

Late Bronze Age Harbours in the Aegean

Towards another theoretical approach

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Abstract – Harbours and ports have always attracted the archaeological interest as places of economical, social and cultural interaction. Their study can give a better insight into the activities of the past cultures and the processes that took place in the broader harbour area. Prehistoric harbours though, in contrast with the ancient ones, leave scarce remains and have been less investigated. In this paper, the archaeological evidence of the Late Bronze Age harbours of the Aegean is presented and discussed and some problematization on the finds is also exposed. Moreover, a new theoretical approach on the study of the Bronze Age Aegean harbours is attempted. It is suggested that the Bronze Age harbours should be examined under the notion of the dynamic seascape and considered as active cultural landscapes with sociopolitical implications. These qualities can be found on the architectural and urban development of the settlement and especially on the structures that consist with an Aegean harbour-town.

Inhalt – Natürliche und künstliche Häfen haben als Stätten der wirtschaftlichen, gesellschaftlichen und kulturellen Wechselwirkung stets das archäologische Interesse angezogen. Ihr Studium kann bessere Einblicke in die Tätigkeiten vergangener Kulturen und in die Prozesse, die im weiteren Hafengebiet abliefen, bieten. Vorgeschichtliche Häfen jedoch hinterlassen im Gegensatz zu den antiken dürftige Reste und sind weniger erforscht. In diesem Beitrag werden die archäologischen Zeugnisse spätbronzezeitlicher Häfen der Ägäis vorgelegt und diskutiert und einige mit den Funden verbundene Probleme aufgezeigt. Darüber hinaus wird ein neuer theoretischer Ansatz für das Studium bronzezeitlicher ägäischer Häfen versucht. Es wird angeraten, die bronzezeitlichen Häfen unter dem Begriff der dynamischen Seewelt zu untersuchen und sie als aktive Kulturlandschaften mit soziopolitischen Auswirkungen zu betrachten. Diese Eigenschaften kann man in der Architektur und Stadtentwicklung der Siedlung und besonders in den Strukturen, die mit einer ägäischen Hafenstadt zusammenhängen, feststellen.

Introduction

By definition a harbour is synonymous to haven; a sheltered place in the sea or other water bodies, where ships can take refuge in case of emergency. The other common term used by the most to refer to such a place is port. Ports are man-made, usually incorporate one or more natural harbours and have been originally made to facilitate transportation needs. In this article, as in other scholarly texts, this discrimination between the two – harbour and port – is not strictly applied.

Placed on the littoral, ports are an important human creation. They

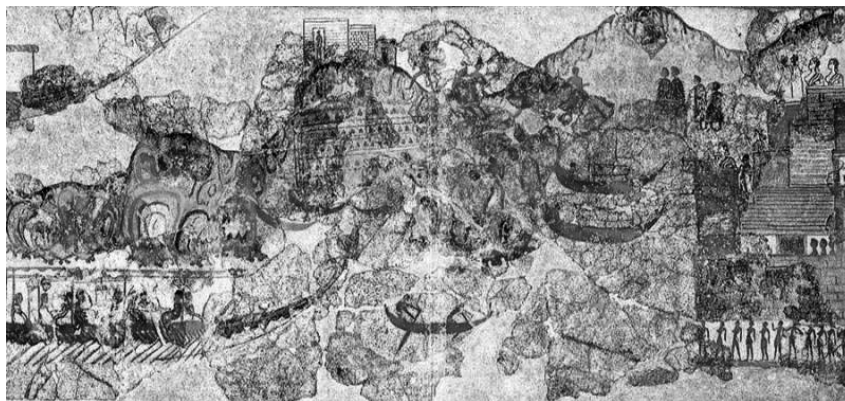


Fig. 1: The double-harbour arrangement from the LC I „Flotilla Fresco“, in West House in Akrotiri, Thera (detail).

serve the commercial, diplomatic, military, even touristic and everyday needs of the people living from and at the sea. As nodal points the Aegean harbours were diachronically connecting and bringing together people, products and ideas from all around the Mediterranean, even further. However, although our knowledge on the ancient Mediterranean harbours is

being continuously enriched (Blackman et al. 2013), prehistoric remains are scarce.

The evidence

During the Aegean Bronze Age a number of important sites is found on the coast. Sea

trade and long-distance connections thrived since the Early Bronze Age and intensified during the Late Bronze Age. Moreover, new sailing methods were adopted during this period and the rise of the bulk and fine commodities traveling across the Eastern Mediterranean testify on high mobility of people and goods (Lambrou - Philippson 1990; Cline 1994; Dickinson 1994). As a

result, it is well anticipated that some prosperous Aegean centres would have served as harbours or intermediate trading stations.

Iconographic evidence from the „Flotilla Fresco“ on the island of Thera (Santorini) shows ships moored on the one side of a promontory while smaller boats lie on the beach on the other side (Fig. 1). The scene depicts two methods of mooring in the so-called „double harbour arrangement“ (Shaw 1990), a pattern found in Homeric epics, too (Odyssey, VII). Joseph Shaw attempted to put together the iconographic information and the archaeological evidence to create a pattern regarding mooring in the Bronze Age Aegean.

According to his study, the location of a prehistoric harbour can be determined based on a comparative methodology of selected sites on the coasts of Anatolia and the Aegean (Shaw 1990: 420). As Shaw observes, the peninsulas were chosen for permanent settling by the inhabitants of Anatolia preferably in places along the coastline with small islands nearby, such as Clazomenai (Shaw 1990, 425). In the Aegean, Shaw locates similar settlements in Agia Eirini (Early Cycladic) in Kea and in Mochlos and Pseira islet on Crete. Specifically, he maintains that Pseira was connected to land in Minoan times. That was also the case with Papadoplaka, the offshore islet of Kommos beach, that used to be connected to the Minoan town with a sandy spit of land (Fig. 2). Shaw's assessment is that during the LM I it would have been exposed about 4m above sea level and would probably be big enough and safe to offer shelter to ships (Shaw 1990, 426).

Other theoretical models for the detection of prehistoric harbours have also been developed incorporating the principles of GIS and geoarchaeology. Thomas F. Tartaron, Richard M. Rothaus and Daniel J. Pullen (2003), based on the relative obscurity of the Aegean harbours, created a model that indicates possible harbour-sites. The application of the model at the Prefecture of Corinth indicated many small bays that could have operated as ports. In particular, the model led to the discovery of two interesting positions of the Bronze Age in Corinthia; Vagia and Kalamianos. The site of Vagia lies on a

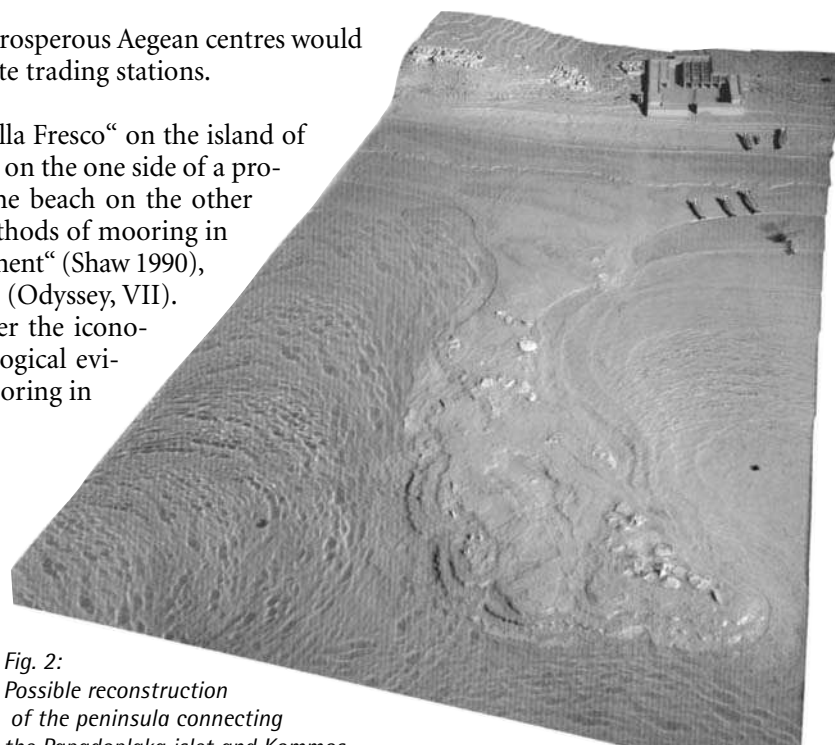


Fig. 2:
Possible reconstruction
of the peninsula connecting
the Papadoplaka islet and Kommos.

peninsula and consists of a fortified area of the Early Helladic II at the proximity of a wetland and supervises two sheltered bays. Kalamianos is located between the modern village Korfos and the cape Trelli, saves a fortification section dating back to the Late Helladic III and has all the environmental con-

ditions to be described as a Mycenaean port (Tartaron et al. 2003, Tartaron 2011). Kalamianos' location is near a wetland, too, and the site's location allows the surveillance of the surrounding area including the sea. What is more, the nearby beach offers relatively deep waters ideal for mooring, as the discovery of ballast stones proves.



Fig. 3: The Shore House in Gournia,
firstly excavated by Boyd



Fig. 4: The long walls of the Shore House
in Gournia, west facade.

However, the discovery of Kalamianos in the NE Peloponnese has provided no concrete evidence, as far as the structures are concerned. But, according to the investigators, permanent port facilities were not necessary especially at the end of the Mycenaean period when the International Spirit in trading commodities and the gift-exchange network were weakening. As they point out, many small natural harbours were used to serve smaller vessels on shorter routes and the use of harbours like Kalamianos was the rule and not the exception (Tartaron et al. 2003). Consequently, the loading and transhipment of goods and people carried out by dinghies or the ship was pulled directly up on the beach (Tartaron 2011, 574). On the other hand, excavators from a number of sites on Crete believe that they have revealed remains from Minoan har-

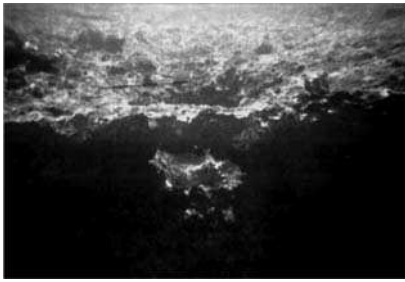


Fig. 5: The wharf found underwater in Gournia.

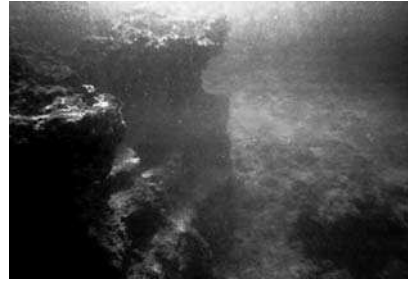


Fig. 6: Stairs found underwater at the west end of the promontory in Gournia.



Fig. 7: The curvings in Nirou Chani found by S. Marinatos.

bours. Vance L. Watrous in Gournia interpreted as MM IIIA shipsheds the long structures going towards the sea from the so-called „Shore House“ which was originally but only partially excavated by Harriet Boyd Hawes in 1901 (Figs. 3–4). The two coastal galleries, named East and West Gallery, are 5m wide and their preserved length is 9m and 13m accordingly. Masonry blocks found further on the coast indicate a possible length up to 25m. There are also three store rooms dated on the MM II on their southern end. North of the building remains Watrous identified a submerged structure with holes as a wharf and discovered stairs also underwater (Figs. 5–6) (Watrous 2012, 523, 525).

In Nirou Chani, Spyridon Marinatos (1926) found what he believed to be an anchorage or a shipyard of the Knossian navy (Fig. 7). The interpretation of the submerged carving depends, according to Marinatos, on its location during the Minoan times. In Malia and Amnisos scholars have also identified submerged buildings which – they presume – correlate with Minoan harbour installations; but no sound chronology can account to that. The case in Amnisos is rather obscure as it has not been



Fig. 8: The shipsheds in Poros/ Katsambas.

recently investigated and the published data come from the '80s. According to J. Shaw (1990) the existence in Amnisos of at least one Minoan building on the shore and the off-shore island favours over the possible use of Amnisos town as a harbour.

In the palace site of Malia the evidence is also problematic. Among the first excavators of the site there was the claim that Malia was „not a major harbour“ (van Effenterre 1980, 75–79). On the other hand Honor Frost argued that a sloping rock-trench going to the sea is associated with harbour works during the Minoan times (Frost 1963, 105–106. Pl. X). Raban goes further claiming that the harbour at Malia would resemble the contemporary „pocket-harbours“ of the Near East (Raban 1983, 239; contra Shaw 1990).

In another site, in Heraklion city, Antonis Vasilakis argues on the discovery of a shipyard – or shipsheds – based on the architectural characteristics of the ruins of six long chambers and the additional contextual finds, which consist of pottery, raw materials and tools (Vasilakis 2010). These six galleries were found in the district of Poros/ Katsambas which is believed to have been the harbour of Knossos

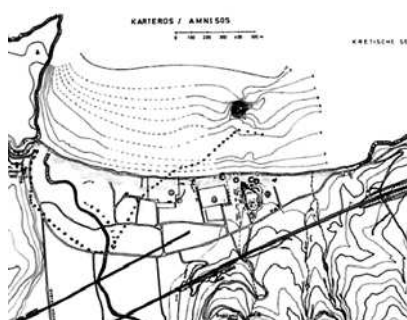
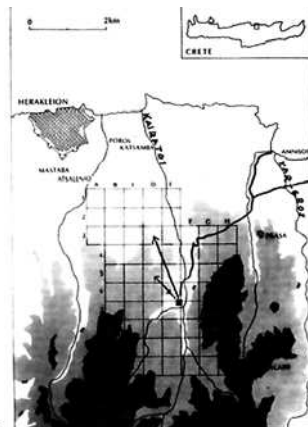


Fig. 9: Map of Knossos with the rivers Kairatos and Karteros and plan of Amnisos.

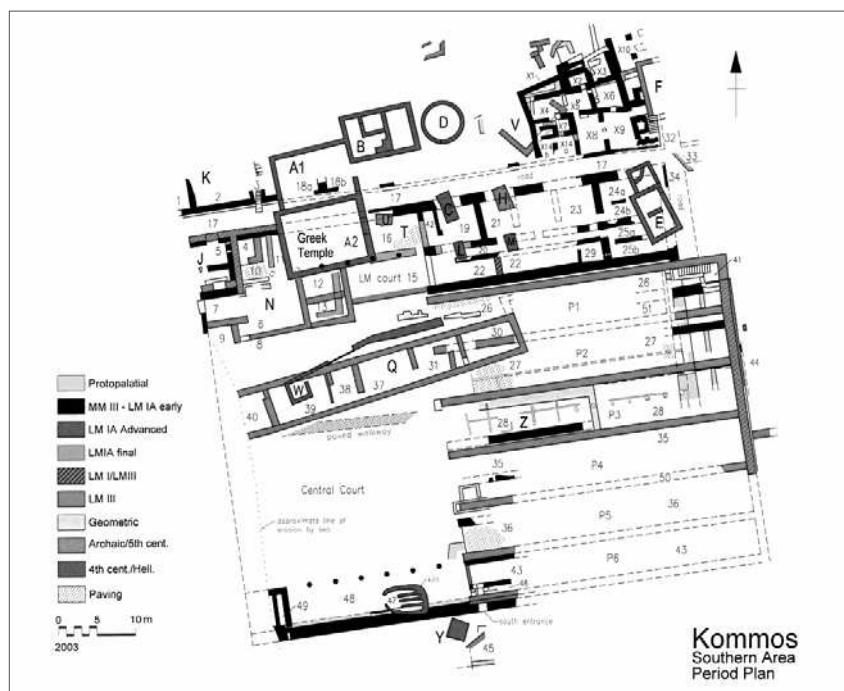


Fig. 10: Plan of Kommos. South area.

(Fig. 8). The structures are 6m wide with a preserved length of maximum 25m, have a N-S orientation and run perpendicular to the coast. It is estimated by the excavator that the galleries could have been up to 50m long and that would have been enough space for more chambers attached to them. The galleries date from the Late Minoan II until the Late Minoan IIIB, when they were finally destroyed.

Many scholars since the beginning of the 20th century claimed that the main harbour of Knossos laid on this area. It was first Louis Franchet in 1912 and then Iosef Chatjidakis, Stefanos Xanthoudides, Richard B. Seager, Sir Arthur Evans and Spyridon Marinatos who favoured the view that the Knossian harbour were at the mouth of river Kairatos, modern Katsambas (Dimopoulou-Rethemniotaki 2004, 365). In addition, Evans and Marinatos maintained that Knossos used to have another subsidiary harbour laid at Amnisos, where the course of river Karteros ends (Fig. 9) (Schäfer 1991, 112). However, as already mentioned above, no distinctive structures are discovered yet on Amnisos to be accounted as harbour installations.

Of the most convincing finds to be considered as shipsheds are the Buildings T¹ and P in Kommos (Fig. 10). They both date in the Neopalatial period and their proximity to the shore is the main reason to connect them with maritime matters (Shaw 1990). The destruction of part of the Building T in LM IIIA1-2 follows the construction of two from the six galleries of Building P, which takes its final almost rectangular form by the end of the LM IIIA2 (Shaw – Shaw 2006, 850). Maria C. Shaw argued since the beginning of the excavation of the Building P – which has not been completed – that it could have been used as shipsheds to store ships and their equipment during the winter months (Shaw 1985, 22-25). The suggestion is rather convincing

taking into consideration the shape and the size of the galleries, the lack of windows and other architectural features, their location on the shore and the fact that the entrance faces the sea (Shaw – Shaw 2006, 851). However, this interpretation does not incorporate finds from the interior of the building such as food preparation facilities and the transportation jars, mainly the short-neck amphora².

To support the argument on the existence of shipsheds in Kommos, Joseph Shaw lectured in January, 2015 on a new interpretation of the paved road heading west coming from the sea and passing by the Building T. This walkway was first thought to be associated with the court, as it was used at the Minoan palaces, likely used for processions. But Shaw's recent study suggests that there had been used wooden beams between the stone slabs to smoothly haul ships up or down to the beach and thus, changing the interpretation of a walkway into a slipway (Fig. 11). If this is the case, then this find is an unicum for the Aegean.

The Minoan harbour of Kommos also presents a feature found in other Minoan sites, too; a nowadays small offshore island which – then – could have formed a peninsula providing shelter at its both sides, in the „double harbour arrangement“. Could this have been the case in other Minoan centres on Crete like Amnisos, Mochlos or Malia³ (Fig. 12)? Geological and more thorough archaeological surveys need to be conducted, in order to confirm the double harbour theory.



Fig. 11: The road or slipway in Kommos.

In the Mycenaean centers of Peloponnese, where the long-distance exchange of Tiryns, Pylos, Mycenae and other sites with the Aegean and Anatolia are confirmed by excavations, evidence for port facilities are limited to Pylos. However, the data from Pylos are also questionable. According to Zangger, Pylos had an internal pocket-harbour constructed in an artificial lagoon simulating the ports of the Near East and the coast of Anatolia (Tel Dor, Tire and Sidon) (Zangger 1998). This proposition based on a number of facts and remarks, such as the rectangular shape of the modern valley and its sandy surroundings, the observation that the course of the river Selas had been redirected in the past – probably during the Late Bronze Age – and the composition of the sediments and microfauna recovered after drilling, which had been related with salt water (Zangger 1998).

In Pylos, Linear B tablets also reveal important aspects of maritime connections between the palace centre and the Aegean. Names of places and ethnic names attest to contacts with islands like Crete, Cyprus, Lemnos, Chios and other sites in Asia Minor's coastline. Moreover, words coming from abroad like sesame, cumin or gold testify contacts with other lands, too (Palaima 1991, 279, 280). Rowers and possibly a fleet are also mentioned in the PY An series (Palmer 1963; Ventris – Chadwick 1973, 173-187; Palaima 1991).

Other Mycenaean centres with well established trade and interconnections bear no evidence of ports, though Tiryns for instance, is referred as a major harbour in the Bronze Age (Maran 2010). Its proximity to the sea, which in the 3rd and 2nd millennium BC was greater (Zangger 1994), encourages the view that Tiryns should be an important harbour-town since the Early Bronze Age.

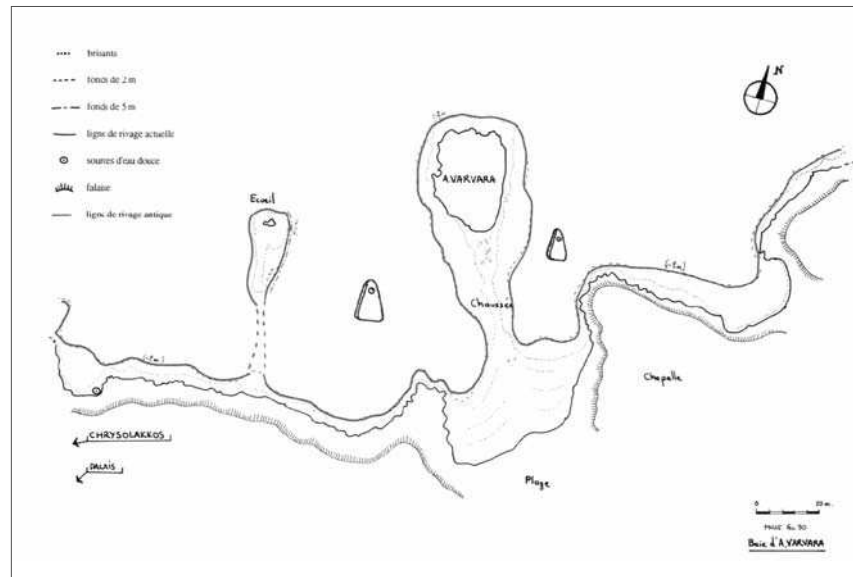


Fig. 12: Plan of the coastline and possible anchorages in Malia.

Discussion

But, what is it actually that archaeologists look for when they seek for harbours or ports? When surveying for ancient harbours archaeologists look for anchorages or safe places to moor with emphasis on the harbour constructions per se, while natural scientists focus on the geological and the environmental information (Morhange et al. 2016). The employed theoretical models also help towards a better understanding on the position of a Bronze Age harbour-site, considering mostly the environmental parameters. The main problem about the search for prehistoric harbours, and in many cases for ancient, too, is their in-visibility, due to geomorphological changes that caused alterations, relocations or complete destruction of a harbour's location (Flemming et al. 1973; Lambeck 1996). As a consequence, basic harbour structures like jetties and moles could be extremely difficult or even impossible to be discovered. Posterior use of the same structures in later times also impede the identification of earlier stages.

However, some scholars maintain that prehistoric ships did not need any structures; they were just dragged on the shore or were either loaded or unloaded with dinghies (Tartaron et al. 2011, 574). This

method is still partly practiced in the Mediterranean by smaller boats and leaves hardly any physical traces behind. But, if this was also the case during the Bronze Age, the question passes on ships and their capacities and limitations; did the shipbuilding of the Bronze Age impose the construction of specific harbour facilities or was there no necessity to create a harbour system?

In the light of the evidence presented above, it appears that a form of prehistoric harbours existed, where people took care of the ships and stored the commodities. As a rule Bronze Age harbours were located on natural protected bays, with sandy beaches and in connection to important and prosperous towns⁴. Long-distance exchanges in the form of gifts and interregional trade created a broad network of sea-routes, diplomatic relationships and reliance. It is quite puzzling, though, that the word „merchant“ is not mentioned in any literary texts from the Aegean nor any references on trade or nautical activities appear in scripts (Bass 1998, 185). It seems that the Bronze Age trade in the Aegean was conducted by entrepreneurs who operated outside the palatial control or only to some extent in dependence on the palatial centres (Sherratt – Sherratt 1991, 357; Artzy 1997, 9). Another possible

fact is that there was no discrimination between military and commercial ships (Raban 1984; Wachsmann 1998, 157). If the ships were owned by citizens serving sometimes the palatial centres, probably they would have been responsible for their ships. As a result, no public concern on merchant ships and their functionality should have been taken, a fact which could explain the obscurity of harbour installations. On the other hand, if the galleries found on Crete were shipsheds indeed, that indicates the allocation of capital and human resources under a form of power that wanted to participate actively in the navy things.

Nevertheless, what makes a harbour is not only the mere constructions, but also the facilities on land. Thus, the study of the ancient harbours turns as well on the shore to incorporate terrestrial data under the notion of a „harbour town“. It is rather obvious from the archaeological discussion that even with no actual harbour structures, archaeologists still refer to Bronze Age coastal sites with evidence of long-distance connections as harbour-towns. The term in this case includes principally coastal sites in locations favourable for maritime activities, with massive imported items or products to be exported. This contradiction between the uncertainty of the existence of prehistoric harbours and the belief that coastal towns functioned as harbours, points out a basic theoretical problem in approaching this kind of structures.

Another perspective

It turns out that the notion of harbour in prehistory is elusive. First of all, it is a matter of terminology; what do we mean by the word „harbour“ when dealing with it in the Bronze Age? Secondly, it is subject of our own anticipation; what do we expect to find when looking for prehistoric harbours. Thirdly, it is also an issue of theoretical context and how do we approach a system partly marginal and at the

same time central in the sociopolitical complex of the Aegean Bronze Age.

A harbour consists of wharves, quays, moles, jetties, piers, fortifications, canals and/or artificial docks (Delgado, J. – Staniforth, M. 2002). These structures are the backbones of the installation made to host ships but they are not the only ones. Other features like lighthouses, shipsheds/shipyards, storage facilities and civic buildings complete the harbour system. Towards the understanding of the harbour-works in the Greek and Roman world great work has been done and is still going on (Blackman 1982; Blackman et al. 2013) but for earlier periods in the Mediterranean little is known. The quest of harbours during the Bronze Age is in particular problematic as there is no unanimity among the scholars on the very existence of harbours at that time, although the term harbour town prevails in the literature. Tiryns and the lately discovered Kalamianos provide good examples on this case. Consequently, to move on with the study of prehistoric harbours the question „what composed a harbour in the Bronze Age?“ should be firstly answered.

In addition, the tendency in the study of ancient harbours was to perceive them as economical structures with certain functions serving specific needs. Their principal role is unquestionable; it is to serve the needs of ships. However, at the harbour area people of different expertise, interests and expectations encounter and interact with each other. Until now the small communities taking action in the broader harbour area remain unknown demonstrating a study's neglect on the social aspects of a harbour. The social identity of a harbour at any given time is attested through the secondary, peripheral facilities like warehouses, shipyards and other premises to accommodate ship's equipment or cargo. The excavations in Kommos and Poros/Katsambas have uncovered complexes which are indirect-

ly related to maritime activities and could be used to detect smaller social groups which are barely seen in the archaeological record.

Another issue is the theoretical context in which the harbour is being investigated. Studies from the last decades incorporate the idea of the natural landscape and the shaping of a cultural landscape into the archaeological interpretation of the material culture (Westerdahl 1992). Coastal archaeology and the archaeology of maritime landscapes investigate how people conceived the coast and their interaction with the littoral environment, as well as with other coastal – and inland – peoples (Ford 2013). Marginal places like harbour sites offer a great example in understanding changes in the landscape and the generic role of the community. Thus, the Bronze Age harbours if seen as a dynamic landscape and as a social place can give a better insight into the maritime Bronze Age society. To conclude with, under the notion of the dynamic landscape, the architectural and urban development of the settlement and the contextual archaeological evidence, a prehistoric harbour can be holistically understood.



Notes

¹ The view that Building T was used as shipsheds is not very convincing, though. In favour of this opinion are the contributors of the exhibition volume *Inseln der Winde, Die maritime Kultur der bronzezeitlichen Ägäis*. Institut für Klassische Archäologie der Universität Heidelberg (Berlin 2011).

² The short neck amphora is most abundant find in the Building P in LM IIIA2 and becomes a standard type in LM IIIB. It is a new transport vessel produced by thousands in Kommos (Rutter, J. 2006: *Minoan Pottery from the Southern Area. Neopalatial and Later Minoan Pottery*, in: J.W. Shaw – M.C. Shaw (eds.) *Kommos V. The Monumental Minoan Buildings at Kommos* (Princeton University Press) 486-609. However, there is nowhere else to be found except of Kommos.

³ A study on Malia's coastline has been published by M. Hue and O. Pelon where it is argued that the location of the harbour was at the nowadays islet in the bay of Aghia Varvara following the pattern of the double-harbour. Hue, M. – Pelon, O. 1990: Malia et la mer, in: R. Laffineur – L. Basch (eds.), *Thalassa: L'Égée préhistorique et la mer. Actes de la troisième Rencontre égéenne internationale de l'Université de Liège, Station de recherches sous-marines et océanographiques (StaReSO) Calvi (Corse)* 23-25.

⁴ Minoan and Mycenaean towns and palatial centres were connected with roads. In the case of harbour towns in Crete remains of roads have been identified in Kommos (Shaw, J.W. 2006: Kommos. A Minoan harbor town and Greek sanctuary in Southern Crete (The American School of Classical Studies in Athens), in Knossos (Evans, A. 1928: The palace of Minos at Knossos, vol.II, part I (London) and in Malia (Hue – Pelon 1990, *passim*).

References

Abbreviations

AJA = American Journal of Archaeology

IJNA = International Journal of Nautical Archaeology

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Credits of figures

Fig. 1: Doulas 1992: 68, fig. 35; courtesy of the Thera Foundation; Fig. 2: Guttandin, T. – Panagiotopoulos, D. – Pflug, H. – Plath, G. 2011. *Inseln der Winde. Die maritime Kultur der bronzezeitlichen Ägäis* (Berlin) fig. 255; Fig. 3: Courtesy Chronis Papanikolopoulos, http://www.minoancrete.com/gournia_seafrontmt.ht; Fig. 4: Watrous 2012, fig. 7; Fig. 5: Watrous 2012 fig.4, photo by L. Ivanovas; courtesy Ephoreia of Underwater Antiquities; Fig 6: Watrous 2012 fig 5. photo by L. Ivanovas; courtesy Ephoreia of Underwater Antiquities; Fig. 7: Marinatos 1926 fig. 5; Fig. 8: Vasilakis 2010; Fig. 9: Schäfer 1991, Pl. XXVIII; Fig. 10: <http://www.fihneart.utoronto.ca/kommos/kommosMaps.html>; Fig. 11: Shaw – Shaw 2006. <https://www.kommosconservancy.org/abstract-j-w-shaw-the-middle-minoan-slipway-for-ships-at-the-kommos-harbor/> Fig. 12: Hue – Pelon 1991 (s. Anm. 3), Plate XXXI.

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