

SKYLLIS

€ 7,50

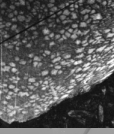
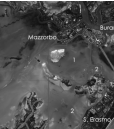
Zeitschrift für maritime und limnische Archäologie und Kulturgeschichte

16. Jahrgang 2016 Heft 2



Inhalt

	Vorwort	103
	GIS Technology A support for the interpretation of submerged sites and ancient environment Alessandro Pellegrini	106
Šimuni, ein neuer Unterwasserfundort aus der Bronzezeit in der Gespanschaft Zadar Luka Bekić		114
Late Bronze Age Harbours in the Aegean Towards another theoretical approach Eugenia Loizou		118
Same Boat - Same People? Alec Tilley		126
Two lásana from the 4th century BC shipwreck at the island of Žirje, Croatia Maja Grisonic - Irena Radić Rossi		132
The Lake Grid Dwelling Rybno I Impulse for New Interpretations Małgorzata Mileszczyk		136
Social organisation on board Viking-Age longships An experimental archaeological investigation Morten Ravn		142
The Nails of Apollonia/Arsuf, Israel Preliminary results Eva Grossmann		148
Iron nails from the Veruda shipwreck in Croatia Maja Kaleb		153





- 158 **The place of a rigging element of a 19th century brig**
Sieghard Wagener



- 160 **Schiffe, die die Welt verändern**
Kleine, hochseetüchtige Panzerschiffe 1860-1870
Jorit Wintjes

- 173 **The Narva Boat**
Another boat attributable to Tzar Peter I?
Vladimir Romanovich Chepelev



- 180 **The first low-cost stereo photogrammetric research on underwater archaeological sites in the Adriatic sea**
A contribution to the history of the 3D documentation in underwater archaeology
Miran Erič - Smiljan Gluščević - Andrej Gaspari - Tomaž Gvozdanović - David Pollack

gelingt selten,
eingereichten
träge sofort zu
plizieren, wenn
n Umfang eines
tschriftenheftes
visse Grenzen

- 199 **Ein Verbrechen auf hoher See**
Miscelle zur antiken Nautik
Christoph Börker



- 201 **Das Bücherbrett**

Titelmotiv

*Examples of sailing situations depicted
on the Bayeux Tapestry.*

*Aus: M. Ravn, Social organisation on
board Viking-Age longships, Abb. 8.*

Vorwort

Es gelingt selten, alle eingereichten Beiträge sofort zu publizieren, wenn dem Umfang eines Zeitschriftenheftes gewisse Grenzen gesetzt sind. So eröffnet ein Artikel die vorliegende Ausgabe, der noch der Dresdener DEGUWA-Tagung „In Poseidons Reich XXI“ entstammt. Diese hatte die DEGUWA im April 2016 zusammen mit dem Landesamt für Archäologie Sachsen und der Technischen Universität Bergakademie Freiberg ausgerichtet. Ihr Schwerpunkt hatte „interdisziplinäre Fragestellungen und technische Innovationen“ zum Inhalt. Passend zu diesem Thema berichtet Alessandro Pellegrini über Erfahrungen mit der GIS-Technologie, die er im Rahmen zweier Forschungsprojekte mit sehr unterschiedlichen Fragestellungen, nämlich an einer bronzezeitlichen Station im Garda-See und in der Lagune von Venedig, gewonnen hat. Damit ist nunmehr die Reihe der Dresdner Referate, die sich bereits über die SKYLLIS-Jahrgänge 15 Heft 2 und 16 Heft 1 erstreckt, abgeschlossen.

Das Gros der folgenden Beiträge entspringt der 22. Tagung „In Poseidons Reich“, die die DEGUWA zusammen mit dem Verein zur Förderung der Unterwasserarchäologie e.V. (FUWA) und mit dankenswerter Unterstützung der Stadt Koblenz, der Universität Koblenz-Landau sowie weiterer Institutionen des Landes Rheinland-Pfalz im März 2017 in Koblenz durchführen konnte. Sie war unter dem griffigen Titel „Wir sitzen alle in einem Boot“ vorwiegend der „gesellschaftlichen Bedeutung von Schiffen, Flößen und Fähren“ gewidmet, doch waren, wie bei diesen Tagungen üblich, andere Themen nicht ausgeschlossen. Die bislang vorliegenden und hier abgedruckten Artikel reichen inhaltlich von der Bronzezeit bis in die zweite

Hälfte des 19. Jahrhunderts und sind im Folgenden in ungefähr derselben chronologischen Reihe angeordnet.

Den Auftakt gibt Luka Bekić mit einem Bericht über die Arbeit an einer in einem kleinen kroatischen Hafen entdeckten Balkenkonstruktion, die mit bronzezeitlicher Keramik verbunden ist und demnach in diese Zeit gehören dürfte. Ebenfalls in die Bronzezeit, jedoch in jene der Ägäis, führt Evgenia Loizou, die weitreichende Überlegungen zur Frage prähistorischer Häfen und zu den Möglichkeiten, sie mit Hilfe interdisziplinäre Methoden zu ermitteln und zu erforschen, vorträgt.

Alec Tilley stellt die Idee zur Diskussion, die venezianische Gondel und einen maltesischen Bootstyp wegen ihrer eigentümlichen Antriebsart – der Ruderer steht aufrecht und schaut in Fahrtrichtung –, die auf altorientalischen Darstellungen des 9. Jahrhunderts v. Chr. wiederkehrt, auf die Phöniker und über diese sogar noch weiter nach Osten zurückzuführen.

Zwei eigenartige Fundstücke aus Terrakotta von einer Wrackstelle vor der kroatischen Adria-Küste legen Maja Grisonic und Irena Radić Rossi vor. Es handelt sich um Stützen, die einen Kochtopf über dem Feuer hielten und zur Schiffsausrüstung gerechnet werden können. Mit dem Wrack und seiner übrigen Ladung können sie ins 4. Jahrhundert v. Chr. datiert werden.

Mit dem anschließenden Beitrag von Małgorzata Mileszczyk verlassen wir die mediterrane Welt und begeben uns ins nördliche Polen in den Bereich der Westbaltischen Hügelgräber-Kultur des 1. Jahrtausends v. Chr., für die neben den Bestattungsformen künstliche,

unter Verwendung von Balkenkonstruktionen errichtete Inseln charakteristisch sind. Sie wurden früher fälschlich zu den sog. Pfahlbauten gerechnet, stehen aber den schottischen Crannogs nahe. Vorgestellt werden Untersuchungen einer solchen Anlage, die neue Forschungsansätze eröffnen können.

In abermals jüngere Zeiten führt uns Morten Ravn. Er macht sich aufgrund eigener Erfahrungen an Bord eines Nachbaues und anhand zeitgenössischer nordischer Schriftquellen Gedanken über das Zusammenleben und die notwendige soziale Organisation der Wikinger auf ihren Meerfahrten mit den berühmten Langschiffen.

Technische Schiffbau-Details stehen im Mittelpunkt der drei folgenden Artikel. Die Fertigung von Nägeln, die mit Objekten des 2. Jahrhunderts n. Chr. im Meer vor der Küste Israels bei Apollonia gefunden worden sind, untersucht Eva Grossmann, und Maja Kaleb widmet sich den Eisennägeln aus dem Wrack eines nahe Pula (Istrien) bei der Insel Veruda gesunkenen Schiffes aus dem 16. Jahrhundert, die teils zum Schiff, teils eventuell zur Ladung gehörten. Sieghard Wagener steuert eine klärende Notiz zu einem Einzelteil der Takelage einer Brigg des 19. Jahrhunderts bei.

Jorit Wintjes liefert eine fesselnde Einführung in die Geschichte und Entwicklung kleiner, hochseetüchtiger Panzerschiffe in der zweiten Hälfte des 19. Jahrhunderts, die als hochgradig innovative Kampfmittel die Seekriegsführung stark beeinflussten. Mit diesem Beitrag enden einstweilen die auf die Tagung in Koblenz zurückgehenden Artikel – weitere sind in Vorbereitung für das folgende SKYLLIS-Heft.

Vladimir R. Chepelev, der unseren Lesern bereits aus seinen früheren Berichten über Boote Zar Peters I. in den jeweils ersten Heften der SKYLLIS-Jahrgänge 14 und 15 bekannt ist, hat ein weiteres kleines Wasserfahrzeug ermittelt, das vielleicht mit dem großen Modernisierer Russlands in eine gewisse Verbindung gebracht werden kann.

Miran Erić, Smiljan Gluščević, Andrej Gaspari, Tomaž Gvozdanović und David Pollak haben unter Federführung des Erstgenannten eine umfassende Darstellung der Entwicklung der 3D-Photogrammetrie in der Unterwasserarchäologie zusammengestellt, die sicher besonders für alle diejenigen, die an der Geschichte

dieser Technologie interessiert sind, aufschlussreich sein dürfte.

Den Abschluss der Beiträge bildet eine Lesefrucht des Redaktors, aus der ersichtlich wird, dass antike Seeleute sich entgegen der immer noch verbreiteten Ansicht spätestens im 4. Jahrhundert v. Chr. keineswegs scheuten, mit einem Frachtschiff ohne Landsicht übers Mittelmeer zu fahren, und zwar auch bei Nacht.

Schließlich sei auch noch auf drei Buchbesprechungen im „Bücherbrett“ hingewiesen und damit die freundliche Aufforderung an unser Fachpublikum verbunden, selber einmal eine solche zu verfassen.

Die Redaktion dankt allen Autorinnen und Autoren herzlich für ihre Beiträge und hofft, dem eigenen Anspruch auf größtmögliche Vielseitigkeit des Heftes nachkommen zu sein.

Die Redaktion
Oktober 2017

PS: Bitte beachten Sie die Ankündigung der 23. DEGUWA-Tagung „In Poseidons Reich“ auf Seite 140!

**LVR-LandesMuseum
Bonn**

**IM
MEER
VERSUNKEN**

12.10.2017
bis
11.03.2018

Sizilien und die Unterwasserarchäologie

www.landesmuseum-bonn.lvr.de

LVR
Qualität für Menschen

Late Bronze Age Harbours in the Aegean

Towards another theoretical approach

Eugenia Loizou

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 bronzzeitlicher ägäischer Häfen versucht. Es wird angeraten, die bronzzeitlichen 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 lead to the discovery of two interesting positions of the Bronze Age in Corinthia; Vagia and Kalamianos. The site of Vagia lies on a

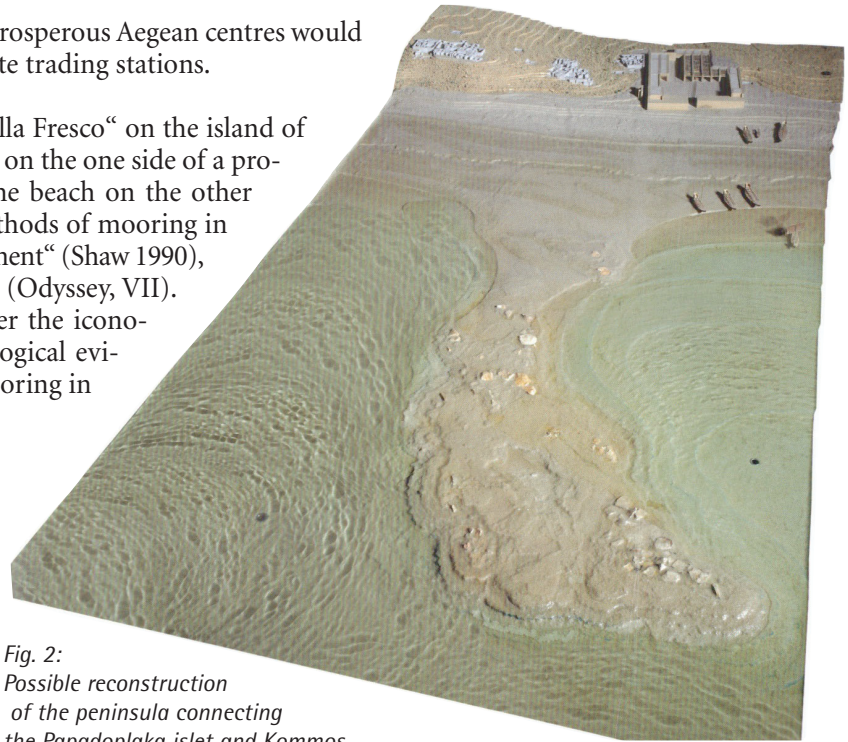


Fig. 2:
Possible reconstruction
of the peninsula connecting
the Papadoplaka islet and Kommos.

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 Harriet Boyd-Hawes



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.

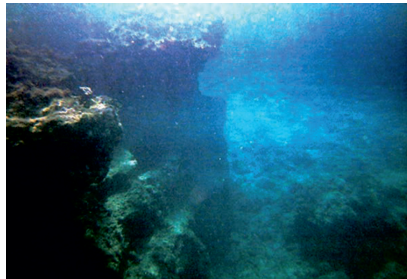


Fig. 6: Stairs found underwater at the west end of the promontory in Gournia.



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



Fig. 8: The shipsheds in Poros/ Katsambas.

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

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 offshore 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 Effentere 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

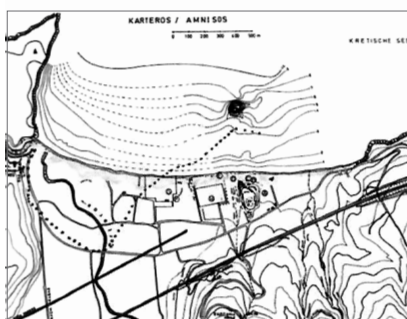
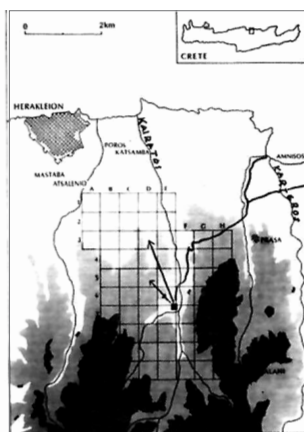


Fig. 9: Map of Knossos with the rivers Kairatos and Karteros and plan of Amnisos.

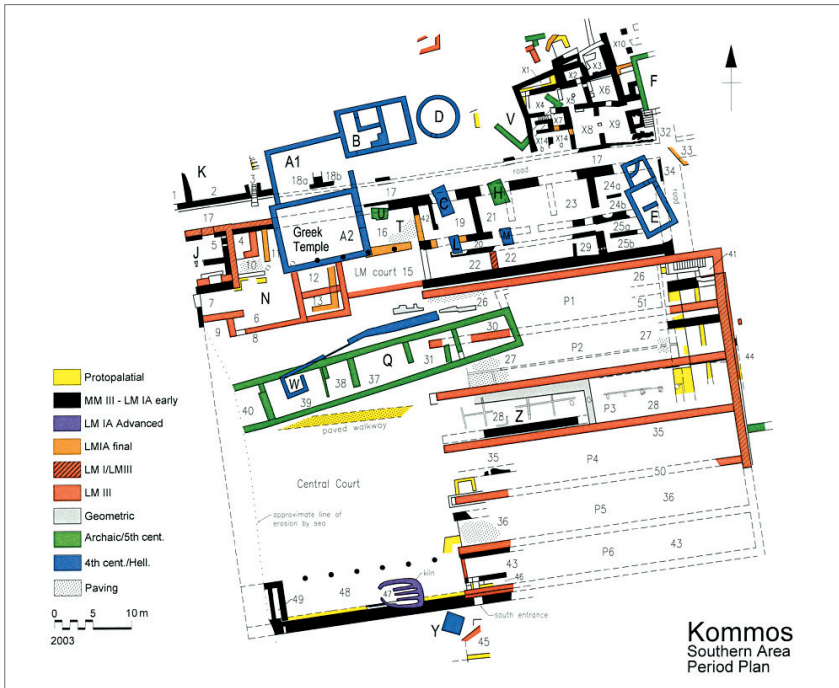


Fig. 10: Plan of Kommos. South area.

(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 was 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.

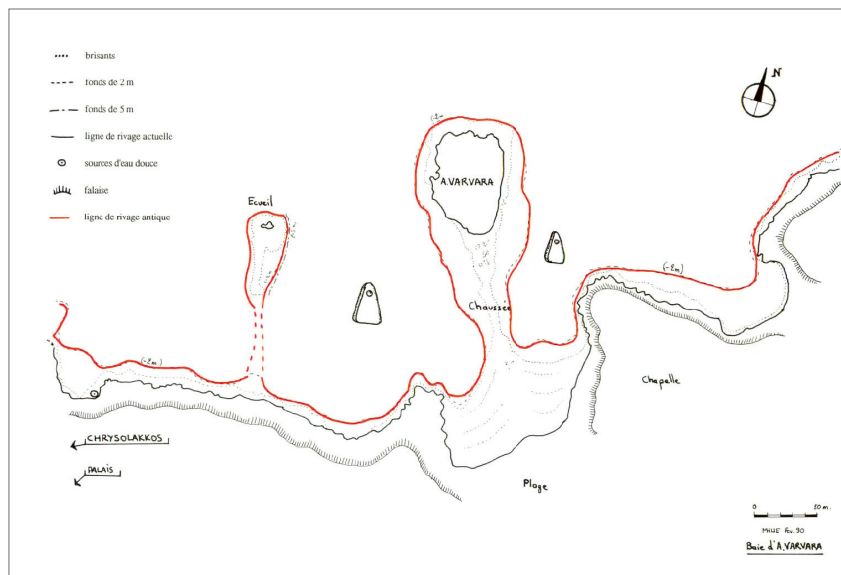


Fig. 12: Plan of the coastline and possible anchorages in Malia.

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

Artzy, M. 1994: Nomads of the Sea, in: St. Swiny – R.L. Hohlfelder – H. Wylde Swiny (eds.), *Res Maritimae: Cyprus and the Eastern Mediterranean from Prehistory to Late Antiquity. Proceedings of the Second International Symposium Cities on the Sea, Nicosia, Cyprus, October 18-22, 1994. Cyprus American Archaeological Research Institute Monograph Series 1* (Atlanta, Ga.)

Bass, G.F. 1998: Sailing Between the Aegean and the Orient in the Second Millennium BC, in: E.H. Cline – D. Harris-Cline (eds.), *The Aegean and the Orient in the Second Millennium: Proceedings of the 50th Anniversary Symposium, Cincinnati, 18-20 April 1997. Aegaeum 18* (Liège/Austin) 183-191.

Blackman, D.J. 1982: Ancient Harbours in the Mediterranean. *IJNA* 11 (2), 79-104 and 11(3),185-211.

Blackman, D.J. – Rankov, B. with Baika K. et al. 2013: *Shipheds of the Ancient Mediterranean* (Cambridge, Cambridge University Press).

Cline, E.H. 1994: *Sailing the Wine-Dark Sea: International Trade and the Late Bronze Age Aegean. BAR International Series 591* (Oxford).

Delgado, J. – Staniforth, M. 2002: 'Underwater Archaeology', in: *The Encyclopedia of Life Support Systems* (online encyclopedia). UNESCO, Paris. Online at: <http://www.eolss.co.uk/>

Dickinson, O. 1994: *The Aegean Bronze Age* (Cambridge, University Press).

Dimopoulou-Rethemniotaki, N. 2004: The harbour of Knossos in Poros-Katsamba, in: Cadogan, G. – Hatzaki, E. – Vasilakis, A. (eds.) *Knossos: Palace, City, State. BSA Studies 12*, 363-380 (in Greek).

Flemming, N.C. – Czartoryska, N.M.G. – Hunter, P.M. 1973: Archaeological evidence for eustatic and tectonic components of relative sea level change in the South Aegean. *Marine archaeology* 23, 1-63.

Ford, B. 2013: Coastal archaeology. Introduction, in: Catsambis, A. – Ford, B. – Hamilton, D.L. (eds.), *The Oxford Handbook of Maritime Archaeology* (Oxford University Press) 763-785.

Frost, H. 1963: *Under the Mediterranean. Marine Antiquities* (Routledge, New York).

Knapp, A.B. – Demesticha, S. (eds.) 2017: *Mediterranean Connections: Maritime Transport Containers and Seaborne Trade in the Bronze and Early Iron Ages* (Routledge, New York) 2017.

Lambeck, K. 1996: Sea level change and shore line evolution in Aegean Greece since Upper Paleolithic time. *Antiquity* 70, 588-611.

Lambrou-Philippson, C. 1990: *Helenorientalia: The Near Eastern Presence in the Bronze Age Aegean, ca. 3000-1100 B.C. SIMA-PB 95* (Gothenburgh, Åström).

Maran, J. 2010: Tiryns, in: E. Cline (ed.), *The Oxford Handbook of the Bronze Age Aegean*.

Marinatos, Sp. 1926: *Anaskafai Nirou Chani Critis. Praktika tis Archaialogikis Etaireias* (in Greek).

Morhange, C. – Marriner, N. – Carayon, N. 2016: The eco-history of ancient Mediterranean harbours, in: T. Bekker-Nielsen – R. Gertwagen (eds.), *The Inland Seas. Towards an Ecohistory of the Mediterranean and the Black Sea* (Stuttgart) 85-106.

Palaima, T.G. 1991: Maritime matters in the Linear B tablets, in: R. Laffineur – L.

Basch (eds.) *Thalassa. Aegaeum 7. (Liège)* 273-309.

Palmer, L.R. 1963: *The Interpretation of Mycenaean Greek Texts* (Oxford).

Raban, A. 1983: Recent maritime archaeological research in Israel. *IJNA* 12, 229-251.

Raban, A. 1984: The Thera Ships: Another Interpretation. *AJA* 88,1, 11-19.

Schäfer, J. 1991: Amnisos – Harbour Town of Minos? in: R. Laffineur – L. Basch, *Thalassa. Aegaeum 7* (Liège) 111-116.

Shaw, J.W. – Shaw, M.C. 2006. Conclusions: The history and functions of the monumental Minoan Buildings at Kommos: Architectural Forms and their uses, in: J.W. Shaw – M.C. Shaw (eds.), *Kommos V. The Monumental Minoan Buildings at Kommos* (Princeton, NJ) 846-854.

Shaw, J.W. 1990: Bronze Age Aegean Harboursides, in: C. Gillis – C. Risberg – B. Sjöberg (eds.), *Thera and the Aegean World III. Vol. 1: Archaeology. Proceedings of the Third International Congress, Santorini, Greece, 3-9 September 1989* (London) 420-436.

Shaw, J.W. 2006: Kommos: A Minoan harbor town and Greek sanctuary in southern Crete (Princeton, NJ).

Shaw, M.C., 1985: Late Minoan I building J/T, and late Minoan III buildings N and P at Kommos: their nature and possible uses as residences, places, and/or emporia, in: J.W. Shaw – M.C. Shaw (eds.), *A great Minoan triangle in south-central Crete: Kommos, Hagia Triada, Phaistos. Scripta Mediterranea, vol. VI* (Toronto. P.) 19-25.

Sherratt, A. – Sherratt, S. 1991: From luxuries to commodities: the nature of Mediterranean Bronze Age trading systems, in: N.H. Gale (ed.), *Bronze Age Trade in the Mediterranean. Studies in Mediterranean Archaeology* 90, 351-386.

Tartaron, F.T. – Pullen, D.J. – Dunn, R.K. et al. 2011: *The Saronic Harbors Archaeological Research Project (SHARP): Investigations at Mycenaean Kalamianos, 2007-2009. Hesperia* 80, 559-634.

Tartaron, F.T. – Rothaus, R.M. – Pullen, D.J. 2003: Searching for Prehistoric Aegean Harbors with GIS, *Geomorphology and Archaeology, Athena Review* 3 n.4, 27-36.

van Effenterre, H. 1980: *Le Palais de Malia, 2 vol.* (Rome).

Vasilakis, A. 2010: Late Minoan shipsheds in Katsamba (Heraklion), in: Andrianakis, M. – Tzachili, I. (eds.), *Archaiologiko Ergo Kritis I. Rethymno*, 28-30 Nov. 2008. 285-293 (in Greek).

Ventris, M. – Chadwick, J. 1973: *Documents in Mycenaean Greek* (Cambridge).

Wachsmann, S. 1998: *Seagoing ships and seamanship in the Bronze Age Levant* (College Station, Tex.).

Watrous, L.V. 2012: The Harbor Complex of the Minoan Town at Gournia. *AJA* 116, 521-541.

Westerdahl, Chr. 1992: The maritime cultural landscape. *IJNA* 21.1. 5-14.

Zangger, E. 1994: Landscape changes around Tiryns during the Bronze Age. *AJA* 98, 189-212.

Zangger, E. 1998: The port of Nestor, in: J.L. Davis (ed.) with contributions by Susan E. Alcock [and others]: *Sandy Pylos: an archaeological history from Nestor to Navarino* (College Station Tex.) 69-74.

Credits of figures

Fig. 1: Dumas 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-middleminoan-slipway-for-ships-at-the-kommos-harbor/> Fig. 12: Hue – Pelon 1991 (s. Anm. 3), Plate XXXI.

Address

Eugenia Loizou
Mittelstraße 18a
22851 - Norderstedt
eugenialoizou@yahoo.com

Deutsches Schifffahrtsmuseum

Von Kapitänen und Kaufleuten

Seehandel im Mittelalter

Eine Ausstellung für Kinder ab 6 Jahren
Deutsches Schifffahrtsmuseum Bremerhaven
10. 12. 2017 – 08. 04. 2018

Leibniz-Institut für deutsche Schifffahrtsgeschichte
Hans-Scharoun-Platz 1
27568 Bremerhaven
www.dsm.museum

Öffnungszeiten:
Dienstag bis Sonntag
10:00 bis 18:00 Uhr

In Kooperation mit:

MUSEUM
straße
KINDER
KULTUR
BÜRO

SCHWEDENSPEICHER



Leibniz
Lern- und
Gemeinschaft

VGH Stiftung

BREMERHAVEN
KULTUR ERLEBEN