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at the Department of Archaeology and Ancient  
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*Abstract*

Kerstin Höghammar, Brita Alroth & Adam Lindhagen (eds.)

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This volume contains 11 articles from an international conference on ancient ports in the Greek and Roman world from the Classical period to Late Antiquity.

The Graeco-Roman civilization was, to a large extent, built on a constant flow of people, goods and ideas between various parts of the Mediterranean. This volume treats the function, character and connectivity of ports in the Greek and Roman Mediterranean. The following topics are discussed: the role of river and sea ports locally, regionally and Mediterranean-wide; the freighting on rivers; the infrastructure of large harbours; the role of the hinterland; sea-routes; connectivity and the social character of harbour cities through time.

*Key words:* ports, harbours, harbour network, sea-routes, fluvio-maritime vessels, hinterland, connectivity, transshipment points, port infrastructure, trade, proxeny network, shipsheds, Portus, Ostia, Rome, Naxos (Sicily), Ravenna, Naron, Pestiros, Kos, Halasarna, the Corinthian Gulf, Achaia, Arcadia, the Aegean

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# The Geography of Connections: A Harbour Network in the Aegean Sea During the Roman Imperial Period?

by

Catherine Bouras

## *Abstract*

Considering the Aegean Sea as a sub-region of the Mediterranean during the Roman Imperial period—the period of *pax romana*—the question this paper attempts to answer is: can one identify a clear network of harbours during that period? In order to do that, one needs to define the Aegean Sea as a region or as a sub-region of *Mare Nostrum* in Antiquity. Did ancient writers consider the Aegean as a whole or was the space rather fragmented? What of archaeological evidence? Whereas ancient descriptions of the space e.g. by Strabo or Pausanias seem to agree to a fragmentation of the space according to groups of islands, the study of the archaeological remains, along with epigraphical evidence, geographical description and ancient sea routes reveals a different picture. It points at a hierarchy of harbours that functions according to the size and the extent of harbour and commercial facilities within one or more types of communication networks in the Aegean and in the Eastern Mediterranean.\*

The last battles of the civil war between Antony and Octavian in the second half of the 1st century BC were followed by a period of peace and prosperity in the Mediterranean—the *Pax Romana*—and the seas were then considered secure for navigation. This political situation allowed for the economic growth of cities across the whole of the Mediterranean, and in particular it facilitated communication and the development of networks and seaborne trade. The aim of this paper is to question whether one can identify a sub-regional harbour network in the Mediterranean, particularly in the Aegean Sea. In this article, therefore, we will consider the Aegean as a region in itself. We will attempt to define the area of the Aegean Sea, and determine whether it can indeed be considered one united space or whether its geographical configuration tends to divide it into sub-regions. An overview of the archaeological evidence for harbours in this predefined space points to the differences in the hierarchy of harbour facilities, thus suggesting a fragmentation of the region under study. It will be put forward here that confronting these physical remains with the evidence from ancient geographers and nautical information actually suggests that reported routes do not seem to match the network inferred by physical ancient realities.

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\* Many thanks to David Blackman for reading my draft and for his valuable and encouraging comments.

## 1. A geographical context: the Aegean, one united space?

From a strictly geographical point of view, the Aegean region can be defined as the maritime embayment in the Eastern Mediterranean between the Southern Balkan and Anatolian peninsulas of modern Greece and Turkey, and Crete to the south. It is connected with the Black Sea to the north through the Sea of Marmara, the ancient Propontis. The maritime region of the Aegean is itself divided into smaller maritime units, which are defined by continent and by groups of islands.

In the Roman Imperial period, the Aegean Sea belonged to a wider region, the Mediterranean Sea or *mare nostrum*, which was controlled by Rome. It could therefore have been considered as a sub-region of the Mediterranean which was surrounded by several established Roman provinces: Achaia to the west, Macedonia to the north with the coast and the northern islands of Thasos and Samothrace, Asia to the east with the Asia Minor coast, and Crete–Cyrenaica to the south. Islands that were off the coast usually belonged to the closest province and the central islands of the Aegean, like the Cyclades, belong to the Province of Asia, as well as the islands off the coast of Asia Minor (cf. *Fig. 1*).

In the writings of ancient geographers, though, the term “Aegean” does not seem to apply to the whole space, and they describe the space as being fragmented into smaller regions. In his second book, Strabo describes the Aegean and the surrounding seas as maritime spaces that define mainland Greece:<sup>1</sup>

Next to the Sea of Sicily, are the Cretan, Saronic, and Myrtoan Seas, comprised between Crete, Argia, and Attica. Their greatest breadth, measured from Attica, is 1200 stadia, and their length not quite double the distance. Within are included the Islands of Cythera, Calauria, Ægina, Salamis, and certain of the Cyclades. Adjacent to these are the Ægæan Sea, the Gulf of Melas, the Hellespont, the Icarian and Carpathian Seas, as far as Rhodes, Crete, Cnidus, and the commencement of Asia. [In these seas]<sup>2</sup> are the Cyclades, the Sporades, and the islands opposite Caria, Ionia, and Æolia, as far as the Troad, namely, Kos, Samos, Chios, Lesbos, and Tenedos; likewise on the Grecian side as far as Macedonia and the borders of Thrace, Eubœa, Scyros, Peparethus, Lemnos, Thasos, Imbros, Samothracia, and numerous others, of which it is our intention to speak in detail. The length of this sea is about 4000 stadia, or rather more, its breadth about 2000. It is surrounded by the coast of Asia above mentioned and by those of Greece from Sunium northwards to the Thermaic Gulf and the Gulfs of Macedonia, and as far as the Thracian Chersonesus.

In Strabo’s words, the Aegean Sea was only the maritime space that stretched north of the Cyclades—the space to the south and as far as Crete was fragmented into smaller seas defined by groups of Islands, which had

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<sup>1</sup> Strabo, *Geography* 2.5.21 (eds. H.C. Hamilton & W. Falconer, 1956).

<sup>2</sup> The restoration is plausible, although not certain, because the passage in the Greek text is corrupt.

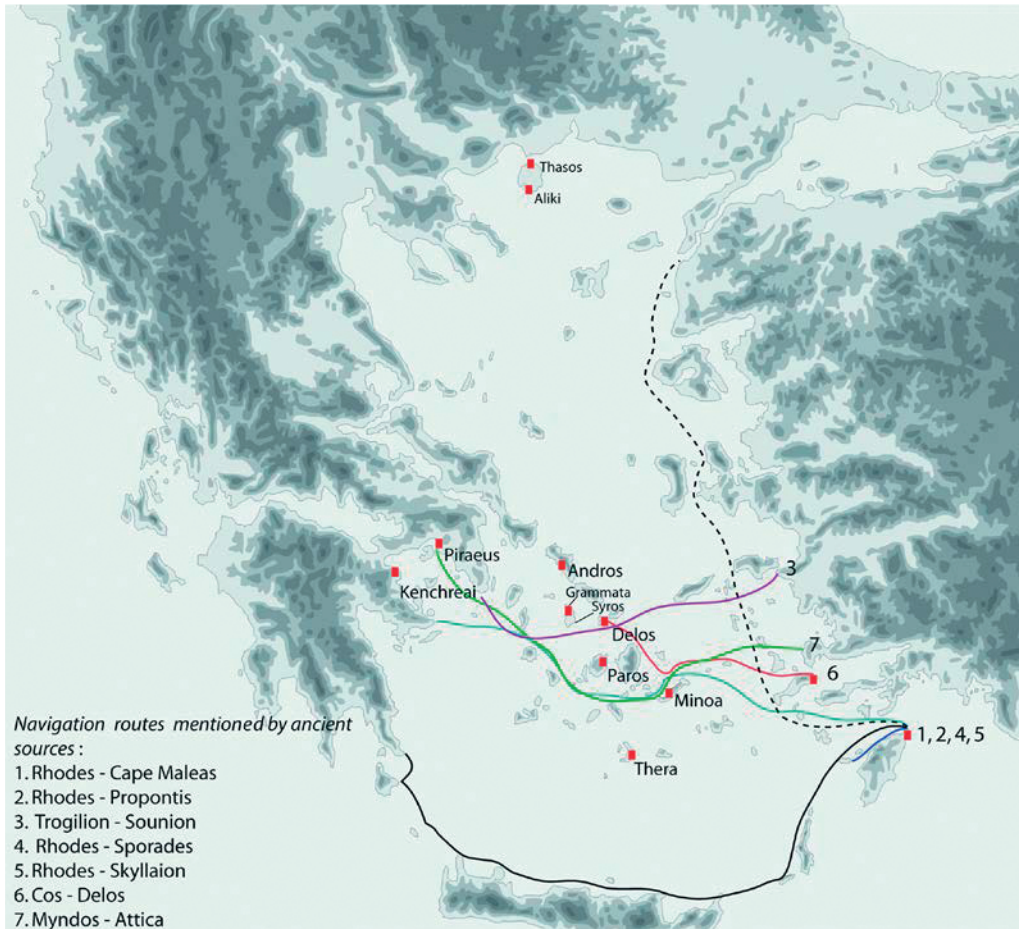


Fig. 1. Map of the Aegean, illustrating navigation routes from ancient geographers' descriptions.

different climatic and seafaring conditions according to their position (bay, strait, open sea etc.). Therefore, one could say that the region that *we* define as the Aegean comprises several sub-regions defined by sea boundaries and groups of islands. Since the ancient geographer's definition of the Aegean does not seem to offer clear boundaries, how can this area, as a maritime stretch which is bound to be crossed,<sup>3</sup> especially one dominated by its islands, be defined otherwise? The geographical description of the boundaries of the maritime space is not enough to define the Aegean region and, as G. Reger has discussed, there is indeed more than one way to define a region. There are several criteria that can be taken into account: geography, economy and polity are the main ones.<sup>4</sup> The Aegean islands have always played the role of a bridge or a stepping stone between the Greek mainland

<sup>3</sup> Constantakopoulou 2007, 20: although she has reexamined all the *topoi* linked to the islands (isolation, poverty etc.), the author has argued that islands are a binding and uniting element rather than a separating one and defines islands as gateways, as do Horden & Purcell 2000, 393.

<sup>4</sup> See Reger 2007, 65–74; 2011, 368–389, in which he reviews some criteria that can be taken into account in order to define a region and discusses distinctions between a geographically defined region and an economically defined one. I am grateful to him for providing me with unpublished copies of some of his most recent papers.

and Asia Minor, and although the islands are less prominent in the sources of the Roman Imperial period, they were still profiting at that time from their central position in the Aegean, and their development is well documented by archaeological remains and epigraphy.<sup>5</sup>

Before examining the archaeological evidence, other literary works with a geographical content, besides Strabo's chorographic description of the Aegean region, draw our attention: the sections concerning the Aegean Sea in Pseudo-Skylax' *Periplous* (4th century BC)<sup>6</sup> and in the *Stadiasmus Maris Magni*, which was anonymously put together in the middle of the 2nd century AD.<sup>7</sup> Both are of different genres and they both provide navigational information regarding routes and harbours with summary descriptions informing the reader about the type of harbour and the architectural equipment available to ships and their crews.<sup>8</sup> The *Periplous* provides information for the whole Mediterranean: on the number of harbour basins—whether they are of the “closed” type, the *limen kleistos*, or a simple anchorage or mooring-point. The *Stadiasmus Maris Magni*, however, lists the harbours of the Mediterranean and their distance in stadia from main harbours or landmarks (i.e. capes)—hence its title. The work is divided into several regional sections, of which the Aegean forms only a very small part: its two main harbours were Rhodes, which was connected to a long list of harbours of the Eastern Mediterranean between Alexandria and Cyprus, and Delos, which was connected to a number of Aegean harbours. It is interesting to note that neither Ephesus nor Kenchreai (the Eastern *epineion* of Corinth), both capitals of the Provinces of Asia and of Achaia respectively, are mentioned.

In the last few decades, historians have studied the historical geography of a united Aegean Sea under different influences, e.g. the Athenian Empire or Byzantium. Some have studied the society of the Cycladic islands in the Classical and Hellenistic periods through the study of written and archaeological evidence<sup>9</sup>; some, more recently, have studied the concepts of networks and connectivity between the islands, as applied to religious or economic networks.<sup>10</sup> Others have focused on the epigraphical evidence of the same geographical area in the Early Christian period,<sup>11</sup> or on the Byzantine thalassocracy.<sup>12</sup> In reality, the extent of political influence over maritime space varies through time, and the area which formed a region during one period may well be very different in another period. The area that we have defined as the Aegean in a wider sense encompassed sub-regions or micro-regions that had interconnections during the Roman period, but may have

<sup>5</sup> Nigdelis 1990. And recently, Raptopoulos 2010.

<sup>6</sup> See Pseudo-Skylax's *Periplous* (Shipley 2011).

<sup>7</sup> For *Stadiasmus Maris Magni*, see *GGM*. On the date of the text, see Arnaud 2005, 235–236.

<sup>8</sup> G. Shipley (2011) has now established that Pseudo-Skylax's text is not a seafarer's guide as had been assumed up to now. Navigational details are only provided for some of the area described, and some difficulties and dangers are not mentioned. Although it seems that the aim of the author was not to provide geographical information, it is difficult to ignore it and one wonders how accurate the information concerning routes is.

<sup>9</sup> Brun 1996.

<sup>10</sup> Horden & Purcell 2000; Constantakopoulou 2007; Malkin, Constantakopoulou, Panagopoulou 2009.

<sup>11</sup> Kiourtzian 2000.

<sup>12</sup> Ahrweiler 1966; Malamut 1988; Koder 1998.



belonged to separate regions and to very different network systems. It therefore appears that in Antiquity the Aegean region was rather fragmented, each sub-region being mainly defined by coastal boundaries and by groups of islands.<sup>13</sup>

## 2. Archaeological evidence: the harbour remains

The study of the archaeological evidence for harbours—their layout and architecture—can give us some indication of the importance of the movements of goods and people, and of the exchanges with the urban centre. Nevertheless, due to the location of harbour sites and their relationship with a changing landscape,<sup>14</sup> as well as the material difficulty of conducting research, these sites are very often insufficiently excavated; thus we have only an incomplete image of ancient realities.

The archaeological evidence and *testimonia* that provide some information about the development of certain sites of the Aegean region allow us to understand to some extent the role of these harbours within their restricted region, the Aegean, and within the Mediterranean. It appears that no new major harbour was built in the Aegean region in the Roman period: harbours were built in previous periods and simply developed according to the political and economic situation of the cities to which they were linked. There are however at least two exceptions: Kenchreai, the eastern harbour of Corinth, which was rebuilt in the 1st century BC,<sup>15</sup> and the harbour of Alexandria Troas, which was intended to facilitate the exportation of marble coming from the imperial quarries of the Troas hinterland towards Rome.<sup>16</sup>

The main feature that emerges from the study of these sites, which is more obvious in relation to the harbour cities of the Eastern Aegean, is that during the Roman period, the military function tends to disappear from most harbours, whereas commercial installations and monumental constructions develop. The public space lying behind the harbour basin, where installations were built according to the needs of the commercial activities, did not develop according to a uniform pattern in all harbours. Some harbours, like those of Piraeus or Delos, which are two examples of cities of different scales and thus cities which developed to very different degrees in the Roman period, had *emporía*. These *emporía* were well-defined and regulated commercial spaces with specific architectural equipment: a series of *stoai* in the harbour of Cantharos in Piraeus,<sup>17</sup> and several complex commercial buildings along the built quay in Delos, south of the main harbour.<sup>18</sup> Eventually, in harbour cities, the harbour space itself developed into a well-

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<sup>13</sup> For references on the definition of the Aegean Sea and islands in ancient geography, see Counillon 2001, 11–23; and in ancient literature, Doukellis 2001, 49–60 and Ceccarelli 2012, 25–49.

<sup>14</sup> Marriner & Morhange 2007, 137–194; see also Fouache *et al.* 2005, 37–43 and Blackman 2005, 61–70.

<sup>15</sup> Kenchreai I.

<sup>16</sup> Feuser 2009.

<sup>17</sup> Garland 1987; Eickstedt 1991; Steinhauer 2001.

<sup>18</sup> Duchêne & Fraisse 2001; Karvonis 2010, 153–219.

defined and important public space for the city; such was the case on Kos and Rhodes, in Ephesus, and also in Chalcis and Thasos.<sup>19</sup> In more modest harbour spaces, where *emporía* with their particular architectural features were not present, the architectural equipment was reduced to what was necessary in order to provide for the city and not for trade.

### Towards a hierarchy of harbours

The harbours that were larger and better equipped in the Aegean are the harbours that played a key role in exchanges within the Aegean and in exchanges between the Aegean and cities of other regions of the Mediterranean. They were the crossroads for maritime commerce from the Eastern Mediterranean to Rome, and from the Eastern Mediterranean to the Aegean, or simply stepping stones within the Aegean, for an east–west or south/east–west crossing. Through several examples we will try to see what architectural development and infrastructures tell us about the role of harbours in the Aegean in the Roman period and their evolution from the Classical and Hellenistic “closed” type (λιμὴν κλειστός) to the more open form of harbour with a commercial function.

In **Rhodes** the rescue excavations and research carried out by I. Kontis, I. Papachristodoulou, and more recently by D. Blackman and by M. Filimonos-Tsopotou, have brought to light parts of the layout of the ancient city of Rhodes and its five harbours (*Fig. 2*), which were celebrated by Aelius Aristidis, among many others.<sup>20</sup> He says in his Rhodian Speech, “There are so many harbours advancing towards the high sea with stone-built jetties, the ones receiving people from Ionia, the others people from Caria, others receiving people from Egypt, Cyprus, Phoenicia”;<sup>21</sup> he also mentions the shipsheds as an instrument of sea power. As an important Hellenistic naval power, the city harboured a number of warships in its closed harbour in the north-east basin, nowadays known as Mandraki (*Fig. 2.2*). The other four basins, one to the north-west, and three south of the military harbour, were dedicated to commercial activities. The commercial role of the west basin and of the Great Harbour, which was immediately south of the military harbour, is illustrated by long hypostyle buildings that have been interpreted as storage facilities in the west basin (*Fig. 2.1a*),<sup>22</sup> and a long, wide jetty and quay, the *choma*, which protected the basin of the Great Harbour to the east, where merchant ships could dock (*Fig. 2.3a*).<sup>23</sup> Judging by the extension of the city towards the north, it appears that the west harbour, which was used by Demetrius to protect his fleet at the end of the 4th century,<sup>24</sup> was no longer in use after the middle of the 3rd century BC. On the east side, we know very little about the south-east basin and the Akantia basin (*Fig. 2.4*

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<sup>19</sup> Bouras 2012a, 141–150.

<sup>20</sup> Kontis 1954; Papachristodoulou 1994; Blackman, Knoblauch & Yiannikouri 1996, 371–426 and Blackman 1999, 41–50; Filimonos-Tsopotou 2004.

<sup>21</sup> Aelius Aristides 25.3–4 (Rhodian Speech).

<sup>22</sup> Filimonos-Tsopotou 2004, 58.

<sup>23</sup> On recent excavations of the mole of the Great harbour, see Platon & Stalidis 2012, 391–393.

<sup>24</sup> Filimonos-Tsopotou 2004, 55 (with references).

and 5): several remains have been brought to light, such as pillar bases and *stelai*, which are apparently related to a religious space.<sup>25</sup> The military harbour, however, has been excavated in several places and its evolution is rather interesting. On its west shore (*Fig. 2.2a*), a rescue excavation has brought to light a series of long buildings with four rows of pillar bases running down the middle; in their first construction phase they functioned as

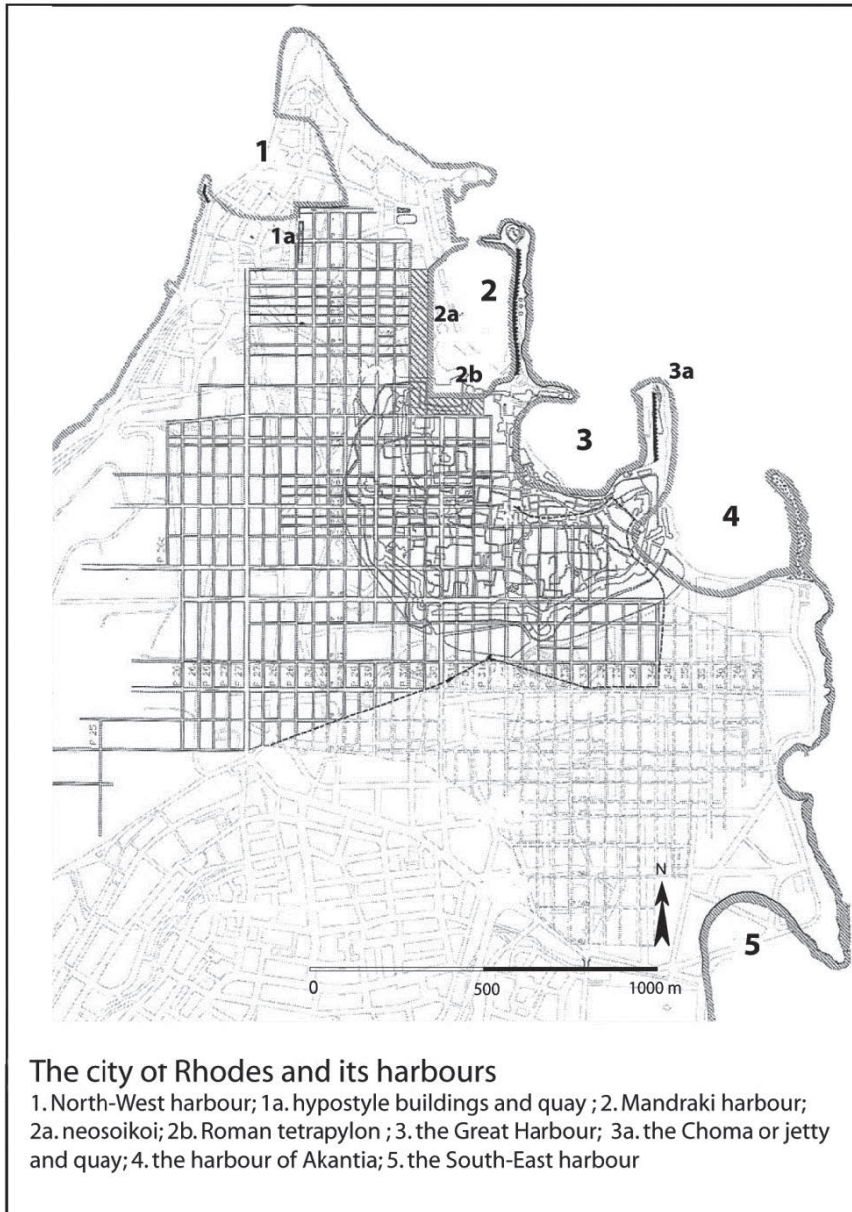


Fig. 2. The harbours of Rhodes (adapted from Filimonos-Tsopotou 2004, p. 35).

<sup>25</sup> Dreliosi 1996, 447–448.

shipsheds, and were reused as commercial facilities in a later period.<sup>26</sup> On the south shore, several phases of shipsheds for different types of ships have been discovered under the remains of the great tetrapylon built in the 2nd century AD at the intersection of the two main streets of the Roman city (*Fig. 2.2b*), after the military installations had been abandoned and destroyed.<sup>27</sup> The construction of the tetrapylon indicates that the military harbour changed function and became not only a commercial harbour, but also a monumental space with a gate leading from the seafront to the city itself.

The harbour of **Kos** is a closed harbour protected by a piece of land to its south-east. It is also a closed harbour in the sense that it is protected by the city-walls and the harbour can be closed by a chain on the north side in order to keep warships safe (*Fig. 3*). The warships of Classical and Hellenistic Kos were housed in shipsheds, two of which have been discovered by a rescue excavation near the centre of the shoreline,<sup>28</sup> which, in Antiquity, was located some distance further to the west than it is today. In the Roman period, these buildings were reused and transformed into commercial facilities.<sup>29</sup> The harbour also had porticoes on the east and west sides, though published reports do not specify their use (storage perhaps), and a monumental sanc-

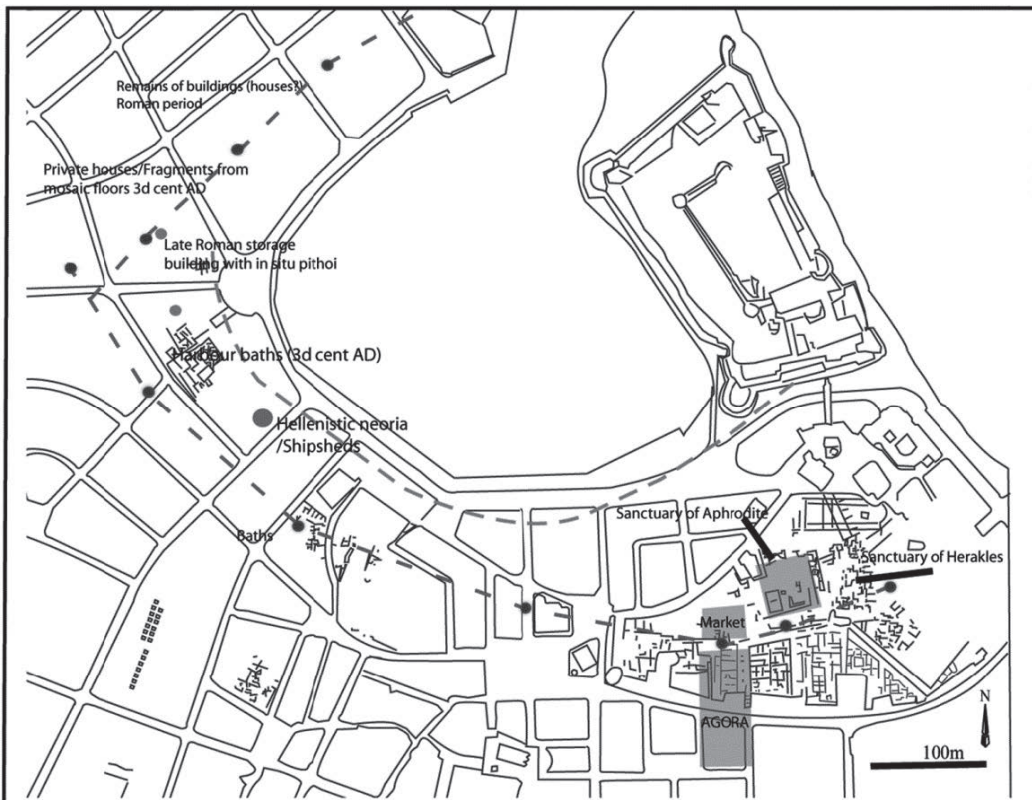


Fig. 3. The harbour of Kos (adapted from Brouskari 2004, fig. 4).

<sup>26</sup> Tsouvala plot, *ArchDelt* 19, 1964 (pr. 1967), *Chronika* B3, 463; see Blackman, Knoblauch & Yannikouri 1996, 371–426.

<sup>27</sup> Cante 1991, 175–266; Blackman, Knoblauch & Yannikouri 1996, 371–426; Filimonos-Tspotou 2004; Livadiotti 1996a, 26–31.

<sup>28</sup> Blackman 2004, 77–82.

<sup>29</sup> Brouskari 2004, 63–75.

tuary dedicated to Aphrodite Pandemos and Pontia.<sup>30</sup> The agora, with its political and commercial activities, was located just behind the harbour with a monumental gate leading to it from the harbour.<sup>31</sup>

The north harbour of **Miletus**, in Lion Bay, was the city's commercial harbour (Fig. 4). Its commercial facilities were most impressive on the harbour front and inside the city: the portico on the south-west corner of the harbour occupied the whole area behind an open circulation space behind the

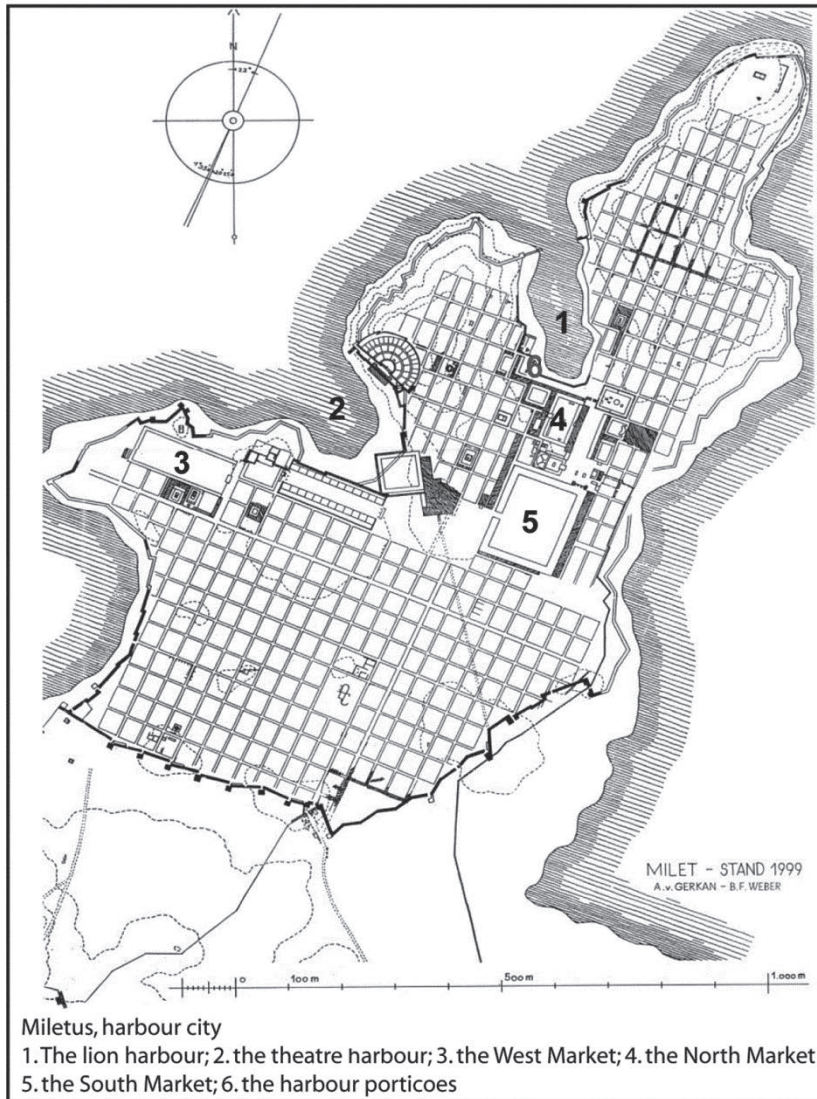


Fig. 4. The north harbour of Miletus (adapted from *Milet II:3*, Taf. 1; <http://www.ruhr-uni-bochum.de/milet/in/stadtplan/htm>).

<sup>30</sup> Livadiotti 1996b, 112–116; Rocco 2010, 599–612; Bouras, forthcoming.

<sup>31</sup> Livadiotti 1996b, 112–116 (with previous bibliography); for a reconstruction of the different construction phases of the sanctuary, see Rocco 2004, 175–194; and more recently Rocco 2010, 599–612.

basin. Beyond the gate between the portico and the Delphinion, the northern market was built on the west of the main street, which led to the other great markets of Miletus.<sup>32</sup>

The harbour of **Ephesus** on the other hand was, in the Roman Imperial period, the monumental gateway from the sea to the city: the waterfront was equipped with a quay which was built of marble and had a paved marble surface (*Fig. 5*). Three marble gates provided access to the main streets, leading to the city centre and to its commercial facilities (*Fig. 5.3, 4 and 5*).<sup>33</sup> According to Louis Robert, one of these, the South Gate, may have been used as a sculptor's workshop according to an inscription, suggesting that these monumental gates were not only passageways and that commerce could have been present along the harbour.<sup>34</sup> However, the storage of heavy loads, particularly wood and stone, before they were loaded onto merchant ships, took place in a specific area of the waterfront where the quay does not seem to have been as carefully built.<sup>35</sup> The harbours of Miletus and Ephesus are situated on alluvial floodplains that have changed substantially over time: the shoreline has progressively shifted towards the west, putting the harbour basins in a difficult survival position and obliging the cities to find solutions.<sup>36</sup> In the Roman period though, *euergetai* and members of rich families financed a greater part of the constructions, especially in Ephesus, and thus the harbour space was turned into another public space and a space where their actions could be admired by visitors.<sup>37</sup>

**Piraeus** was founded by Themistocles in the early 5th century BC as Athens' *epineion* and link with the islands of the Aegean. The harbour city of Piraeus was designed with three harbours, all of which housed military equipment (warships in shipsheds, *naupegia*, storage and other equipment; *Fig. 6*).<sup>38</sup> The Great Harbour, also known as the Kantharos, did not only have military installations, it was also lined by five porticoes belonging to Piraeus' *emporion*, used for the commerce and storage of products such as wheat, as attested by specific names for these buildings (the *Makra Stoa*, the *Deigma*, for the building where products were sampled, the *Alphitopolis*, where grain was exchanged, etc.).<sup>39</sup> According to epigraphical sources,<sup>40</sup> these buildings were still standing in the Roman period, and after Sulla's destruction of the town. Pausanias, in the middle of the 2nd century AD, also witnessed the continuing existence of the shipsheds of Zea,<sup>41</sup> of the *skeuotheke*, and of the two *agorai* that the city had—one for the citizens and the

<sup>32</sup> *Milet* I:6; Greaves 2002.

<sup>33</sup> Scherrer 1995 (with previous bibliography).

<sup>34</sup> *IvE* VII:1, 3216, ll. 3–4, discussed by Robert 1977, 95, n. 30.

<sup>35</sup> For the excavations in the harbour, see Langmann 1988, 9; 1989, 8; 1990, 31; also discussed in Bouras 2009, 495–508, where the problem of the storage of heavy loads on the fragile and unstable banks of the Ephesian canal is discussed.

<sup>36</sup> Kraft *et al.* 2000, 175–230; 2007, 121–150.

<sup>37</sup> Kraft *et al.* 2000, 175–230; Bouras 2008, 107–122.

<sup>38</sup> On the military facilities of Piraeus during the 5th and 4th centuries BC, see Lovén 2011.

<sup>39</sup> On the topography of Piraeus, Garland 1987; Eickstedt 1991; Steinhauer 2001 and most recently, Lovén 2011.

<sup>40</sup> *IG* II<sup>2</sup>, 1035; 1103.

<sup>41</sup> Of which, according to David Blackman, some must have been rebuilt in the Roman period. Indeed, M. Petritaki reports on recent excavation on Akti Koumoundourou (Mounychia basin), where the continuous occupation from the 4th century BC to the Roman period (probably

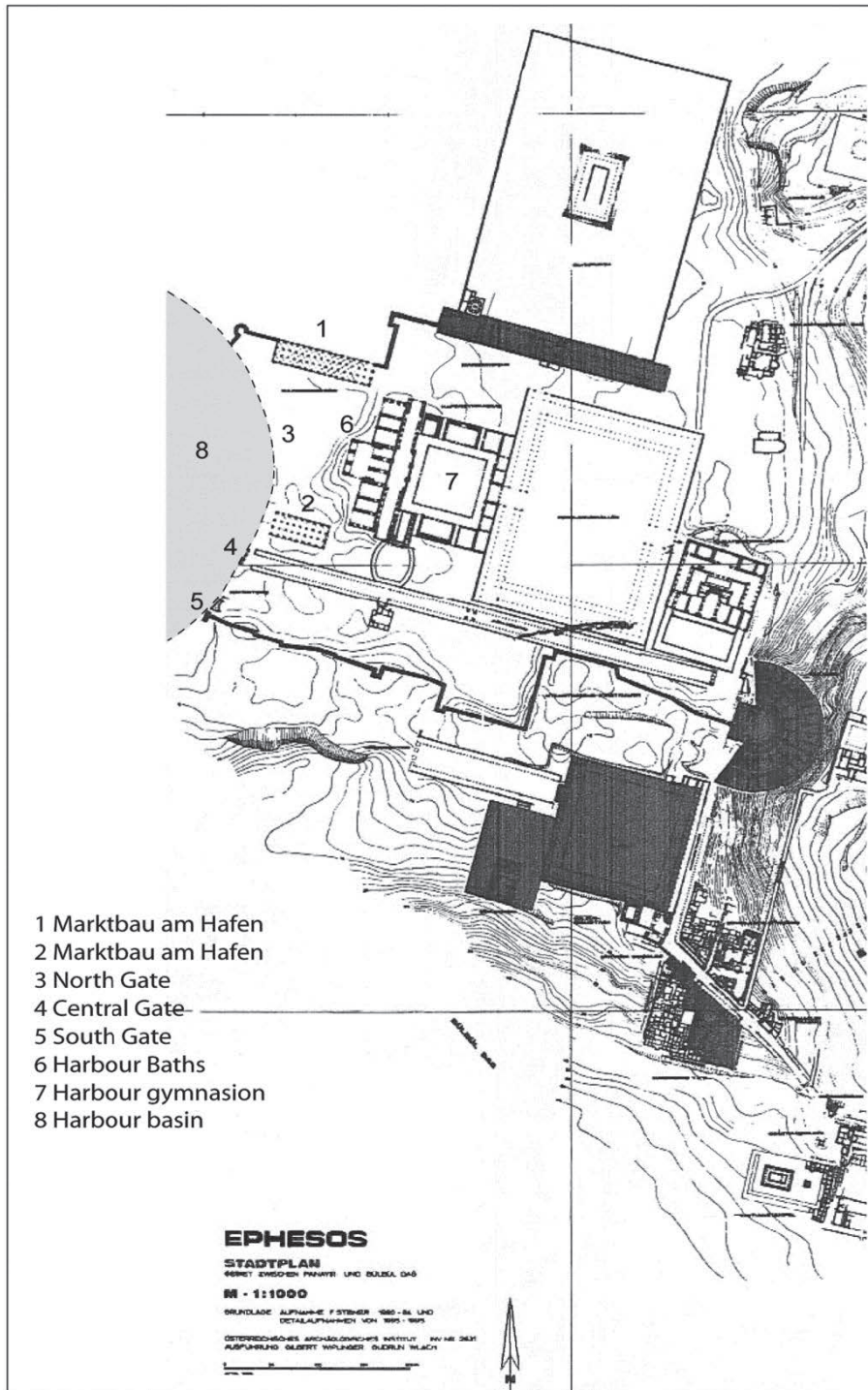


Fig. 5. The harbour of Ephesus (adapted from Wiplinger & Wlach 1996).

with a rebuilding phase after Sulla's destruction in the 1st century BC) of three shipsheds and part of one has been recovered, cf. Petritaki 2012, 443–445.

other for the merchants.<sup>42</sup> More recently, rescue excavations have brought to light part of the commercial neighbourhood close to the *Deigma*—evidence that the commercial character of Athens' outport was still alive in the Roman and Late Roman period.<sup>43</sup>

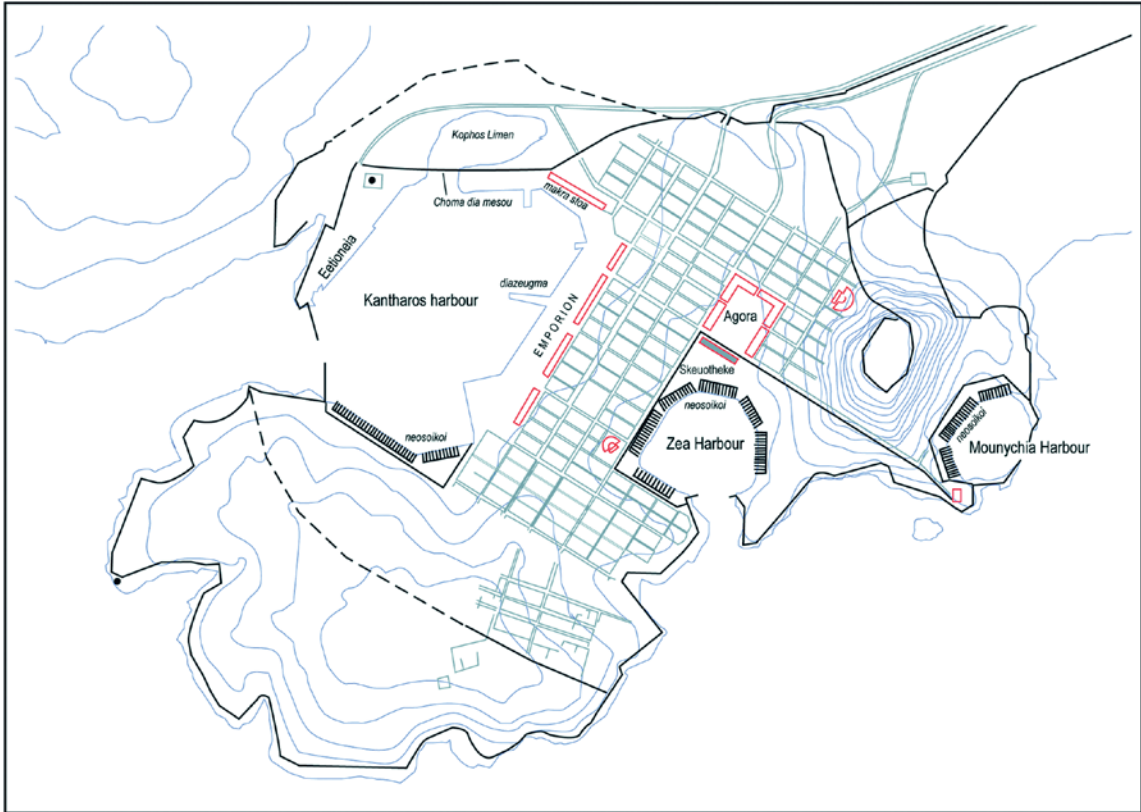


Fig. 6. The harbours of Piraeus (adapted from Hoepfner & Schwandner 1994, Abb. 14).

The east *epineion* of Corinth, **Kenchreai**, is the most impressive in terms of harbour construction, in the Aegean (Fig. 7). It was rebuilt in the 1st century BC, after Corinth was refounded by the Romans and served as the city's *epineion* towards the east, since Lechaion was its western *epineion* on the Corinthian gulf. Kenchreai was built as a commercial harbour in a naturally protected bay. Two projecting points of land were extended by the construction of piers and quay surfaces, thus offering further protection. The south-east pier and mole were equipped with a series of buildings with three rows of small rooms that were probably used for storage and as shops—this is perhaps the only known example of such warehouses alongside a harbour in Greece. A complex *piscinae* structure, which included a paved area and six interconnecting basins at the end of the jetty, was added after remodeling the very last rooms of the warehouse.<sup>44</sup> Some blocks of the buildings were transformed into a religious building at a later date. Another long waterfront

<sup>42</sup> Pausanias 1.1.3.

<sup>43</sup> Tsaravopoulos & Grigoropoulos 2012, 277–298.

<sup>44</sup> *Kenchreai* I, 25–35.



building with rows of rooms was built along the north quay, whereas the remains on the north-west quay could not be identified. The excavation of the building at the back of the waterfront has also brought to light several construction phases of a religious building.<sup>45</sup>

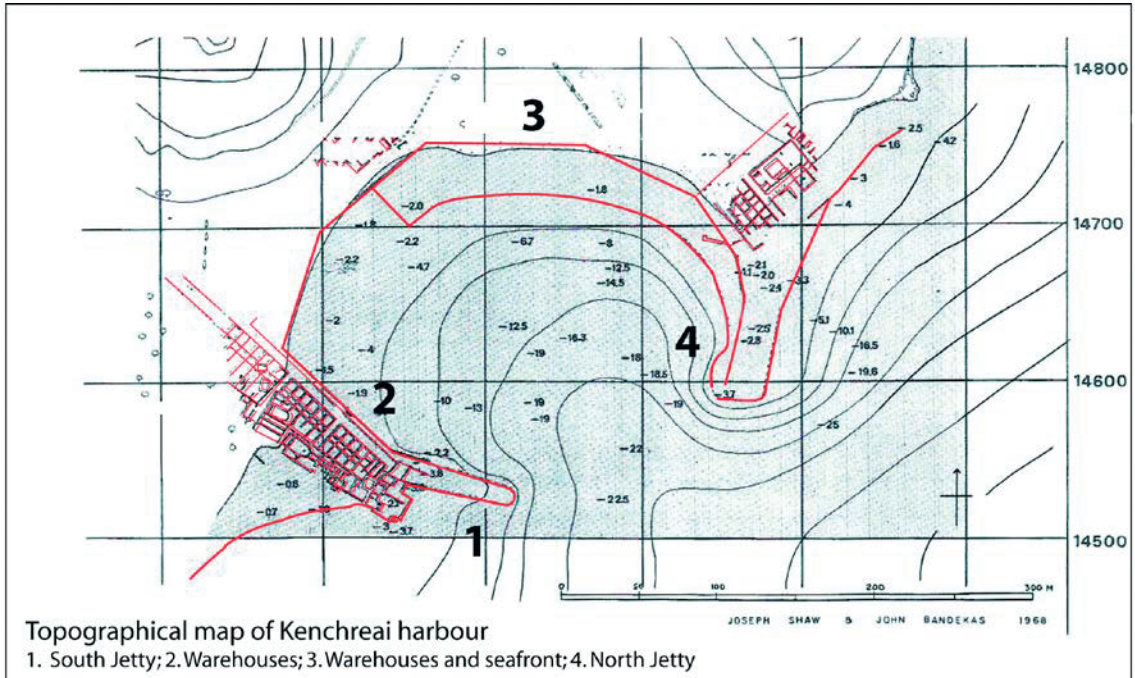


Fig. 7. The harbour front of Kenchreai (adapted from *Kenchreai I*, fig. 4).

Harbour installations and commercial architectural equipment are not as obviously present in the harbours of the Cycladic islands as in the harbours mentioned above, but they nevertheless attest to inter-regional connections and commerce. The harbour of Palaiopolis on Andros is protected by an important stone-paved jetty, forming a closed harbour. The agora of the city, which has been under excavation for the past few years, is located fairly close behind the harbour basin.<sup>46</sup> Paros has important resources in its hinterland, among them the very fine white marble that was exported to Rome.<sup>47</sup> Underwater surveys have been carried out in the bay of Paroikia and several structures have been discovered. These have been identified as jetties.<sup>48</sup> Unidentified carvings on the beach have been observed in different areas around the island, namely in Kambos and in Naoussa.<sup>49</sup> The ancient harbour space of Paroikia has not yet been discovered, although rescue excavations in the modern harbour have brought to light several marble blocks.<sup>50</sup> Delos' harbour is an exceptional case for the Cycladic islands: its

<sup>45</sup> *Kenchreai I*.

<sup>46</sup> Palaiokrassa-Kopitsa 2007. Systematic archaeological research has not been carried out on the harbour.

<sup>47</sup> On Parian marble, the *lichnites lithos*, see Pliny, *HN* 36.14.

<sup>48</sup> Papathanassopoulos & Schilardi 1981, 133–144.

<sup>49</sup> Kraounaki 2012, 564 and 558–562. These carvings have not been identified.

<sup>50</sup> Kraounaki & Kourkoumelis 2009, 1213–1215 (see also *Chronique des fouilles en ligne*, n. 1344 = <http://chronique.efa.gr/index.php/fiches/voir/1344/>).

central position in the Aegean, mainly due to the importance of its sanctuary, led to the construction of one of the most important *emporion* of the Eastern Mediterranean. Its western seafront is occupied by the sacred harbour, which is bordered by several harbour spaces, Theophrastos' agora and the Compeltaliasts' agora,<sup>51</sup> and by the commercial facilities of the *emporion* to the south.<sup>52</sup> On a different scale, the island of Amorgos, south-east of Naxos, had three cities:<sup>53</sup> Aigiale, in the north-east part of the island, Minoa, in the central part, and Arkesine, in the south-west part. Its main city, Minoa,<sup>54</sup> which is located in the centre of the island, over the south shore of the bay of Katapola, is mentioned several times in the *Stadiasmus Maris Magni*, in which it appears as an important stepping stone from Kos to the Cyclades.<sup>55</sup> However, remains of Minoa's ancient harbour installations have not yet been found: the closest remains to the harbour that have been excavated up to now are Roman villas, whereas the structures that are visible on the shore at Kat' Akrotiri, presumably a storage building and another undefined building that is partly submerged, are at some distance from the centre of the settlement.<sup>56</sup> Thera's city remains from the Imperial period are located on Mesa Vouno and can be linked to several *epineia*,<sup>57</sup> as attested by an honorific inscription for Titos Flavios Cleitosthenes Claudianos, who "decorated the *epineia* of Thera with baths".<sup>58</sup>

If we take a closer look at these harbours and compare their facilities, we can easily picture the evolution of the various micro-regions of the Aegean, and we can note that the more prominent harbours are those which were best equipped for commerce.<sup>59</sup> Asia Minor and the islands close to the coast had a more monumental evolution and the Cycladic islands had more modest harbour installations. Many harbours of continental Greece are also modest installations. The information gathered in *Table 1* provides approximate figures for the size of the basins and buildings present at the harbour and on land (i.e. commercial and storage facilities). By comparing these approximate figures one can see that the greatest harbour spaces are at Ephesus, and those of Rhodes and Kos on the eastern shores of the Aegean Sea, whereas Piraeus' commercial harbour has the largest capacity on the western side of the Aegean Sea. Less is preserved of the Cycladic harbours, which were more modest, and since the size of these basins has not been estimated, it is difficult to compare them to one another. Other than the size of the basins, the study of the architectural equipment of Cycladic harbours combined with the study of the relations between the hinterland and the harbour on one hand, and between the harbours, connection points or nodes, on the other, can begin to give us an idea of networks. Indeed, as Chr. Constantakopoulou

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<sup>51</sup> Hasenohr 2012, 247–262.

<sup>52</sup> Karvonis 2010, 153–219; Moretti, Fincker & Chankowski 2012, 225–246; Hasenohr 2015, 291–308.

<sup>53</sup> Ps.-Skylax, 58.

<sup>54</sup> On the excavation of the city of Minoa, see Marangou 2002.

<sup>55</sup> *GGM*, p. 499 = *Stadiasmus Maris Magni*, 282.

<sup>56</sup> Marangou 2002; see also *BCH* 128–129, 2004–2005, *Chronique des fouilles*, 1562–1563; also a description of these remains in Bouras 2008, 131–140; 2012b, 99–109.

<sup>57</sup> On the term *epineion*, see Bonnier 2008, 47–61.

<sup>58</sup> *IG XII*, 3, 326.

<sup>59</sup> Bouras 2008.

comments, the lack of impressive material evidence for maritime installations on the islands even nowadays does not indicate a lower level of mobility,<sup>60</sup> and whereas buildings are expectedly present on important sites, Cycladic harbour sites, except for Delos, have more restricted evidence. This is due to continuous occupation in most cases, but perhaps also because each harbour needs to be considered within its own context, given the needs of the city which it serves.

Table 1. List of main harbour cities with dimensions and main facilities and buildings.

Site/City	Number of basins/capacity of basins	Architectural equipment
Andros	1 basin c. 50 × 15 m (750 m <sup>2</sup> )	not excavated: mole and quay visible underwater
Delos	2 basins	quays, porticoes, shops, storage
Ephesus	1 basin c. 600 × 500 m (300,000m <sup>2</sup> )	quays, 3 gates to the city
Kenchreai	1 basin (c. 30,000 m <sup>2</sup> )	quays, warehouses, shops/tabernae, sanctuaries(?)
Kos	1 basin ( <i>kleistos</i> ) c. 300 × 350 m (105,000 m <sup>2</sup> )	quays, porticoes, shipsheds, storage, gates to the city, sanctuaries
Miletus	4 basins (of which one is <i>kleistos</i> ) Lion Bay: c. 260 × 100 m (26,000 m <sup>2</sup> )	quays, porticoes (markets, storage), gate to the city
Minoa	1 basin (no information on size)	not excavated
Paros	2 harbours (of which one <i>kleistos</i> ) No information on size of basin.	not excavated: moles and jetties were seen underwater
Piraeus	3 basins Mounychia: c. 360 × 220 m (79,200 m <sup>2</sup> ) Cantharos: c. 1000 × 750 m (750,000 m <sup>2</sup> ) Zea: c. 450 × 200 m (90,000 m <sup>2</sup> )	quays, shipsheds, porticoes/warehouses (storage, markets)
Rhodes	5 basins (of which one is <i>kleistos</i> ) – total capacity estimation: 127,500 m <sup>2</sup> North-east basin Mandraki: c. 250 × 100 m Great Harbour: c. 100 × 200 m Akantia harbour: c. 150 × 150 m East harbour: 200 × 150 m West harbour: 200 × 150 m	quays, jetties, <i>choma</i> , storage, shipsheds, sanctuary
Thera	3 harbours (no information on size)	not excavated

<sup>60</sup> Constantakopoulou 2007, 22.

### 3. Ancient sources: the evidence from geographers and nautical compilations

Once a hierarchy of harbours can be sketched according to the architectural equipment of the harbours and their capacity, one can expect points or nodes of a network to appear between a central position (the hub) and secondary centres. Nevertheless, taking into account that navigation routes according to seafaring conditions or to social and commercial priorities, evidence for networks becomes harder to manage as a whole. Some routes provided by ancient sources do not seem to reflect the partial image provided by the archaeological evidence:

Pseudo-Skylax' *Periplous*, at the very end of the text, titled "Endmatter" provides a west–east navigation route, which he calls *διάπλους*, across the Aegean and the Cyclades,<sup>61</sup> linking Chalcis to Cape Mycale, and one east–west, which crosses south of the Cyclades and just north of Crete, as far as Cape Maleas<sup>62</sup> (cf. *Fig. 1*).

As a south–north route, taking Rhodes as a central node, Strabo estimated the distance between Rhodes and Propontis at 500 stadia, since it was a direct route.<sup>63</sup> The majority of routes that are mentioned as such by Strabo—and not as a description of the area or a circumnavigation of an island—and by the anonymous author of the *Stadiasmus Maris Magni*, go in an east–west direction, perhaps suggesting that at least a majority of movements go that way. Because of sailing conditions, it is indeed rather unlikely that sailors coming from the opposite direction would have used the exact same itinerary to sail back to their starting point; they would have used more favourable winds or currents instead.

The first route that Strabo refers to crosses the Aegean from the south of Samos, close to Ephesus, to Attica. This route was 1600 stadia, and went from **Cape Trogilion to Sounion**: Cape Trogilion – Icaria and Korassia islands – across the Cycladic islands – Cape Sounion.<sup>64</sup> The second route he refers to, departing from Rhodes and terminating at Sporades, is a local one, in which he links the commercial hub to the nearby islands: **Rhodes – Sporades**. It suggests a connection between the Rhodian "mainland" and the Sporades, in this case Chalki and Alimnia, the small nearby islands that can be reached from Cape Thoantion.<sup>65</sup>

Among the routes that are referred to in the *Stadiasmus*, two of them cross the Aegean from west to east and one reaches Delos. The small island

<sup>61</sup> Ps.-Skylax, 113: Chalcis – Mycale: Chalcis – Geraistos/Karystos – Paionion in Andros/Cap Aulon south of Andros – Tenos – Rheneia – Mykonos – Melantioi Skopeloi – Ikaros/Icaria – Samos – Mykale.

<sup>62</sup> Ps.-Skylax, 113: Rhodes – Maleas: sail to the west of Rhodes – Carpathos – Casos – Cape Samonium/Crete – Cythera – Cape Maleas.

<sup>63</sup> Strabo 14.2.14: "There is a bend of the Carian coast opposite to Rhodes, immediately after Elaeus and Loryma, towards the north, and then the ship's course is in a straight line to the Propontis, and forms as it were a meridian line of about 500 stadia in length, or somewhat less. Along this line are situated the remainder of Caria, Ionians, Æolians, Troy, and the parts about Cyzicus and Byzantium. Next to Loryma is the Cynossema, or dogs' monument, and the island Syme".

<sup>64</sup> Strabo 14.1.13.

<sup>65</sup> Strabo 14.2.12.

in the centre of the Cyclades was indeed one of the most important sanctuaries and commercial centres of the Aegean:

- **Rhodes – Cape Skyllaion** (*Stadiasmus*, 273): Rhodes – Nisyros – Astypalaea, with Kos and Leros to the right – Kinaros – Amorgos – Donoussa – Ios – Sikinos – Siphnos – Seriphos – and Kythnos, while on leaving the last island, Cape Skyllaion, in the Argolis, is visible.
- **Kos – Delos** (*Stadiasmus*, 280): Kos – Calymnos, keeping Leros and Patmos to the right, Melanteioi islands (?) with Mykonos and Tenos to the right before arriving at Delos.
- **Myndos – Attica** (*Stadiasmus*, 285): Myndus – Corsicae islands – Leros – Calydna (Calymnos) – Amorgos, holding Donoussa, Naxos and Kythnos to the right.

Another rather important source of evidence for navigation networks is a group of navigation wishes—*Euploiai*<sup>66</sup>—and expressions of gratitude, inscribed on the rock of the bay of Grammata, on the north-west coast of Syros island, in a bay which is not accessible from land. These were inscribed by seamen who sought shelter during rough weather on an east–west route, or so it appears from the texts. Over 100 inscriptions dating from the Hellenistic to the Byzantine period have been recorded; each one was inscribed by a member of a crew, thanking the gods for this shelter and/or wishing for a safe journey—presumably to their final destination. These texts are short, up to four lines long, and they mention the sailor in charge of the ship, their origin, and they thank a particular divinity (Asclepius, in the inscriptions *IG XII 5, 712, [31, 33, 34 and 35]*), “the god”, or the “saviour” (*IG XII 5, 712, 36*). This location, as I have mentioned, is only accessible by sea, and therefore cannot be related to the island’s resources or to its commerce. It is not an “architecturally equipped” harbour, but it was a passage point for ships of different origins: the Cycladic islands, Asia Minor, and even the Middle East.

Although chronology is relative, three different networks can be observed. A local network appears from seamen who travelled within the Cycladic islands: Isidoros from Andros (*IG XII, 5, 712, 59A*), Naxos, Thera and Isidoros from Gyaros (*IG XII, 5, 712, 84B*), Ioannis from Gyaros (*IG XII, 5, 712, 86B*), Ioannis from Hydra (*IG XII, 5, 712, 87B*), and Ioannis from Melos (*IG XII, 5, 712, 97B*). This group is mainly represented by Christians. A second group is characterized by Aegean origins, including the coasts: Apollonios from Rhodes (*IG XII, 5, 712, 6Δ*), Ioulianos, son of Artemisios from Miletus (*IG XII, 5, 712, 25A*), a ship belonging to Theompompos from Miletus (*IG XII, 5, 712, 26A and IG XII, 5, 712, 93B*), Rythmos Tiberios Claudius, son of Alexander from Smyrna (*IG XII, 5, 712, 20Δ*), Eulimenios from Ephesus (*IG XII, 5, 712, 67B*), Onesimos from Perge (*IG XII, 5, 712, 10A*), and Sardis is also represented. A small number of seamen come from farther away cities: Dioscouridis from Tyr (*IG XII, 5, 712,*

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<sup>66</sup> These texts have been published as *IG XII, 5, 712 (1–100)*, then studied and augmented by Sandberg 1954 and by Kiourtzian 2000, 145–200; Horden & Purcell 2000, 438–440 and 628–629.

7E and *IG XII, 5, 712, 36B*), the governor of the Pannoniens is mentioned in one inscription (*IG XII, 5, 712, 50*), and Italian *negotiatores* are mentioned in some texts, such as one mentioning Lucius Veticulus Mela (*IG XII, 5, 712, 3Γ*), or Rusticus (*IG XII, 5, 712, 9A*).

All the ships that are documented in these inscriptions come from cities on the eastern shores and islands; this group of inscriptions records people and ships of eastern origins carving their names. It could perhaps suggest east–west navigation routes which are similar to those also described in the *Stadiasmus Maris Magni*, as mentioned above. This group of inscriptions might also suggest that another itinerary was used for west–east navigation routes, like the one mentioned in Pseudo-Skylax’s *Periplus*, following the Peloponnesian coast down to Kythera and North of Crete and crossing to the Dodecanese (Ps.-Skylax, 113). One wonders though why the Aegean is so poorly represented in the text of the *Stadiasmus*: it provides connections for only two points, which seem to hold a central position (Rhodes and Delos), and mentions only the island harbours on the frequently used routes across the Aegean. These routes went towards important landmarks, from which access to continental regions would have been relatively easy—Rhodes to Cape Skyllaion (*Stadiasmus, 273*) for the Argolid, Kos to Delos (*Stadiasmus, 280*), Myndos (Halicarnassos) to Attica (*Stadiasmus, 281*). The proximity of major religious centres to these landmarks could perhaps indicate the nature of these communications, explaining why these routes do not take into account the importance of Ephesus or Corinth but only acknowledge Rhodes as a central node in the Eastern Mediterranean network (*Fig. 8*).

The information on communications that can be gathered from the inscriptions in the bay of Grammata (see above) and from the passages concerning the Aegean in the *Stadiasmus* is rather insufficient for a precise map of networks between the Cycladic islands in the Roman Imperial period, let alone the Aegean. In order to have a clearer view of commercial networks it is therefore more useful to look at other sources such as epigraphic and prosopographic evidence, as well as archaeological finds, in an attempt to draw a distribution map of circulating products for each site. Another type of source which could add some pieces to the puzzle is the material from shipwrecks, particularly the objects and products that the ship had been carrying. Nevertheless, drawing conclusions from this type of material is not so simple, as has already be pointed out in publications on shipwrecks and in more synthetic studies.<sup>67</sup> Indeed, one cannot assume that a ship was loaded progressively stop after stop: rather, the products were shipped from smaller centres to a main point where the ship would then be fully organized and loaded for a longer trip. With a pattern like this, one would theoretically be dealing with a commercial system communicating with another one, point A and point B; each one of them would be fed by smaller surrounding centres, either production centres or trade centres, implying that another network system for each centre was in contact with points A and B.

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<sup>67</sup> Pomey *et al.* 1997.

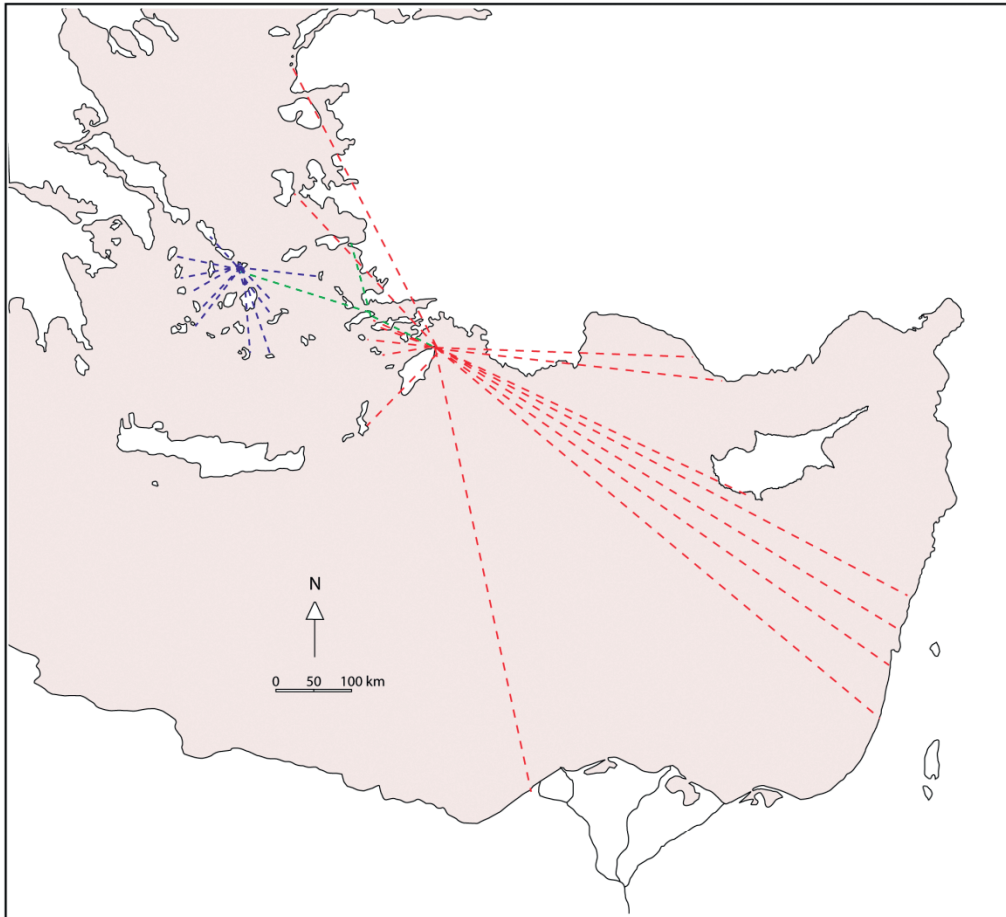


Fig. 8. Map of the Eastern Mediterranean area illustrating the relation between Aegean harbours, as described in *Stadiasmus Maris Magni*.

After taking a look at archaeological realities and ancient writings, it seems that different sources provide us with completely different information. Ancient geographers' texts provide us with routes and some networks, but do not include all of the harbours with extended facilities that stand out. Piraeus, Kenchreai, Miletus, Ephesus, and the *epineion* of Corinth are hardly mentioned in these texts. It appears to be clear from studies on the wider area of the Mediterranean that there were different networks for different purposes and different networks for different merchandise: wheat, marble, pottery, etc. The commerce of different goods was also a reason for the economic growth of certain cities and their harbours: e.g. the exportation of marble from Aliko in Thasos, Proconesus, Paros, or Alexandria Troas.

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