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Johannes Preiser-Kapeller · Falko Daim (eds)

### HARBOURS AND MARITIME NETWORKS AS COMPLEX ADAPTIVE SYSTEMS

International Workshop »Harbours and maritime Networks as Complex Adaptive Systems« at the Römisch-Germanisches Zentralmuseum in Mainz, 17.-18.10.2013, within the framework of the Special Research Programme (DFG-SPP 1630) »Harbours from the Roman Period to the Middle Ages«

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## PREFACE

The establishment of the Special Research Programme (SPP) of the Deutsche Forschungsgemeinschaft 1630 »Harbours from the Roman Period to the Middle Ages. The archaeology and history of regional and over regional traffic systems« in spring 2013 for a period of six years provides the opportunity to study the conditions under which anchorages, harbours and port cities emerged, were used and disappeared. Within this framework, three major European shipping zones are scrutinized, which at first sight are characterised by very different conditions and dynamics: the Mediterranean, the Northern and Baltic Seas and inland waterways. For all three areas, the same fundamental questions are posed: How and under what conditions interfaces between water and land were designed and organised in space and time? Yet, natural and historical parameters as well as the available written and materials source evidence very much differ. Moreover, these various regions and periods are embedded in different and highly sophisticated scientific cultures with their own systems of concepts and thinking styles. The research focus therefore faces not only also otherwise existing challenges of major research projects to organise the analysis of immense amounts of data and the systematic exchange between the individual projects, but also to overcome »cultural« barriers between disciplines in order to ultimately provide large syntheses.

Besides the necessary explanations of terms and a discussion of criteria by which comparisons are to be drawn, it is also important to consider different theoretical approaches for their applicability and to use tools of the digital humanities in order to collect and analyse the evidence and to gain new scientific ground. Special meetings held at the RGZM in Mainz for the SPP-1630 are devoted to these issues. The first one focused on »Harbours and Maritime Networks as Complex Adaptive Systems« and took place on October 17<sup>th</sup> and 18<sup>th</sup> 2013. Through the contributions of the speakers and extensive discussions, it became clear that network theory and the accompanying digital tools are well suited to analyse complex systems, such as maritime and terrestrial transport systems and their interfaces.

Our thanks go to Johannes Preiser-Kapeller for the concept and organisation of the meeting as well as to the speakers who provided not only perfect presentations but also written versions of their contributions. May this collection of papers stimulate the working groups within the SPP »Harbours« and also beyond.

*The initiators of the SPP »Harbours«*

*Claus von Carnap-Bornheim*

*Falko Daim*

*Peter Ettel*

*Ursula Warnke*



## **MEDITERRANEAN BYZANTINE PORTS AND HARBOURS IN THE COMPLEX INTERPLAY BETWEEN ENVIRONMENT AND SOCIETY. SPATIAL, SOCIO-ECONOMIC AND CULTURAL CONSIDERATIONS BASED ON ARCHAEOLOGICAL EVIDENCE FROM GREECE, CYPRUS AND ASIA MINOR**

Throughout the history of Byzantium, ports and harbours provided a frontline service in the administrative, military and economic chain which linked the different parts of the empire as well as linking the empire with the rest of the known world. Whether for levying taxes, military dispatches, private and official state correspondence or staple commodities, the most efficient form of long-distance communication – from as far back as antiquity – involved passage through coastal gateways. It is therefore surprising that Byzantine Archaeology has long been facing a serious problem in tracing the actual material remains of these ports and harbours. Given the volume of maritime trade in Byzantium from the 4<sup>th</sup> to the 15<sup>th</sup> century, the archaeological evidence of harbour construction and refurbishments during this period is relatively scarce.<sup>1</sup>

In this study I intend to show that this problem has two dimensions: one real and one circumstantial. The reality of the problem has been revealed beyond any doubt by the recent unearthing of the Theodosius harbour of Constantinople at Yenikapi. This accidental discovery made clear the size of the environmental transformation on the coastline of the Eastern Mediterranean, especially around river deltas, as well as how much archaeological effort is required in order to locate and investigate Byzantine harbours.<sup>2</sup> As Robert Vann has shown:

»Harbors, by necessity at the edge of land and water, suffer the depredations of both environments. Continuous winter storms batter the breakwaters and associated structures at the same time that basins and channels become clogged with silt. Thus the south breakwater at Korykos port, that is thought to have once joined the mainland and the Sea Castle, is gone and the harbour at Sebaste is now landlocked. Second is the nature of construction. Many breakwaters built of rubble are poorly preserved and while large portions of concrete breakwaters such as that at Pompeiopolis might remain, other harbor structures on land have disappeared because their building materials were convenient to reuse. Third, several of these harbors will be difficult to investigate in the future because they continue to be used as anchorages today. In some instances, such as at **Antalya** (Coraceseum) and Aydmiaç (Celenderis), new breakwaters have been built on or near the old ones. Finally, even where large excavations have been in the field, such as at Anemourion, an elusive harbor might be an expensive objective when so many other priorities exist.«<sup>3</sup>

On the other hand, a great help in our search for Byzantine ports is just knowing their place-names from Byzantine texts; this should normally facilitate archaeological research. Indeed, the sources have provided us with a great number of Byzantine names for places which are defined by the authors as λιμὴν, ἐπίγειον or κατάβολος, ἐμπόριον, ὄρμος, σκάλα, ἀρσανάς.<sup>4</sup> At this point the second, circumstantial dimension of the problem of »missing« ports arises. Tasha Voderstrasse has recently discussed the challenges faced by historical archaeology in related issues: the texts can be both helpful and misleading, since they can affect the archaeological tasks of find-interpretation and site-reconstruction.<sup>5</sup> The Byzantine texts do indeed provide us with more or less detailed representations of the natural and built environments in the aforementioned

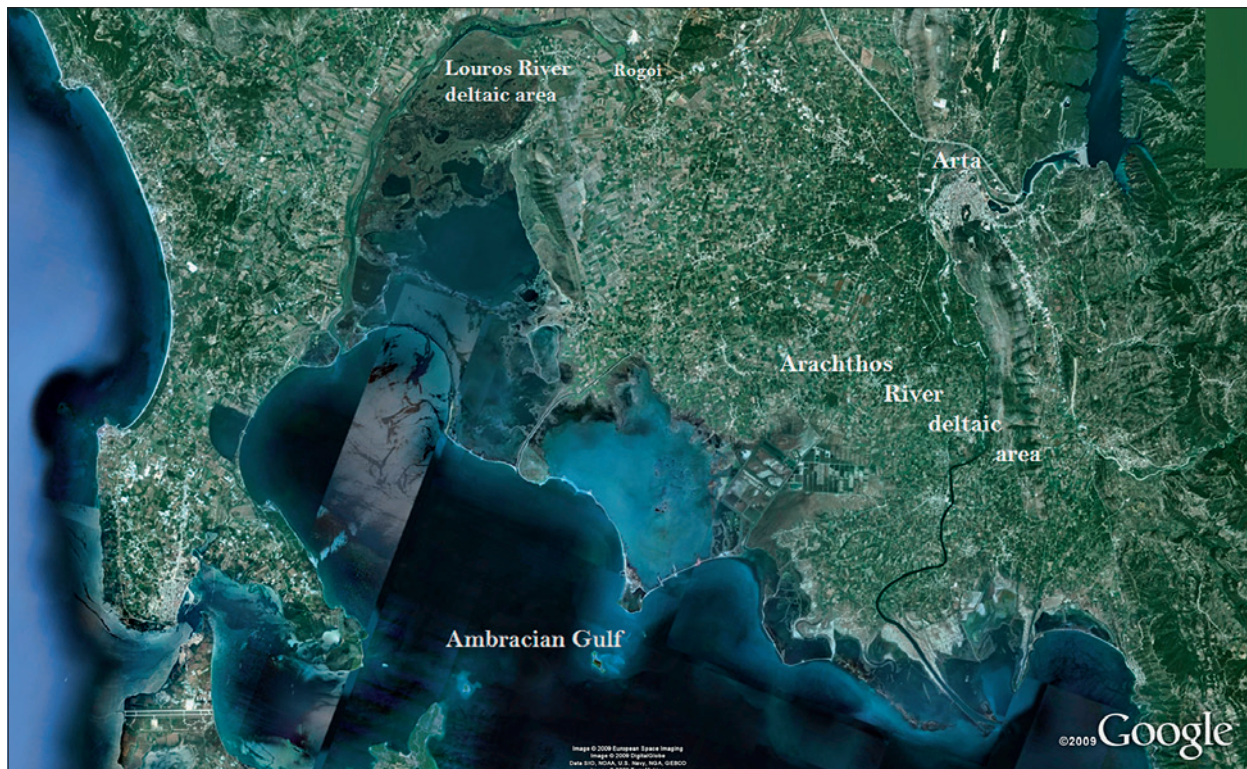
ports, harbours and anchorage sites.<sup>6</sup> However, as Sean Kingsley has argued, »a fundamental reason for the absence of late-antique (and Byzantine) harbour installations, which seems surprising to the modern mind, is the disparity between modern and ancient definitions of a port. Contemporary definitions emphasize the indispensable requirement for artificial installations, which ease the movement of cargoes onto shore within a calm body of sheltered water. (...) Such definitions [or rather representations] have been applied inappropriately to ancient ports.«<sup>7</sup> Kingsley cites a 1<sup>st</sup>-century nautical guide in order to demonstrate that a Roman port is defined as loosely as a maritime settlement where merchandise is traded, and a harbour appears simply as a geographical point where a ship can anchor.<sup>8</sup> Indeed, neither of the aforementioned terms found in Byzantine texts was specifically synonymous with artificial maritime structures which would provide striking archaeological finds. The λιμὴν would mean a port; the ἐπίνειον or κατάβολος a satellite harbour or town; ἐμπόριον a commercial centre; ὄρμος (ὄρμισκος) would mean a bay or natural harbour, defined either as a natural embayment suitable for mooring or a cove enclosed by headlands, or as the internal basin of a harbour; σκάλα stood for an anchorage and ἀρσανάς for a small anchorage.<sup>9</sup>

Given the aforementioned diversity of Byzantine anchorage sites and regardless of the existence or the nature of accompanying settlement, I will investigate the notions of ports and harbours in Byzantium by examining the history of such sites within the context of the complex interplay between environment and society. Aspects of this investigation refer, for example, to the criteria used by the Byzantines for the selection of ports' and harbours' locations, their construction and maintenance practices, as well as the meaning of different components and features of ports and harbours in different periods. The investigation is based on a discussion of several features of archaeological sites at Byzantine ports and harbours in the Eastern Mediterranean, dated to between the 4<sup>th</sup> and 9<sup>th</sup> centuries and located in modern Greece and Turkey (the locations of all the archaeological sites mentioned in the text are shown in **fig. 6**). This discussion has three aspects as follows. First of all, my main aim is to define the ways in which specific physical and social features of these sites determined – and emerged from – their role in land and maritime networks. Secondly, in a similar vein, I focus on three multidisciplinary factors that are not only interrelated in the development of ports and harbours but also fundamental in shaping their history: geomorphology, geography, and human geography. Last but not least, I comment on the physical, economic, political and cultural conditions which add up to the analytical categories of the medieval Mediterranean port and harbour, putting on the table a few ideas about the way these sites performed as Byzantine »gateway communities«, fostering social contact and cross-cultural exchanges.

## **BYZANTINE PORTS AND HARBOURS: ANCIENT AND NEWER**

Elements of the antique way of life were inherited and adjusted to late antique and medieval conditions in the eastern Mediterranean and ports are no exception to this. By the mid-5<sup>th</sup> century a large number of coastal cities operated within a dense network of Byzantine civic settlements. The former would have been the late antique ports with built harbours equipped with appropriate amenities to host the subjects and products involved in maritime trade. Some built harbours of older Roman ports are indeed known to have been refurbished during the first centuries of Byzantium. One example from Greece is the great port of Neapolis and later Chrysoupolis (modern Kavala, in Greece) which gained importance due to its proximity to the Via Egnatia. Some repairs dated to between the 3<sup>rd</sup> and the 6<sup>th</sup> century have been observed at the gate leading from the harbour to the settlement through the sea walls and along them.<sup>10</sup> Other port constructions dated somewhat later (6<sup>th</sup>-7<sup>th</sup> century) are known from Anhedon in Central Greece, as well as from sites in Byzantine provinces not included in this study.<sup>11</sup>





**Fig. 1** Satellite image depicting the geomorphology and Byzantine ports in the area of the Ambracian Gulf in Epirus (Greece). – (The background is courtesy of Google Earth).

Apart, however, from the antique ports, which continued to be used in similar ways after antiquity, the emergence of a number of other coastal sites indicates what seems to be a pattern of natural, economic, political and cultural conditions which add up to the analytical categories of Byzantine port and harbour within the medieval Eastern Mediterranean. I will now discuss some of the principal traits of these patterns which are related to the three aforementioned, interrelated factors in the development and history of ports and harbours, i. e. geomorphology, geography, and human geography.<sup>12</sup>

## **INTERRELATED FACTORS IN THE DEVELOPMENT AND HISTORY OF PORTS AND HARBOURS**

### **Geomorphology**

Geomorphology is the first of the factors related to the development and history of ports and harbours. It involves the natural aspect of the port and its physical setting. It had the greatest impact on the foundation and evolution of a port because the limited technological resources of the time were insufficient to offset or modify natural settings to any great extent. Consequently, sites that offered favourable natural conditions seem to have been preferred to others. The geomorphological characteristics that turn out to have been necessary for the successful development of a port can be summarized as:

1. presence of a sandy beach for loading, unloading, and dockyard activities;
2. protection offered by a promontory or rocky area, including protection from marine currents and coastal winds, but also as a defence from enemy attack, because a hilly promontory was suitable for fortification and provided a lookout (**figs 4; 5a-d**); and
3. the mouth of a river or smaller watercourse to provide fresh water for the settlement and sailors and to serve as an easy route for communication with the interior (**figs 1-3; 5a-d; 6**).<sup>13</sup>

Most Byzantine ports shared all these geomorphological features. They were certainly located on sandy beaches rather than a rocky seabed. Whenever possible and in order to ensure maximal protection from bad weather conditions, they comprised double bays (i. e. two anchorages at either side of an isthmus) (**fig. 4**),<sup>14</sup> or complexes of bays and nearby islets to serve as breakwaters (**fig. 5d**).<sup>15</sup> For the same purpose it was also common for several other auxiliary points of anchorage (sometimes even on rock) to be used in addition to the main port, depending on weather conditions (**figs 2; 5a-d**).<sup>16</sup> Last but not least, some Byzantine harbours were noted for their sweet and healthy drinking water.<sup>17</sup>

A fourth condition was also often present, sometimes connected to a major river or at other times substituting for it: coastal wetlands and lagoons that could be used as docking basins and fisheries and serve as connections to the sea,<sup>18</sup> as in the cases of settlements on Strymon, Louros and Arachthos Rivers (**fig. 1**) as well as Miletus (**fig. 3a**).<sup>19</sup> In these cases, there were no built harbours but just *skalai*, whose Byzantine connotations did not include permanent infrastructure – rafts solved the problem of communications with the interior, as on all the great rivers of the southern Balkans.<sup>20</sup>

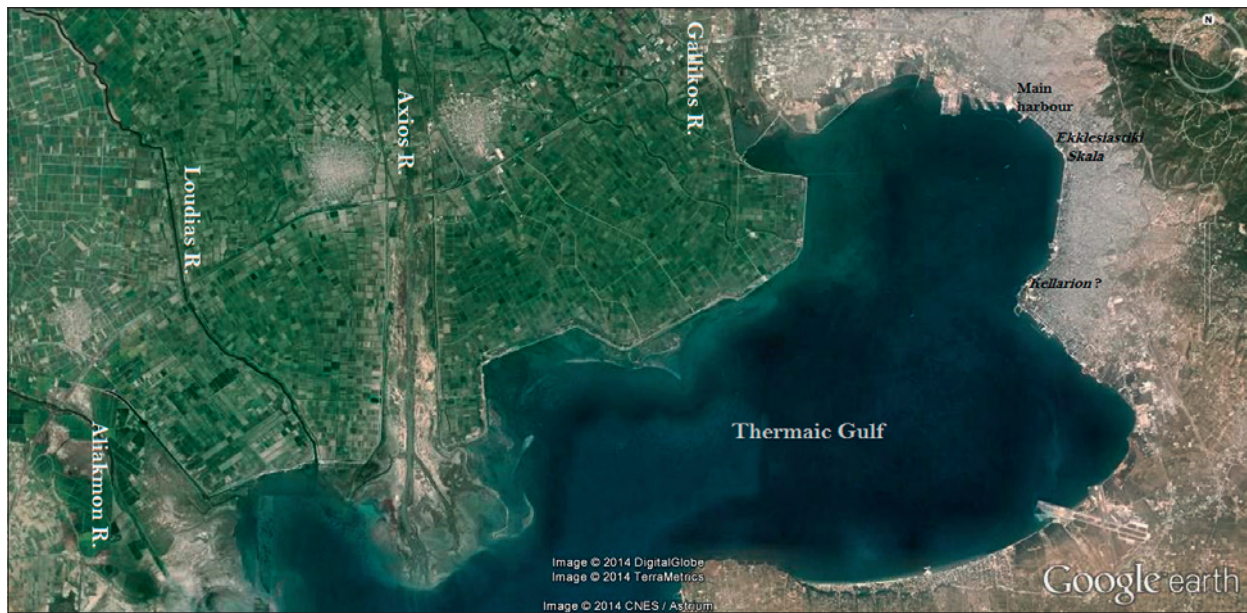
Unfortunately, most places that offered all four of the characteristics mentioned above were, for the same reasons, locked into a delicate geomorphological balance. In other words, the harbour and nearby land or wetlands were subject to the damaging effects of siltation due to the same natural forces that had created some of the favourable conditions in the first place.<sup>21</sup> Countermeasures involved either:

- a) controlling the water level by efforts to remove alluvial deposits so as to artificially prevent the harbour from silting-up, as for example in Nafpaktos,<sup>22</sup> or
- b) moving port activities to a more recently exploited part of the coastline like in Constantinople and Ephesos, for example, where different harbours succeeded one another at different times,<sup>23</sup> or
- c) relocating the settlements to adjust to changes of the riverbed such as to the east and west river-channels of the River Strymon in the case of settlements around Amphipolis and Chryssoupolis<sup>24</sup> and perhaps also in the case of Eressos on Lesbos,<sup>25</sup> or
- d) eventually abandoning the settlements all together, as in the case of Salamis-Constantia in Cyprus and Herakleia at Latmos in Asia Minor,<sup>26</sup> or
- e) controlling the wetlands by creating artificial drainage channels and diverting the course of the river (as in the cases of Rogoi on Louros (**fig. 1**), and also of Strymon and Demetrias)<sup>27</sup> so as to create access to the old silted harbours like in Ephesos (**fig. 3b**) and perhaps Latros.<sup>28</sup>

Nevertheless, it seems that the Byzantines may have been cautious not to overdo it. In his description of the harbour settlement of Demetrias Kekaumenos described how the wetlands around the city served as a major protection for the inhabitants, equal to the sea.<sup>29</sup> Aggradation is a great constant of Mediterranean life; but, as Horden and Purcell suggested in their cutting-edge work *The Corrupting Sea*, »this cluster of processes must be seen in perspective: we must pursue »mutual-caused processes of co-evolution of people and their landscapes« and »recognize the futility of one-sided deterministic approaches in which certain factors are singled out as the sole explanation of complex, closely interwoven physical, biological and cultural processes«. «<sup>30</sup>

And there were, of course, exceptions to the rule of selecting port locations fulfilling the aforementioned four geomorphological criteria. Some strategically-selected port locations, albeit in geographically disadvan-





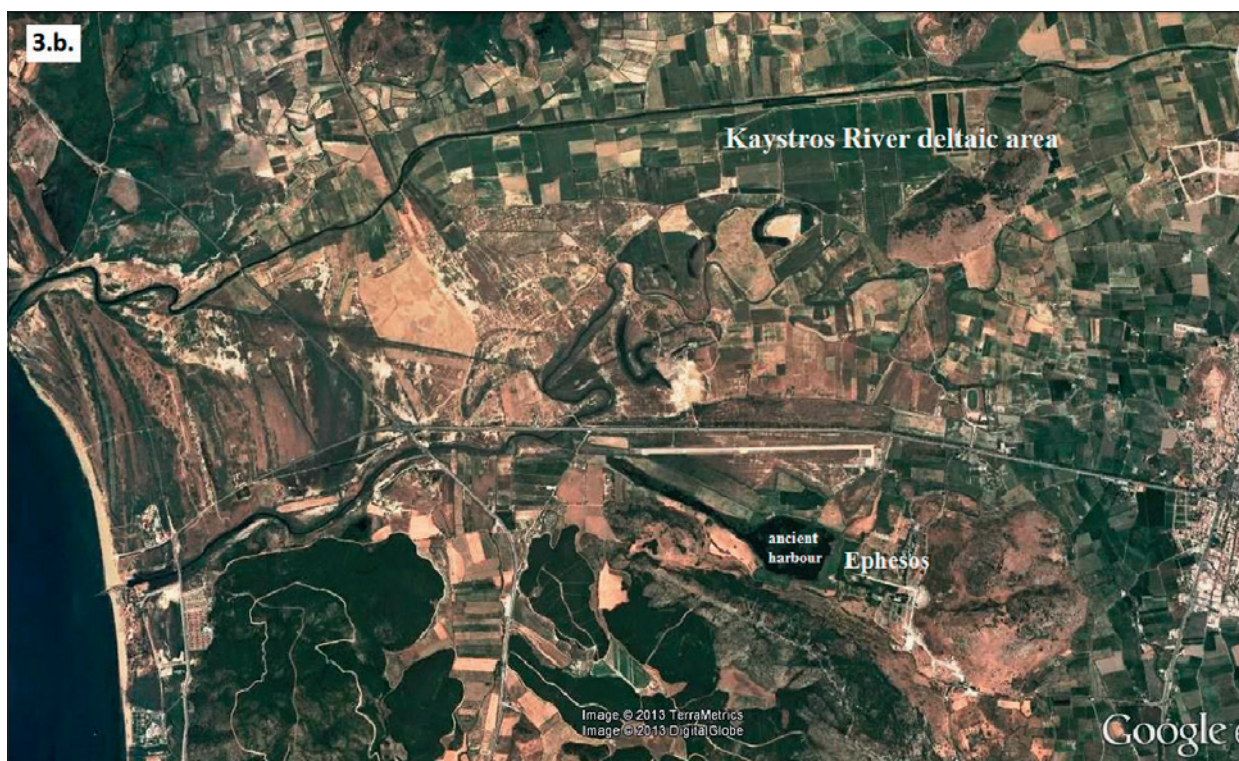
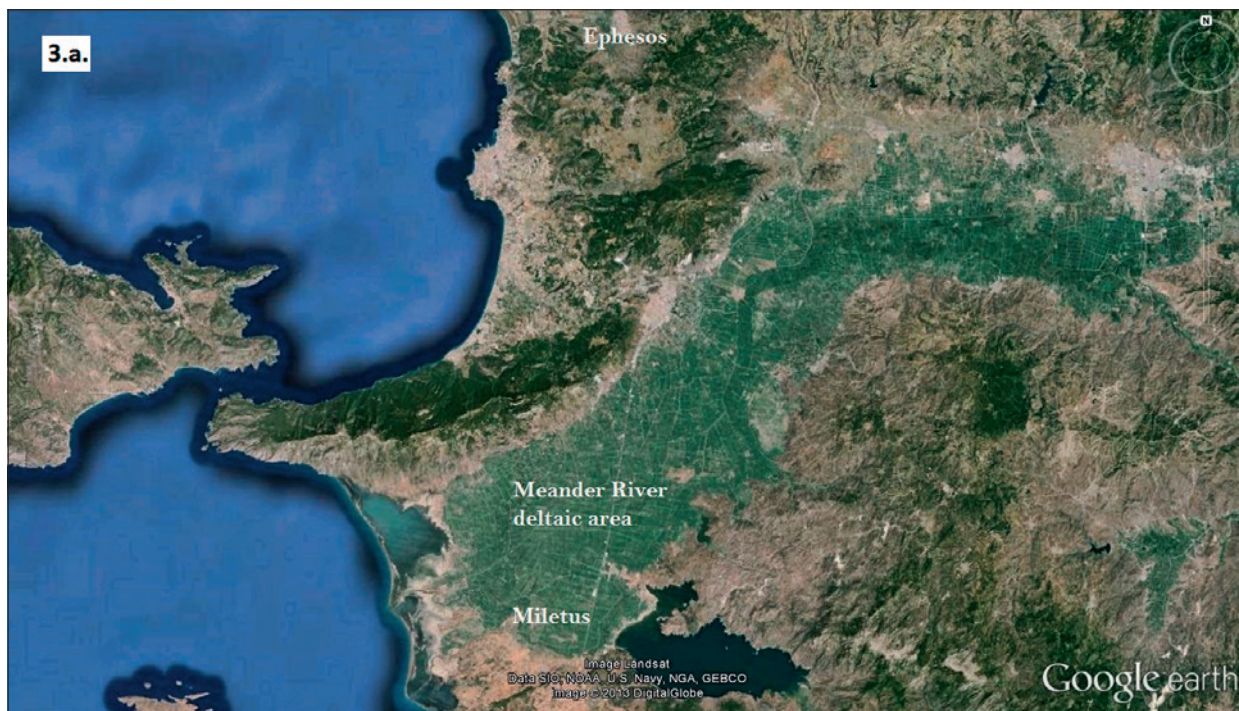
**Fig. 2** Satellite image depicting the geomorphology and Byzantine ports in the area of the Thermaic Gulf near Thessaloniki (Greece). – (The background is courtesy of Google Earth).

tageous situations (such as standing at the head of bays exposed to the sea and isolated by rugged mountains from easy access to the interior), were developed for economic reasons.<sup>31</sup> Other similarly apparently »uncomfortable« port locations were stopovers on important long-distance maritime routes along the Eastern Aegean and South-eastern Mediterranean, established for economic and military purposes (fig. 6).<sup>32</sup> In a few striking cases of such ports – like the long-lived Byzantine port of Monemvasia (fig. 4) – there was not even fresh water.

## Geography

In the Mediterranean the fragility of the port environment and the vulnerability of port settlements due to deltaic phenomena involving estuaries are an inevitable side-effect of their privileged geomorphology which allows them economic autarchy and surplus due to the presence of fertile estuarine plains. However, the aforementioned exceptions to the rule introduce us to the second factor in the development of a port: geography, meaning the relative geographical position of the harbour within the surrounding region. In his work »La Méditerranée et le monde méditerranéen à l'époque de Philippe II« Fernand Braudel described a common attribute of all Mediterranean ports: being located at the crossing of land- and sea-routes.<sup>33</sup> In fact, the strategic location of Byzantine ports (such as those of Constantinople, Thessaloniki [fig. 2], Durres, Corinth, Platamon, Thessalian Thebes and Demetrias, Amastris, Ephesos [fig. 3b], Miletus [fig. 3a], Myra, Limyra and many others) along not just sea routes but also inland and river routes connecting the ports with fertile hinterlands (fig. 6) is crucial, because it indicates both the area of production of goods exported by these ports and, conversely, the most distant markets reached by the merchandise arriving in the ports themselves.<sup>34</sup> Indeed it seems that long-distance maritime routes along the Eastern Aegean and South-eastern Mediterranean remained entirely or partly open during the Byzantine Period, as confirmed by both written sources and archaeological evidence such as the distribution of ceramics in that period, for instance.<sup>35</sup>





**Fig. 3** Satellite image depicting the geomorphology and Byzantine ports in the area near Ephesos in Asia Minor. – (The background is courtesy of Google Earth).





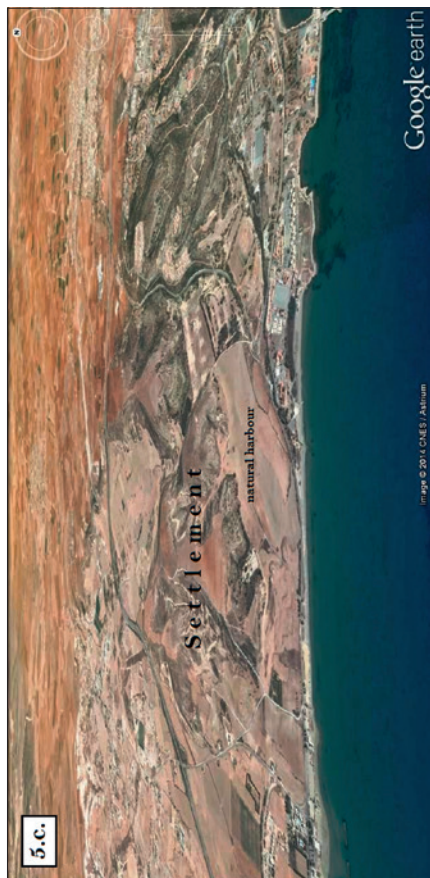
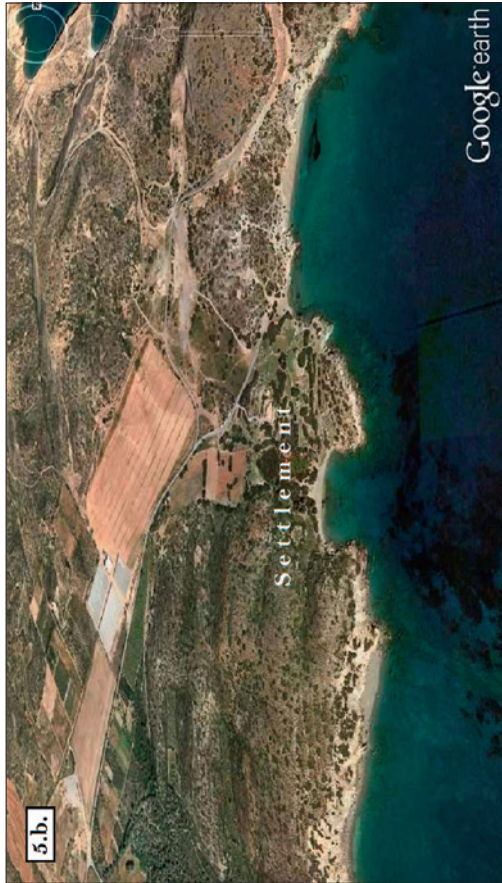
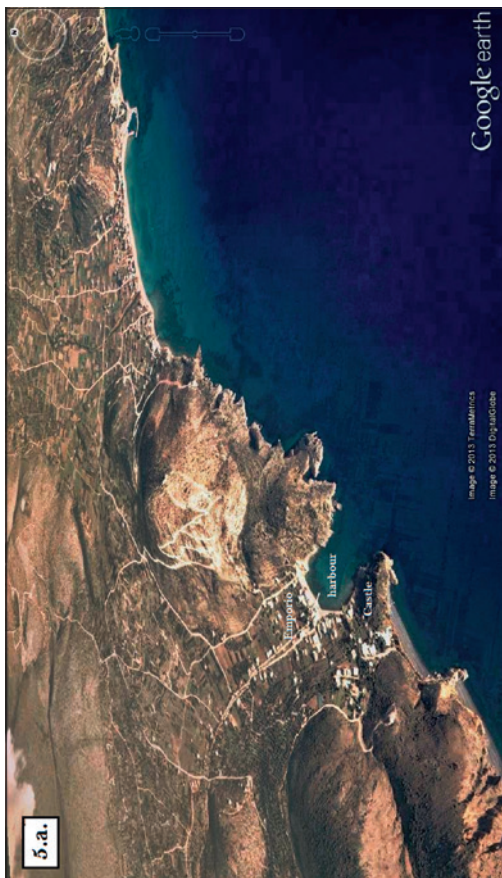
**Fig. 4** Satellite image depicting the geomorphology in the area of the Monemvasia Peninsula in the Peloponnese (Greece). – (The background is courtesy of Google Earth).

All of this defines the extent of the port's foreland, i. e. the overall maritime area served by the port. For instance, the professions mentioned in the 456 5<sup>th</sup>- and 6<sup>th</sup>-century funerary inscriptions of Korykos, the main port in Cilicia, Asia Minor, allow for a reconstruction of everyday economic and social life in a Byzantine port whose prosperity is not related to a specific activity.<sup>36</sup> The individuals mentioned worked in two main fields of social life: a) as public and ecclesiastical officials and b) in maritime occupations. No merchants are mentioned with the exception of wine-importers, while a large number of industrial workshops reveal the dynamics of the local economy; a significant part of the population was also involved in food storage, preparation and sales. In fact the evidence reflects a combination of economic strategies, including the cultivation of grains, grapes, and olives, as well as horticulture, and the herding of sheep and goats, whose wool and skin were processed in Isaurian-Cilician cities and harbour settlements. The productivity of the port's immediate hinterland and the area's ease of communication with the harbour itself were fundamental elements in the port's initial establishment as well as its further development into a major port-city.<sup>37</sup>

### Human agency

In fact, ports and other harbours or anchorages qualify as »complex systems« as described in the introduction to this volume,<sup>38</sup> because they represent the process of constant adjustment of – maritime and fluvial – water-trade routes to environmental and social (political, economic, and cultural) conditions, as is evident in the ports of Leucas and Chrysoupolis in Greece and possibly also in Butrint. In the case of Leucas, the selection of the inner or outer maritime route depended equally on environmental and social conditions,





**Fig. 5** Satellite images of harbour areas of: **a** Emporio in Chios (Greece). – **b** Itanos in Crete (Greece). – **c** Pyla-Koutsopetria near Larnaca (Cyprus). – **d** Agios Georgios near Pegeia (Cyprus). – (The background is courtesy of Google Earth).





**Fig. 6** Map of known sites of Byzantine ports and harbours, in the Eastern Mediterranean, mentioned in the text: **1** Dyrrachion, ancient (modern Durrës). – **2** Bouthroton, ancient (modern Butrint). – **3** Rogoi, ancient (modern Kastro Rogon). – **4** Leucas, ancient (modern Karyotes). – **5** Vonitsa, ancient. – **6** Nafpaktos, ancient. – **7** Olympia, ancient. – **8** Monemvasia, ancient. – **9** Lechaeon/Corinth, ancient. – **10** Kenchreai/Corinth, ancient. – **11** Piraeus, ancient. – **12** Thisvi basin, Boeotia. – **13** Anthedon, ancient. – **14** Thessalian Thebes, ancient (modern Nea Anchialos). – **15** Demetrias, ancient. – **16** Iolkos, ancient. – **17** Platamon, ancient (modern Kastro Platamona). – **18** Thessaloniki, ancient. – **19** Strymon R. delta. – **20** Neapolis-Chrysoupolis, ancient (modern Kavala). – **21** Constantinople, ancient (modern Istanbul). – **22** Lesbos, Eressos, ancient. – **23** Lesbos, Mytilene. – **24** Chios, Emporio (modern Emborios). – **25** Ephesos, ancient. – **26** Fygela, ancient (modern Kuşadası). – **27** Miletus, ancient. – **28** Herakleia, Mount Latmos, ancient. – **29** Telendos. – **30** Kalymnos. – **31** Sıralık. – **32** Caryanda, ancient (modern Göl). – **33** Strobilos, ancient (modern Aspat). – **34** Itanos, ancient (modern Erimopolis). – **35** Aperlae, ancient. – **36** Dolichiste, ancient (modern Kekova)-Tristomo Gulf. – **37** Andriace/Myra, ancient. – **38** Limyra, ancient. – **39** Aphrodisias, ancient. – **40** Korykos, ancient. – **41** Amastris, ancient (modern Amasra). – **42** Salamis-Constantia, ancient. – **43** Koutsopetria. – **44** Kition, ancient (modern Larnaca). – **45** Maroni-Vrysoudhia. – **46** Amathous, ancient. – **47** Paphos, ancient. – **48** Agios Georgios, Pegeia. – **49** Dor, ancient. – **50** Sebastos/Caesaria Maritima, ancient. – (The background is courtesy of Google Earth).

i. e. the accessibility of the Dioryctos Channel depending on tidal phenomena but also the security of Ionian waters and the ship's final destination.<sup>39</sup> Similar tidal phenomena resulted in the profound transformation of settlement around Butrint; rearrangements of the settlement's access to the sea could perhaps even have caused the 9<sup>th</sup>-century relocation of the administrative centre from the fortified nucleus to Vrina Plain.<sup>40</sup> According to Archie Dunn, in this process »individual *loci* of maritime traffic were shifting in response to environmental change, but also gaining or losing in importance in response also to politico-administrative and economic changes.«<sup>41</sup> This brings us to the third factor in the development of ports, i. e. to human geography. While geomorphology and geography allow humans to act, it is human agency that really profits (or not) from the opportunities offered by nature. Differences in the fate of Byzantine harbour settlements, then, can also be an outcome of their inhabitants' agency, which needs to be acknowledged as a cultural trait. A good example is that alongside surviving late antique port-cities, which – as such – were inevitably also centres of central administration, some anchorages (*σκάλαι*) with non-built harbours also developed into intra-regional and even inter-regional trade centres, as discussed below in some detail.

It seems that the role of ports was of vital importance to the settlements. The loss of that role due to environmental or political change proved fatal for some settlements, such as for Agios Georgios near Pegeia and Itanos in Crete, discussed below. In other cases, related phenomena reveal a very complex interplay between environment and society. For example, in Olympia, although the major alluvial crises in the area of the Slavic cemetery have been dated by Eric Fouache to after the 7<sup>th</sup> century, environmental change due to the alluvial processes linked to the River Alpheius must have been under way for quite a while.<sup>42</sup> Alluvial processes may well have caused a gradual change of land use from agricultural to pastoral perhaps even before the 7<sup>th</sup> century. This is implied by the differences in pattern between the two phases of Byzantine habitation, but should also be considered within the context of the rapidly changing demographic and political conditions in the area from the 6<sup>th</sup> century onwards. Similarly, in the case of the relocation of the lowland harbour settlement of Demetrias to the hilltop site of Iolkos, environmental change due to the silting up of the harbour cannot be ignored or underestimated by comparison with the defensive needs of the 7<sup>th</sup>-century bishopric considered by Olga Karagiorgou to have been the main cause of relocation.<sup>43</sup>

In other instances, people might well devote considerable resources and energy to maintaining and refurbishing harbours through the construction of more or less sophisticated installations, which archaeologists can usually now trace in ports where sedimentation is absent. First of all, stabilization works have been observed in the harbour of Aperlae in Lycia.<sup>44</sup> Harbour installations might range from modest constructions (like the simple, plain jetties identified in Aperlae and Leucas,<sup>45</sup> the plain stone docks at the promontory of Siralik, by the Halicarnassos peninsula,<sup>46</sup> or the wooden ones in the main (northern) port of Monemvasia (**fig. 4**)<sup>47</sup> or even a mere handful of rubble walls and a pavement in Emporio on Chios (**fig. 5a**)<sup>48</sup> to sophisticated buildings (like the 6<sup>th</sup>-century granary at Andriace, the harbour of Myra<sup>49</sup> or the lighthouse which functioned at least until the 13<sup>th</sup> century in Monemvasia (**fig. 4**).<sup>50</sup>

Furthermore, the construction of breakwaters, in cases where natural ones (e.g. islets or promontories) were absent, seems to have been a primary concern. They were made of stone like those located in the Mikron Emvolon in Thessaloniki (identified by Charalambos Bakirtzis with the *Kellarion* anchorage, **fig. 2**),<sup>51</sup> or of wood as in Sebastos in Caesarea Maritima;<sup>52</sup> alternatively older Roman concrete constructions might have been still in use as in Korykos.<sup>53</sup> The extensive artificial stone ridges, discovered along the Thermaic Gulf in Thessaloniki,<sup>54</sup> probably served not only as breakwaters for all three known ports and anchorages but they might also have been meant to produce a channel which would prevent the bay silting up too quickly and obstructing the harbour area, as happened also in other cases such as the port of Dor.<sup>55</sup> Last but not least, fortifications were essential for important harbours that were expected to host naval forces, especially when it came to Early Byzantine imperial works and provincial sites of the 7<sup>th</sup>, 8<sup>th</sup> and 12<sup>th</sup> centuries. Several examples are known from insular and continental ports in both Greece and Asia Minor (e.g. in sites in Lycia and Caria, Chios, Corinth, Nafpaktos, Butrint, Leucas, Vonitsa, Rogoi, Iolkos, Thessaloniki etc.).<sup>56</sup> In fact, ports from the 7<sup>th</sup> century onwards seem to have followed the prevailing patterns of dispersed overall settlement (small fortified stations) with the exception of big cities.

## THE SIGNIFICANCE OF SETTLEMENTS' SPECIFIC ROLES WITHIN MARITIME NETWORKS

The last point to be explained is that specific physical, social and cultural features of these sites determined – and emerged from – their role within land and maritime networks. I intend to demonstrate this first of all by commenting on the ways some Byzantine harbours are seen to perform as »gateway communities« of social contact and cross-cultural exchange, although they do not seem to have shared other characteristics



of contemporary port-cities.<sup>57</sup> Secondly, I will comment on certain spatial and social traits of ports and harbours, identified from textual evidence, which define such sites as culturally distinct places among Byzantine settlements.

### **Byzantine harbours as »gateway communities«**

It seems only reasonable that in Late Antiquity the great ancient port-cities should have remained administrative centres charged with conducting and controlling maritime inter-regional commerce. Moreover, the situation seems to have changed between the 5<sup>th</sup> and 7<sup>th</sup> centuries. More specifically, in that period a new form of coastal settlement seems to have appeared in coastal areas and especially along the coastline of the islands. The reason for its appearance seems to be associated with the fact that coastal areas in general, and especially those of the islands, presented extensive possibilities for trade, whereas inland areas had a more limited field of communication.<sup>58</sup> This difference between coast and hinterland is certainly of crucial importance in all periods, but even more so in the context of the 5<sup>th</sup>-7<sup>th</sup> centuries for reasons which will be explained below. This new settlement formation dating from the 5<sup>th</sup> to the 7<sup>th</sup> century is perhaps most aptly termed an *emporion*.<sup>59</sup> Several coastal sites of this period can be categorized as this type of settlement. In this study I shall consider the cases of Chrysoupolis at Strymon, Emporio on Chios, settlements at Kalymnos and the Telendos strait in the Dodecanese, Itanos on Crete, Koutsopetria and Agios Georgios at Pegeia in Cyprus, although I will not discuss them all in detail. Of the aforementioned settlements, half were located on strategically located islands, such as Emporio at Chios, the settlement at the Kalymnos-Telendos strait, Itanos, the settlement at Koutsopetria and Agios Georgios at Pegeia (**fig. 6**). Almost half of them emerged very close to a still thriving late antique city. For example, Chrysoupolis on the Strymon was located next to Christoupolis (modern Kavala), the site of Koutsopetria was located in the immediate vicinity of Kition while Agios Georgios at Pegeia was located near Paphos (**fig. 6**). Last but not least, all aforementioned sites seem to have been orientated towards the sea and not facing inland, by contrast with other contemporaneous settlements in the same region, like in the examples from Cyprus. According to Tassos Papacostas this must indicate that their inhabitants' main interest was trade and the redistribution and exchange of any surplus they might have produced.<sup>60</sup>

To briefly explain the precise features shared by these sites, I will discuss a few examples based on the best-investigated sites. So, the site of Koutsopetria, first of all, is located on Larnaca Bay, 10 km east of ancient Kition and has recently been investigated by David Pettegrew, William Caraher and R. Scott-Moore.<sup>61</sup> The site consists of a broad scatter of cultural material on the narrow coastal plain at the base of a continuous ridge (**fig. 5c**). The investigated area covers some 40 hectares and has produced a large number of features and artefacts especially of Roman and Late Roman date. The features include a church, architectural sculptures and a lot of Cypriot roof tiles, cisterns, evidence of olive processing and limestone quarries; predominant among the artefacts are examples of Late Roman pottery, especially LR1 amphoras and fine wares such as Cypriot Red Slip, African Red Slip and Phocian Ware. This would be consistent with the site's *floruit* being attributed to the 5<sup>th</sup> and 6<sup>th</sup> centuries when it was part of a broad regional system of exchange. The site's southern boundary is the sea and some low-lying sandy soils; based on the finds distribution the investigators think that this lowland to the east of Koutsopetria marks an embayment that is now infilled but functioned as a natural harbour throughout antiquity and probably as late as the medieval era.<sup>62</sup> They also think that the harbour would certainly have been well situated to take advantage of several ancient roads through this area, one running toward the Mesaoria and one probably turning towards Salamis-Constantia. Why did the site of Koutsopetria flourish in the immediate vicinity of Kition? Some scholars have suggested that

Kition suffered earthquakes in the 4<sup>th</sup> century and as a result of tectonic uplift the harbour gradually silted up.<sup>63</sup> The growth of Koutsopetria and other neighbouring small sites might have been encouraged by the city's decline due to that.<sup>64</sup> However, it has been suggested that the town's silted harbour might have been refurbished during Late Antiquity or that maritime activity in Kition during this period might have shifted further west from its ancient location at Bamboula towards the central area of the medieval city near the church of Ayios Lazaros.<sup>65</sup> Therefore it may very well be that Kition and Koutsopetria flourished concurrently.<sup>66</sup>

It would seem that there was contemporaneous flourishing of an ancient city and a mid-size settlement nearby on the western coast of the island too: Agios Georgios near Pegeia at Cape Drepanon (**fig. 5d**) grew into a flourishing and wealthy, important centre of inter-regional exchange just 21 km north of the port-city of Paphos, the former capital of Cyprus. The settlement covered 16 hectares and the site has produced burial chambers, agricultural implements, a bath complex and three large, luxuriously furnished, basilica churches.<sup>67</sup> The fact that this site appears to have been more dependent on the sea and contacts beyond the shores of Cyprus, turning its back on the hinterland, led Charalambos Bakirtzis to argue that it grew not as a result of its proximity to Paphos, but on account of its orientation towards the sea, serving as a stopover for Egyptian grain ships bound for Constantinople.<sup>68</sup> However, the settlement can equally be very plausibly explained as a thriving *emporion* of the time, due to its strategic location on the *annonia* road.

Finally, thorough investigation of the site of Itanos in Crete (**fig. 5b**) has confirmed the same pattern by means of more precise dating of buildings and pottery.<sup>69</sup> Indeed pottery finds from Itanos have confirmed a *floruit* of the settlement between the 5<sup>th</sup> and the 7<sup>th</sup> centuries and they have indicated not only the existence of trade and contacts with North Africa, Asia Minor and Cyprus but also a large amount of locally produced vessels serving agricultural purposes, especially during the 6<sup>th</sup> and 7<sup>th</sup> centuries.<sup>70</sup>

Indeed, for island coastal settlements in particular, Late Antiquity was a time of economic and demographic growth as a result of the integration of the local population into a system of interregional shipping routes and trade in the 5<sup>th</sup> and 6<sup>th</sup> centuries.<sup>71</sup> On the southern coast of Attica, for example, Piraeus also appears to have overshadowed other coastal settlements during the period from the 4<sup>th</sup> to the 7<sup>th</sup> century.<sup>72</sup> Having been structurally integrated into an expanding network of long-distance exchange, *emporia* flourished until at least the mid-6<sup>th</sup> century. But human activity at all of these coastal sites seems to have contracted dramatically after the mid-7<sup>th</sup> century with slight regional, chronological variations.<sup>73</sup> During this last period of their life (7<sup>th</sup> and 8<sup>th</sup> centuries) these coastal settlements functioned within networks of regional communication.<sup>74</sup> The pottery finds from Itanos, among which there are a great many objects from Asia Minor, strongly support this idea.<sup>75</sup> What was once considered an apparently drastic decline in maritime trade between the 6<sup>th</sup> and the 10<sup>th</sup> century, which could also have caused the subsequent decline of coastal settlements, tends now to be viewed more circumspectly.<sup>76</sup>

However, it was during the 6<sup>th</sup> and 7<sup>th</sup> century that coastal areas seem to have faced the biggest changes.<sup>77</sup> In Itanos not only were large amounts of local pottery being produced for agricultural purposes in that period, but also locally made amphorae survive in greater quantities.<sup>78</sup> In fact, excavations of the site indicate that the settlement died out in the 7<sup>th</sup> century due to the decline of the long-distance maritime trade and the Arab raids. There was no trace of violent raids or destruction of parts of the settlement; only shrinkage, decline, and final abandonment.<sup>79</sup> The same pattern is seen in the Byzantine port-settlements at Koutsopetria, Agios Georgios near Pegeia, possibly a number of other sites in Cyprus,<sup>80</sup> Telendos,<sup>81</sup> and Emporio on Chios.<sup>82</sup>

As for the interpretation of these sites, Archie Dunn has referred to them as »*loci* of maritime traffic« while Cecile Morrisson and Jean-Pierre Sodini term them Byzantine *emporia* and »secondary towns«. <sup>83</sup> Whatever their status, the emergence of these sites seems to be linked to their inhabitants grabbing the opportunity for economic growth by simply taking advantage of the sites' privileged locations astride major maritime

trade routes of the period. George Deligiannakis proposed a definition for this type of site in the Dodecanese, calling them »secondary« or »satellite towns« after Morrisson and Sodini.<sup>84</sup> According to him, »the evidence from these coastal settlements indicates a relatively socially homogeneous population, which lived primarily on the land as small-holders or tenant farmers, but also engaged in maritime activities as traders and fishermen, as well as in various kinds of craftsmanship; there is clear evidence for commercial contacts with regions far beyond their shores. At a local level, these settlements usually functioned as centres of local markets, artisanal production and trade, and hardly differed from small cities; agricultural surplus would have fuelled the growing economy of these market towns and supported an island-wide project of church building. A network of wealthy agrarian villages was connected with these large settlements, which possibly functioned as upper-tier collection points for local agricultural products and major distribution centres for bigger markets; these large, prosperous coastal villages probably offered a partial substitute for urban centres in the regional economy, even though they did not carry the traditional urban apparatus and culture«. <sup>85</sup> David Pettegrew, William Caraher and R. Scott-Moore have discussed the »urban or rural character« of these sites. According to them:

»What we have in all these cases are a number of mid-sized coastal sites which are neither wholly urban nor wholly rural space. They possess religious architecture, obvious wealth, some civic amenities and connections to the broader world, yet lack the full range of civic features. They are rural spaces which gained independence from their strategic and favorable positions. While undoubtedly interacting closely with nearby cities, they also developed and flourished in respect to their connectedness to networks beyond the city. (...) It is clear that these settlements, centred at crossroads, would have been places of cultural exchange and frequent interaction with a broader Late Antique world. Just as scholars recognize that pottery sherds are the most visible physical traces of a vibrant economic exchange system that included a much wider range of material goods, so they must also represent a broad array of exchanges of ideas and culture that are now invisible to us. The merchants putting into port at Koutsopetria, for example, may have gone on to either Salamis or Kition, and from there, to the coastal towns of northern Palestine and Syria, just as those from Korykos did. The inhabitants of these sites presumably interacted with neighboring large coastal sites and also with inland populations who provided the agricultural surplus for exchange. The routes themselves fostered relationships between coastal town and inland villages and farms, various urban and civic centres as well as other provinces and places. Large crossroads settlements like them, then, were not just economic entities, but places of cultural contact and accommodation between groups originating from very different social and geographic spheres. The distinct and heterogeneous archaeological assemblages suggest that these places could produce independent self-expressions within larger relational networks. (...) These originally rural places were not static places standing outside of history and defined exclusively by an economic relationship to culture-producing urban zones, but constituted places capable of producing and transmitting culture in and of themselves.«<sup>86</sup>

Under these conditions, it may well be suggested that these sites functioned as »gateway communities«, a concept applied mostly to settlements which control the point of contact between two quite strongly contrasting economic and social systems or, according to Horden and Purcell, between two settlements with heterogeneity in their value-systems, which promotes inter-cultural exchange.<sup>87</sup>

I shall finish this brief overview of Early Byzantine *emporía* by pointing out ways in which specific physical and social features of harbours determined – and, at the same time, emerged from – their role in land and maritime networks. An important common physical attribute shared by all the aforementioned *emporía* seems to emerge at this point. While the existence of a built harbour in all these sites is more or less assumed or taken for granted by their investigators, no built harbour has so far been discovered in any of these coastal settlements nor does any mention of them as ports exist in the late antique textual sources

(fig. 5a-d). In the cases of sites located in alluvial plains it has been assumed, for example, that built harbours are hidden somewhere under the layers of alluvial deposits which gradually filled in the embayments. However, in the case of Agios Georgios near Pegeia (fig. 5d), for example, there is no river and alluvial plain, yet no harbour installations have been identified along the coast below the settlement. Nevertheless, an underwater survey carried out along 13 km of coastline to the north and south of Cape Drepanon revealed several sites with Late Antique material including 6<sup>th</sup>- and 7<sup>th</sup>-century amphorae.<sup>88</sup> The site is still equipped with a natural anchorage hosting shipyards to this day (fig. 5d).

What could be the significance of seafront settlements without built harbours and lacking port facilities developing into intra-regional and inter-regional trade centres after the 5<sup>th</sup> century? Was there indeed a correlation between the preference for one of the known ports and anchorages of that time over another and the nature – rather than range and scale – of redistribution and exchange of products in the area? A plausible reason for such choices, in my opinion, is that some people may have preferred to use side anchorages rather than big city-ports (with built harbours) in this period in order to avoid the official port taxation. Sean Kingsley was possibly hinting at this in his work about some late antique ports in Palestine.<sup>89</sup> Basing herself on the interpretation of 6<sup>th</sup>- to 9<sup>th</sup>-century ceramic evidence from the Adriatic, Joanita Vroom has stressed the great variety of agendas of different social groups involved in maritime trade.<sup>90</sup> She also suggested the existence, during this period, of a number of overlapping networks of production, distribution and redistribution which was essentially centred on the Aegean but stretched well beyond this area to the central and Eastern Mediterranean, i. e. from Constantinople and the Black Sea to the South coast of Turkey, Cyprus, Egypt, Crete, Greece and the southern Adriatic.<sup>91</sup> Could the flourishing of a black economy have been a cultural trait of this type of settlement? In my opinion the fact that such anchorages developed, during the 5<sup>th</sup>-to-6<sup>th</sup>-century economic boom, in the vicinity of large contemporary ports, indicates that this assumption may be correct, because there had to be *some* reason why merchants would avoid using the nearby existing ports with their built-harbour facilities. And there is no reason why there could not have been alternative economic and distribution networks in the Byzantine provinces, operating alongside the official ones but seeking to escape state control.

If the development of ports with activities that were »invisible« to the civic administration, using natural harbours only for tax-evasion purposes, would be a reasonable explanation for the flourishing of »gateway communities« in Byzantium before the 7<sup>th</sup> century, it seems not to have been the case thereafter. From around the 7<sup>th</sup> century onwards, Byzantine neglect in maintaining the artificial Roman harbours is noticeable;<sup>92</sup> even in the port of the thriving Middle-Byzantine settlement of Corinth, Lechaion, no artificial harbour repairs have been dated later than 335 AD.<sup>93</sup> This might be explained by various developments, the most important of which must have been the new technologies used in ship-building, which seem to have begun in earlier centuries but were developed and gradually introduced all over the Mediterranean from the early Middle Ages onwards.<sup>94</sup> These technologies probably produced smaller ships with shallow draught that eventually led to increased confidence in navigation skills.<sup>95</sup> Indeed, a Byzantine text referring to historical events of the year 866 AD in the port of Ephesos (ships sailing from there to Constantinople)<sup>96</sup> refers to bays (*ormous*), i. e. natural anchorages – not to harbours – and notes that the ships had low tonnage.<sup>97</sup>

### **Ports and harbours as destinations and windows on the world**

My final point involves another important cultural dimension of life in Byzantine ports, unconnected with administrative or construction issues, which must be acknowledged. Whether they were artificial harbours in big port-cities or natural harbours and simple anchorages near small settlements, harbours were above

all destinations on unpredictably long and quite often dangerous voyages. This is evident from information about voyages and travelling found in various Byzantine texts and more specifically from the limited number of travellers' accounts at our disposal.<sup>98</sup> It is also made very clear in these texts that harbours meant both the end of the danger and discomfort of a voyage and a successful outcome (i. e. the survival of the travellers and their eventual arrival at their destination and return home). They were, therefore, associated with feelings of relief, the availability of commodities designed to satisfy the travellers' and crews' primary needs and other comforting services.

Furthermore, as Theoni Bazaiou-Barabas has shown through her study of literary texts, although no Byzantines would ever travel just for pleasure, the sea had by no means solely negative connotations. Though on the one hand it was perceived as an unpredictable and dangerous way to travel, on the other it was an opportunity to open new routes of communication, ensure the proper functioning of state machinery and facilitate the everyday survival of the common people.<sup>99</sup> This has, I think, been confirmed by the examination of Early Byzantine emporia in the sense of »gateway communities« in this study.

Therefore ports and harbours also had distinct cultural connotations in Byzantine society, as both links and areas of transition between the safe but limited, »ordinary«, everyday life and the risky condition of travelling. Indeed life on board ship may well be considered one of Foucault's *heterotopias*, where space and time are experienced in different ways from normal.<sup>100</sup> This characteristic gives ports and harbours a particularly special place in Byzantine settlement and may ultimately stimulate more flexible and imaginative interpretations of material remains from relevant archaeological sites, their surroundings and their connection-points around their inhabitants' known world.

## CONCLUSIONS

In concluding this study, four ideas emerge as potentially fruitful paradoxes. In my opinion, these four paradoxical circumstances are the result of the liminal vicinity of water and land and the best reflection of the fragile balance of Byzantine ports and other harbour settlements.

So, first of all, as everybody knows: water is man's best friend and worst enemy. Exploiting it has been a constant struggle for man and not just for those on the medieval waterfront. In many cases changing physical conditions can be shown to have influenced the movement and number of the deltaic loci of maritime traffic and of administrative centres in the vicinity. Evidently contemporary technology allowed people to manage small-scale environmental change but, when large-scale physical phenomena – such as alluvial crises – radically altered the geomorphology of the wider area, the inhabitants either could not or did not find it worthwhile to struggle to »rehabilitate« the disaster area and re-establish the former conditions. Adjusting to the new conditions by introducing changes in land use no doubt seemed preferable and a more natural development.

The second paradox, when it comes to ports and harbours, concerns the concept of contact. The harbour settlements function as gateways between the Aegean and the rest of the Mediterranean and the Balkan or Anatolian hinterlands, which were traditionally rich in agricultural resources, wetlands, agriculture and mining activities and gave them the inevitable advantages and disadvantages of close social contact.<sup>101</sup> Prosperity and the availability of commodities must have also gone hand in hand with cultural exchange but also with disease, invasions and raids.

The third idea concerns the correlation between the size of ports and the level of trade. During the Byzantine period, there seems to be no correlation between extensive commercial activity and the use of ports with built harbours. In the case of Strymon, Pegeia, Pyla and Itanos we have established that significant

economic activity persisted for centuries in the absence of built harbours.<sup>102</sup> By contrast, it remains a moot point as to whether there was indeed a correlation between a preference for one port or anchorage over another and the nature – rather than range and scale – of trade and distribution networks.

Finally, the last paradox I have come across during this investigation is that the more or less homogeneous patterns in settlement evolution, found in other categories of Byzantine settlements, are lacking in the case of ports. Obviously a complex interplay of different factors, as outlined by Johannes Preiser-Kapeller, is indeed very relevant in this case. The concept of connectivity has already been identified by Horden and Purcell as a key element in the interpretation of settlement in the Mediterranean, because it contextualizes urban centres as simply the largest nodes within a broad matrix of exchange and elevates the smaller links of the chain; villas, villages and small towns may have lacked urban status but they still produced surpluses, participated in trans-regional exchange and functioned with varying degrees of economic autonomy.<sup>103</sup> Caraher, Scott-Moore and Pettegrew also discussed this concept in relation to late antique Cyprus, and the site of Koutsopetria in particular.<sup>104</sup> They argued that this small island was never a central place in the Roman economy *per se* but it did sit astride major maritime trade routes linking Egypt, the Aegean and the Levant, and was, consequently, directly connected to the wider Mediterranean matrix. However, though connectivity offers potential and opportunity, it does not determine or presuppose the nature of relationships between inhabitants; this is a cultural aspect which also has to be taken into consideration. Therefore, it would be a good idea to broaden out our view of settlement around the late antique and medieval Mediterranean by bearing in mind that, apart from the strategic and economic potential of any site, which »invites« human agency, the dynamic picture of settlement and the connectedness of different sites were also the result of a constant re-negotiation of human relations – both within the microcosm of a region and with the rest of the known world.

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## Notes

- 1) Much of the available evidence will be discussed further in this study. For late antique sites see the brief account by Kingsley 2001; for Byzantine sites see Vann 1998. Some of the ancient Greek harbours surveyed by researchers of the National Technical University of Athens have been also found to have remained in use in Late Antiquity and the Early Middle Ages (Memos et al. 2014). The European Project NAVIS II also provides some sporadic information about harbours in Late Antiquity and the Middle Ages (Navis II).
- 2) Pulak 2010.
- 3) Vann 1998, 80-81.
- 4) For an account of ports and harbours known from Byzantine texts see: Koder 2005, 104-105; Gkagktsis/Leontsini/Panopoulou 1993; Koder 1993; Malamut 1988, 536-561; Avramea 2002, 77-88; Gerolymatou 2008, 90-183. 272-278.
- 5) Vorderstrasse 2010, 15-26.
- 6) Maria Gerolymatou (2008, 272-278) provides an ample account.
- 7) Kingsley 2001, 85.
- 8) Kingsley 2001, 85.
- 9) Kingsley 2001, 85. – Gerolymatou 2008, 272-278. – Koder 2005, 103-104.
- 10) Dakari/Bakirtzis/Karabasis 2008, 13.
- 11) Blackman/Schäfer/Schläger 1967, 12-17; 1968. – Theodoulou 2014a. For the evidence of Early Byzantine repairs to the harbours of Caesaria Maritima and Dor, Sarepta in Lebanon and Marea in Egypt see the brief account by Kingsley 2001, 81 (literature); Vann 1998; Hohlfelder 2000.
- 12) Orviantani Busch 2001, 255.



- 13) Orvientani Busch 2001, 255.
- 14) Double-bay complexes are found for example in Dor (Kingsley 2001, 71-75), in Salamis-Constantia (Raban 1995; Karageorghis 1969; Flemming 1974), Amastris (Crow/Hill 1995, 256), Aphrodisias (Vann 1998, 83), Mytilene in Lesbos (Kourtzelis/Theodoulou 2014) and Monemvasia (Kalligas 2002, 879-880). In this case, either one of the bays served as the main basin and the other as an anchorage (e. g. Monemvasia; **fig. 4**) or both bays might be used simultaneously for different purposes (e. g. one for the navy and the other for merchants, as at Amastris) or each bay was used at different periods according to the problems created by silting (e. g. in Salamis-Constantia). See also note 16 below on the port of Thessaloniki.
- 15) This pattern is found in the combination of Dolichiste (modern Kekova) with the gulf of Tristomo in Lycia (Foss 1994, 18-21), at the coastal settlement with two islets at Göl, Halicarnassus peninsula (Foss 1988, 171-172), at Fygela, Caria (Foss 1979, 123), at Agios Georgios near Pegeia, Cyprus, discussed in detail below (**fig. 5d**) as well as at Dor (Kingsley 2001, 73-74).
- 16) Apart from the multiple harbours and anchorages known from Byzantine texts to have been offered by the Byzantine capital Constantinople (Magdalino 2007; Gerolymatou 2008, *passim*), this is also known in the cases of the ports of Monemvasia (**fig. 4**) (Kalligas 2002, 879-880) and Amathous, where the nearby anchorage at Maroni-Vrysoudhia seems to have served mostly for the distribution of produce from the countryside (Rautman 2004, 198; 2000, 325) and Thessaloniki. The latter, in particular, being located on the coast of the extensive Thermaic Gulf, had the advantage of having in fact three different ports and several anchorages within the same gulf (**fig. 2**) (Bakirtzis 2007, 95) of which the main was created by Constantine the Great in the south-west corner of the city (Bakirtzis 1975, 315-320; 2007, 94). The harbour facilities comprised a dockyard, the state granaries and the custom services supervised by the *kommerkiarioi* or *avydikoi* (Bakirtzis 2007, 94-95). This main harbour also served as a naval port and for that reason it was closed to some categories of ships and was surrounded by fortifications preventing free circulation (Bakirtzis 2007, 95). However, there were another two harbours called *Ekklesiastiki Skala* and *Kellarion* respectively (**fig. 2**) (Bakirtzis 2007; 1997). The first was in the most southerly corner of the city, on the site of the Roman harbour that had served as the palace of Galerius and the fact that it was termed ecclesiastical and differentiated from the main harbour suggests that it was used exclusively by the Church of Thessalonike and probably exempt from the normal customs procedures (Bakirtzis 2007; 1997). On this side the Thermaic Gulf formed a number of coves suitable for landing-stages for sailors and passengers for short-distance trade within the Gulf, fishing anchorages and market-places (Bakirtzis 2007; 1997).
- 17) This seems to be the case of the natural harbour of Strobilos in Lycia, mentioned in the Middle-Byzantine and later sources, which Clive Foss has identified with Aspat Castle (Foss 1988, esp. 176).
- 18) Orvientani Busch 2001, 255.
- 19) Herda/Brückner/Müllenhoff 2009; Ragia 2009, 173-176 (literature). The site of Βίγλα/Vigla or Φανάρι/Phanari must have been one example of a secure, fortified embayment providing side anchorage to Byzantine Miletus (Ragia 2009, 144).
- 20) Dunn 2009, 19.
- 21) See discussion by Horden/Purcell 2000, 312-328.
- 22) Veikou 2012, 36-37.
- 23) Müller-Wiener 1961, 24 note 39. – Foss 1979, 185-187. – Ladstätter 2011, 11-12. – Knoob/Pfarr/Grellert 2011, 245 fig. 5. – Gerolymatou 2008, 129. – Ragia 2009, 152.
- 24) Dunn 2009.
- 25) Schaus 1996; see also Kourtzelis/Theodoulou 2014.
- 26) Raban 1995. – Karageorghis 1969. – Flemming 1974. – Ragia 2009, 152.
- 27) Jing/Rapp 2003, 182. 192. 198. – Veikou 2012, 31-32. 477. – Dunn 2009. – Karagiorgou 2001, 197-198.
- 28) Ladstätter 2011, 11-12. – Knoob/Pfarr/Grellert 2011. – Bokotopoulos 1966/1967, 73.
- 29) Karagiorgou 2001, 210.
- 30) Horden/Purcell 2000, 327.
- 31) For example, the port of Aperlae in Lycia seems to have flourished thanks to the trade of *murex trunculus* used for the production of purple dye (Hohlfelder/Vann 1998), just like at Dor (Kingsley 2001, 71-72). Bays along the Northern coast of the Northern Gulf of Corinth in Boeotia are likewise known to have been used for the same purpose in the same period (Dunn 2006); these ports seem to have been functioning as stopovers for intraregional – not interregional or long-distance – trade (Vroom 2004).
- 32) This seems likely to have been the case at Monemvasia (Kalligas 2002) and Emporio on Chios (Balance 1955, 7). On these routes see Gerolymatou 2008, 122-123; Malamut 1988, 547-549; Avramea 2002, 77-88.
- 33) Braudel 1966, vol. I, 291.
- 34) Constantinople's strategic location on the routes from East to West and North to South has already been discussed in various instances. The port of Thessaloniki was located in the deltaic area of four rivers (**fig. 2**), the Vardar (ancient Axios) and Gallikos (ancient Echedoros), extending as far as the Loudias lagoon and the River Loudias while Aliakmon River lay a little further to the west; it enjoyed the geopolitical advantages conferred by its position as a Balkan port communicating via the Aegean with the Black Sea and the Levant (Dimitriadis 1990; Bakirtzis 2007, 94). The port of Durrës linked the Adriatic Sea with the East via the Via Egnatia (Gerolymatou 2008, 141). The ports of Arta and Rogoi were located in the deltaic areas of two major river-routes to the Epirote hinterland, along the rivers of Louros and Arachthos (**fig. 1**; Veikou 2012, 28-34). Corinth had two ports, Lechaion on the Northern Gulf of Corinth (for a summary of the available evidence see Theodoulou 2014b) and Kenchreai on the Saronic Gulf (Rife et al. 2007) allowing a settlement to operate at the junction of two major maritime routes linking the West with the East. The (as yet unidentified) port of the Byzantine settlement by the Castle of Platamon, which was eventually silted up by alluvial deposits, was also located in a strategic position, controlling the exit from the Tempe valley (connecting Macedonia with Thessaly and southern Greece) to the Aegean (Loverdou-Tsigarida et al. 2001; Loverdou-Tsigarida 2006). At Demetrias the Xerias River likewise linked the port with the fertile hinterland of Thessaly (Karagiorgou 2001, 184). The port of Limyra, Phoenix, was situated at the junction of two land routes running along river valleys to the hinterland (Foss 1994, 37); Joanita Vroom (2004) has shown that it definitely involved large-scale, long-distance trade, as demonstrated by the amounts of pottery imports from Cyprus, Egypt, South-eastern

- Turkey and the Near East. The port of Myra, Andriace, was located near the delta of the Myros River connecting it with a fertile hinterland (Foss 1994, 21). Miletus lay in the deltaic area of the Meander River and Ephesos in that of the Kaystros River, both connecting the Aegean coast with the fertile plains of the Anatolian hinterland and highways to the east (Ragia 2009, 173; Foss 1979, 3).
- 35) Gerolymatou 2008, 123. – Francois 2012.
  - 36) Iacomi 2010. – Varinlioğlu 2011, 173-174.
  - 37) Varinlioğlu 2011, 187.
  - 38) Preiser-Kapeller, Introduction to this volume.
  - 39) Veikou 2012, 37.
  - 40) Hodges/Saraçi/Bowden 1997, 211-212. – Greenslade/Hodges 2013, 3.
  - 41) Dunn 2009, 19.
  - 42) Fouache 1999, 115-130.
  - 43) Karagiorgou 2001, 209-210.
  - 44) Hohlfelder/Vann 1998, 32.
  - 45) Bakirtzis 1997.
  - 46) Foss 1988, 169-171.
  - 47) Kalligas 2002, 879.
  - 48) Balance 1955, 47-49.
  - 49) Foss 1994, 29-30.
  - 50) Kalligas 2002, 879-880.
  - 51) Bakirtzis 1997, 306-307.
  - 52) Kingsley 2001, 77 fig. 7.
  - 53) Vann 1993, 32.
  - 54) Bakirtzis 1997, 306-307.
  - 55) Kingsley 2001, 74.
  - 56) Foss 1988, esp. 159 ff; 1994, 32. 36. – Balance 1955. – Veikou 2012, 448-449. 476-477. 513-514. – Karagiorgou 2001, 210. – Bakirtzis 2007, 95.
  - 57) On the term »gateway communities« coined by a prehistoric archaeologist and relating to the interregional movement of goods and people, see Hirth 1978.
  - 58) Haldon 2013, 104.
  - 59) Veikou 2013, 129.
  - 60) Papacostas 2001, 120-121.
  - 61) Caraher/Pettegrew/Scott Moore 2014.
  - 62) Caraher/Pettegrew/Scott Moore 2014, 292. 298.
  - 63) Caraher/Pettegrew/Scott Moore 2014, 292.
  - 64) Caraher/Pettegrew/Scott Moore 2014, 292-293.
  - 65) Caraher/Pettegrew/Scott Moore 2014, 292. – Pettegrew/Caraher/Scott Moore 2006.
  - 66) Caraher/Pettegrew/Scott Moore 2014, 292-293.
  - 67) Bakirtzis 2001.
  - 68) Bakirtzis 1995.
  - 69) Tsigonaki 2009, 159-174.
  - 70) Xanthopoulou 2004, 1014.
  - 71) Deligiannakis 2008, 209-234.
  - 72) Tzavella 2013.
  - 73) While, for example, the turning point for such settlements in the Dodecanese occurred during the mid-6<sup>th</sup> century, the one in Itanos, Crete (like Pyla in Cyprus) continued until the mid-7<sup>th</sup> century.
  - 74) Haldon 2013, 100-101.
  - 75) Xanthopoulou 2004, 1016.
  - 76) Pieri 2013, 39.
  - 77) Curta 2001, 200 ff.
  - 78) Xanthopoulou 2004, 1016. 1022.
  - 79) Xanthopoulou 2004, 1027. – Tsigonaki 2009, 159-174.
  - 80) Pettegrew/Caraher/Scott Moore 2006.
  - 81) Deligiannakis 2007, 256.
  - 82) Balance 1955.
  - 83) Dunn 2006. – Morrisson/Sodini 2012, 179-180.
  - 84) Morrisson/Sodini 2012, 179-181.
  - 85) Deligiannakis 2008, 211-212.
  - 86) Pettegrew/Caraher/Scott Moore 2006.
  - 87) Horden/Purcell 2000, 393.
  - 88) Bakirtzis 2001, 156 note 6.
  - 89) Kingsley 2001, 84.
  - 90) Vroom 2012, 389-390.
  - 91) Vroom 2012, 389-390.
  - 92) Hohlfelder 2000. – Kingsley 2001.
  - 93) Theodoulou 2014b.
  - 94) Makris 2002, 98. – Rieth/Kahanov/Pomey 2012.
  - 95) Vann 1998, 81. – McCormick 2013, 91.
  - 96) Ignatios Diakonos, § 17.10-14.
  - 97) Gerolymatou 2008, 129 note 89.
  - 98) Gkagktsis/Leontsini/Panopoulou 1993. – Karpozilos 1993.
  - 99) Bazaiou-Barabas 1993, 443.
  - 100) Kokot 2008. – Foucault 1997.
  - 101) Dunn 2009, 19.
  - 102) Dunn 2009, 20.
  - 103) Horden/Purcell 2000, 123-172.
  - 104) Caraher/Pettegrew/Scott Moore 2014.



## Bibliography

- Avramea 2002: A. Avramea, Land and Sea Communications, Fourth-Fifteenth Centuries. In: A. Laiou (ed.), *The Economic History of Byzantium from the Seventh through the Fifteenth Century*. *Dumbarton Oaks Studies* 39 (Washington, D. C. 2002) Vol. 1, 56-90.
- Bakirtzis 1975: Ch. Bakirtzis, Η θαλάσσια οχύρωση της Θεσσαλονίκης. Παρατηρήσεις και προβλήματα. *Byzantina* 7, 1975, 165-180.
- 1995: Ch. Bakirtzis, The Role of Cyprus in the Grain Supply of Constantinople in the Early Christian Period. In: V. Karageorghis / D. Michaelides (eds), *Proceedings of the International Symposium »Cyprus and the Sea«*, Nicosia 25-26 September 1993 (Nicosia 1995) 247-253.
- 1997: Ch. Bakirtzis, Το Κελλάριον της Θεσσαλονίκης. In: Αφιέρωμα στον Ν. G. L. Hammond. *Παράρτημα Μακεδονικών* 7 (Thessaloniki 1997) 305-308.
- 2001: Ch. Bakirtzis, Αποτελέσματα ανασκαφών στον Άγιο Γεώργιο Πέγειας (ακρωτήριο Δρέπανον), 1991-1995. In: A. Papageorgiou (ed.), *Πρακτικά του Τρίτου Διεθνούς Κυπριολογικού Συνεδρίου (Λευκωσία, 16-20 Απριλίου 1996)* (Nicosia 2001) Vol. II, 155-169.
- 2007: Ch. Bakirtzis, Imports, exports and autarchy in Byzantine Thessalonike from the seventh to the tenth century. In: J. Henning (ed.), *Post-Roman Towns, Trade and Settlement in Europe and Byzantium* (Berlin, New York 2007) Vol. 2, 89-118.
- Balance 1955: M. Balance (ed.), *Excavations in Chios, 1952-1955: Byzantine Emporio* (Athens 1955).
- Bazaiou-Barabas 1993: Th. Bazaiou-Barabas, Θαλάσσιοι δρόμοι: δυνατότητες και δυσκολίες της θαλάσσιας επικοινωνίας σε βυζαντινά λόγια κείμενα. In: N. G. Moschonas (ed.), *Η Επικοινωνία στο Βυζάντιο, Πρακτικά του Β' Διεθνούς Συμποσίου, Κέντρο Βυζαντινών Ερευνών/Ε.Ι.Ε.* (Athens 1993) 435-443.
- Blackman/Schäfer/Schläger 1967: D. Blackman / J. Schäfer / H. Schläger, Un port de l'époque romaine en Grèce central. *Archéologia* 17, 1967, 12-17.
- 1968: D. Blackman / J. Schäfer / H. Schläger, Der Hafen von Anthedon mit Beiträgen zur Topographie und Geschichte der Stadt. *Archäologischer Anzeiger* 1968, 21-98.
- Bokotopoulos 1966/1967: P. Bokotopoulos, Λάτρος. Έπετηρίς Έταιρείας Βυζαντινών Σπουδών 35, 1966/1967, 73.
- Braudel 1966: F. Braudel, *La Méditerranée et le monde méditerranéen à l'époque de Philippe II* (Paris 2<sup>1966</sup>).
- Caraher/Pettegrew/Scott Moore 2014: W. R. Caraher / D. K. Pettegrew / R. S. Scott Moore, Pyla-Koutsopetria: Archaeological Survey of an Ancient Coastal Town. *American Schools of Oriental Research, Archaeological Report Series* 21 (Boston MA 2014).
- Crow/Hill 1995: J. Crow / S. Hill, The Byzantine Fortifications of Amastris in Paphlagonia. *Anatolian Studies* 45, 1995, 251-265.
- Curta 2001: F. Curta, Peasants as Makeshift Soldiers for the Occasion: Sixth-Century Settlement Patterns in the Balkans. In: T. S. Burns / J. W. Eadie (eds), *Urban Centers and Rural Contexts in Late Antiquity* (East Lansing 2001) 199-218.
- Dakari/Bakirtzis/Karabasis 2008: K. Dakari / A. Bakirtzis / G. Karabasis, Το παράλιο τείχος της Καβάλας. 12<sup>th</sup> Ephoreia of Byzantine Antiquities, Greek Ministry of Culture (Kavala 2008).
- Deligiannakis 2007: G. Deligiannakis, The history and archaeology of the Aegean Islands in Late Antiquity, AD 300-700. The case of the Dodecanese [PhD thesis, Univ. Oxford 2007].
- 2008: G. Deligiannakis, The economy of the Dodecanese in late antiquity. In: Ch. Papageorgiadou-Banis / A. Giannikouri (eds), *Sailing in the Aegean. Readings on the economy and trade routes*. *Meletemata* 53 (Athens 2008) 209-234.
- Dimitriadis 1990: E. Dimitriadis, The Harbour of Thessaloniki: Balkan Hinterland and Historical Development. In: Αρμός, Τιμητικός τόμος στον καθηγητή Ν. Μουτσόπουλο (Thessaloniki 1990) 541-561.
- Dunn 2006: A. Dunn, The Rise and Fall of Towns, Ports, and Silk-production in Western Boeotia: the Problem of Thisvi-Kastorion. In: E. Jeffreys (ed.), *Byzantine Style, Religion and Civilization*. In honour of Sir Steven Runciman (Cambridge 2006) 38-71.
- 2009: A. Dunn, Byzantine and Ottoman Maritime Traffic in the Estuary of Strymon: Between Environment, State, and Market. In: J. Bintliff / H. Stöger (eds), *Medieval and Post-Medieval Greece: The Corfu Papers*. *British Archaeological Reports International Series* 2023 (Oxford 2009) 15-31.
- Flemming 1974: N. C. Flemming, Report of Preliminary Underwater Investigations at Salamis Cyprus, Report of the Department of Antiquities of Cyprus (Nicosia 1974) 163-174.
- Foss 1979: C. Foss, *Ephesus After Antiquity: A Late Antique, Byzantine, and Turkish City* (Cambridge 1979).
- 1988: C. Foss, Strobilos and Related Sites. *Anatolian Studies* 38, 1988, 147-174.
- 1994: C. Foss, The Lycian Coast in the Byzantine Age. *Dumbarton Oaks Papers* 48, 1994, 1-52.
- Fouache 1999: E. Fouache, L'alluvionnement historique en Grèce occidentale et au Péloponnèse. *Géomorphologie, archéologie, histoire*. *Bulletin de Correspondance Hellénique Supplément* 35 (Paris 1999).
- Foucault 1997: M. Foucault, Of Other Spaces: Utopias and Heterotopias (1967). In: N. Leach (ed.), *Rethinking Architecture: A Reader in Cultural Theory* (New York 1997) 330-336.
- Francois 2012: V. Francois, Représenter le commerce de la poterie à Byzance. In: E. Malamut / M. Ouerfelli (eds), *Les échanges en Méditerranée médiévale. Marqueurs, réseaux, circulations, contacts* (Aix-Marseille 2012) 33-55.
- Gerolymatou 2008: M. Gerolymatou, *Αγορές, έμποροι και εμπόριο στο Βυζάντιο (9ος-12ος αι.)*. *Institute of Byzantine Research Monographs* 9 (Athens 2008).
- Gkagktsis/Leontsini/Panopoulou 1993: D. Gkagktsis/M. Leontsini/A. Panopoulou, Πελοπόννησος και Νότια Ιταλία: σταθμοί επικοινωνίας στη Μέση Βυζαντινή περίοδο. In: N. G. Moschonas (ed.), *Η Επικοινωνία στο Βυζάντιο, Πρακτικά του Β' Διεθνούς Συμποσίου, Κέντρο Βυζαντινών Ερευνών/Ε.Ι.Ε.* (Athens 1993) 469-486.
- Greenslade/Hodges 2013: S. Greenslade / R. Hodges, The aristocratic oikos on the Vrina Plain, Butrint c. AD 830-1200. *Byzantine and Modern Greek Studies* 37/1, 2013, 1-19.
- Haldon 2013: J. F. Haldon, Commerce and Exchange in the Seventh and Eighth centuries. *Regional Trade and the Movement of Goods*. In: C. Morrisson (ed.), *Trade and Markets in Byzantium*.

- Dumbarton Oaks Byzantine Symposia and Colloquia (Washington, D.C. 2013) 99-124.
- Herda/Brückner/Müllenhoff 2009: A. Herda / H. Brückner / M. Müllenhoff, Auf Meersand gebaut – Landschaftswandel im Milet im Spiegel geoarchäologischer Zeugnisse. In: O. Dally / M. Maischberger / P. Schneider / A. Scholl (eds), »ZeitRäume« – Milet in Kaiserzeit und Spätantike [exhibition catalogue Berlin] (Regensburg 2009) 18-23.
- Hirth 1978: K. G. Hirth, Interregional Trade and the Formation of Prehistoric Gateway Communities. *American Antiquity* 43/1, 1978, 35-45.
- Hodges/Saraçi/Bowden 1997: R. Hodges / G. Saraçi / W. Bowden, Late Antique and Byzantine Butrint: the port and its hinterland. *Journal of Roman Archaeology* 10, 1997, 207-234.
- Hohlfelder 2000: R. L. Hohlfelder, Anastasius I, Mud, and Foraminifera: Conflicting Views of Caesarea Maritima's Harbor in Late Antiquity. *Bulletin of the American Schools of Oriental Research* 317, 2000, 41-62.
- Hohlfelder/Vann 1998: R. L. Hohlfelder / R. L. Vann, Uncovering the Maritime Secrets of Aperlae, a Coastal Settlement of Ancient Lycia. *Near Eastern Archaeology* 61/1, 1998, 26-37.
- Horden/Purcell 2000: P. Horden / N. Purcell, *The Corrupting Sea* (Oxford 2000).
- Iacomi 2010: V. Iacomi, Some Notes on Late-Antique Oil and Wine Production in Rough Cilicia (Isauria) in the Light of Epigraphic Sources: Funerary Inscriptions from Korykos, LR 1 Amphorae Production in Elaiussa Sebaste and the Abydos Tariff. In: Ü. Aydinoglu / A. K. Şenol (eds), Olive Oil and Wine Production in Anatolia during Antiquity. *International Symposium Proceedings, 06-08 November 2008, Mersin, Turkey* (Istanbul 2010) 19-32.
- Ignatios Diakonos: Ignatios Diakonos und die Vita des H. Gregorios Dekapolites, ed. G. Makris, trans. M. Chronz. *Byzantisches Archiv* 17 (Stuttgart, Leipzig 1997).
- Jing/Rapp 2003: Z. Jing / G. R. Rapp, The coastal evolution of the Ambracian embayment and its relationship to archaeological settings. In: J. Wiseman / K. Zachos (eds), *Landscape Archaeology in Southern Epirus, Greece I. Hesperia Supplement 32* (Princeton, N.J. 2003) 157-198.
- Kalligas 2002: H. Kalligas, Monemvasia, Seventh-Fifteenth Century. In: A. Laiou (ed.), *The Economic History of Byzantium from the Seventh through the Fifteenth Century*. *Dumbarton Oaks Studies* 39 (Washington, D.C. 2002) Vol. 2, 879-897.
- Karageorghis 1969: V. Karageorghis, *Salamis in Cyprus. Homeric Hellenistic and Roman* (London 1969).
- Karagiorgou 2001: O. Karagiorgou, Demetrias and Thebes: the fortunes and misfortunes of two Thessalian port cities in late antiquity. *Journal of Roman Archaeology* 42, 2001, 182-215.
- Karpozilos 1993: A. Karpozilos, Ταξιδιωτικές περιγραφές και εντυπώσεις σε επιστολογραφικά κείμενα. In: N. G. Moschonas (ed.), *Η Επικοινωνία στο Βυζάντιο, Πρακτικά του Β' Διεθνούς Συμποσίου, Κέντρο Βυζαντινών Ερευνών/Ε.Ι.Ε.* (Athens 1993) 511-541.
- Kingsley 2001: S. Kingsley, »Decline« in the ports of Palestine in late antiquity. In: L. Lavan (ed.), *Recent Research in Late-Antique Urbanism. Journal of Roman Archaeology Supplementary Series* 42 (Portsmouth 2001) 69-88.
- Knoob/Pfarr/Grellert 2011: M. Knoob / M. Pfarr / M. Grellert, Ephesos – byzantinisches Erbe des Abendlandes. *Digitale Rekonstruktion und Simulation der Stadt Ephesos im 6. Jahrhundert*. In: F. Daim / S. Ladstätter (eds), *Ephesos in byzantinischer Zeit. Monographien des RGZM* 84, 2, 2 (Mainz 2011) 241-254.
- Koder 1993: J. Koder, Νησιωτική επικοινωνία στο Αιγαίο κατά το μεσαίωνα. In: N. G. Moschonas (ed.), *Η Επικοινωνία στο Βυζάντιο, Πρακτικά του Β' Διεθνούς Συμποσίου, Κέντρο Βυζαντινών Ερευνών/Ε.Ι.Ε.* (Athens 1993) 445-455.
- 2005: J. Koder, *Το Βυζάντιο ως χώρος. Εισαγωγή στην Ιστορική Γεωγραφία της Ανατολικής Μεσογείου στη Βυζαντινή Εποχή* (Thessaloniki 2005).
- Kokot 2008: W. Kokot, Port Cities as Areas of Transition. *Ethnographic Perspectives*. In: W. Kokot / M. Gandelsman-Trier / K. Wildner (eds), *Port Cities as Areas of Transition. Ethnographic Perspectives* (Bielefeld 2008) 7-23.
- Kourtzelis/Theodoulou 2014: G. Kourtzelis / Th. Theodoulou, Lesvos – Eressos. In: C. Memos et al. 2014; [www.limenscope.ntua.gr/show\\_port.cgi?lan=en&id=87](http://www.limenscope.ntua.gr/show_port.cgi?lan=en&id=87) (20.1.2015).
- Ladstätter 2011: S. Ladstätter, Ephesos in byzantinischer Zeit. Das letzte Kapitel der Geschichte einer antiken Stadt. Überblick. In: F. Daim / S. Ladstätter (eds), *Ephesos in byzantinischer Zeit. Monographien des RGZM* 84, 2, 2 (Mainz 2011) 3-29.
- Loverdou-Tsigarida 2006: K. Loverdou-Tsigarida, *Το Κάστρο του Πλαταμώνα* (Athens 2006).
- Loverdou-Tsigarida et al. 2001: K. Loverdou-Tsigarida / B. Xanthos / A. Tokmakidou / P. Photiades, Έρευνες στο Κάστρο του Πλαταμώνα. *Archaeologiko Ergo Makedonias Thraakis* 15, 2001, 401-414.
- Magdalino 2007: P. Magdalino, *Studies on the History and Topography of Byzantine Constantinople* (Aldershot 2007).
- Makris 2002: G. E. Makris, Ships. In: A. Laiou (ed.), *The Economic History of Byzantium from the Seventh through the Fifteenth Century*. *Dumbarton Oaks Studies* 39 (Washington, D.C. 2002) Vol. 1, 91-99.
- Malamut 1988: E. Malamut, *Les îles de l'Empire byzantin: VIII<sup>e</sup>-XII<sup>e</sup> siècles* (Paris 1988).
- McCormick 2013: M. McCormick, Movements and Markets in the First Millennium. Information, Containers, and Shipwrecks. In: C. Morrisson (ed.), *Trade and Markets in Byzantium. Dumbarton Oaks Byzantine Symposia and Colloquia* (Washington, D.C. 2013) 51-98.
- Memos et al. 2014: C. Memos et al. (eds), *The Limenscope Project of Ancient Hellenic Ports. School of Civil Engineering of the National Technical University of Athens and the Ephorate of Underwater Antiquities* (2014). [www.limenscope.ntua.gr/show\\_port.cgi?lan=en&id=36](http://www.limenscope.ntua.gr/show_port.cgi?lan=en&id=36) (20.1.2015).
- Morrisson/Sodini 2002: C. Morrisson / J.-P. Sodini, The Sixth-century Economy. In: A. Laiou (ed.), *The Economic History of Byzantium from the Seventh through the Fifteenth Century*. *Dumbarton Oaks Studies* 39 (Washington, D.C. 2002) 171-220.
- Müller-Wiener 1961: W. Müller-Wiener, *Mittelalterliche Befestigungen im südlichen Jonien. Istanbul Mitteilungen* 11, 1961, 89-112.
- Navis II: The NAVIS II Project Database, European Commission Directorate General Information, Communication, Culture, Audio-

- visual Culture and Audiovisual Policy (Brussels 2014). [www.rgzm.de/Navis2/Home/Frames.htm](http://www.rgzm.de/Navis2/Home/Frames.htm) (20.1.2015).
- Orvietani Busch 2001: S. Orvietani Busch, *Medieval Mediterranean Ports: The Catalan and Tuscan Coasts, 1100-1235*. The Medieval Mediterranean 32 (Leiden, Boston 2001).
- Papacostas 2001: T. Papacostas, *The Economy of Late Antique Cyprus*. In: S. Kingsley / M. Decker (eds), *Economy and Exchange in the Eastern Mediterranean during Late Antiquity* (Oxford 2001) 107-128.
- Pettegrew/Caraher/Scott Moore 2006: D. K. Pettegrew / W. Cara-her / R. Scott Moore, *Between City and Country: Settlement on the Fringe in Late Roman Cyprus*. Paper Presented on November 16, 2006 at the Annual Meeting of the American Schools of Oriental Research, Washington, D.C. (2006). [www.pkpa.org/publications/ASOR%202006.htm](http://www.pkpa.org/publications/ASOR%202006.htm) (20.1.2015).
- Pieri 2013: D. Pieri, *Regional and Interregional Exchanges in the Eastern Mediterranean during the Early Byzantine period. The Evidence of Amphorae*. In: C. Morrisson (ed.), *Trade and Markets in Byzantium*. *Dumbarton Oaks Byzantine Symposia and Colloquia* (Washington, D.C. 2013) 27-50.
- Pulak 2010: C. Pulak, *Yenikapi Byzantine Shipwrecks*. In: *Istanbul: 8000 Years Brought to Daylight, Marmaray, Metro, Sultanahmet Excavations* [exhibition catalogue] (Istanbul 2010) 202-215.
- Raban 1995: A. Raban, *The Heritage of Ancient Harbour Engineering in Cyprus and the Levant*. In: V. Karageorghis / D. Michaelides (eds), *Proceedings of the International Symposium »Cyprus and the Sea«*, Nicosia 25-26 September 1993 (Nicosia 1995) 162-163.
- Ragia 2009: E. Ragia, *Η κοιλάδα του κάτω Μαιάνδρου ca. 600-1300. Γεωγραφία και Ιστορία* (Thessalonike 2009).
- Rautman 2000: M. Rautman, *The Busy countryside of Late Roman Cyprus*. Report of the Department of Antiquities of Cyprus 2000, 317-331.
- 2004: M. Rautman, *Valley and Village in Late Roman Cyprus*. In: W. Bowden / L. Lavan / C. Machado (eds), *Recent Research on the Late Antique Countryside*. *Late Antique Archaeology 2* (Leiden, Boston 2004) 189-218.
- Rieth/Kahanov/Pomey 2012: E. Rieth / Y. Kahanov / P. Pomey, *Transition from Shell to Skeleton in Ancient Mediterranean Ship-Construction: analysis, problems, and future research*. *The International Journal of Nautical Archaeology* 41/2, 2012, 235-314.
- Rife et al. 2007: J. Rife / M. Morison / A. Barbet / R. K. Dunn / D. H. Ubelaker / F. Monier, *Life and death at a port in Roman Greece: The Kenchreai Cemetery Project 2002-2006*. *Hesperia* 76, 2007, 143-181.
- Schaus 1996: G. Schaus, *An Archaeological Field Survey at Eresos, Lesbos*. *Echos du Monde Classique/Classical Views* 15, 1996, 27-74.
- Theodoulou 2014a: Th. Theodoulou, *Anthedon*. In: C. Memos et al. 2014; [www.limnoscopes.ntua.gr/show\\_port.cgi?lan=en&id=60](http://www.limnoscopes.ntua.gr/show_port.cgi?lan=en&id=60) (20.1.2015).
- 2014b: Th. Theodoulou, *Corinth – Lechaeon*. In: C. Memos et al. 2014; [www.limnoscopes.ntua.gr/show\\_port.cgi?lan=en&id=60](http://www.limnoscopes.ntua.gr/show_port.cgi?lan=en&id=60) (20.1.2015).
- Tsigonaki 2009: Ch. Tsigonaki, *Ίτανος. Ιστορία και τοπογραφία μιας παράκτιας θέσης της ανατολικής Κρήτης κατά την πρωτοβυζαντινή περίοδο*. In: O. Gratziou / Ch. Loukos (eds), *Ψηφίδες, Μελέτες Ιστορίας, Αρχαιολογίας και Τέχνης στη μνήμη της Στέλλας Παπαδάκη-Oekland* (Herakleio 2009) 159-174.
- Tzavella 2013: E. Tzavella, *Urban and Rural Landscape in Attica in the Early and Middle Byzantine period (4<sup>th</sup>-12<sup>th</sup> c.)* [PhD thesis Univ. Birmingham 2013].
- Vann 1993: R. L. Vann, *A Survey of Harbors in Rough Cilicia: the 1991 Preliminary Survey*. *Araştırma Sonuçları Toplantısı* 10, 1993, 29-40.
- 1998: R. L. Vann, *Some Observations on Byzantine Harbors in Isauria*. *Zantijkskij Vremennik* 55, 1998, 78-85.
- Varinlioglu 2011: G. Varinlioglu, *Trades, Crafts and Agricultural Production in Town and Countryside in Southeastern Isauria*. In: O. Dally / C. Ratté (eds), *Archaeology and the cities of Asia Minor in Late Antiquity*. *Kelsey Museum Publication 6* (Ann Arbor 2011) 173-187.
- Vorderstrasse 2010: T. Vorderstrasse, *A Port without a Harbour: Reconstructing Medieval al-Mina*. In: J. G. Schryver (ed.), *Studies in the Archaeology of the Medieval Mediterranean. The Medieval Mediterranean 86* (Leiden, Boston 2010) 15-40.
- Veikou 2012: M. Veikou, *Byzantine Epirus: A topography of transformation. Settlements from the 7<sup>th</sup> to the 12<sup>th</sup> centuries* (Leiden, Boston 2012).
- 2013: M. Veikou, *Settlements in the Greek Countryside from the 4<sup>th</sup> to the 9<sup>th</sup> centuries: forms and patterns*. *Antiquité Tardive* 21, 2013, 125-133.
- Vroom 2012: J. Vroom, *From One Coast to Another: early medieval ceramics in the southern Adriatic region*. In: S. Gelichi / R. Hodges (eds), *Da un mare all'altro. Luoghi di scambio nell'Alto Medioevo Europeo e Mediterraneo/From One Sea to Another. Trade Centres in the European and Mediterranean Middle Ages* (Turnhout 2012) 353-392. 540-542.
- 2004: J. Vroom, *Late Antique Pottery, Settlement and Trade in the Eastern Mediterranean: a preliminary comparison of ceramics from Limyra (Lycia) and Boeotia*. In: W. Bowden / L. Lavan / C. Machado (eds), *Recent Research on the Late Antique Countryside*. *Late Antique Archaeology 2* (Leiden, Boston 2004) 281-331.
- Xanthopoulou 2004: M. Xanthopoulou, *Παλαιοχριστιανική κεραμική της αρχαίας Ίτανου*. In: M. Livadiotti / I. Simiakaki (eds), *Creta Romana e Protobizantina* (Atti del Convegno Internazionale, Iraklion, 23-30 settembre 2000, Scuola Archeologica Italiana di Atene) (Torino, Padova 2004) Vol. III/1, 1013-1028.

**Byzantinische Häfen im Mittelmeer im komplexen Zusammenspiel zwischen Umwelt und Gesellschaft. Räumliche, sozioökonomische und kulturelle Betrachtungen aufgrund archäologischer Befunden aus Griechenland, Zypern und Kleinasien**

In diesem Beitrag werden bestimmte Merkmale der archäologischen Stätten von byzantinischen Häfen im östlichen Mittelmeer diskutiert; diese Merkmale beleuchten Aspekte der Geschichte dieser Orte im komplexen Zusammenspiel zwischen Umwelt und Gesellschaft. Das Hauptziel ist es, zu definieren, wie bestimmte physische und soziale Charakteristika dieser Seiten ihre Position in Netzwerken zu Lande und zu Wasser bestimmten bzw. wie diese von dieser Position beeinflusst wurden. Ebenso werden drei disziplinenübergreifende Faktoren berücksichtigt, nicht nur aufgrund ihrer Wechselbeziehung mit der Entwicklung der Häfen, sondern als wesentliche Gestalter ihrer Geschichte: Geomorphologie, Geographie und Humangeographie. Zwei theoretische Fragenkomplexe bilden den Hintergrund zu dieser Studie: 1. die Rolle dieser Standorte als byzantinische »Gateway-Gemeinschaften« für soziale Kontakte und interkulturellen Austausch und 2. die physischen, wirtschaftlichen, politischen und kulturellen Bedingungen, die sich zu den analytischen Kategorien für mittelalterliche Häfen im Mittelmeerraum gesellen.

**Mediterranean Byzantine Ports and Harbours in the Complex Interplay between Environment and Society. Spatial, Socio-Economic and Cultural Considerations Based on Archaeological Evidence from Greece, Cyprus and Asia Minor**

In this paper, certain features of archaeological sites of Byzantine ports and harbours in the Eastern Mediterranean are discussed; these features reveal aspects of the sites' history within the complex interplay between environment and society. The main aim is to define how specific physical and social features of these sites determined – and emerged from – their role in land and maritime networks. Similarly, three multidisciplinary factors will be considered, not just for their interrelatedness in the development of ports and harbours but also as fundamental shapers of their history: geomorphology, geography, and human geography. Two theoretical issues form the backdrop to this study: 1. the sites' performance as Byzantine »gateway communities« of social contacts and cross-cultural exchanges and 2. the physical, economic, political and cultural conditions which add up to the analytical categories of medieval Mediterranean port and harbour.

**Ports byzantins méditerranéens et ports dans la relation complexe entre l'environnement et la société. Considérations spatiales, socio-économiques et culturelles à partir du témoignage archéologique venant de Grèce, de Chypre et d'Asie Mineure**

Dans cette étude, une considération de certains traits des sites archéologiques des ports et des havres byzantins de la Méditerranée Orientale est proposée. Ces traits révèlent des aspects de l'histoire des sites dans une interaction complexe entre l'environnement et la société. Le but central de cette étude est de définir les modes avec lesquelles des traits spécifiques naturelles et sociales de ces sites sont déterminées – et en même temps sont émergées – du rôle qu'ils ont joué dans les réseaux terrestres et maritimes de l'époque. Dans cette direction, on propose trois facteurs multidisciplinaires comme des interliaisons pour le développement des ports et des havres et en même temps comme conditions fondamentales pour la formation de leur histoire: géomorphologie, géographie et géographie humaine. Dans ce contexte, deux théories sont traitées: 1. la fonction des sites comme des »gateway communities« Byzantines des contacts sociaux et interculturels et 2. les conditions physiques, économiques, politiques et culturelles qui s'ajoutent pour former les catégories analytiques du port et de l'havre médiéval de la Méditerranée.