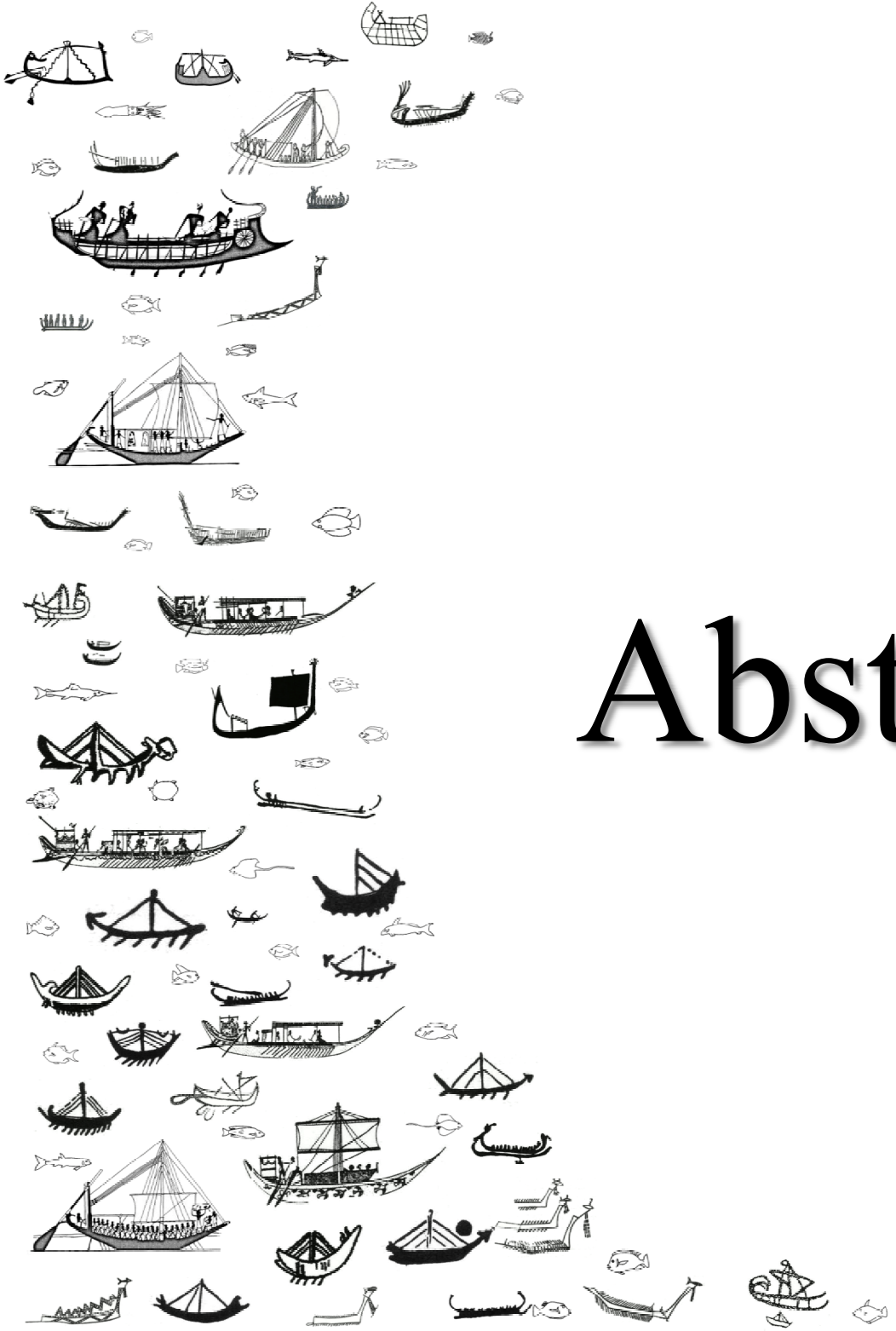

Abstracts

Agourides, Christos S.

The Late Bronze Age Shipwreck at the islet of Modi (Poros)

The rocky islet of Modi (or Liondari = Lion) is situated SE of Poros on a very important sea route between the Saronic and Argolic Gulfs. Its impressive shape, like a sited lion, forms a very important land mark for navigation in the region.

The Hellenic Institute of Marine Archaeology (HIMA) since 2003 carries out an underwater research project that has brought to light important finds of the Late Bronze Age period (around 1200 BC). Ceramics and stone anchors rose to surface from the sea bed around Modi, together with the Mycenaean settlement on the rocky slopes of Modi excavated recently, verify the important role that the islet would have hold as a maritime stop over on one of the most frequented sea routes of the Aegean.

On the north steep sloppy bottom of Modi, at a depth of 27-40 metres, a concentration of large transport vessels were located (pithoi, amphorae and hydriae) some of them intact and most of them in fragmentary condition. During preliminary research (2005, 2006 and 2007 campaigns) and the systematic excavation that followed (2009 and 2010), the scientific team of HIMA worked intensively in order to survey the wreck, raise and evaluate the remains of the ceramic cargo. The site is dated to the LH III period (13th-12th c. BC), which is very important for Aegean prehistory. It is the second wreck of the LBA investigated by the Hellenic Institute of Marine Archaeology in the Greek waters, after systematic u/w archaeological research. Moreover, it is one of the few LBA wrecks investigated in the Aegean.

Furthermore, a Geo-archaeological survey was planned and carried out in co-operation with the Laboratory of Marine Geology and Physical Oceanography of the University of Patras in order to define the evolution of the coastline configuration around Modi island over the last 18000 years BP, to define the subbottom stratigraphy of the recent sediment sequence, and to detect targets (surface and subsurface) of potential archaeological interest.

Artzy, Michal

Tell Abu Hawam to Athlit: From Anchorage to Artificial Harbor

The participation of the Carmel Coast in the international maritime trade network is not surprising given its geographical location. Imported material goods from the sites, Akko, Tell abu Hawam, Nami, Shiqmona, Athlit and Dor from the Late Bronze to the Earlier Iron Ages have are know to archaeologists interested in the era.
The questions we ask in this study is what was the nature of the anchorages to and from which the goods emanated, especially in this almost completely bay-less area. In the past the idea of river outlets has been suggested and oft negated. The problem associated with the lack of natural anchoring possibilities led to the early attempts at constructing artificial harboring installations in the outlets and eventually the sea.

Blackman, David

Minoan Shipsheds

Covered slipways or 'shipsheds' were a diagnostic feature of military harbours in the classical world from the late sixth century BC. A new dimension has been added to the subject with the discoveries of Joseph and Maria Shaw, at Kommos in southern Crete. In the mid-1980s a row of six long, narrow roofed galleries were revealed (Building P), dating to the Late Minoan IIIA2 period (14th century BC); Maria Shaw first suggested in 1985 that they could be interpreted as shipsheds, though they lay well inland. Some, including the writer, were slow to accept this interpretation, but have now been convinced that it is plausible by recent similar discoveries at the port of Knossos; I add the proviso that here the term 'shipsheds' means 'sheds for ship storage', for example for winter storage well away from the shore, rather than 'covered slipways'.

At Poros/Katsamba, excavations by Antonis Vasilakis have revealed a row of six long chambers, perpendicular to the coast, which is now 150m away. The structures were destroyed at the end of Late Minoan IIIA2 (1300 BC or just before). We thus have two plausible examples of Minoan 'storage shipsheds', but Minoan parallels for the later 'covered slipways' have not been found, unless one accepts some remains on the shore at Gournia. Other possible sites will be discussed, and also possible iconographic evidence.

Interesting exchanges of information between the Kommos and Naxos excavators have revealed the possible parallel use of haematite on ships as a colouring and probably also anti-fouling agent, at sites nine centuries apart in date; remains of pigments from Katsamba, not yet studied, may provide a further Minoan parallel.

DEGUWA

Bounegru, Octavian

Die „homerischen Schiffe“.
Zu einer Kontroverse über Terminologie und Bilder

Die Typologie der so genannten „homerischen“ Schiffe ist bislang nicht genügend erforscht worden. Das liegt einerseits an der konfusen Terminologie und andererseits an den extrem standardisierten Schiffsdarstellungen der griechischen Keramik. Es ist bekannt, dass weder in der Ilias noch in der Odyssee auf den spitzen Vorderteil des Bugs angespielt wird, den Rammsporn, der als *eperon* bezeichnet wird. So kann man davon ausgehen, dass in den homerischen Epen, an keiner Stelle von Kriegsschiffen die Rede ist. Jedoch erfahren wir aus den homerischen Schriften von Schiffen mit gerundetem Bug und Heck, den *nēes korónides*, *nēes ortókrairai* und *nēes amphiélissai*. Diese Typologie wird teilweise von Darstellungen auf geometrischen Vasen aus dem 8. Jht. vor Chr. bestätigt, im allgemeinen Schiffe ohne Deck und Deckaufbauten mit nach innen gewölbtem Bord.

Dellaporta, Katerina

Early Seafaring in the Ionian Sea

The paper attempts to present the archaeological sites and cultural exchanges between the network of the Ionian Sea islands as stopping places of a long journey along the western coastline of Greece in the middle Mediterranean Sea through which people exchanged things, knowledge and experience.

The sea reveals a part of the past of the seven islands ; some of these to remember are among others the Early Bronze Age site at Platyiali on the coast of Akarnania and the Early Bronze Age shipwreck of Yayana bay in Cephalonia island.

Galili, Ehud; Gale, Noel & Rosen, Baruch

Late Bronze Age Cargoes of Tin and Copper Ingots from the Carmel Coast, Israel

Twelve Late Bronze underwater assemblages, concentrations of one-hole stone anchors and artifacts, are known along a ten Km portion of the North Carmel coast, Israel. Four, located along 3 km long stretch and containing metal ingots, are discussed. A representative site, Hishuley Carmel is reported in detail. It provides direct evidence for the sea-transport of copper and tin ingots, along the Israeli coast, at that period. The site may mark a connection area between inland trade-routes of tin from the east and copper maritime trade routes in the Mediterranean, in the west. That shipwreck and the metal ingots represent a supply system providing the Bronze demanded in the Levant at that period. Trace elements and lead isotope analysis suggest that the copper originated in Cyprus. The several possible sources of the tin were also discussed.

Gkioni, M., Ferentinos, G.; Geraga, M. & Papatheodorou, G.

The Greek Archipelagos: a prehistoric laboratory for the development of sailing skills

Archaeological studies in the southern Ionian Islands, the Sporades island complex, the Cyclades island complex and Crete in the Aegean Sea has shown that the islands were visited by human from the Middle Palaeolithic to the Mesolithic times.
The reconstruction of the palaeo-shoreline configuration in the Ionian and Aegean Seas during the same period shows that the coastal and island configuration was favorable for man to reach the island. Furthermore, the Middle Palaeolithic, Upper Palaeolithic and Mesolithic hunter-gathers were probably bearing in mind the concepts of “voyaging nursery” and “autocatalysis” in their movements to the islands.

Göttlicher, Arvid

Dekorative Aspekte altägäischer Schiffsikonographie

Jenseits aller materiellen Existenzsicherung hat der Mensch die Objekte seines täglichen Gebrauchs ästhetisch angereichert und überhöht. Dazu gehören auch seine Wasserfahrzeuge, die hier geografisch und chronologisch eng betrachtet, aber als exemplarisch gedeutet werden. Es geht um die künstlerische Ausstattung der Rümpfe selbst sowie um zusätzliche Schmuckelemente in der kreativen Vielfalt und identitätsstiftenden Bildsprache.

Decorative aspects of Aegean nautical imaginary

Decorating himself and the objects he makes and uses is a basic human requirement beyond any material existence. Among the objects are all kind of watercraft, here studied in a geographical and historical field, but generally exemplary. We have a look at additional decorative elements in the variety of creative symbols and interpretative ideas.

Grossmann, Eva

Maritime Tel Michal, Israel

The coastal settlement of Tel Michal is situated some 10km north of Tel-Aviv on the coastal ridge, on three hillocks to the south of the estuary of wadi Gelilot. According to land excavations it was inhabited from MB IIB (1750 BC), when port cities and fortresses were established along the coast of Israel, until the Persian period (6th century BC). The beginning of international trade at Tel Michal can also be traced back to MB IIB.

It was common practice, during the MB and LB periods, to divert wadi and river flows to build anchorages. The flowing water prevented silting, which was the main concern of harbour engineers. Geological findings based on wadi sediments at Tel Michal indicate that there was water flowing in this area, supporting the assumption that Tel Michal had an estuary-harbour on the south-eastern side of the town.

Ships at that time were built double ended, with identical stem and stern and single square sail. During day time, with prevailing western winds, ships could enter the estuary-harbour sailing before the wind; then in the morning, when the breeze blows from the land, ships could put out to sea, again with the wind in their back, requiring only shifting the oar-rudder from stern to stem.

At the beginning of the Iron Age, when waves of migrating tribes invaded the coast, most of the inhabitants moved inland. The estuary-harbour went out of use and was never rebuilt. In the 6th century BC, 3.5 km to the north, a new town, Apollonia, was established. There two harbours were built in the 2nd century AD.

Haarmann, Harald

Schifffahrt und Ritualwesen in der ägäischen Bronzezeit

Verbindungen zwischen Europa und Asien bestanden auf dem Land- und Seeweg. Die Migration von Menschen, der Transport von Waren und der Transfer von Ideen erfolgte seit dem frühen Neolithikum über die bis ca. 6700 v. Chr. existierende Landbrücke am Bosporus sowie mit Booten über die Ägäis. Zu den ältesten Handelsgütern, deren Wanderwege identifiziert werden können, gehört Obsidian, der von der Insel Melos aus zum griechischen Festland und nach Kleinasien transportiert wurde.

Die bronzezeitlichen Kulturen der Ägäis, die der Kykladen und die minoische Altkretas, stützten sich auf den Seehandel. Die minoische Zivilisation wird auch als Thalassokratie (´Seeherrschaft´) bezeichnet, ein Ausdruck, der von dem griechischen Wort für ´Meer´ (*thalassa*) abgeleitet ist. Griech. *thalassa* ist kein einheimisches Wort, also kein indoeuropäisches Erbwort, sondern ein vorgriechisches Substratwort. Dies ist wohl ein Anzeichen dafür, dass die Griechen Schiffsbau und Seefahrt von der vorgriechischen Bevölkerung, eben von den Kykladenbewohnern und den Minoern gelernt haben.

Von der vorgriechischen neolithischen Kultur (Alteuropa bzw. Donauzivilisation) des Festlandes ist bekannt, dass deren Bewohner, die Alteuropäer, Fernhandel über ein ausgedehntes Netz von Flussrouten betrieben, entlang der Donau und ihrer Nebenflüsse. Bestimmte diagnostische Leitmotive des Fernhandels, wie Spondylusmuscheln, erlauben eine Rekonstruktion der Routen über Hunderte von Kilometern, von den Küsten der Ägäis bis nach Mitteleuropa. Ob die Tradition der Flussschifffahrt Impulse für den Aufbau des ägäischen Seehandels späterer Zeit vermittelt hat, ist eine bislang offene Frage.

Die Alteuropäer sind für ihr ausgeprägtes Ritualwesen bekannt, dessen Beziehung zu den Flussläufen mit ihren Handelszentren in der Ikonographie - wenngleich fragmentarisch - aufscheint. Wesentlich besser sind die mit Schiffsprozessionen assoziierten Kultpraktiken in der ägäischen Bronzezeit dokumentiert, wie in den Fresken von Thera (Akrotiri), in Bildszenen auf kretischen Siegelringen, usw. Auch im Zeichenrepertoire der Schriftsysteme finden sich visuelle Anklänge an religiöse Zeremonien und Rituale, die in Verbindung mit dem Meer stehen.

Es ist sicher nicht abwegig, die aus der griechischen Antike und aus historischer Zeit bekannte Sitte der Fischer, anlässlich religiöser Festlichkeiten zu Prozessionen aufs Meer zu fahren, auf bronzezeitliche Ursprünge zurückzuführen.

DEGUWA

Haarmann, Harald

Seafaring and related ritual activity in the Aegean Bronze Age

There were both land routes and sea routes connecting Europe with Asia Minor. Since the Early Neolithic the migration of people, the transport of trade goods and the diffusion of ideas followed the land route near the Bosporus, that existed until c. 6700 BCE (that is until the Black Sea flood), and the sea route across the Aegean. Among the oldest items for trade the distribution of which can be identified is obsidian that was transported from the island of Melos to the Greek mainland and to Asia Minor.

The Aegean Bronze Age cultures, those in the Cycladic islands and in Minoan Crete, were focused on sea trade. Minoan civilization has been termed thalassocracy (´sea power´), an expression which is derived from the Greek word for ´sea´ (i.e. *thalassa*). Greek *thalassa* is no indigenous term, that is no Indo-European cognate, but an expression of the pre-Greek substratum. The foreign origin of the term for ´sea´ may indicate that the Greeks got acquainted with shipbuilding and seafaring through contact with the inhabitants of the Cyclades and the Minoans.

The archaeological record for Neolithic Southeast Europe - for a region that has been termed Old Europe or Danube civilization - shows that the pre-Greek population was engaged in lively trade relations along the waterways of the Danube and its tributaries. The distribution of certain diagnostic items, such as spondylus shells, can be traced over hundreds of kilometers, from the Aegean coasts as far as Central Europe. The question whether the river trade of the Old Europeans inspired the Aegean sea trade of later periods is as yet unresolved.

The Old Europeans are known for their cultic traditions and elaborate rituals. The association of certain cultic customs with water and rivers becomes apparent, albeit fragmentary, in the iconography. For the Aegean Bronze Age there is documentation of ritual activities related to boat- or ship processions. Evidence comes from the frescoes of Thera (Akrotiri), from pictorial motifs on Cretan seal rings, etc. One finds visual allusions to religious ceremonies and rituals, related to the sea, also in the sign repertories of the Aegean scripts.

It does not seem unreasonable to identify Bronze-Age origins for certain customs of the fishermen, known from Greek antiquity and from historical times, to participate in boat processions on the occasion of religious festivities.

DEGUWA

Kamarinou, Dimitra

«ΟΥΡΟΣ ΑΝΕΜΟΣ» in the Bronze Age Aegean

Thorough research of the Homeric verses has revealed a corpus of precise information and terminology on shipbuilding timber and seafaring. Should it be proven reliable, it would add to the missing pieces of our knowledge on Bronze Age shipbuilding and seafaring.
The Homeric references on shipbuilding timber concern the proper tree species for the building of a ship and of certain parts of it, the criteria for the selection of the most suitable tree trunk among the individuals of a forest, and the procedures of the tree cutting and the working out of the trunks. Later ancient Greek texts on shipbuilding timber (like Theophrastus) have been studied in order to check the reliability of the Homeric information and to explain the rational of the shipbuilding timber choices All philological data have been reflected on the archaeological evidence regarding the dendromorphology of the excavated shipwrecks. The study also examines whether plant species suitable for shipbuilding would have existed in the Bronze Age Aegean islands. Additionally the study shows that the epics provide us with reliable and abundant information on aspects of seafaring, like the prevailing Aegean winds, the sea routes, the rigging and the speed of the ships, the conditions of sailing.

DEGUWA

Mielke, Dirk Paul & Schuhmacher, Thomas X.

Zeugnisse prähistorischer Seefahrt – Die Schiffspetroglyphen auf der Iberischen Halbinsel

An den Küsten der Iberischen Halbinsel finden sich verstreut Petroglyphen mit auffälligen Schiffsdarstellungen. Diese zeigen oft zahlreiche Details, die es ermöglichen sie mit entsprechenden Schiffsmodellen des östlichen Mittelmeerraumes in Verbindung zu bringen. Begleitende Motive und die entsprechenden Parallelen der Schiffe erlauben es einzelne Darstellungen bereits in das 3. Jt. v. Chr. oder das beginnende 2 Jt. v. Chr. zu datieren. Andere sind hingegen an das Ende der Bronze- und den Beginn der Eisenzeit zu datieren.
In dem Vortrag sollen diese Darstellungen und ihre möglichen Parallelen vorgestellt werden. Gleichzeitig möchten wir die historischen Kontexte näher betrachten, wobei vor allem der Zusammenhang dieser Bilder mit dem Aufkommen von Neuerungen und exotischen Objekten auf der Iberischen Halbinsel zur Diskussion steht. Abschließend soll die Frage beantwortet werden, in wie weit die Schiffspetroglyphen als Zeugnisse prähistorischer Seefahrt und überregionaler Kontakte vor dem Einsetzen der phönizischen Kolonisation angesehen werden können.

On the coasts of the Iberian Peninsula we can find scattered petroglyphs with striking images of ships. These often show numerous details, which allow us to link them to Eastern Mediterranean ship types. The motives which accompany them and the parallels for the ships enable us to date some images to the 3rd or the beginning of the second millennia BC. Others originate from the end of the Bronze and the beginning of the Iron Age.
In our lecture we will present these illustrations and their possible analogies. At the same time we want to look at their historical context, having in mind especially the connection between these images and the emergence of innovations and exotic objects on the Iberian Peninsula. Concluding we try to answer the question whether we can regard the petroglyphs of ships as proofs for prehistoric sea-faring and supra-regional contacts before the beginning of Phoenician colonization.

Müller, Marko

Neue Sicht auf alte Tafeln – Ein Ende der pylischen Küstenwache?

Die im mykenischen Pylos gefundenen so genannten o-ka-Tafeln werden in der Forschung seit ihrer Entdeckung in den allermeisten Fällen als Beschreibung der Küstenwache von Pylos angesehen. Diese Deutung stützt sich vor allem auf den Text PY An 657.1. Es kann aber gezeigt werden, dass eine militärische Deutung dieser Zeile sowie der o-ka-Tafeln insgesamt aufgrund der Formulierung in PY An 657.1 nicht zwingend ist. Ferner wäre eine Küstenwache, die nach Art der o-ka-Tafeln aufgestellt gewesen wäre, kaum ihrem Zweck gerecht aufgestellt gewesen.
Wenn die seit langem bekannten Übereinstimmungen der o-ka-Tafeln mit Texten der pylischen Na-Subserie systematisch untersucht werden, deutet sich vielmehr an, dass in den o-ka-Tafeln Gruppen beschrieben werden, die in der pylischen Landwirtschaft eingesetzt wurden. Anführer der darin genannten Gruppen anonymer, in der Flachsproduktion tätiger Männer waren mykenische e-qe-ta. Die in den o-ka-Tafeln namentlich genannten Einzelpersonen waren keine Offiziere, sondern Handwerker, die den als o-ka bezeichneten Einheiten insgesamt zugeordnet waren.

The so called o-ka-tablets from Pylos are assumed to be the description of the Pylian coast guard in most of the publications referring to them. This understanding is largely based on PY An 657.1. However, the text of PY An 657.1 is not neccesarily to be understood as a military document, but it also allows a different interpretation. Besides, a coast guard organized in a way as presented in the o-ka-tablets would be very inefficent.
By taking the well-known correspondences between the o-ka-tablets and the Pylian Na-tablets into account, an agricultural context appears to be a more likely interpretation of the o-ka tablets: They enumerate groups of anonymous rural workers. The supervisors of the workers involved in flax production were the Mycenaean e-qe-ta. The men mentioned by their individual names were not commanding officers, but craftsmen associated with the groups called o-ka.

Panagiotopoulos, Diamantis

The Eastern Mediterranean Nexus. Late Bronze Age Cultural Interaction and the Impact of the Maritime Element

The significance of the environmental constraints in determining the character and intensity of intercultural contacts cannot be overestimated. In our Mediterranean context it is inevitable to focus on the sea. Connectivity, openness, exchange, unity, all these key elements of Mediterraneism, resemble in essence the effects of maritime activity. Viewed in Braudelian terms this maritime environment shaped the *field of possibilities* of Bronze Age cultural interaction and evolution. The Mediterranean Sea divided as well as linked. It was dangerous and a force that could not be easily controlled. However, the long-distance maritime trade opened through the advantages in terms of cost and speed endless opportunities. Due to this ambiguity, the sea did serve as an important unifying force, yet only for those who were able to take the risk. The lectures strives to shed some light on the consequences of this ambiguity at different levels of cultural interaction, including the social, political and economic structures, the channels of exchange and - last but not least - the different kinds of encounter with objects and ideas circulating via maritime routes.

Pavic, Anton

Kontrollierte Handelswege? Seerouten in der Ostadria (1300-800 v. Chr.)

Mit dem Erscheinen der verschiedenen Kulturgruppen des späteren Illyricum (Histrische, Japodische, Liburnische, Delmatische und Illyrische) entsteht im Zeitraum von etwa 1300 bis 800 v. Chr. an der Ostküste des Adriatischen Meeres eine Vielzahl neuer, planmäßig angelegter Städte. Im Unterschied zu den vorangehenden Befestigungen und befestigten Siedlungen des gesamten ostadriatischen Raums sind diese Anlagen nun unmittelbar an den Küsten des Festlandes und der vielen Inseln unter anderem strategisch mit weiteren Wallburgen über natürlichen Hafenbuchten gelegen. Eine derartige Expansion in Richtung des Meeres sowie komplex gegliederte Gemeinwesen lassen sich nur durch eine höher frequentierte Seefahrt und intensivierte Kontakte zu weiter entfernten Kulturen erklären. Im Vortrag werden die Seefahrt entlang der Ostadria sowie ausgewählte Stadtanlagen näher beleuchtet. Darüber hinaus werden Funde mykenischer, apulischer und mitteleuropäischer Provenienz in den jeweiligen Städten exemplarisch vorgestellt. Die daraus resultierenden Ergebnisse einer wahrscheinlichen Kontrolle der Seefahrt im Adriatischen Meer werden schließlich diskutiert.

Controlled channels of trade? Maritime routes in the Eastern Adriatic (1300-800 B.C.)

Multiple new, systematically built cities on the east coast of the Adriatic Sea emerge through the appearance of the various cultural groups of the later Illyricum (Histrian, Japodian, Liburnian, Delmatean and Illyrian) between ca. 1300 and 800 B.C. These sites are now situated right on the shores of the mainland and the plenty islands, in contrast to the previous fortified settlements of the entire Eastern Adriatic area. In addition, further enclosures are strategically built on hills above ports in natural bays, overviewing the sea. Such an expansion towards the Adriatic coast as well as sophisticatedly structured polities can only be explained by a more frequented seafaring and intensified contacts with more distant cultures. The lecture will shine a light on the seafaring along the Eastern Adriatic and the location of selected cities. Furthermore the presentation will consider finds of Mycenean, Apulian and Central European provenance of the respective cities. It will finally discuss the presumption of a controlled seafaring in the Adriatic Sea.

Pedersen, Ralph K.

Emerging Maritime Paradigms for the Bronze Age in Lebanon

During the first decade of this century archaeology in a revitalized Lebanon has made new inroads into our understanding of the past. Archaeological investigations on land and under the sea at the middle Bronze Age Tell el Burak and at the early Bronze Age Tell Fadous-Kfarabida have yielded insights into late prehistoric and early historic settlement and seafaring in Lebanon. These studies, combined with general underwater archaeological surveying along the Lebanese coast have led to greater, albeit nascent, understanding of the maritime aspects of Lebanon in the Bronze Age. The research in the sea at the Bronze Age tells, the 'sunken city of Yarmuta,' and other areas will be presented.

Pulak, Cemal

The Anchors Assemblage of the Late Bronze Age Uluburun Ship (ca. 1320 B.C.)

In marine contexts, stone anchors are usually associated with offshore moorings, inshore anchorages, and proto-harbors. The 24 stone anchors found on the Late Bronze Age shipwreck excavated off Uluburun, Turkey, however, comprise the largest group of stone anchors ever found associated with an ancient shipwreck. The Uluburun anchors provide important information about the sizes and shapes of anchors used on Bronze Age ships, as well as about their stowage aboard the ship. Several groups of Bronze Age anchors have also been discovered in shallow-water shipwrecks off the coast of Israel, but these wrecks are badly dispersed by the elements and are therefore less informative about the anchors they carried. Stone anchors excavated in terrestrial contexts, on the other hand, are usually associated with temples or are recovered as reused construction material in buildings.

Twenty-two Uluburun anchors are of beachrock (coastal sandstone) and two smallest anchors in the group are of limestone or marble. The anchors were found in two distinct groups: 8 were stowed amidships, presumably as spares, and 16 were kept at the bow of the ship, ready for use. The total weight of the Uluburun anchors is 3,297 kg. The heaviest of the 22 beachrock anchors on the ship is 201 kg, and the lightest is 97 kg, and averaging 148 kg. The beachrock anchors vary in height between 0.59 and 0.96 m, and average 0.79 m. The analysis of the weight, shape, and distribution on the seabed of the Uluburun anchors, provides crucial indications for their stowage and stacking aboard the ship and sheds light on Late Bronze Age seafaring and safety practices.

Radić Rossi, Irena

Evidence of Bronze Age Seafaring in Croatian Waters

Prehistoric seafaring in the E Adriatic is attested mainly by archaeological evidence from sites on land. Evidence of maritime exchange between the E and W sides of the Adriatic, as well as with the Ionian and the Aegean area, can be documented from as early as the Neolithic period. Although most of the underwater evidence comes from classical antiquity, several objects registered recently suggest the existence of Bronze Age shipwrecks in these waters. One decorated Early Bronze Age vessel was found several years ago in the bay of Marina at a depth of 30 m. Another ceramic vessel, probably jetsam or part of a cargo from a wreck, was found off the Pelješac peninsula near the small Illyrian fort located between the two sheltered inlets of Vela and Mala Bezdija. The entire area abounds in sites of the Illyrian period and holds great potential for revealing seafaring craft belonging to the local population.
The most promising find, a large ceramic vessel (diam. 50 cm) with four handles and a narrow neck, was raised recently from over 60 m of water by a fisherman between the islands of Hvar and Korčula, in proximity to a submerged reef known as Pločica. Its closest parallels are found on the Kefallonia wreck (EH II-III) in Ionian Greece. Similar objects from land sites in Croatia suggest a date in the Late Bronze Age. The position of the find and its state of preservation give positive indications of a shipwreck in the area.

Sakellariou, Dimitris

The submerged city of Pavlopetri

The Pavlopetri Underwater Archaeological Project 2009-2013 is a multi-national, multi-disciplinary survey based on the close collaboration between archaeologists, geoscientists and marine engineers. It offers the possibility (i) to use and test innovative and conventional mapping techniques and methodologies for the survey of the submerged city, (ii) to understand the geological processes which led to the drowning of the city within a long-term uplifting region ("The Laconia Paradox") and (iii) to reconstruct the submerged prehistoric landscape.
In parallel with the total station topographic measurements, the submerged site was surveyed with side scan sonar, multi beam echo sounder, sector scan sonar and with diver-operated photogrammetry-rig. Offshore geological survey of the Vatika Bay and land geological mapping of the Elaphonissos and Vatika region aim at resolving the "Laconia Paradox" and understand the relationship between faulting, vertical tectonics and Holocene sea level rise. High resolution seismics have revealed the presence of successive, submerged, Holocene paleo-shorelines at shallow depths and underwater marine terraces formed during Late Pleistocene low-sea level stands.

Schmitt, Tassilo

THALASSOKRATIA und Realität. Grundsätzliches zu „Seemacht“ und „Seeschlacht“ bis zu den Perserkriegen

Eine in der „Chronik“ des Eusebius überlieferte Liste gliedert die Zeit zwischen dem Fall Trojas und Xerxes’ Angriff auf Griechenland als eine Abfolge von „Thalassokratien“. Ähnlich findet man in Thukydides’ so genannter Archäologie die Vorstellung, dass der erfolgreiche Auf- und Ausbau von Macht eng mit der Seeherrschaft verbunden sei. Diese Ansichten sind ohne Zweifel sehr stark von der Rolle Athens im 5. Jahrhundert und der Deutung der Seeschlacht von Salamis als grundlegendem Ereignis geprägt. Im Vortrag soll untersucht werden, ob Herrschaftsbildung und militärische Überlegenheit zur See von der Bronzezeit bis ins frühe fünfte Jahrhundert miteinander verbunden sind. Insbesondere wird danach gefragt, welche Bedeutungen Kriegsmarine und „Seeschlachten“ gehabt haben.

THALASSOKRATIA and the Facts. Basic Reflections on „Sea Power“ and „Sea Battles“ until the Persian Wars

A list, passed on by Eusebius’s „Chronikon“, classifies the time between the fall of Troy and Xerxes’s transition to Greece as a series of „thalassocracies“. Similarly, Thucydides in his so-called „Archaeology“ develops the idea that building and extending power is closely connected with naval supremacy. Such points of view are certainly based on the role of Athens in the 5th century and on the battle of Salamis as a founding myth. This lecture is to study whether, in the period from the bronze age to the early 5th century, the establishment of a rule and naval superiority are related to each other, particularly concentrating on the importance of navy and sea battles.

Tiboni, Francesco

Sailing Vessles of the Bronze Age Mediterranean: From Convoy to Fleet

In this research I would like to stress archaeologists attention on a topic linked to the correct interpretation of a particular aspect of the first Mediterranean seafaring.
In fact, even if we know from Thucydides that the mythic king of Crete Minos must be considered the first king to have a fleet at his disposal, a combined analysis of archaeological, historical and epigraphic sources allow us to re-examine the dawn of the arranged fleets of the Mediterranean reigns.
In fact, even if archaeological evidences permit us to fix the date of the first appearance of convoys at least in the first half of the 3rd millennium BC of Egypt, a combined studies of historical and archaeological sources seems to demonstrate that we have to wait at least until the end of the bronze age to have the first evidence of a real *fleet*.
Thus, in my piece, starting from a lexical analysis of the words *Convoy*, *Shipping* and *Fleet* I would like to put in light how it is possible to have a more precise idea of the evolution of sailing techniques inside the Mediterranean basin, as a correct definition of a fleet cannot be considered a sole lexical problem: it involves important consideration on naval warfare as well as on the classical idea of Thalassocracy.

Tusa, Sebastiano

The tragic end of a late roman ship in Pantelleria

Excavation of the remains of the late roman wreck near the Scauri shores in Pantelleria strated in 1999 and was completed in 2010. At the end we can frame a preliminary idea of the cargo as well as of the dynamics of wreckage. The excavation was carried out with a GIS methodology with a great effort in collecting all the data useful for a correct reconstructing of this tragic event. It was a ship dated to the first half of Vth cent.a.D. carrying coking ware named *Pantellerian ware*. Alongwith such staff there were other items and a series of small objects that gives us the idea that the owner of that ship was a Christian coming from North Africa. Other details coming from the excavation give us the possibility to understand that the ship sunk after a violent event probably connected with the turbulent events that characterized the last years of Roman domain in this part of Mediterranean.

Tusa, S.; Royal, J. & Buccellato, C.

Rams, warships and sea-battles in Sicily according to new archaeological evidences

With little direct material evidence for ancient warships available, the discovery of four rams in Sicily in the past few years excited the archaeologists as well as the wider public. Two of those rams were discovered in the frame of a comparative effort between the Cultural Heritage in Sicily and RPM Nautical foundation (RPMNF) in the sea around Egadi islands. One, coming from the same area, was recovered after an intelligence operation carried out by Sicilian Cultural Heritage authorities and "Carabinieri", while the third was discovered near Messina. The three rams coming from the Egadi island gave us the possibility to understand place and features of the sea battle that the 10th of march of 241 b.C. decided the end of First Punic War in favor of the Romans.

Likewise, the voluminous amounts of ink and paper devoted to the detailed descriptions of ancient warships suffer from the near complete lack of direct material evidence as a foundation. Hence, the discovery of four ancient rams in Sicily was exceptional in two regards. The ram's presence in a location described by the ancient historian Polybius as the final battle of the First Punic War may provide this sought after convergence in the historical and archaeological records for ancient naval engagements. Additionally, the ram adds to the corpus of like finds in the Mediterranean, several made in the last five years, and expands the only data set of direct evidence for the construction of ancient warships.

Such finds are encouraging on one hand because of their association with a selection basis for this particular survey area. In a recent paper at the 2009 AIA annual meeting, Dr. William Murray outline the difficulties of locating ancient naval battle sites, as well as the complexity and expense in the conduct of such ventures. Initial interest in the area around Levanzo Island was the possibility of it being the site of the final battle of the First Punic War between the Romans and Carthaginians. However, a search for a sea-battle site attested to in historical sources, which do not always agree, is an insufficient basis on which to allocate the tremendous resources required to conduct such a project. A concomitant factor in support of selecting this area was that it lies along one of the major sea routes utilized in the transport of goods between N Africa and Italy, particularly those associated with the Roman *annona* system.

The discovery of two rams in this area adds to the meager archaeological evidence for ancient Mediterranean warships and allows a limited foray into the nature of warship construction. This work does not intend to discuss complete warship construction, rower configurations, or deck structures as the archaeological evidence from ram finds do not provide an archaeological basis to address such facets. Unfortunately, this lack of direct archaeological evidence from the pre-Byzantine period other than warship rams, has not curtailed the considerable publications that authoritatively explain such facets in extraordinary detail. With the number of known warship rams at seven, there is the potential to offer new archaeologically-based hypotheses on the function and features of warship rams, and to some extent the bow construction of ancient warships. The zeal to understand ancient warships has also led to a regrettable trend in this field of study whereby some experimental archaeological projects are confused with direct evidence gained through excavation and artifact analyses. Whereas the experimental reconstruction of the Kyrenia vessel illuminated characteristics associated with the extant archaeological remains on which it was based, projects such as the Olympias trireme construction have no archaeological basis to referentially address and, therefore, are more limited in what they offer to the study of ancient warships.

Vianello, Andrea

Late Bronze Age long-distance maritime trade as cultural agency: the case of non-palatial contexts

During the Late Bronze Age maritime exchange networks expanded to include the whole Mediterranean. Products such as Mycenaean pottery and amber circulated across the whole Mediterranean. Cargoes such as that of the Uluburun shipwreck demonstrate the importance of seafaring for the ancient societies and economies. Long-distance seafaring, largely motivated by trade, was also an occasion for significant cultural exchanges, both direct between physical persons of different culture and indirect through the influence of foreign and exotic artefacts. Whilst trade controlled by palatial elites and other elites in hierarchical societies was conceived within established political alliances and strategies, long-distance trade in pre- and non-palatial societies, mainly in the central and western Mediterranean, affected local societies in many ways and with less predictability. The connection between trade and the development of social hierarchy will be reviewed in non-palatial local contexts. Moreover, detectable cultural influences will be assessed in order to determine their effective importance in local and regional socio-economic contexts.

Wachsmann, Shelley

Minoan/Cycladic Ships: An Overview

This paper is an overview of the evidence for Minoan/Cycladic ships. The Minoans were the quintessential seafarers of the Bronze Age Mediterranean. We find them trading for tin at Mari on the upper Euphrates, and presenting their wares before Egyptian pharaohs. Artisans schooled in Cretan art forms decorated palaces in Asia and Egypt with Minoan motifs.

To date, not a single Minoan hull has been found. Our knowledge of these vessels is based almost exclusively on contemporaneous ship iconography. For decades after Sir Arthur Evans resurrected the Minoan culture at Knossos, little was known about their watercraft. A large corpus of Minoan ship representations existed, but most of the information derived from engravings on tiny seals and sealings along with a few poorly-made ship models, which could only give a general understanding of the vessels. Then, in 1972 Spyridon Marinatos on Thera began uncovering the site of Akrotiri: an entire settlement buried by volcanic ash at the end of the 17th century BC. A two-storey structure contained a miniature fresco depicting in exquisite polychromatic detail a group of ships taking part in a waterborne race or procession. The ships in this scene are identical, or at least similar in all discernable details, to the vessels appearing in Minoan art and represent a significant source of information for our understanding of Minoan/Cycladic watercraft. Additionally, a recent reevaluation of the silver ship model found in the XVIIth Dynasty tomb of Ahhotep (I) indicates that it is patterned after a Minoan ship type.