Στέφανον πρὸς Τέρβελιν κύριον ὄντα τηνικαῦτα τῶν ἐκεῖσε Βουλγάρων, παρακαλῶν συλλαβέσθαι αὐτῷ ὥστε τὸν τῆς βασιλείας ἀπολήψεσθαι θρόνον, ἄλλα τε πλεῖστα δῶρα ὑποσχόμενος καὶ τὴν ἑαυτοῦ θυγατέρα εἰς γυναῖκα αὐτῷ δώσειν ἐπαγγειλάμενος. – Symeon Logothetes, Chronicon 116, 4 (175, 19-23 Wahlgren). – John Zonaras, Epitome XIV 24, 11-15 (III 237, 3-16 Büttner-Wobst). – Michael the Syrian, Chronicle X 17 (II 478 Chabot).

67 Barnea, Dobrogea 208. – Barnea/Stefănescu, Din istoria Dobrogei III 11-12. – Barnea, La Danube 584. – Diaconu, La Dobroudja et Byzance 218. – Diaconu, Kilia et Licostomo 249. – See also Damian, Prezența politică bizantină 286 and n. 15.

68 Tăpkova-Zaimova, Quelques observations 80.

69 Nicephorus Patriarches, Breviarium 42 (102-104, 58-64 Mango). – Zacos/Veglery, Seals I/3 no. 2672.

70 Symeon Logothetes, Chronicon 117, 1 (175, 2-4 Wahlgren).

71 Heher/Preiser-Kapeller/Simeonov, Strukturen 108.

72 Cf. Beševliev, Feldzüge. – Ziemann, Wandervolk 213-228. – Rochow, Konstantin V, 93-102. – Busetto, Presenza della flotta. – Božilov, Istorija I 254-256.

73 For the chronology of this campaign and an analysis of the data in the sources, see Beševliev, Feldzüge 7-9. – Božilov/Gjuzelev, Istorija na Dobrudža II 59.

74 Nicephorus Patriarches, Breviarium 73 (144, 11-16 Mango): μετ᾽ οὐ πολὺ πλοῖ καὶ πεζῇ κατ᾽ αὐτῶν ἐστράτευεν. οἱ γοῦν τὰς ναῦς ἔχοντες ἄχρι καὶ εἰς πεντακοσίους τὸν ἀριθμὸν συντελούσας, διὰ τοῦ Εὐξείνου ἐκπλεύσαντες καὶ πρὸς τῷ Ἴστρῳ γενόμενοι ποταμῷ χώρας τε Βουλγάρων ἐπίμπρασαν καὶ δοριαλώτους οὐκ ὀλίγους εἷλον. – It is not clear where the Byzantine troops disembarked. According to Božilov/Gjuzelev, Istorija na Dobrudža II 59-60, this happened somewhere between Dinogetia (near the commune Garvăn) and Dorostolon (modern Silistra).

75 Beševliev, Zwei Versionen 365-367. – Busetto, Presenza della flotta 220. – Atanasov/Russev, Onglos 27 and n. 9. – For Byzantine logistics and tactics, see Haldon, Warfare 174-189.

76 Nicephorus Patriarches, Breviarium 73 (144, 16-18 Mango): αὐτὸς δὲ μάχῃ συμμίξας αὐτοῖς κατὰ τὰς λεγομένας Μαρκέλλας (φρούριον δὲ τοῦτο πλησιαίτατα Βουλγάρων κείμενον) εἰς φυγὴν ἐτρέψατο καὶ πολλοὺς αὐτῶν ἔκτεινεν. – Busetto, Presenza della flotta 220. – On Markellai, cf. Soustal, Thrakien 348-349.

(*chelandia*), each transporting twelve horses, and sent them to the Danube to the rear of the Bulgars, while he headed the land army to Anchialos[77]. Ostrogorsky thinks that both troops united in the area of Anchialos, but it is hard to believe that the cavalry would have marched the whole way from the Danube mouth to the fields south of the Balkan Mountains while leaving the heartland of the Bulgars untouched[78]. Having in mind the tactics Constantine V had already applied during his previous campaign against Bulgaria, we can assume that the purpose of the cavalry units transported to the Danube on board the *chelandia* was to divide the forces of the enemy and to weaken the strength of that army, which had to fight against the Byzantine land forces headed by the emperor himself. This tactic proved to be efficient once again – at the decisive battle near Anchialos on 30 June 763, Constantine V defeated the Bulgarian Khan Telets and took lots of prisoners of war that were murdered in Constantinople after the emperor's triumphant return[79]. As for the fleet, neither Theophanes nor Patriarch Nicephorus give any further details about its mission, nor do they say whether it succeeded in disembarking in the Delta as was the case with the previous expedition. But from their accounts, it becomes clear that the Byzantines once again had to send a fleet from Constantinople to the Danube and did not rely on the assistance of an alleged local administration in the area of the mouth.

A similar scenario of dividing the enemy's forces took place in 774 when Constantine V put to sea on the red *chelandia* and headed a sea expedition against Bulgaria the aim of which once again may have been the Danube Delta[80]. By sending a fleet of 2000 *chelandia* – a number that seems to be very much exaggerated[81] – the Emperor tried to divert the attention of the Bulgars from the passes in the Eastern Balkan Mountains, which the cavalry units of the land army had to take control of. The only source informing us about this campaign, the chronicle of Theophanes, says that near Varna the Emperor became fearful and turned back to Constantinople without having achieved anything[82]. The reason may have been a strong headwind, which destroyed the Byzantine fleet twice during Constantine's maritime campaigns against Bulgaria in 766[83] and 775[84] when a severe north wind crushed the ships near the coast south of Mesembria[85]. We can suppose that the Byzantines had chosen the Delta as their destination, because the coast near Obzor, Shkorpilovtsi, Varna and Kranevo was fortified with ditches that were meant to protect the Bulgarian heartland from attacks from the Black Sea[86] and because the lagoons of the lakes Sinoe, Goloviṭa and Razelm could hardly offer good possibilities for an entire fleet to land[87].

The Ninth Century

The wars that the Bulgarian Khan Krum waged against Byzantium in 813 and 814 caused not only the destruction of many settlements in Thrace but also resulted in the deportation of thousands of Byzantine prisoners of war to what the Byzantine historians called »Bulgaria beyond the Danube«[88].

77 Nicephorus Patriarches, Breviarium 76 (148, 7-12 Mango): οὗ τὸ θρασὺ καὶ αὔθαδες Κωνσταντῖνος θεασάμενος ναῦς ἱππαγωγοὺς ἄχρι καὶ εἰς τὰς ὀκτακοσίας κατεσκεύασε, καὶ ταύτας ἱππικῷ στρατῷ πληρώσας διὰ τοῦ Εὐξείνου πρὸς τὸν Ἴστρον ἐξέπεμψεν. αὐτὸς δε στρατὸν ἕτερον ἐπαγόμενος πρὸς Ἀγχίαλον πόλιν παραγίνεται. – Theophanes, Chronographia A.M. 6254 (432, 29 – 433, 1 de Boor): τῇ δὲ ις´ τοῦ Ἰουνίου μηνὸς ἐξῆλθεν ὁ βασιλεὺς ἐπὶ τὴν Θρᾴκην ἀποστείλας καὶ πλώϊμον διὰ τοῦ Εὐξείνου Πόντου ἕως ω´ χελανδίων ἐπιφερομένων ἀνὰ ιβ´ ἵππων. – Symeon Logothetes, Chronicon 122, 10 (191, 113-115 Wahlgren). – John Zonaras, Epitome XV 6, 17-18 (III 271, 12-18 Büttner-Wobst). – Beševliev, Zwei Versionen 363-365. – Busetto, Presenza della flotta 220-221. – On transport capacity of 8th-century Byzantine *chelandia* based on Theophanes' account, see Zuckerman, Byzantine Dromon 83-85. – Pryor/Jeffreys, Dromōn 304-333.

78 Ostrogorsky, Geschichte 140.

79 Theophanes, Chronographia A.M. 6254 (433, 4-14 de Boor). – Nicephorus Patriarches, Breviarium 76 (148-150, 12-22 Mango). – Božilov, Istorija I 257-258.

80 On the red *chelandia*, cf. Heher/Simeonov, Ceremonies by the Sea 221-225.

81 For numbers in Byzantine sources, see Treadgold, Numbers. If we take into consideration Theophanes' information on the transport capacity of one *chelandion* carrying 12 horses during the previous campaign, in 774 the emperor should have had 50 000 horsemen available, which would have been quite a formidable number even for Byzantine armed forces in the first half of the 6th century when Justinian sent 16 000 soldiers against the Vandals in North Africa, cf. Procopius of Caesarea, Bella III 11, 2-13 (I 360, 27-362, 14 Haury/Wirth). – Treadgold, Byzantium and Its Army 47-64.

82 Theophanes, Chronographia A.M. 6265 (446, 27-447, 2 de Boor): Τούτῳ τῷ ἔτει μηνὶ Μαΐῳ ἰνδικτιῶνος ιβ´ ἐκίνησε Κωνσταντῖνος στόλον χελανδίων ,β κατὰ Βουλγαρίας καὶ εἰσελθὼν καὶ αὐτὸς εἰς τὰ Ῥούσια χελάνδια ἀπεκίνησε πρὸς τὸ εἰσελθεῖν εἰς τὸν Δανοῦβιν ποταμὸν καταλιπὼν καὶ τοὺς τῶν καβαλλαρικῶν θεμάτων στρατηγοὺς ἔξω τῶν κλεισουρῶν, εἴ πως δυνηθῶσι τῶν Βουλγάρων εἰς αὐτὸν ἀσχολουμένων εἰσελθεῖν εἰς Βουλγαρίαν. ἐλθόντος δὲ αὐτοῦ ἕως τῆς Βάρνας, ἐδειλίασε καὶ ἐμελέτα ὑποστρέψαι. – John Zonaras, Epitome XV 7, 4-5 (III 278, 16-279, 2 Büttner-Wobst). – Busetto, Presenza della flotta 221-222.

83 Theophanes, Chronographia A.M. 6257 (437, 19-23 de Boor): τῇ δὲ κα´ τοῦ Ἰουνίου μηνὸς τῆς δ´ ἰνδικτιῶνος ἐκίνησε κατὰ Βουλγάρων καὶ ἀπέστειλεν ἐπὶ Ἀχελὸν ,βχ´ χελάνδια ἐξοπλίσας αὐτὰ ἐκ πάντων τῶν θεμάτων. τούτων δὲ ἐν ταῖς ἀκταῖς προσορμισθέντων, καὶ τοῦ βορρᾶ πνεύσαντος, συνετρίβησαν μικροῦ δεῖν ἅπαντα, καὶ ἐπνίγη λαὸς πολύς. – Nicephorus Patriarches, Breviarium 82 (156, 4-16 Mango): πλόϊμον δὲ ἐξοπλίσας συντελοῦν περὶ τὰ δισχίλια καὶ ἑξακόσια σκάφη, ναυτικὸν δὲ πλῆθος καὶ στρατιωτικὸν ἔκ τε τῶν πλοΐμων στρατηγίδων καὶ ἑτέρων χώρων ἐμβαλὼν ἐν αὐτοῖς ἀπέστειλεν, ὥστε παραγενέσθαι περί τε Μεσήμβρειαν καὶ Ἀγχίαλον τὰ πολίσματα καὶ προσπελάζειν Βουλγάροις […] ἐπεὶ δὲ τὸ πλόϊμον πρὸς ταῖς ἀκταῖς τῆς ἐκείνη θαλάσσης καθωρμίζετο (ἀλίμενος γὰρ ὁ τόπος καὶ τοῖς πλέουσι δυσφορώτατος), πνεῦμα βίαιον καὶ σκληρὸν κατ᾽ αὐτῆς πνεῦσαν (βορέας δ᾽ ἦν ἄνεμος) τάς τε ναῦς πρὸς ταῖς ἀκταῖς περιτρέψας συνέτριψε καὶ πλήθη τῶν εἰσπλεόντων οὐκ ὀλίγα τῷ ῥοθίῳ κατεπόντισεν. – Symeon Logothetes, Chronicon 122, 13 (192, 134-136 Wahlgren). – Georgios Monachos, Chronicon IX 34 (II 758, 1-8 de Boor). – John Zonaras, Epitome XV 7, 19 (III 275, 17-276, 4 Büttner-Wobst).

84 Theophanes, Chronographia A.M. 6265 (447, 29-448, 4 de Boor): ὁ δὲ βασιλεὺς ὡς λύσας τὴν πρὸς τοὺς Βουλγάρους εἰρήνην ἐξώπλισε πάλιν στόλον πολύν. καὶ εἰσαγαγὼν εἰς αὐτὸν καβαλλαρικὸν χιλιάδας ιβ´ ἀπέλυσε τοὺς στρατηγοὺς τῶν πλωϊμάτων πάντας σὺν αὐτῷ. αὐτὸς δὲ φοβηθεὶς ἔμεινεν εἰς τὸ καβαλλαρικόν. εἰσελθόντων δὲ αὐτῶν ἕως τῆς Μεσημβρίας, καὶ ἀνέμου σφοδροῦ βορρᾶ πνεύσαντος, πάντα μικροῦ δεῖν συνετρίβησαν, καὶ πολλοὶ ἀπώλοντο· καὶ ὑπέστρεψε μηδὲν ποιήσας.

85 Busetto, Presenza della flotta 221 wrongly localizes the place of the shipwreck around the Danube mouth.

86 Rašev, Ukrepitelni săorăženija 20-27. – Rašev, Starobălgarski ukreplenija 31-50. – Rašev, Asparuhovijat val. – Georgiev, Beležki.

87 On the evolution of the lagoons, cf. Bony et al., Danube Delta Lobes.

88 Scriptor Incertus III (43-44, 150-153 Iadevaia): Καὶ λαβόντες οἱ Βούλγαροι τὴν αἰχμαλωσίαν πᾶσαν εἰς πλῆθος οὖσαν ἀναρίθμητον, καὶ πᾶσαν τὴν ἀποσκευὴν αὐτῶν, μετῴκισαν αὐτοὺς εἰς Βουλγαρίαν ἐκεῖθεν τοῦ Ἴστρου ποταμοῦ. – Symeon Logothetes, Chronicon 131, 9 (235-236, 70-77 Wahlgren): ἐπὶ τούτου ἐξῆλθεν ὁ Κροῦμος, ἄρχων Βουλγαρίας, κατὰ τῶν Χριστιανῶν, καὶ τραπεὶς Μιχαὴλ καὶ Λέων ὁ Ἀρμένης τυραννήσας αὐτὸν καὶ βασιλεύσας, ἐλθὼν ὄπιθεν αὐτοῦ Κροῦμος περιεκύκλωσε τὴν πόλιν. λογχευθεὶς δὲ παρὰ Λέοντος τοῦ Ἀρμένη καὶ ὑποστρέφων ἐν Βουλγαρίᾳ ἔπεμψεν εἰς τὸν ἅγιον Μάμαντα ἀφελόμενος τὰ ἐκεῖσε χαλκᾶ ζῷδα. ἀπελθὼν δὲ καὶ ἐν Ἀδριανουπόλει παρέλαβεν αὐτὴν καὶ μετέστησε χιλιάδας ἀνδρῶν δέκα χωρὶς γυναικῶν καὶ τούτους κατῴκισε πέραν τοῦ Δανουβίου. – Syn-

According to sources, one of them was the future Emperor Basil I who was captured together with his family in the vicinity of Adrianople and was sent to Bulgaria[89]. Apart from the story of his early years in captivity and the persecutions of Byzantine Christians by the heathen Bulgars, we know very few details about these prisoners of war and their life in Bulgaria[90].

There is only one source, which tells the story of them returning to Byzantium. According to Symeon Logothetes, during the reign of Emperor Theophilus (829-842) the Byzantine captives planned for their escape from Bulgaria[91]. For this purpose, they sent a man called Cordyles to Constantinople. In the capital he met the emperor who promised his assistance and sent ships to the Danube; they were charged with the task of transporting the refugees from there back to Byzantium[92]. Earlier theories, such as those of Bănescu, Barnea, Brezeanu, Tăpkova-Zaimova and Venedikov, assumed that the prisoners of war settled down in modern Budjak and thus they got on the vessels in the area of the Delta[93]. The first one to challenge this hypothesis was Petre Panaitescu. In his article on Bulgarian domination in the region north of the Danube in the 9th and 10th centuries, he paid attention to the socio-economic background of the Byzantine war captives. Having in mind their agricultural skills, the Romanian historian doubted them being settled in the steppe zone of Budjak and suggested a location of their dwellings in modern Muntenia[94]. Two scholars, Dan Gh. Teodor and Kamen Stanev, tried to use archaeological data complementary to the information from the written sources and also localized the settlements of the captives in Muntenia[95]. However, their views on the place where the Byzantines boarded the ships differ; while Teodor argues for embarkation near the mouth of Ialomița, Stanev localizes this event in the area close to the Danube mouth[96]. Unfortunately, the text of Symeon Logothetes says nothing about the place of these events, but a site within the Delta seems to be more plausible for several reasons. Brezeanu and Stanev have already stressed that an operation away from the sea would have been far more dangerous than one in the area of the Delta[97]. Another argument for placing the embarkation near the Danube mouth is the communication between Bulgars and Hungarians during the operation. The war captives crossed an unnamed river, but a Bulgarian *komēs*[98] also crossed over trying to stop them and was defeated[99]. After a second attempt to cross over had failed, the Bulgars called their northern neighbours, the Hungarians, to help them stop the Byzantines[100]. In a further battle, the war captives succeeded in driving the Hungarians back and got on the ships, which carried them into Thrace where some became high imperial officials such as Tzantzes who was appointed a *strategos* of Macedonia[101].

axarium CP 414-415 (Delehaye). – A good historiographical overview may be found in Tanaşoca/Teoteoi, L'extension. – On »Bulgaria beyond the Danube«, cf. Mladjov, Trans-Danubian Bulgaria. – Grecu, Bulgaria în Nordul Dunării 223-234. – Brezeanu, La Bulgarie d'au delà de l'Ister. – Koledarov, Političeska geografija I 36-41. – Teodor, Quelques aspects. – Bănescu, Les frontières. – Sophoulis, Byzantium and Bulgaria 112-128. – For Bulgarian domination to the north of the Danube, see also Božilov, Anonimăt na Haze, whose view on the northeastern border, following the Dnieper River, the author of the present paper does not share.

89 There are good reasons to doubt Basil being born so early, that is why some historians date his birth in captivity in the 830s, cf. PmbZ I 1, # 832, p. 277.

90 Cf. Adontz, Basile I, 478-486. – Moravcsik, Sagen und Legenden 70-77. – Božilov, Istorija I 339-342. – On Byzantine captives in Bulgaria in the first half of the 9th century, cf. Hristov, Prisoners of War. – Stanev, Deportiranite romei. – Venedikov, La population byzantine 261-277. – On archaeological findings (ceramics, tools, and weapons) in Eastern Wallachia attributed to the Byzantine prisoners of war, see Teodor, Quelques aspects 9-14. – Teodor, Nouvelles considérations 97-102. – Madgearu, Byzantine Military Organization 13-14.

91 Recent studies have pointed out that attributing the authorship of the so-called *Logothetenchronik* to Leo the Grammarian, Theodosius Melissenus and Georgius Monachus Continuatus should be considered anachronistic, cf. Wahlgren, Symeon the Logothete (with further bibliography).

92 Symeon Logothetes, Chronicon 131, 10-11 (236, 77-83 Wahlgren): ἐν δὲ ταῖς ἡμέραις Θεοφίλου τοῦ βασιλέως ἦν στρατηλάτης ἐν Μακεδονίᾳ ὁ Κορδύλης προσαγορευόμενος. εἶχε δὲ καὶ υἱὸν Βάρδαν ὀνόματι ἡνδριωμένον πάνυ, ὃν κατέλιπεν ἀντ᾽ αὐτοῦ ἄρχειν τῶν Μακεδόνων τῶν ὄντων πέραν τοῦ ποταμοῦ Δανουβίου. αὐτὸς δὲ μετὰ μηχανῆς τινος ἦλθεν εἰς Θεόφιλον· ὃν ὑποδεξάμενος χαίρων καὶ γνούς, ὃ θέλει, ἀπέστειλε πλοῖα ἀναλαβέσθαι αὐτοὺς καὶ ἐλθεῖν ἐν τῇ πόλει.

93 Bănescu, Les frontières 6-7. – Barnea, Dobrogea 209. – Barnea/Ştefănescu, Din istoria Dobrogei III 13. – Barnea, La Danube 585. – Brezeanu, La Bulgarie d'au delà de l'Ister 122. – Tăpkova-Zaimova, Quelques observations 80. – Tăpkova-Zaimova, Otvăddunavska Bălgarija 64. – Venedikov, Ustrojstvo 93.

94 Grecu, Bulgaria în Nordul Dunării 228 (Panaitescu subscribed the article as Alexandru Grecu).

95 Teodor, Quelques aspects 5-15. – Teodor, Nouvelles considérations 96-101. – Stanev, Deportiranite romei 186-188.

96 Teodor, Quelques aspects 13-14. – Teodor, Nouvelles considérations 99-100. – Stanev, Deportiranite romei 186-187.

97 Brezeanu, La Bulgarie d'au delà de l'Ister 129. – Stanev, Deportiranite romei 187 and 190, n. 40.

98 On the function of *komēs*, who was in this case a Bulgarian and not a Byzantine official, cf. Tăpkova-Zaimova, Otvăddunavska Bălgarija 64. – Some scholars think that the *komēs* came from the area south to the Danube to stop the captives, cf. Grecu, Bulgaria în Nordul Dunării 227. – Brezeanu, La Bulgarie d'au delà de l'Ister 22. – Mladjov, Trans-Danubian Bulgaria 90. – Spinei, Romanians 58 (a possibility, which Božilov, Istorija I 341 also would not exclude). The text of the source is ambiguous, but it is quite possible that the *komēs* had his seat in modern Wallachia. – Barnea, Periochē 83 identifies the *archōn Bulgarias*, attested on some seals, with the *komēs* in the chronicle of Symeon Logothetes and attributes to him the function of being in charge for the Byzantine fleet based in the Danube mouth. The *archōn Bulgarias* is the Bulgarian ruler Boris-Michael and from the narrative of the Byzantine chronicle it becomes clear that the *komēs* was one of his administrators, cf. Jordanov, Corpus 43-60. Thus, both had nothing to do with Byzantine functionaries within the Delta.

99 Symeon Logothetes, Chronicon 131, 11-12 (236, 85-90 Wahlgren): ἐποίησαν οὖν βουλὴν ὁ λαὸς σὺν γυναιξὶ καὶ τέκνοις ἐξελθεῖν ἐν Ῥωμανίᾳ. ἐξελθόντος δὲ Μιχαὴλ Βουλγάρου ἐν Θεσσαλονίκῃ ἤρξαντο διαπερᾶν σὺν ταῖς ὑποστάσεσιν αὐτῶν. μαθὼν δὲ ὁ κόμης τοῦτο ἀντεπέρασε πολεμήσων αὐτούς. ἀπογόντες οὖν οἱ Μακεδόνες ἐποίησαν κεφαλὴν αὐτῶν τόν τε Τζάντζην καὶ τὸν Κορδύλην καὶ συμβαλόντες πόλεμον ἀπέκτειναν πολλούς, τινὰς δὲ καὶ ἐκράτησαν. – Brezeanu, La Bulgarie d'au delà de l'Ister 128-129.

100 For Hungarian presence in the region north to the Danube Delta, see Spinei, Great Migrations 47.

101 Symeon Logothetes, Chronicon 131, 11-12 (236-237, 91-108 Wahlgren): οἱ δὲ μὴ δυνηθέντες περᾶσαι Βούλγαροι προσερρύησαν τοῖς Οὔγγροις, ἀναγγείλαντες αὐτοῖς πάντα τὰ τῶν Μακεδόνων. ἦλθον δὲ καὶ τὰ πλοῖα τοῦ βασιλέως πρὸς τὸ ἀναλάβεσθαι αὐτοὺς καὶ ἀγαγεῖν ἐν τῇ πόλει. παρευθὺ δὲ ἀνεφάνησαν Οὖννοι τῷ πλήθει ἄπειροι. οἱ δὲ ἰδόντες αὐτοὺς μετὰ δακρύων ἐβόων λέγοντες· ὁ θεὸς τοῦ ἁγίου Ἀδριανοῦ βοήθει ἡμῖν· καὶ παρετάσσοντο πρὸς συμβολὴν πολέμου. οἱ δὲ Τοῦρκοι εἶπον πρὸς αὐτούς· δότε ἡμῖν τὴν ὕπαρξιν ὑμῶν πᾶσαν καὶ ἀπέλθατε, ὅπου καὶ βούλεσθε. οἱ δὲ τοῦτο οὐ κατεδέξαντο, ἀλλὰ παρατεταγμένοι ὑπῆρχον ἐν τρισὶν ἡμέραις καὶ τῇ τετάρτῃ ἤρξαντο εἰς τὰ πλοῖα αὐτῶν εἰσέρχεσθαι. θεασάμενοι δὲ τοῦτο οἱ Τοῦρκοι συνέβαλον πόλεμον ἀπὸ ὥρας πέμπτης μέχρις ἑσπέρας, καὶ τραπὲν τὸ ἔθνος κατεδίωκον αὐτοὺς οἱ Μακεδόνες. καὶ τῇ ἐπιούσῃ ἡμέρᾳ βουλομένων αὐτῶν ὑποχωρῆσαι ἀνεφάνησαν πάλιν Οὖννοι πρὸς τὸ πολεμῆσαι αὐτούς. ἀναστὰς δὲ Μακεδὼν νεώτερος ὀνόματι Λέων ἐκ γένους τῶν Γομοστῶν, ὃς μετὰ ταῦτα γέγονεν ἑταιρειάρχης, καὶ ἕτεροι ὀνομαστοὶ τῶν Μακεδόνων ἔτρεψαν αὐτοὺς καὶ ἐξήλασαν καὶ ὑποστρέψαντες εἰσῆλθον εἰς τὰ πλοῖα καὶ ἀπεσώθησαν πρὸς τὸν βασιλέα καὶ φιλοτιμηθέντες παρ᾽αὐτοῦ ὑπέστρεψαν εἰς Μακεδονίαν εἰς τὴν ἰδίαν χώραν.

If we accept that the unnamed river was the Ialomița in Muntenia, it is hard to explain how the Bulgarian *komēs* could not cross the river but succeed in calling the Hungarians who lived in the area behind the Byzantines. Placing the events within the Delta would explain the sequence of events in a better way – the refugees may have crossed one of the Danube branches to reach the ships sent from Constantinople. Thus, the Bulgars could not prevent them from getting on the vessels after having been defeated, but they could easily contact the Hungarians living in Budjak to the north of the river.

The episode with the transportation of Byzantine war captives from the area of the Lower Danube to Byzantium is not the last case when the Empire used ships sent from Constantinople for military operations in the Danube Delta. In 893, Leo VI transferred the Bulgarian markets from Constantinople to Thessaloniki. By doing so, the Emperor harmed the trade interests of his northern neighbours[102]. After Simeon's request for their return to the capital remained unanswered, he attacked Thrace and defeated the imperial army[103]. The Byzantines were at that time at war with the Arabs, thus lacking troops to launch a large-scale offensive in the Balkans. Although the land army under the command of Nicephorus Phocas marched against Bulgaria, the main attack against the enemy had to be carried out by the Hungarians in the North. According to Symeon Logothetes and Theophanes Continuatus, Leo VI sent the *droungarios* Eustathius to the Danube, charged with the transfer of the Hungarian cavalry to the south of the river where it was meant to attack Simeon from the rear[104]. We find some interesting details about these events in *De administrando imperio* written by Constantine Porphyrogenitus[105]. The Bulgarians tried to organize their defence in the area of the Delta by building mantlets that had to prevent the Hungarians from getting to the southern riverbank. The mantlets seem to have worked at the beginning because the first attempt of the Hungarians to cross the Danube failed. Therefore, the Hungarians were forced to wait for assistance – when the Byzantine navy arrived, three sailors leapt down from one of the ships and cut the mantlets down[106]. Božilov assumes that these mantlets stretched from one Danube bank to the other[107], but this makes it difficult to explain why the Hungarians who were standing on the opposite side of the river could not overcome such an obstacle by just cutting its northern end down and instead had to wait for Byzantine help. All of this does point to another explanation – the mantlets could have been built in vulnerable places on the southern bank of the Danube, where the Hungarians may have passed through without using Byzantine vessels.

Thus, the way for the Hungarian horsemen was opened and they crossed the Danube on Byzantine ships. In three battles, the Hungarians defeated Simeon and made him retreat behind the walls of Dorostolon (or in Mundraga, according to Constantine Porphyrogenitus[108]), from where he organized his counterattack using the assistance of the Pechenegs[109]. The combined assault of the Bulgarians and the Pechenegs on the Hungarian settlements in Budjak was so ferocious that it caused the migration of the Magyars under the leadership of Arpad to Pannonia[110].

The Tenth Century

The Hungarian migration to the West caused the establishment of the Pechenegs in the region to the north of the Danube Delta. Thus, they became the next possible ally of Byzantium with the potential to be used against Bulgaria. The Byzantines did not have to wait long, since the wars of Simeon provided them with a good excuse to organize

102 On trade between Byzantium and Bulgaria from the 8th to the 10th century, cf. Ferluga, Handel nach dem Norden 619-629. – Simeonova, Tărgovija.

103 Theophanes Continuatus VI 1, 9 (357, 12-23 - 358, 1-7 Bekker). – Symeon Logothetes, Chronicon 133, 15-16 (275-276, 82-100 Wahlgren). – John Scylitzes, Synopsis 175-176, 75-95 (Thurn). – John Zonaras, Epitome XVI 12, 15-18 (III 442, 9-17 Büttner-Wobst). – For a historical background, see Tougher, Leo VI, 172-180. – Božilov, Simeon Veliki.

104 Symeon Logothetes, Chronicon 133, 17 (276, 100-105 Wahlgren): οὓς ἰδὼν ὁ βασιλεὺς καὶ θυμωθεὶς ἀπέστειλε Νικήταν τὸν ἐπιλεγόμενον Σκληρὸν μετὰ δρομώνων ἐν τῷ ποταμῷ Δανουβίῳ δοῦναι δῶρα τοῖς Τούρκοις καὶ πρὸς πόλεμον κινῆσαι κατὰ Συμεών. ὁ δὲ ἀπελθὼν καὶ συντυχὼν ταῖς κεφαλαῖς Ἀρπάδῃ καὶ Κουσάνῃ καὶ συνθεμένων πολεμῆσαι λαβὼν ὄψιδας ἦλθε πρὸς τὸν βασιλέα. – Theophanes Continuatus VI 1, 9 (358, 7-12 Bekker). – John Scylitzes, Synopsis 176, 1-6; 177, 14-19 (Thurn). – John Zonaras, Epitome XVI 12, 19-23 (III 442, 17 - 443, 1-11 Büttner-Wobst). – Leo VI, Taktika XVIII 40 (452, 215-220 Dennis): καὶ γὰρ τῶν ἡμετέρων δυνάμεων κατὰ Σαρακηνῶν ἀσχολουμένων Τούρκους ἡ θεία πρόνοια ἀντὶ Ῥωμαίων κατὰ Βουλγάρων ἐστράτευσε, πλοΐμου στόλου τῆς ἡμῶν βασιλείας τὸν Ἴστρον αὐτοὺς διαπεράσαντός τε καὶ συμμαχήσαντος, καὶ τὸν κακῶς κατὰ Χριστιανῶν ὁπλισθέντα Βουλγάρων στρατὸν τρισὶ μάχαις κατὰ κράτος νενικηκότας. – Annales Fuldenses ad A. 896 (129 Kurze): *Pacem ergo Greci eodem anno cum Avaris, qui dicuntur Ungari, facientes; quod eorum concives Bulgari in pravum vertentes hostili expeditione contra eos insurgunt et omnem regionem illorum usque portam Constantinopolitanam devastando insecuntur. Quod ad ulciscendum Greci astucia sua naves illorum contra Avaros mittunt ac eos in regnum Bulgarorum ultra Danuvium transponunt. Illi transpositi manu cum valida gentem Bulgarorum ingressi maximam partem cedendo neci tradiderunt*. – Dimitrov, Bulgaria and the Magyars. – Božilov/Gjuzelev, Istorija na Dobrudža II 60-62.

105 For the work and its author, see Belke/Soustal, De administrando imperio 41-60.

106 Constantine Porphyrogenitus, De administrando imperio 51 (250-252, 110-120 Moravcsik/Jenkins): Οὗτος οὖν ὁ Συμεών, ὁ ἄρχων Βουλγαρίας, μαθὼν τὴν τοῦ πλωΐμου πρὸς τὸν ποταμὸν ἄφιξιν, καὶ ὅτι μέλλει τὸ πλώϊμον τοὺς Τούρκους κατ᾽ αὐτοῦ περᾶσαι, ἐποίησεν λέσας, ἤτοι πλοκοὺς ἰσχυροὺς πάνυ καὶ στερεμνίους, ὥστε μὴ δύνασθαι τοὺς Τούρκους ἀντιπερνᾶν, δι᾽ ἣν ἐπίνοιαν καὶ ἐκωλύθησαν οἱ Τοῦρκοι τὸ πρῶτον περᾶσαι. Ὁ οὖν προρρηθεὶς Μιχαὴλ ὁ Βαρκαλᾶς μετὰ καὶ ἄλλων δύο πλωΐμων ἀναλαβόμενοι τὰ σκουτάρια καὶ σπαθία αὐτῶν, ἀνδρείῳ καὶ ῥωμαλέῳ ὁρμήματι ἐκπηδήσαντες τοῦ χελανδίου, κατέκοψαν τὰς λέσας, ἤτοι τοὺς πλοκούς, καὶ ἤνοιξαν τὸν πόρον τοὺς Τούρκους. – Ahrweiler, Byzance et la mer 88. – On *lesai*, cf. LBG II/1 928. – Litavrin, Kekavmen 429, n. 356.

107 Božilov/Gjuzelev, Istorija na Dobrudža II 62.

108 Constantine Porphyrogenitus, De administrando imperio 40 (174-176, 7-12 Moravcsik/Jenkins): Μετὰ δὲ ταῦτα παρὰ Λέοντος, τοῦ φιλοχρίστου καὶ ἀοιδίμου βασιλέως, προσκληθέντες διεπέρασαν, καὶ τὸν Συμεὼν πολεμήσαντες κατὰ κράτος αὐτὸν ἤττησαν, καὶ ἐξελάσαντες μέχρι τῆς Πρεσθλάβου διῆλθον, ἀποκλείσαντες αὐτὸν εἰς τὸ κάστρον τὸ λεγόμενον Μουνδράγα, καὶ εἰς τὴν ἰδίαν χώραν ὑπέστρεψαν. – On Mundraga, cf. Beševliev, Mundraga 17-21.

109 On Bulgaria and the Hungarians in the late 9th century, cf. Dimitrov, Bulgaria and the Magyars. – Todorov, Value of Empire 317-321.

110 Constantine Porphyrogenitus, De administrando imperio 40 (176, 13-27 Moravcsik/Jenkins). – Regino Prumiensis abbas, Chronica ad A. 889 (131-133 Kurze). – Spinei, Great Migrations 52-53.

a coalition against him. In 917, Empress Zoe Carbonopsina undertook a large-scale campaign in the Balkans. Peace was signed with the Arabs, so the army from Asia Minor crossed the Straits and headed to Bulgaria. Apart from that, the Byzantines tried to win the assistance of Simeon's neighbours, which included the Serbian ruler of Raška Petar Gojniković, and the Pechenegs[111]. The *stratēgos* of Chersonesus, John Bogas, offered the government in Constantinople to persuade the Pechenegs to join the alliance against Simeon[112]. Their leaders agreed and the Byzantine navy was sent to the Danube under the command of Romanus Lecapenus[113]. According to the Byzantine historians, the negotiations failed because John Bogas and Romanus Lecapenus argued in the presence of the Pechenegs, who broke the alliance with Byzantium[114]. The fleet had to sail back to Constantinople, which caused some troubles to its commander, Romanus Lecapenus, as he was accused of not having helped the Byzantine troops who retreated after the battle of Achelous in August 917[115].

The trans-border location of the Danube Delta and its good waterway connections were the reason why the region was involved not only in military campaigns but was also a centre of intense trade activity[116]. Describing the so-called »Route from the Varangians to the Greeks« in his work *De administrando imperio*, Constantine Porphyrogenitus remarks that one of the Danube arms called Selina (modern Sulina) was the border between the Pechenegs and Bulgaria; after crossing it the Varangian sailors, who were under the constant threat of being attacked by the Pechenegs, had nothing more to fear on their way to Constantinople[117]. Another source, the *Russian Primary Chronicle* (*Povest' vremennych let*), describes a place on the Lower Danube where trading took place on the eve of Svyatoslav's Balkan campaigns in the late 960s[118]. This was the so-called Pereyaslavets or Preslavitsa, identified by the fortress excavated near the Romanian commune of Nufăru[119], where the Byzantines established one of their *kommerkia* in the 11th century[120]. The *Russian Primary Chronicle* has preserved what is believed to have been Svyatoslav's answer to his mother Olga's appeal to come back to Kiev: »I do not care to remain in Kiev, but should prefer to live in Pereyaslavets on the Danube, since that is the centre of my realm, where all riches are concentrated; gold, silks, wine and various fruits from Greece, silver and horses from Hungary and Bohemia, and from the Rus' furs, wax, honey, and slaves«[121]. The same source informs us that when Svyatoslav landed on the Danube bank in 968 and 969, he took the town of Preslavitsa after having fought against Bulgarian troops[122].

De thematibus and the Byzantine Lists of Precedence

The reports by the Byzantine historians on imperial maritime activity around the Danube Delta from the 8th to the late 10th century attest that military campaigns in that part of the Balkans were carried out or were at least supposed to have been carried out by naval forces sent from Constantinople and not by a fleet based in one of the Danube branches. There is another group of sources that remain silent about Byzantine administration in the area of the Danube Delta before 971. The first author is Constantine Porphyrogenitus. In his work *De thematibus* he describes the Byzantine administration in the Balkans, Asia Minor, and Italy and on the Chersonesus. In the Balkans, he mentions only *themata* located in the southern part of the peninsula – Thrace, Mac-

111 Božilov, Simeon Veliki. – Todorov, Value of Empire 323-325.

112 For further details on this person, see Zuckerman, Pontic Policy 221-223. – PmbZ II 3, # 22911.

113 Symeon Logothetes, Chronicon 135, 21 (305, 156-161 Wahlgren): ἀπεστάλη δὲ τότε καὶ Ῥωμανὸς πατρίκιος, δρουγγάριος ὢν τοῦ πλοΐμου, μετὰ παντὸς τοῦ στόλου ἐν τῷ Δανουβίῳ ποταμῷ βοηθήσων Λέοντι τῷ Φωκᾷ, ἀλλὰ καὶ Ἰωάννης ὁ Βωγᾶς καταγαγεῖν Πατζινάκας, ὡς εἴρηται, κελευσθέντος τοῦ δρουγγαρίου Ῥωμανοῦ διαπερᾶσαι τούτους κατὰ Βουλγάρων, ὥστε συμμαχῆσαι Λέοντι τῷ Φωκᾷ. – Theophanes Continuatus VI 3, 10 (389, 20-22 Bekker). – John Scylitzes, Synopsis 204, 18-25 (Thurn). – John Zonaras, Epitome XVI 17, 1-3 (III 464, 10-17 - 465, 1-2 Büttner-Wobst).

114 A more plausible reason for the failure of the Pecheneg assistance may have been the activity of Bulgarian diplomacy, which probably tried to break up the dangerous alliance between Constantinople and the horsemen from the steppes. According to Constantine Porphyrogenitus and Patriarch Nicholas Mysticus, the Bulgars were interested in maintaining good relations with their north-eastern neighbour, cf. Constantine Porphyrogenitus, De administrando imperio 5 (52, 3-13 Moravcsik/Jenkins). – Nicholas Mysticus, Letter 9 (58, 109-112 Jenkins/Westerink): καὶ τοσοῦτον τὸ πρᾶγμα σπουδάζεται Βουλγάροις, ὥστε καὶ γάμου κοινωνίᾳ τῶν οἰκείων παίδων σπουδάζειν ἑνῶσαι καὶ συνδῆσαι τὴν πρὸς ἑαυτοὺς συμμαχίαν Πατζηνακιτῶν. – Božilov, Bălgarija i pečenezite 52. – Spinei, Great Migrations 116. – Mladjov, Trans-Danubian Bulgaria 92-95.

115 Dimitrov, Western Black Sea Coast 321-323.

116 Paraschiv-Talmaţchi/Talmaţchi, Considerations. – Grecu, Bulgaria în Nordul Dunării 225-226.

117 Constantine Porphyrogenitus, De administrando imperio 9 (62, 92-99 Moravcsik/Jenkins): πάλιν ἀποκινοῦντες ἔρχονται εἰς τὸν Σελινάν, εἰς τὸ τοῦ Δανουβίου ποταμοῦ λεγόμενον παρακλάδιον. Καὶ ἕως οὗ διέλθωσι τὸν Σελινὰν ποταμόν, παρατρέχουσιν αὐτοῖς οἱ Πατζινακῖται. Καὶ ἐὰν πολλάκις ἡ θάλασσα μονόξυλον εἰς τὴν γῆν ἀπορρίψῃ, σκαλώνουσιν ὅλα, ἵνα τοῖς Πατζινακίταις ἀντιπαραταχθῶσιν ὁμοῦ. Ἀπὸ δὲ τὸν Σελινὰν οὐ φοβοῦνταί τινα, ἀλλὰ τὴν τῆς Βουλγαρίας γῆν ἐνδυσάμενοι, εἰς τὸ τοῦ Δανουβίου στόμιον ἔρχονται. Ἀπὸ δὲ τοῦ Δανουβίου καταλαμβάνουσιν εἰς τὸν Κωνοπάν, καὶ ἀπὸ τοῦ Κωνοπᾶ εἰς Κωνστάντιαν. – Cf. the commentary in Litavrin/Novosel'cev, Ob upravlenii imperiej 291-332, especially notes 57-58 on pp. 328-329. – Litavrin, Drevnjaja Rus. – Kostova, Settlement Patterns 31-32. – For further details about the route, see Povest' vremennych let 29-31 (Lichačev). – Ferluga, Handel nach dem Norden 625; 629-642. – Howard-Johnston, *De Administrando Imperio*. – Simeonova, Putešestvie.

118 Cf. Andronic, Români.

119 The main bibliography may be found in Madgearu, Byzantine Military Organization. – On the identification, cf. Damian/Andonie/Vasile, Nufăru. – For other identifications concerning the location, such as Noviodunum (Isaccea), see Kostova, Settlement Patterns 34. – For coin circulation in the medieval settlement in Nufăru, see Mănucu-Adameşteanu, Circulaţia monetară. – For Byzantine artefacts, see Mănucu-Adameşteanu et al., Descoperiri.

120 For the seals, see Oikonomides, Presthlavitza.

121 Povest' vremennych let A.M. 6477 (50 Lichačev): Рече Святославъ къ матереи своей и къ боляромъ своимъ: »Не любо ми есть в Киевѣ быти, хочю жити в Переяславци на Дунаи, яко то есть середа земли моей, яко ту вся благая сходятися: отъ Грекъ злато, поволоки, вина и овощеве разноличныя, изъ Чехъ же, из Угорь сребро и комони, из Руси же скора и воскъ, медъ и челядь«. The English translation is the one of Cross/Sherbowitz-Wetzor, Russian Primary Chronicle 86. – For Varangian artefacts found in Nufăru, see Damian/Vasile, Varangians.

122 Povest' vremennych let A.M. 6475 and 6479 (48 and 52 Lichačev). – Cross/Sherbowitz-Wetzor, Russian Primary Chronicle 84 and 87. – Barnea, La Danube 586.

edonia, Thessalonike, Strymon (actually a *kleisura*), Hellas, Peloponnesus, Cephalenia, Nicopolis and Dyrrhachion[123]. We find the same data in the Byzantine *Lists of Precedence* edited by Nikolaos Oikonomides. Both *Taktikon of Uspenskij* (842-843)[124] and *Taktikon of Benešević* (934-944)[125] and the so-called *Kletorologion of Philotheos* (899)[126] mention only the *stratēgoi* of Thrace, Macedonia and Chersonesus but they say nothing about a *stratēgos* of Lykostomion or of an alleged *thema* in the northern part of Dobruja in the 9th or 10th century[127]. The situation changes when we look at the *Taktikon*, which Oikonomides discovered in Spain and edited under the name of *Taktikon Escurialensis*. It dates back to the middle of the 970s and attests a *stratēgos* of Thrace and Ioannoupolis (the new name of the former Bulgarian capital Preslav conquered by John Tzimiskes in 971) and a *thema* called *Mesopotamia tēs Dyseōs*, located in the northern part of Dobruja[128].

Geographical Position and Climate

It is easier to understand the political history of the Lower Danube in Late Antiquity and Early Middle Ages if we consider the geographical position of the Danube Delta, which seems to have been crucial for Roman and Byzantine defence strategies at the Lower Danube[129]. The Roman province of Scythia Minor is a natural continuation of the steppe region lying in the North and is characterized by a continental climate and very low winter temperatures[130]. The cold climate during the winter is a topic we find in the works of some Late Antique authors. In one of his speeches to Emperor Julian, Libanius speaks of the thin ice on the Danube as the only reason for the Empire's safety in earlier ages[131]. We can find the explanation for this statement in the work of a 5th-century theologian. Pseudo-Caesarius says in his *Dialogues* that the severe frost caused the river to freeze. According to him, the ice could have been so thick that it allowed the passing over of thousands of horsemen[132].

Some may call it simply rhetorical, but the information we get from the works of different historians reporting on the environmental conditions in the northern and north-western region of the Black Sea confirms the remarks of Libanius and Pseudo-Caesarius. In his description of the Black Sea, Ammianus Marcellinus says that the sea itself froze up because of the high amount of sweet water pouring into it from the rivers of what is nowadays Eastern Europe and Russia[133]. As a child, the Byzantine historian Theophanes played on the pieces of an iceberg, that had built up due to the severe cold in the northern and north-western regions of the Black Sea, eventually floating towards the Bosporus and crushing the seaside walls of Constantinople[134]. There is one account in the *Church history* of Philostorgius that reveals what happened when invaders, coming from the North, succeeded in taking advantage of the frozen Danube Delta. According to him, unnamed Barbarians crossed the frozen river in the winter of 384/385 and conquered the easternmost Roman town of the Limes, Halmyris (modern Murighiol)[135]. Thanks to the Latin Life of two Early Christian Saints, Epictetus and Astion,

123 Constantine Porphyrogenitus, De thematibus II 1-9 (84-94 Pertusi). – The hypothesis of Barnea, Dobrogea 206-207, shared by Rădulescu, Românii 79-80 and Damian, Prezența politică bizantină 287-288, that Constantine IV established the *thema* of Thrace comprising territories on the Lower Danube from which the later thema of Paristrion developed, bases on a misinterpretation of Constantine Porpyrogenitus, De thematibus II 1 (84, 19-23 Pertusi): Διασαπείσης δὲ τῆς σαγήνης, ὡς εἴπομεν, καὶ τῶν βαρβάρων ἐκπορθησάντων τὰς πόλεις, εἰς μικρὰ τμήματα διῃρέθη ἡ τῆς Θρᾴκης ἀρχή· ἥ τε γὰρ Βουλγαρία καὶ αὐτὸς ὁ Ἴστρος καὶ τὸ περιώνυμον ὄρος τὸ διῆκον ἄχρι τοῦ Πόντου, τὸ καλούμενον Αἷμος τῆς Θρᾴκης εἰσὶ μέρη, νυνὶ δὲ ἀλλότρια χρηματίζουσι. The toponyms in the passage are an attempt to explain the names of the Late Roman provinces of Moesia II Inferior, Scythia Minor and Haemimontus within the diocese of Thrace through toponyms familiar to the reader of the 10th century, cf. Ditten, Thrakien 164-165; 177-179. Moreover, the text clearly says that since Constantine's reign the territories between the Danube and the Balkan Mountains were beyond the authority of Constantinople, cf. the critical remarks of Madgearu, Continuitate şi discontinuitate culturală 146-147 on Barnea's hypothesis. – On the foundation of the *thema* Thrace, cf. Lilie, Thrakien und Thrakesion. – Soustal, Thrakien 76. – Leontsine, Konstantinos 145-150.

124 Taktikon Uspenskij 49, 8-9; 57, 13 (Oikonomidès).

125 Taktikon Benešević 247, 8-9, 30 (Oikonomidès).

126 Kletorologion of Philotheos 101, 15-16, 30 (Oikonomidès).

127 On this topic, see Damian, Prezența politică bizantină 289-293.

128 Taktikon Escurialensis 263, 29; 265, 9; 267, 10 (Oikonomidès). – Oikonomidès, La Mésopotamie de l'Occident.

129 For an overview on climate in Byzantium, see Teleles, Meteōrologika phainomena. – Telelis, Climatic Fluctuations.

130 Cf. DNP Suppl. 11, S. 622-623. – For a discussion on the modern landscape of Dobruja and the ancient geography of Scythia Minor, see Oračev, Prinosi 32.

131 Libanius, Orationes LIX 90 (IV 253, 8-12 Foerster): γνοίη δ' ἄν τις, εἰ παραθείη τῇ νῦν ἀπὸ Σκυθῶν ἀδεία τὰς προτέρας καταδρομάς, πρὸς ἃς ἀντιβλέπειν μὲν οὐκ ἐξῆν, μιᾶς δὲ εὐχῆς τυγχάνουσιν ἐγίγνετο σώζεσθαι. αὕτη δὲ ἦν μὴ παγῆναι βέβαιον ἐν Ἴστρῳ κρύσταλλον, ὥστε καὶ ἐπελθεῖν ὑπάρχειν.

132 Pseudo-Caesarius, Erotapokriseis 67 (57, 11-19 Riedinger): θέα δέ μοι ἐναργέστερον ὑπόδειγμα περὶ τοῦ στερεώματος, οὐ τέχνῃ βροτῶν, ἀλλὰ θείᾳ βουλῇ συνιστάμενον καὶ οἱονεὶ διδασκαλεῖον ἡμῖν προκείμενον, τὸν ἕνα τῶν τεττάρων ἐκ τῆς ἐν παραδείσῳ κρήνης ῥεόντων ποταμῶν, τὸν Φησῶνα παρὰ τῇ καθ' ἡμᾶς γραφῇ, παρ' Ἕλλησιν δὲ Οἶστρον, παρὰ δὲ Ῥωμαίοις Δανούβιον, παρὰ δὲ Γόθθοις Δούναυην προσαγορευόμενον· χειμῶνος πηγνυμένου καὶ εἰς λιθώδη ἀντιτυπίαν μεθισταμένης τῆς μαλακῆς τοῦ ῥείθρου φύσεως, ὡς οἷαν τε φέρειν ἐπιπορευομένων πολεμίων καὶ πρὸς τὰ Ῥωμαίων Ἰλλύριά τε καὶ Θρᾴκεια μέρη διαφοιτούντων πλῆθος, οὕτω τοι καὶ τὸ αὐτὸ ἐκ τοῦ ὕδατος παγὲν στερέωμα ὑποκλύζεται μὲν τῷ ὑποκριθέντι ῥείθρῳ, ὑπερστέγει δὲ ἵππον καὶ ἀναβάτην ἐν χιλιάσιν δέκα πολλάκις ὁρώμενον.

133 Ammianus Marcellinus, Res Gestae XXII 8, 48 (III 32, 13-16 Seyfarth): *Quidquid autem eiusdem Pontici sinus aquilone caeditur et pruinis, ita praestringitur gelu, ut nec amnium cursus subteruolui credantur nec per infidum et labile solum gressus hominis possit uel iumenti firmari, quod uitium numquam mare sincerum, sed permixtum aquis amnicis temptat.* – Marcellinus Comes, Chronicon ad 401 (8 Croke): *Maris Pontici superficies ita gelu frenata est, ut per triginta dies solute tandem glacies instar montium per Propontidem superne portata decurreret.*

134 Theophanes, Chronographia A.M. 6255 (434, 6-435, 5 de Boor). – Nicephorus Patriarches, Breviarium 74 (144-148, 1-49 Mango). – Symeon Logothetes, Chronicon 122, 11 (191-192, 116-132 Wahlgren). – Georgios Monachos, Chronicon IX 34 (II 758, 11-759, 6 de Boor). – John Zonaras, Epitome XV 7, 1-7 (III 272, 8-273, 11 Büttner-Wobst). – Teleles, Meteōrologika phainomena I 342-351.

135 Philostorgius, Historia ecclesiastica X 6, 2 (I 402, 52-53 Bleckmann/Stein): ἀλλ' ἡ μὲν Ἁλμυρὶς κρυσταλλωθέντος τοῦ Ἴστρου ὑπὸ τῶν διαβάντων αὐτὸν βαρβάρων ἁλίσκεται. – Nicephorus Callistus Xanthopulus, Historia ecclesiastica XII 29 (PG 146, 840 A-B). – Teleles, Meteōrologika phainomena I 126-127 (with a different chronology). – On chronology, cf. Madgearu, Barbarian Invasions 175. – Wolfram, Goten 141 assumes that these Barbarians may have been Goths. – On Halmyris, cf. Suceveanu et al., Halmyris I 79-114. – Zahariade/Alexandrescu, Inscriptions from Halmyris 1-20. – Zahariade, Environmental Archaeology 39-51.

who were killed in Halmyris at the very end of the 3rd century[136], as well as numerous inscriptions on votive altars commissioned by Roman veterans, we have some data about the maritime activity in the area of the town[137]. Archaeological findings such as ceramics, especially amphoras produced in Italy, North Africa, the Eastern Mediterranean and the West Pontic towns, attest to the role of Halmyris' harbour in trade activity at the easternmost point of the Danube border of the Byzantine Empire before the 7th century[138]. Although the settlement had a harbour, its inhabitants were obviously helpless in times of great cold when the water of the river froze, and the Byzantine ships could do nothing against the horsemen who wanted to cross the Danube.

Bearing in mind the information about the environment of the Danube Delta in Late Antiquity and Early Middle Ages we can see how vulnerable Byzantine defence was in the north-easternmost region of the Balkans. The combination of a marshy area, shallow waters and sometimes extremely low winter temperatures could become a real threat for a province the borders of which were the next station for people coming from the North Black Sea region[139]; to mention a few, the Goths in 376[140], the Huns in 394/395[141], the Kutrigurs in 539/540[142] and 559 (crossing the frozen Danube)[143] and the Avars in 562/563[144], not all of whom had the intention of crossing the Limes with the permission of Constantinople. It seems that Barbarians also realized where the Achilles' heel of Byzantine defences on the Lower Danube laid, if we consider the words of the Turkic Khagan Turxanthos to a Byzantine mission in 576. His remarks are quoted by Menander Protector: »As for you, Romans, why do you take my envoys through the Caucasus to Byzantium, alleging that there is no other route for them to travel? You do this so that I might be deterred from attacking the Roman Empire by the difficult terrain. But I know very well where the river Danapris flows, and the Danube and the Hebrus, and from where our slaves, the Uarkhonitai, crossed into Roman territory. I know your strength. For the whole world is open to me from the farthest East to the very western edge«[145].

Byzantium was aware of the threat that might come from the North and easily reach as far as the hinterland of its own capital. Thus, the Empire organized a complex defence system in the eastern part of the Diocese of Thrace (Scythia Minor, Moesia Inferior and Haemimontus), the first line of which was preserved for the Danubian fleet[146]. As we have seen, the Byzantines had a naval base within the Delta called in the *Notitia Dignitatum* Plateypegiis and had at their disposal special ships built to operate in the marshy area of the Danube mouth. Furthermore, we know from the *Codex Theodosianus*[147] and Justinian's *Novellae*[148] that both Emperor Theodosius II and Justinian I tried to reorganize the forces of the Byzantine Danubian fleet in the 5th and the 6th century to improve its efficiency[149]. But the role of the fleet should not be taken out of the context of Byzantine defence strategy in the Balkans. The fact that only one Barbarian assault was stopped by the Danubian fleet, when the *potamiai nēes* arranged in three lines by Promotus defeated the boats of the Greuthungi led by Odotheus during a night assault in 386, shows that relying only on the strength of naval forces alone was not enough for an effective defence of the river[150]. Thus, the support by land troops stationed in the forts at the final

136 Vita SS Epicteti et Astionis 9, 25, 33 (AASS Julii II, 542 D, 545 F-546 B, 547 F): *et descendentes navim, in Scytharum fines ingressi sunt, atque in Almiridensium civitatem devenerunt, ubi nullus erat, qui eos vel eorum patriam posset agnoscere… Igitur cum in urbe Almiridensium sancti Martyres hæc tormenta pro Christi nomine tolerarent, quidam peregrinus quodam die videns beatissimum Astionem ante tribunal judicis consistentem, et cognoscens, quis cujusque generis haberetur, festinanter navigans in partibus Orientis descendit… Et egressi cum tribus pueris de domo sua, navim protinus conscenderunt, et navigare cœperunt, ut in Scytharum terram, atque in Almiridensium civitatem devenirent… Rogo igitur te, frater charissime, festina descendere ad portum, et suscipe eos in domum tuam, atque per omnia consolare eos, eo quod propter me valida sunt tristitia macerati: sed et in postremo de Salvatoris nostri fide, atque diversis magnalibus facias eos monere. Hæc et plura horum audiens Vigilantius, dedit gloriam Deo: et statim cum festinatione ad fluvium descendit. Et ecce, circa horam tertiam cernit naviculam parvam subito applicuisse ad portum. Cumque egressi de navi epibatæ a fuissent, cœperunt a circumstantibus ibidem viris solicite inquirere, si aliquis eorum aliquando audisset ibidem, aut vidisset juvenem, Astion nomen habentem.* – Philostorgius, Historia ecclesiastica X 6, 1 (I 400-402, 47-52 Bleckmann/Stein). – Nicephorus Callistus Xanthopulus, Historia ecclesiastica XII 29 (PG 146, 840 A-B). – On the Vita, cf. Madgearu, Data pătimirii.

137 Zahariade/Alexandrescu, Inscriptions from Halmyris 28-38.

138 Topoleanu, Ceramica 128-158. – Topoleanu, Pottery from Halmyris. – Suceveanu et al., Halmyris I 190-237.

139 Barnea, La Danube 577-579.

140 Ammianus Marcellinus, Res Gestae XXXI 4, 9 (IV 254, 33-256, 16 Seyfarth). – Wolfram, Goten: 125-127.

141 Sozomen, Historia ecclesiastica VIII 25, 1 (383, 14-16 Bidez). – Zahariade, Scythia Minor 28. – Madgearu, Barbarian Invasions 176.

142 Procopius of Caesarea, Bella II 4, 8-9 (I 163, 23-164, 9 Haury/Wirth). – Pseudo-Dionysius of Tel-Mahre, Chronicle 82-83 (Witakowski). – Meier, Zeitalter Justinians 662-663, n. 56.

143 Agathias, Historiae V 11, 5-6 (177, 17-28 Keydell). – Theophanes, Chronographia A.M. 6051 (233, 4-234, 7 de Boor). – Michael the Syrian, Chronicle IX 33 (II 269, 10-12 Chabot). – Ziemann, Wandervolk 99-100. – Kislinger, Angriff.

144 Evagrius Scholasticus, Historia ecclesiastica V 1 (196, 1-18 Bidez/Parmentier). – Menander Protector, Fragmenta V 4 (50-52, 1-22 Blockley). – Corippus, In laudem Iustini Augusti minoris III 282-302 (69-70 Cameron). – Pohl, Awaren 40-43.

145 Menander Protector, Fragmenta XIX 1 (174, 75-85 Blockley): Ὑμεῖς δέ, ὦ Ῥωμαῖοι, τί δῆτα ἄρα τοὺς κατ᾽ ἐμὲ πρέσβεις διὰ τοῦ Καυκάσου ὁδοιποροῦντας ἐπὶ τὸ Βυζάντιον ἄγετε, ὡς ἐμὲ φάσκοντες μὴ εἶναι ἑτέραν ἀτραπόν, δι᾽ ἧς αὐτοῖς ἔσται ἡ πορεία; ταῦτα δὲ ἐπιτελεῖτε, ὡς ἀπείποιμι διὰ τὰς δυσχωρίας ἐπιθέσθαι τῇ Ῥωμαίων ἐπικρατείᾳ. πλὴν ἔγωγε ἐξεπίσταμαι μάλα ἀκριβῶς ὅποι τε ὁ Δάναπρις ποταμός, οὐ μὴν ἀλλὰ καὶ ὁ Ἴστρος ἔνθα καταρρεῖ καὶ ἵνα ὁ Ἕβρος, ὁπόθεν τε ἐπεραιώθησαν ἐς τὴν Ῥωμαϊκὴν τὸ ἡμέτερον δουλικὸν οἱ Οὐαρχωνῖται. οὐκ ἀγνοῶ τὴν καθ᾽ ὑμᾶς δύναμιν. ἐμοὶ γὰρ ὑποκέκλιται πᾶσα ἡ γῆ, ἀρχομένη μὲν ἐκ τοῦ ἡλίου πρώτων ἀκτίνων, καταλήγουσα δὲ ἐς τὰ πέρατα τῆς ἑσπέρας. – Pohl, Awaren 66-67.

146 For the Roman/Byzantine Danubian Limes, see Scorpan, Limes Scythiae. – Torbatov, Ukrepitelnata sistema. – Gajewska, Topographie. – Poulter, Danubian Frontier. – For the Danube fleet and its role in protecting the Limes, see Himmler, Untersuchungen. – Matei, Considerații 143-158. – On different techniques applied in building harbours in Scythia Minor, cf. Munteanu, Porturile fluviale 214-231.

147 Codex Theodosianus VII 17, 1 (343, 1-20 Mommsen).

148 Novellae XLI (262, 14-21 Schöll). – John Lydus, De magistratibus II 29, 1-2 (II 35-36 Schamp).

149 Bounegru/Zahariade, Les Forces Navales 35; 108.

150 Zosimus, Historia nova IV 35, 1 and 38-39, 1-3 (II/2 299, 6-15 and 303-305 Paschoud). – Claudian IV Cons. 619-637 (II/2 47-48 Charlet). – Himmler, Untersuchungen 151-156. – Barnea, La Danube 579. – Even in this battle the last line of Byzantine defence was built by land troops stationed on the southern riverbank.

part of the Danube was crucial for the Limes to maintain its function[151]. Winters may have been cold, and the fleet may not have been always able to stop the Barbarians but if the Empire had control over the hinterland, it could still re-establish its authority on the southern bank of the Danube[152]. The Avar and Slavic campaigns in the late 6th and in the first half of the 7th century resulted not only in the collapse of Byzantine defences in Moesia and Scythia Minor, but also caused a decline in urban life in the regions between the Danube and the Balkan Mountains. One example may be enough to illustrate the destiny of Late Antique towns in the Northern Balkans since the 7th century. It was already mentioned that after crossing the Danube the Bulgars of Asparukh settled in the former province of Scythia Minor and, according to Byzantine historians, reached »the so-called Varna near Odessos«[153]. At the site of the ancient town, which was once a seat of the *Quaestura exercitus* responsible for sea communications in the region[154], archaeologists have found the remains of only three cottages dating back to the 10th and 11th century; archaeological evidence covering the entire period from the late 7th to the early 10th century was found to the West of Odessos[155]. The lack of Byzantine garrisons in the forts on the southern bank of the Danube Delta during Constantine IV's campaign against Asparukh in 680 seems to explain why the Byzantines could not prevent the Bulgars from crossing the river and raiding the territories as far as Thrace although the fleet was lying at anchor in the area of the battle[156].

Conclusion

Having in mind the data we have analysed and the political history of the Northern Balkans at the end of the Late Antiquity one can see that it was almost impossible for a Byzantine naval base in the area of the Danube Delta to withstand the turmoil of the Migration Period starting with the Goths in the 4th and ending with the Bulgars in the 7th century (to use Božilov's words[157]), and to remain under imperial control before John Tzimiskes' campaign of 971. This assumption does not mean that the region of the Lower Danube and its mouth was outside the sphere of interest of Byzantium[158]. The vicinity of Constantinople where one part of the imperial navy had its base made it easy for the Byzantines to reach the Delta within a short period of time[159]; moreover, they still had control over the Black Sea ports in Eastern Thrace such as Anchialos and Mesembria. Thus, it was not difficult for a navy to reach the Delta and surprise the northern neighbour, which, apart from that, obviously lacked any maritime forces in the Black Sea and was no threat for imperial ships[160]. The strategy to divide the forces of its enemy by sending a fleet to the North, combined with the Bulgars having concentrated on building defences on the shore rather than constructing boats or ships, can explain why the main task of Byzantine vessels was to transport imperial armed forces (cavalry) or the troops of its allies in the steppes. The only time when the Empire had to rely on warships during a campaign in the North was in 971. However, at that time the main threat did not come from the Bulgarians but from the Rus' whose *monoxyla* forced Emperor John Tzimiskes to prepare battleships equipped with Greek fire, which laid at anchor in the Golden Horn and were sent to Dorostolon[161]. John Scylitzes

151 Ammianus Marcellinus, Res Gestae XXVI 6, 11 (IV 28, 4-9 Seyfarth). – Harhoiu, Observații generale 350.

152 Codex Theodosianus VII 16, 2 (342, 1-11 Mommsen). – Zosimus, Historia nova IV 35, 1 and IV 38-39, 1-3 (II/299, 6-15 and 303-305 Paschoud). – Claudian, IV Cons. 619-637 (II/2 Charlet). – Themistius, Orationes 10 (I 206, 15-24; 207, 1-19; 210, 8-11 Schenkl/Downey).

153 Theophanes, Chronographia A.M. 6171 (359, 5-12 de Boor): οἱ δὲ Βούλγαροι τοῦτο θεασάμενοι ἐπεδίωκον ὀπίσω αὐτῶν καὶ τοὺς πλείστους ξίφει ἀνεῖλον, πολλοὺς δὲ καὶ ἐτραυμάτισαν. καὶ καταδιώξαντες αὐτοὺς μέχρι τοῦ Δανουβίου καὶ τοῦτον περάσαντες καὶ ἐλθόντες ἐπὶ τὴν λεγομένην Βάρναν πλησίον Ὀδύσσου καὶ τοῦ ἐκεῖσε μεσογαίου, τὸν τόπον ἐωρακότες ἐν πολλῇ ἀσφαλείᾳ διακείμενον, ἐκ μὲν τῶν ὄπισθεν διὰ τοῦ Δανουβίου ποταμοῦ, ἔμπροσθεν δὲ καὶ ἐκ πλαγίων διὰ κλεισουρῶν καὶ τῆς Ποντικῆς θαλάσσης. – Nicephorus Patriarches, Breviarium 36 (90, 17-23 Mango): οἱ δὲ Βούλγαροι ἐπιδόντες ἐπεδίωκον καρτερῶς, καὶ ὅσους μὲν τοῦ λαοῦ κατελάμβανον ἀνῄρουν, πλείστους δὲ καὶ ἐτραυμάτιζον. περαιωθέντες δὲ τὸν Ἴστρον ἐπὶ τὴν λεγομένην Βάρναν πλησίον Ὀδύσσου καὶ τοῦ ὑπερκειμένου μεσογαίου, τὸ ὀχυρὸν καὶ ἀσφαλὲς τοῦ τόπου πάντοθεν ἔκ τε τοῦ ποταμοῦ καὶ τῆς ἄγαν δυσχωρίας θεασάμενοι ἐνταῦθα σκηνοῦσι. – John Zonaras, Epitome XIV 21, 18 (III 227, 18-228, 2 Büttner-Wobst). – Pletnjov, Varna 103-134. – Pletnjov/Rusev, Istorija na Varna II 72-90.

154 Novellae XLI (262, 14-21 Schöll). – John Lydus, De magistratibus II 29, 1-2 (II 35-36 Schamp). – Gkoutzioukostas/Moniaros, Quaestura Iustiniana Exercitus. – Torbatov, Quaestura Iustiniani Exercitus. – Haldon, Warfare 68. – Barnea, La Danube 581-582.

155 Dimitrov, Varna 57-76. – Pletnjov, Varna 143-181, especially 153. – According to Lazarenko, Numizmatični danni 150-160, who built his hypothesis on numismatic data, Odessos had already suffered because of Barbarian assaults during the first half of the 7th century (perhaps in 614), when it may have been burned down by the Avars.

156 Theophanes, Chronographia A.M. 6171 (358, 11-20 de Boor). – Nicephorus Patriarches, Breviarium 36 (88-90, 1-5 Mango). – John Zonaras, Epitome XIV 21, 10 (III 226, 15-17-227, 1-3 Büttner-Wobst).

157 Božilov, Istorija I 218.

158 Stănescu, Byzance et les Pays roumains 394-395.

159 Bannikov/Morozov, Istorija voennago flota 285-293. – Ahrweiler, Byzance et la mer 102-107. – According to Dimitroukas, Reisen und Verkehr II 433-434, it took the ship bringing Pope Martin I to his exile three weeks to cover the sea route from Constantinople to Chersonesus. As the scholar remarks, it may have been the weather at that time of the year (the early spring of 654) that caused such a long travel. In the Late Middle Ages vessels powered by oars could reach the Bay of Burgas which lays more or less in the middle of the way from the Bosporus to the Danube Delta within three days, cf. Todorova, Istorijata 37 and n. 53.

160 For the maritime activity in Early Medieval Bulgaria, see Rašev, Moreto. – Oračev, Majstorstvo. – Božilov, Istorija I 32-33. – Further details basing on accounts on Slavic *monoxyla* (dugouts) in Medieval sources can be found in Strässle, Monoxylon. – Havlíková, Slavic Ships.

161 Leo the Deacon, Historia VIII 1 (129, 14-21 Hase): τὴν γοῦν μετ' ἐμπειρίας καὶ κόσμου τῶν τριηρῶν εἰρεσίαν καὶ ἅμιλλαν ὁ βασιλεὺς θεασάμενος (ἐτύγχανον δὲ ὑπὲρ τὰς τριακοσίας, συνάμα λέμβοις καὶ ἀκατίοις, ἃ νῦν γαλέας καὶ μονέρια κοινῶς ὀνομάζουσι), φιλοφρονησάμενός τε τοὺς ἑρέτας καὶ τὸ περὶ αὐτὰς στρατιωτικὸν ἀργυρίου διανομῇ, ἐς τὸν Ἴστρον ἐκπέμπει, τὸν τούτου πόρον φρουρήσοντας, ὡς μὴ ἐνὸν εἴη τοῖς Σκύθαις, ἐς τὴν σφῶν πατρίδα ἐκπλεῖν καὶ τὸν Κιμμέριον Βόσπορον, εἴγε πρὸς φυγὴν ἀποκλίνοιεν. – John Scylitzes, Synopsis 295, 7-10 (Thurn): ἐπεμελήθη δὲ καὶ τοῦ στόλου διὰ Λέοντος τοῦ μετὰ ταῦτα πρωτοβεστιαρίου, δρουγγαρίου τότε τῶν πλωΐμων τυγχάνοντος, τὰ μὲν παλαιὰ ἐπισκευάσας, κατασκευάσας δὲ καὶ ἄλλα καινὰ καὶ στόλον ἀξιόλογον καταστησάμενος. – John Zonaras, Epitome XVII 2, 16 (III 527, 7-9 Büttner-Wobst). – For the campaign, see Busetto, Giovanni Tzimisce e Svjatoslav. – Madgearu, War of 971. – Andronic, Români.

says that the emperor did not take the risk of attacking the town without the assistance of the fleet and waited for its arrival before he began the assault[162].

Although the Barbarian incursions of the late 6th and the 7th century caused an enormous loss of territories in the Balkans, which slipped away from Byzantine administrative control, the Empire could easily strike back[163]. One of the reasons why its tactics could lightly change from defensive to aggressive actions was the imperial navy. It is hard to believe that the campaign of 680, which is impressive in many ways, would have been carried out without the assistance of the fleet. In the 8th and 9th century we can see that it was not a problem for Byzantine ships to reach the Danube Delta and operate in the back of Byzantium's northern neighbour. However, all these campaigns had their starting point in the capital of the Empire from whence the emperors sent their fleet. Taking this into account one can assume that the existence of a Byzantine maritime province in the area of the Danube Delta before John Tzimiskes' campaign in 971, who also started his operation against the Rus' by dispatching the battleships lying at anchor in the Golden Horn to Dorostolon, seems to have been beyond the bounds of possibility.

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162 John Scylitzes, Synopsis 300, 68-71 (Thurn): οὐ μέντοι γε καὶ πολιορκίας ἥψατο, δεδιώς, μή πως ἀφυλάκτου τοῦ ποταμοῦ τυγχάνοντος ἀποδρᾶσαι μετὰ τῶν νηῶν δυνηθεῖεν οἱ Ῥῶς, αὐλισάμενος δὲ προσέμενε τὸν Ῥωμαϊκὸν στόλον. – On Byzantine naval tactics, cf. Dolley, Naval tactics 324-339.

163 For an overview of Byzantine naval campaigns in the Black Sea region before the year 1000, see Madgearu, Marea Neagră 11-32.

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Summary / Zusammenfassung

The Region of the Danube Delta in the 7th to 10th century and the case of the so-called Lykostomion Maritime Province

Based on a detailed examination of the written sources, the presence of the Byzantine fleet in the Danube Delta between the 7th and 10th centuries is reconstructed. These findings are combined with new results from geoarchaeology to gain a more realistic picture of the real influence of Byzantine naval power in the region and to contrast this with the often-contradicting national research traditions in Romania and Bulgaria.

Die Region des Donaudeltas vom 7. bis 10. Jahrhundert und die sogenannte maritime Provinz Lykostomion

Auf der Grundlage einer detaillierten Untersuchung der schriftlichen Quellen wird die Präsenz der byzantinischen Flotte im Donaudelta zwischen dem 7. und 10. Jahrhundert rekonstruiert. Diese Erkenntnisse werden mit neuen Ergebnissen der Geoarchäologie kombiniert, um ein realistischeres Bild des tatsächlichen Einflusses der byzantinischen Seemacht in der Region zu gewinnen und dieses mit den oft widersprüchlichen nationalen Forschungstraditionen in Rumänien und Bulgarien zu kontrastieren.

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Sigles Used

AASS	Acta Sanctorum, 1-71 (Paris 1863-1940)
ABSA	The Annual of the British School at Athens
ADelt	Ἀρχαιολογικὸν Δελτίον
AI	Annales islamologiques
AJA	American Journal of Archaeology
AnBoll	Analecta Bollandiana
AST	Araştırma Sonuçları Toplantısı
BAR	British Archaeological Reports
BBA	Berliner Byzantinistische Arbeiten
BCH	Bulletin de correspondance hellénique
BHG	F. Halkin, Bibliotheca Hagiographica Graeca (Bruxelles ³1957)
BMGS	Byzantine and Modern Greek Studies
BOO	Byzanz zwischen Orient und Okzident. Veröffentlichungen des Leibniz-WissenschaftsCampus Mainz
BV	Byzantina Vindobonensia
Byzslav	Byzantinoslavica
BZ	Byzantinische Zeitschrift
CCSG	Corpus christianorum, Series Graeca
CCSL	Corpus christianorum, Series Latina
CE	Coptic Encyclopaedia
CFHB	Corpus Fontium Historiae Byzantinae
CSHB	Corpus Scriptorum Historiae Byzantinae
DeltChrA	Δελτίον τῆς Χριστιανικῆς Ἀρχαιολογικῆς Ἑταιρείας
DNP	Der Neue Pauly
DOP	Dumbarton Oaks Papers
DOS	Dumbarton Oaks Studies
DOT	Dumbarton Oaks Texts
DThC	Dictionnaire de la théologie catholique
EEBS	Ἐπετηρὶς Ἑταιρείας Βυζαντινῶν Σπουδῶν
GRBS	Greek, Roman and Byzantine Studies
IG	Inscriptiones Graecae
IstMitt	Istanbuler Mitteilungen
JÖB	Jahrbuch der Österreichischen Byzantinistik
LBG	Lexikon zur byzantinischen Gräzität
MGH	Monumenta Germaniae Historica
ODB	The Oxford Dictionary of Byzantium
PG	Patrologiae cursus completus, Series graeca, hrsg. v. J.-P. Migne (Paris 1857-1866)
PmbZ	Prosopographie der mittelbyzantinischen Zeit
PO	Patrologia Orientalis, hrsg. v. R. Graffin / F. Nau (Paris 1904-)
REB	Revue des Études byzantines
SBN	Studi bizantini e neoellenici
SBS	Studies in Byzantine Sigillography
TIB	Tabula Imperii Byzantini
TM	Travaux et Mémoires

List of Publications of the Project »Harbours and landing places on the Balkan coasts of the Byzantine Empire (4th to 12th centuries)«

Edited volumes and data collections (5)

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In recent years, interest in the study of maritime installations and networks in the Roman and Byzantine Mediterranean has increased considerably, as documented by various projects and publications.
The conference »Seasides of Byzantium. Harbours and Anchorages of a Mediterranean Empire«, from which the papers collected in the present volume emerged, took place in Athens in 2017 as part of a cooperation between the DFG-funded Special Research Programme (SPP 1630) »Harbours from the Roman Period to the Middle Ages« and the National Hellenic Research Foundation. It united historians, archaeologists and geoarchaeologists to explore harbours and anchorages as core maritime infrastructure to the Late Roman and Byzantine Empire.
General phenomena such as the organisation of the Byzantine navy and its operations or lighthouses are discussed in this volume as well as new geoarchaeological research methodologies in harbour archaeology. Most contributions in the present volume examine case studies for the most important maritime core region of the Byzantine Empire, the Aegean. This sea connected the remaining provinces of the empire in Southeastern Europe and Asia Minor after the loss of Syria, Palestine, Egypt, and North Africa to the Arabs in the 7th century AD. In addition to technical and geographical aspect, the studies in this volume make clear that we need to explore more and more the social embedding of the seasides of Byzantium to understand their dynamics in all their complexity.

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Die Reihe dient als Publikationsorgan für das Forschungsprogramm des Leibniz-WissenschaftsCampus, das Byzanz, seine Brückenfunktion zwischen Ost und West sowie kulturelle Transfer- und Rezeptionsprozesse von der Antike bis in die Neuzeit in den Blick nimmt. Die Methoden und Untersuchungsgegenstände der verschiedenen Disziplinen, die sich mit Byzanz beschäftigen, werden dabei jenseits traditioneller Fächergrenzen zusammengeführt, um mit einem historisch-kulturwissenschaftlichen Zugang Byzanz und seine materielle und immaterielle Kultur umfassend zu erforschen.