

# THE 'ADMINISTERED' SYSTEM OF TRANS-MEDITERRANEAN MARITIME RELATIONS AT THE END OF THE 2ND MILLENNIUM BC: APOGEE AND COLLAPSE

Stratton

Massimiliano Marazzi

## Summary

The Mycenaean expansion in the Mediterranean reaches its peak during the 14th and 13th centuries BC. Whilst its geographical coordinates are roughly known, the more strictly economic and political aspects are generally difficult to classify. Besides Aegean-Mycenaean mariners other maritime groups – not always clearly distinguishable from the former – are present, especially in the eastern Mediterranean. They are mostly known through the cuneiform and hieroglyphic sources of contemporary territorial states, in whose service they appear to act simultaneously as mercenaries and maritime operators. The decades between the 13th and 12th centuries BC see the collapse of these 'administered' commercial relationships, mainly due to the loss of control over this network of maritime interconnections. This phenomenon, variously defined as the emergence of "freelance mariners", "nomads of the sea" or "sea peoples" is concomitant with a series of social and technological changes taking place in the more strictly nautical environment: above all the propulsion techniques and structure of the ships and new arrangements at port facilities.

## 1. TOWARDS "GLOBALIZING" MEDITERRANEAN INTERCONNECTION PHENOMENA: THE 'MYCENAEAN' MEDITERRANEAN BETWEEN THE 15TH AND THE BEGINNING OF THE 13TH CENTURY BC (FIG.1)

The profound difference between the Mycenaean maritime expansion and that of the Minoans was already pointed out, very clearly, over twenty years ago by Mario Liverani (1986).<sup>1</sup>

Contrary to the *communis opinio*, Mycenaean society (or rather, its various geopolitical configurations, territorially controlled by the citadels that were home to the dominant elites) – as opposed to the model of the Minoan palaces or the Near Eastern territorial states – does not appear to have acted according to a 'politically administered' system in its interactions with the various trading environments with which it came into contact.

It is no coincidence, for example, that after the conquest of Knossos by Greek-speaking groups in LM IIIA2 and the political rebuilding of Crete, scenes of diplomatic missions from the Aegean no longer appear depicted in the tombs of Egyptian notables (see now Matić, Franković 2017). The process of progressive 'Mycenaeanization' of the Aegean centres, whose mechanisms remain to be clarified, and the massive diffusion of Mycenaean products in the major ports of the eastern Mediterranean, are not reflected in the evidence and findings from the textual sources belonging to their respective administrations.

The Mycenaean 'entrepreneurs' remain invisible in the texts; they are visible only in the material traces of their goods. This phenomenon accompanies all the processes of interconnection, which follow one another in rapid succession in the Mediterranean between the 15th and the 14th centuries BC: the foundation (or re-foundation) of ports on the major islands of the Cyclades and the Dodecanese; the occupation of strategic points along the Anatolian coast, often with the connivance of satellite political entities of the central Hittite authority in more or less open conflict with the latter; and the start of trading activities at the main ports of the Levant and, above all, of the island of Cyprus.<sup>2</sup>

1 The same publication, with some additions, was included in Marazzi 1994. On the same topic, see Sherratt 2001.

2 A general picture is provided in Broodbank 2013, 445-505 and Marazzi 2014b. Also of interest are Burns 2010 and the general overviews offered by van Wijngaarden 2002 and Tartaron 2013.

Precisely for its multifaceted nature, the very concept of ‘Mycenaeanization’ remains difficult to define (see recently Gorogianni, Pavuk, Girella 2016). How and in what way it is genuinely and directly related to the individual major political entities – such as Mycenae in Argolis, Pylos in Messenia, Sparta/Xirokambi-Agios Vasileios in Laconia, Athens in Attica, Thebes in Boeotia, Volos in Thessaly, which at this time appear to have their own citadels, ports, and directly controlled territories, not to mention the ‘Mycenaeanized’ Cretan centers like Knossos,

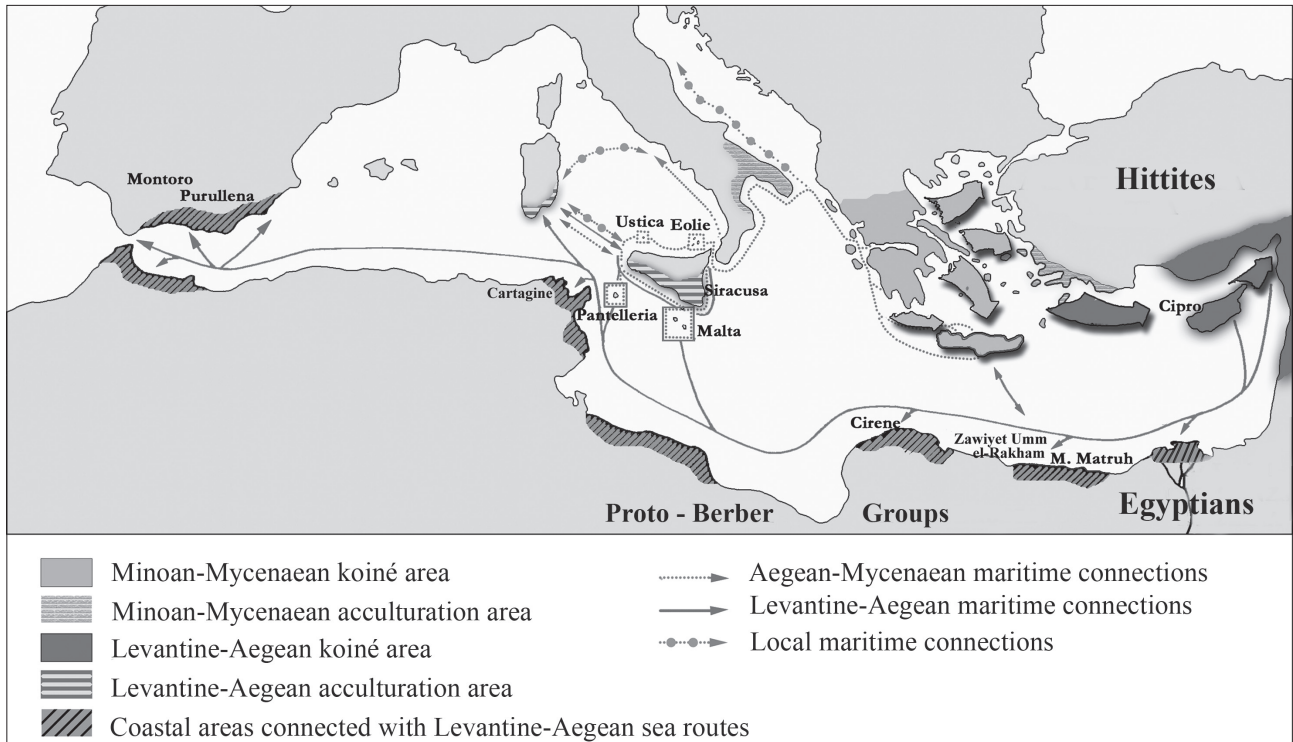


Fig. 1. Map of transmarine interconnections in the Mediterranean basin in around the second half of the 13th BC. Map by the author.

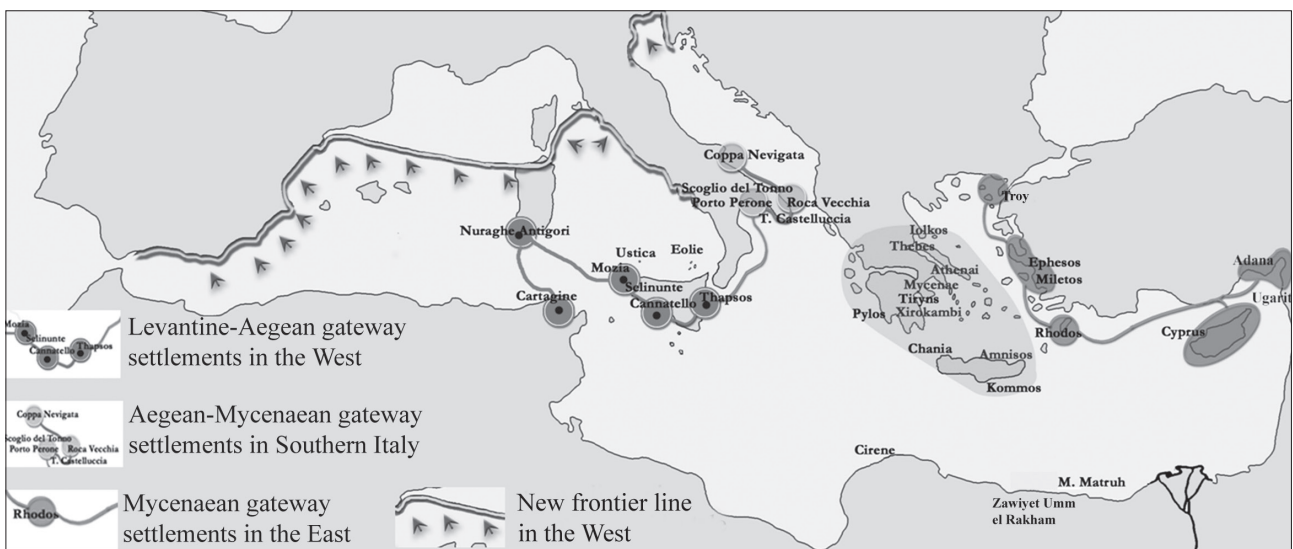


Fig. 2. Map of port terminals in relation to the various Mediterranean interconnection routes in around the middle of the 13th century BC. Map by the author.

Chania, and Phaistos/Hagia Triada – remains uncertain because these political entities did not produce literature attesting for their activities, nor did they leave any trace of themselves in the written sources of others.<sup>3</sup>

What is certain is that Mycenaean expansion on the seas, often viewed in the current literature as a homogeneous process based on a vision of Mycenaean society as a unified phenomenon, remains difficult to understand both in its forms and in its dynamics. Rather than taking place in one or another citadel of the motherland, it seems to have developed thanks to maritime groups that had over time become increasingly autonomous from their original environment. These operated from time to time on assignment and to the advantage of various Helladic territorial entities (and, over time, certainly of extra-Helladic entities as well), providing military support and a regular flow of goods as needed.

In the West, the Mycenaean entrepreneurial phenomenon led to the emergence and development of important ports of trade (paradigmatic are those of Scoglio del Tonno and Roca Vecchia in Apulia and Thapsos and Cannatello in Sicily), and the emergence of a dense network of relations with the local groups, able to extract goods from the areas of central Europe and the farthest regions of the western Mediterranean.<sup>4</sup> This network intersected with communication routes running along the North African coast already from the end of the 17th century BC, where seaside centres or intermediate subcoastal settlements such as Marsa Matruh and Zawiyet Umm al-Rakham were established (White 2002; Snape 2003; 2013), connecting the Levantine-Egyptian area with the southern maritime quadrants of the central Mediterranean (Fig. 2).

The phenomena of partial acculturation and the possible displacement of small human groups (especially in connection with the aforementioned port areas, to which we should add, at the end of the 13th century BC, the coasts of southern Sardinia), suggested by, among other things, the pottery productions labelled as Italo-Mycenaean and Cypriot-Sicilian, contribute to the development of further social modification (and entanglement) processes (Stockhammer 2012; 2013)

## 2. THE TURNING POINT DURING THE 13TH CENTURY BC

This process of intense interconnectivity encompasses the entire Mediterranean basin and is accompanied by the multiplication of centres of production and distribution for the goods in circulation, and, consequently, of the maritime nodes responsible for their diffusion; it thus goes hand in hand with the growing importance of the agents of the transfer of goods by sea. Already in the 14th century BC, and to an even greater extent during the decades that followed, the Egyptian and Near Eastern written sources suggest the idea that groups such as the *Lukka*, the *Shekelesh*, and the *Sherden*, which functioned as entrepreneurs and contemporaneously as military contingents serving the territorial states and the political authorities of the ports they controlled, become increasingly important (Marazzi forthcoming). Obviously we can imagine a strong Aegean-Mycenaean component within these groups, often characterized through the filter of the written sources of the time as lacking a specific territorial connotation, a sort of “nomads of the sea”, to revive an expression coined by M. Artzy (1997; 1998; Marazzi forthcoming).<sup>5</sup> The

3 Extremely misleading is the tendency, particularly evident in some recent studies, such as Kelder 2012, to attempt to map the ‘international politics’ of the contemporary world of the Near Eastern territorial states (for which see Liverani’s seminal work of 1990, re-published in 2001 with some upgrades) onto Mycenaean political entities. The long-standing debate over the references to *Abhijal/Abhijawa* in Hittite sources, the political significance to be assigned to them, and their identification with an actual Mycenaean geopolitical entity located variously in western Anatolia, in the Dodecanese, or on the Greek continent, cannot be discussed here. See Marazzi forthcoming, and also the Forum article in *SMEA*, this volume. Another *topos* that must be dispelled is that of the effective functionality of the literacy present in the Mycenaean environment. As the present author has recently noted (Marazzi 2015; 2016a), Mycenaean literacy, limited to contexts of political-economic control not only does not go beyond the boundaries of the monitoring of the movement of domestic goods *within* their controlled territory, but is used only for specific production areas. It does not apply to political matters (treatises, edicts, etc.), religion (festivals, cults, ritual calendars, etc.) and, in no case, to operations and transactions of exchange, offering or gift giving.

4 An updated view of these phenomena is included in Vagnetti 2010; on the concept of the ‘Levantinization’ of the nascent western port nodes, see Marazzi 1997; 2014b; forthcoming; on the acculturation phenomena of Aegean people in the western seas, see Jones *et al.* 2014.

5 The concept of ‘nomads of the sea’ is taken up and developed in a series of relatively recent works, particularly Manning, Hulin 2005; Bachhuber, Roberts 2009; Broodbank 2013, 345-505; Gilan 2014; Hitchcock, Maeir 2014; Hitchcock, Maeir 2016.

shipwrecks of Uluburun and Cape Gelidonya (dated to the end of the 14th and 13th centuries BC respectively, Yalçın *et al.* 2005) with their cargoes of metal ingots, prestige goods, transport jars and tools for impromptu metal work, were vehicles of long-distance administered trade as well as of freelance commerce connected with intermediate ports of call. They were not, however, linked to a specific ‘flag’ (something alien to our modern conceptions) and can be seen as exemplifying this nascent interconnectivity, entirely based on agents who did not belong directly to any one political-territorial entity.

These ‘peoples’ or ‘nomads’ of the sea appear to result from a social phenomenon triggered during the 14th and 13th centuries BC by both the expansion and intensification of administered trade and the organizational and military requirements of the elites who underpinned the various territorial entities. There was a growing divergence between those who worked directly at sea and those who were the original contractors for such operations. Together with the establishment throughout the Mediterranean area of sea ports increasingly free of territorial control, this resulted in the rapid development of coastal territories in which new social aggregations and different forms of production and movement of goods emerged. All this led to the destabilization and subsequent collapse of the traditional elites linked to, and dependent on, the flow of goods (raw materials and prestige items) and performance at war. Widespread destructions are reported in the major centres of the eastern Mediterranean basin between the end of the 13th and the beginning of the 12th century BC, from Mycenaean Greece to Hittite Anatolia and along the coasts of the Levant, echoed in the great epic composition of the battle against the peoples of the sea described and depicted by Ramses III on the walls of the monumental complex of Medinet Abu. However, this is far from being a unitary and connected phenomenon (as the Egyptian sources and often modern historiography would like) attributable to invasions or hordes of barbarians descending from the northern Eurasian regions. Rather, these destructions are different episodes – with different causes – of the economic-political disintegration of the elite groups that had built their power on the production, control, and redistribution of the flow of goods deriving from forms of transmarine commerce. This is particularly true of the Mycenaean geopolitical entities, whose rapid rise was based on the ability to create a ‘controlled interconnection’ between the acquisition areas in the western quadrant and the distribution areas for prestige goods in the central-eastern quadrant of the Mediterranean.<sup>6</sup>

If with the term ‘Mycenaean’ we refer strictly to that political-cultural entity that (1) is characterized by the emergence of elites at the end of the 17th century BC, later witnessed archaeologically by monumental and often fortified citadels characterized by magnificent and representative buildings; that (2) controlled the primary production of large territories through the use (limited to specific sectors) of writing; and that (3) established its status through the centralized control and processing of the flow of goods overseas, we can say that these entities did not survive the collapse evidenced by the destruction taking place in the decades between the end of the 13th and the early 12th century BC (on the definition of ‘Mycenaean’, Feuer 2011).

The emergence of the phenomenon described here as ‘the peoples of the sea’, ‘nomads of the sea’, or ‘freelance trade mariners’, should be seen, however, not only as a process that undermines the economic and political equilibrium of states, ports and administered regions, but also as a driver of profound innovation. This is true especially of the social composition and economic order not only of traditionally strategic port areas (such as Troy, Miletus and the Cilician ports of Anatolia, those in northern Syria and the Palestinian coastal strip, the developing Cypriot ports, the ports of Chania and Kommos in Crete, and the Tiryns naval centre in Greece), but also of those that we could describe as *newly emerging*. For example, consider the whole complex of maritime population centres (some of which are mentioned above) with proto-urban-type structures that had, through the 14th and 13th centuries

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6 The subject of seaports in this period is comprehensively addressed in Marazzi, Pecoraro 2016, while the phenomena of collapse linked to the so-called Peoples of the Sea are discussed in Marazzi forthcoming. For a complete and up-to-date documentation on the literary sources dealing with these marine groups, see Killbrew, Lehmann 2013, with an Appendix by Matthew J. Adams and Margaret E. Cohen at pp. 645-664. For a recent discussion on the redistribution of prestige goods see Crafts, Specialists, and Markets in Mycenaean Greece, Forum Article in AJA 117/3, 2013 <https://www.ajaonline.org/forum/1554>.

BC, increasingly become places of acculturation and commercial outlets for new productions.<sup>7</sup> These new settlements run from the Adriatic (*e.g.*, the emerging centres of Polesine) along the Adriatic and Ionian Apulia coasts (*e.g.*, Roca Vecchia and Scoglio del Tonno), the southeastern and southern coasts of Sicily (such as Trapano and Cannatello) to southern Sardinia (Cagliari area).

### 3. TECHNOLOGICAL CHANGES OF MARITIME INDICATORS

These phenomena of change, principally technological and productive in nature, are reflected, for example, in all those ceramic productions that become established with their 'Aegeanizing style' and that are often replicated with regional variants across the Mediterranean basin towards the end of the 13th century and especially during the 12th century.

We could also consider, to mention only the more macroscopic phenomena, that variably defined class of Mycenaean-type painted pottery that spreads originally from Cyprus to all the coastal settlements of the Levant. Or the very rich production of the so-called Italo-Mycenaean pottery, distributed through all the major island and coastal sites of the western Mediterranean basin.<sup>8</sup> To see behind these phenomena ethnic or linguistic specificities, or indicators of migration and colonization, as has too often been the case, is both naïve and dangerous (the same applies to the numerous futile speculations accompanying the quarrel over the ethnic characterization of the Uluburun and Gelidonya shipwrecks). They, and above all their dissemination, largely reflect the social mixing resulting from the process of extreme maritime connectivity outside (and sometimes alternative to) the controlled flow of an administered exchange now on the brink of collapse.

It is from the same perspective that, in our opinion, focus should be placed on all those technological changes that, not coincidentally, affect the maritime sphere more directly, and primarily the ships that, in their structure and propulsion strategies, especially with regard to a new sail and sheet arrangement, and in the experimentation with the first rudimentary rostrum forms, take on those characteristics that will remain peculiar to shipbuilding throughout antiquity. These advances in managing the means of navigation appear already from the middle of the 13th century and become central in the decades between the end of the 13th and the mid-12th century BC.<sup>9</sup>

### 4. THE SEAPORTS

As just mentioned, the main changes to the social order take place within the port facilities. Some of these are seaports falling directly within the sphere of territorial states, like the great international port of Ugarit on the north Syrian coast, politically controlled by the Hittite kingdom. Others are coastal shelters that, bypassing the systems of a managed activity, become places of acculturation for maritime groups free from the reins of political and economic control; this was probably the case of many island ports in the Aegean, and some ports on the west coast of Anatolia, such as Miletus, which was a true Aegean-Mycenaean merchant stronghold.<sup>10</sup>

Indeed, ports are dedicated to the collection of goods resulting from short or long-distance trade; they are environments for the development of loading and unloading practices and devices, stop-over and interaction points for seamen of different origins, languages, and traditions, concentrations of crews and their captains. Here suffice

7 On the development of harbour centres in the western Mediterranean, see Vagnetti 2000; 2010; and Marazzi 2003; 2014b (but earlier, in a more strictly Sicilian perspective, Marazzi 1997). See also Onnis 2011 and Cazzella, Recchia 2013.

8 For an approach to all the problems of the emergence of new productions, see Sherratt 1998, 1999; 2013. For contemporary productions in the western Mediterranean, see also Jones *et al.* 2014.

9 The bibliography on this include the seminal works of Wachsmann 1998 and 2013, and Wedde 2000 and 2005; the state of the art, with extensive bibliographical references, is outlined in Tartaron 2013, 48-89; most recently, Marazzi 2014a; Emanuel 2014a; 2014b; 2014c; 2015a; 2015b.

10 On the ports of Ugarit and Miletus at this time, see Yon 2006 (Ugarit); Niemeier 2007; 2009; Marazzi 2005 (Miletus and the western coast of Anatolia).



it to remember that the various documents written in the second half of the 2nd millennium testify to this directly or indirectly, as is the case with some cuneiform sources concerning the activities of the elusive people of *Abhijawa* and *Lukka*, or those from Ugarit on the *Shekelesh/Sikila* “who live on their ships” (Marazzi forthcoming; see also Gilan 2014; Sauvage 2008; 2011; Killbrew, Lehmann 2013).

On the other hand, new maritime elites must have developed in the ports located along the Peloponnesian coasts, such as those in west and south Messenia, Laconia, or in the large gulfs of Argos and, further north, of Volos. These gradually became increasingly detached from the Greek-Mycenaean bureaucracies residing in the citadels such as Mycenae, Sparta/Xirokambi-Aghios Vasileios, Pylos and Iolkos, that must also originally have been their constituent element.

Finally, we must imagine that similar phenomena also occurred during the second half of the 2nd millennium BC in the new port terminals built under the pressure of trade routes directed towards the western Mediterranean basin, including the coasts of Ionian and Adriatic Apulia (first of all Roca Vecchia in Salento and Scoglio del Tonno, at the entrance to the *Mar Piccolo* of Taranto), the southern coast of Sicily (above all Thapsos, Syracuse and Cannatello), and – according to different mechanisms resulting from territorial conditions – in the islands located in the Strait of Sicily and the lower Tyrrhenian (Ustica and Aeolian archipelago), along the north African coasts, to ‘far’ Sardinia and the southeastern coasts of Spain (Marazzi 2014b).

We must therefore assume that, paralleling the technological innovations that directly affected the boats and as mentioned above, specifically concerned sheets and sail tensing, deck layout and new forms of hull, keel, and bow, a number of transformations affected the actual places where ports were built.

What do we know today about the arrangement of ports during the 2nd millennium BC? When and to what extent does the port element, irrespective of the conditions created by the geomorphological structure of the territory into which it is integrated, become a part of a ‘built’ plan? ‘Built’ refers to the presence of facilities for docking, anchoring, and mooring (artificial piers and dry docks), alongside buildings dedicated to the reception of boats and goods, signalling and sighting devices, and a propensity for connections with subcoastal centres and their dedicated production.

Maritime archaeological research on this period, understood as a systemic approach to the concept of port building, still appears limited and partial in many respects, to the extent of negating (or severely limiting) the concept of the emergence of a ‘constructed’ port phenomenon.<sup>11</sup> Yet various significant clues should lead us to reflect on this issue, as the examples to which we would like to draw attention below, seem to indicate.

#### 4.1. *The harbour of Pylos: a hydraulic engineering project*

The geo-archaeological research carried out as part of PRAP (Pylos Regional Archaeological Project), in particular by geo-archaeologist E. Zangger,<sup>12</sup> in the subcoastal area between the bay of Navarino to the south and the area of the Mycenaean palace of Pylos to the north, and in the flat area immediately southwest of the hilltop of Tragana where the Selas river now runs, has brought to light traces of a massive hydraulic engineering project aimed at creating an artificial dock.

The original course of the Selas river, running southwards and flowing into the northern lagoon at the edge of the gulf of Navarino, appears to have been partially diverted towards the Ionian coast to the west in the Late Bronze Age (Zangger 1998, 70, fig. 37). This artificial change created a sort of man-made lake at the point of diversion, from which the waters, by cutting a canal, fed into a port of rectangular form. From here, a second canal was opened up following the curvature of the original slope, thus placing this basin into communication with the

11 On the ports in the Mediterranean of this period, see Tartaron 2013, 139-181. Repertoires are contained in Sauvage 2012, 70-84; Marriner *et al.* 2014. A much broader approach, limited to Minoan Crete, may be found in Guttandin *et al.* 2011, 132-153.

12 All project information and documentation are collected on the web at <http://classics.uc.edu/prap/>; see also: Zangger 1998 for an overall illustration of the work done; Hope Simpson 2014 for an updated view of the entire territory; Zangger *et al.* 1997 for a detailed geo-archaeological study and reconstruction of hydraulic interventions related to the Mycenaean port of Pylos; in Zangger, Mutlu 2015 the topic is taken up and inserted into a wider Mediterranean picture.

sea (which at this point of the coast formed a sort of natural cove). To control the flow of water from the lake to the port basin, the entrance of the communication canal (with *in situ* traces of suitably carved blocks) could be closed, allowing the river water to continue its course towards the area of the old river mouth. Moreover, based on the stone-cutting traces found mainly on its northeastern side, the basin appears to have been created by a series of excavation and delimitation activities at its edges rather than simply by adapting an existing natural depression. The lake upstream of the port basin must therefore have had a dual function: on the one hand, it created a waterway (also regulated by the sluice on the canal connecting it to the dock); on the other, it acted as a decantation zone for the debris carried by the river, and, consequently, allowed for the influx of partially purified fresh waters into the ship mooring area. When this hydraulic system fell into disuse, the Selas river maintained its course through the alluvial plain and the old estuary towards the bay of Navarino underwent a gradual process of sedimentation.

#### 4.2. *Zakros: a 'built' port*

The second example also starts from a geomorphological reinterpretation of the territory, this time at the site of Zakros, a Minoan palatial settlement on the east coast of Crete, whose maximum development can be dated to between the 16th and the 15th centuries BC. In the context of the neo-palatial type, the so-called Palace of Zakros is in many respects abnormal. It is considerably smaller than the Minoan large palaces of the time, of both the proto- and neo-palatial type, and it stands directly on the sea, taking the form of a 'port-palace' complex.<sup>13</sup>

The geo-archaeological study, conducted by an interdisciplinary team of scholars, was published in the catalogue of an exhibition held in Heidelberg in 2011 (Guttandin *et al.* 2011). A reconstruction model of the layout of the harbour complex was also presented.

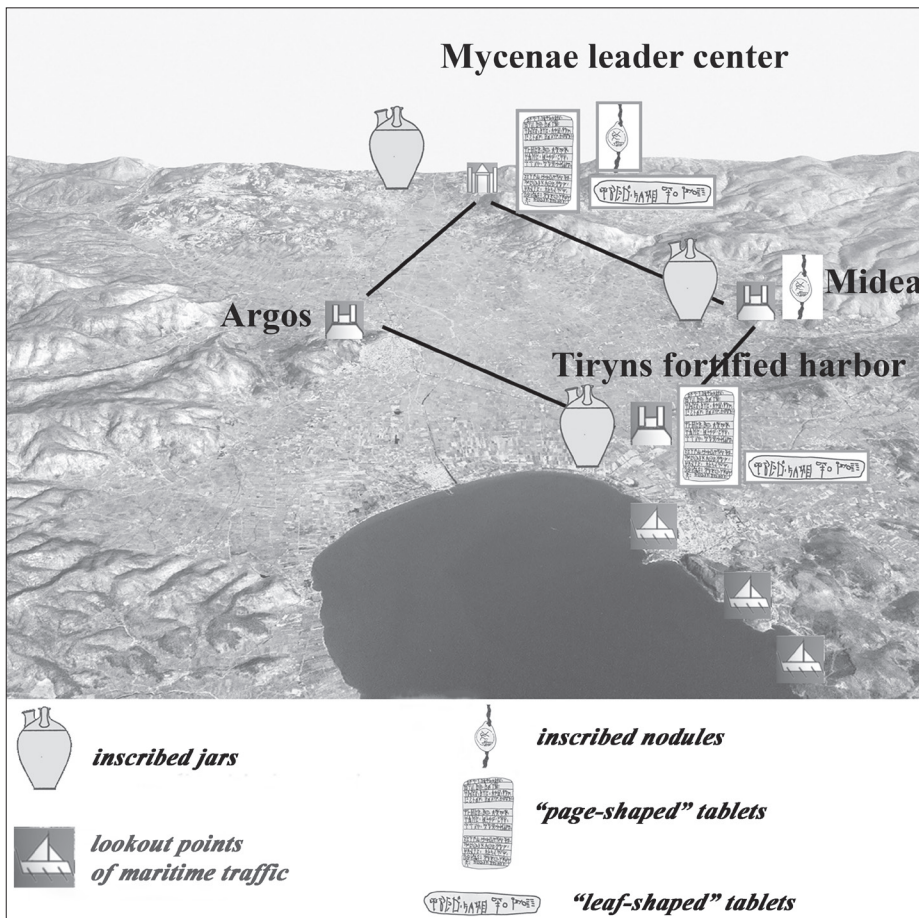
The analysis of geomorphological changes combined with the projection onto the present-day topographical map of the optimal areas for anchoring, mooring, the loading/unloading of goods and water supply, made it possible to reinterpret many otherwise incomprehensible archaeological features as belonging to a 'built port'. In addition, the new geomorphological configuration of the entire area allowed for a reconsideration of many buildings with respect to their functions in the port (this is true, for example, of the water supply system and the warehousing premises). The reconstructed scenario looks particularly impressive, with a highly developed port: a complex of piers and a lighthouse at the mouth of the mooring dock, partially protected by a jetty-breakwater (features also found, not coincidentally, in the contemporary port settlement of Kommos) (Guttandin *et al.* 2011, 142-145). In addition, thanks to existing knowledge on the road network and settlements of the period, it has been possible to insert Zakros into the dynamics of territorial interconnections.

#### 4.3. *Kommos: the traces of the shipsheds*

The excavations at Kommos on the southern coast of Crete, which began in the 1970s under the direction of J. and M.C. Shaw, have in many ways revolutionized the concept of built port with respect to the emergence of the first forms of shipsheds.<sup>14</sup> Within the scope of the site renovations that characterize the beginning of the Late Minoan I period, a central feature is the construction of a large building (P), partially erected using the earlier building complex T, which was to function as a warehouse in close connection with the port area, which it faced (Shaw, Shaw 2006, 850-853, pls. 1.11-12; Shaw 2006, 30-39, figs. 20-21, 26-27). However, this area was geomorphologically very different from what we see today: the sea level must have been significantly lower, leaving not only a larger portion of the beach uncovered, but also a curved strip of land ending in a cape (now visible at exactly sea level)

13 On the Zakros Palace, see Platon 1971 and Cadogan 1992, 292-301; see also Platon 2010. For an overview of the peculiarities of this palace, see Preziosi, Hitchcock 1999, 106-109.

14 In general on Kommos, Shaw 2006. For shipsheds see the preliminary publications of Shaw 1990; Shaw, Shaw 1999. For a reconsideration of all the issues, with the addition of at least two more interesting examples at Poros/Katsambas (ancient port of Knossos) and in the maritime centre of Gournia, see Blackman 2011. For an overview of these older examples in a general historical perspective, Blackman, Rankov 2013, 4-15.



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Fig. 3. The Argolid 'system' in the 14th-13th centuries BC, with evidence of the major Mycenaean sites and of the written documents found there (after Marazzi 2008a).

whose tip very likely hosted an installation functioning as a lighthouse/sighting platform (similar to that found at Zakros; Guttandin *et al.* 2011, 146-153). This arrangement created a relatively well-sheltered basin for the docking and anchoring of ships.

Given its architectural features and strategic location, the new building (P) has rightly been interpreted as a form of dockyard, where long covered spaces could accommodate ships during the non-sailing months. The hypothesis that such proto-forms of shipshed existed at Kommos would also confirm the possible traces of similar buildings in other coastal Minoan centres, as recently noted by D. Blackman (2011), perhaps suggesting the existence on Crete of this kind of built port at this very remote period.

#### 4.4. *The 'systems' of the Argolid plain and the gulf of Volos*

In this case, the example principally concerns the importance of the geopolitical structure of the territory into which the port cities are inserted. The example of the Argolid plain, elaborated some years ago, can be taken as a paradigm (Fig. 3) (Marazzi 2008a, 487-492, figs. 3-6).<sup>15</sup>

<sup>15</sup> See Marazzi 2008a for the entire discussion and bibliography concerning the geopolitical layout of the Argolid plain, the location and characteristics of the original port of Tiryns and the function of the strategically located outposts on the east coast of the gulf of the Argolid, of the road and settlement systems as well as the distribution and significance of the written documents found in the various centres belonging to the system. For the geo-archaeological layout of the Argolid plain in the Bronze Age, especially in relation to the definition of the ancient coast-line, cf. Zangger 1993;1994.



The fortified port of Tiryns, which in the 14th-13th centuries BC directly overlooked the coast, belongs to a geomorphological and geopolitical context that underlines its strategic function as a *locus* of arrival/departure and sorting for a trade that was to develop throughout the Mediterranean. Although the specific features of its port configuration elude us today, it appears to have been closely linked to a series of hydraulic engineering constructions similar to those we saw for Pylos. Traces of the development, in the 13th and 12th centuries BC, of a fairly large *extra moenia* port, which has also yielded some important epigraphic documents (albeit few in number), suggest a controlled organization of the movement of goods, with places dedicated to their storage and inventory.

A similar scenario suggests itself for a second harbour pole of Mycenaean Greece: that of the Volos Plain (Fig. 4). The excavations and the epigraphic finds made in recent years in Dimini and Volos itself certainly provide a very interesting foundation for a 'systemic' approach to Mycenaean ports in this area (Pantou 2010; Skafida *et al.* 2012).

In both cases, a very important port centre is located on the edge of a plain overlooking a gulf of strategic importance for the development of trans-Mediterranean trade. The territory to which it is connected is organized according to a hierarchical settlement system simultaneously conceived both in relation to the control over access and the maritime and terrestrial communication routes to and from it, and to the direct connection of centres for the manufacturing and production of goods with embarkation and disembarkation points. It is no coincidence that, in both cases, some of the centres involved in this geo-economic system have yielded evidence of written records being used as a monitoring tool for activities certainly related to the circulation of specific goods. In the case of the Volos plain, traces of writing used to monitor goods are only attested in Volos/Kastro Palaia; some finds from Dimini – a ceramic fragment and an inscribed stone weight – however suggest that recording through writing was in use at least in this settlement.



Fig. 4. The layout of the Volos Plain in the 14th-13th centuries BC, with the major Mycenaean sites in evidence (based on a Google Maps image).

#### 4.5 *The canals of Troy: the hypothesis of a futuristic port*

Far more complex is the situation at one of the most important port sites of the Mediterranean, located in the northeastern region, and active throughout the course of the 2nd millennium BC: that of Troy.

Research, restarted in the late 1980s by a German-led international expedition, has allowed us to ascertain that around the citadel, with its imposing fortifications, a large inhabited *extra moenia* area was developed starting in the mid-2nd millennium, especially in the southern area, probably also delimited by a defensive structure (a moat combined with some sort of *agger*?).<sup>16</sup> However, how was the port configured? And above all, given that the plain extending to the west of the citadel was originally partially occupied by a lagoon that progressively filled up over the centuries due to the debris carried by the watercourses flowing through, what shape did the coastline have and how was the port positioned with respect to that coastline during the 14th-13th centuries BC?

<sup>16</sup> The bibliography on the research carried out by the German expedition since 1988 is ample. A general overview is provided by the catalogue *Troia - Traum und Wirklichkeit* 2001, followed by Wagner *et al.* 2003; Korfmann 2006; Pernicka *et al.* 2014. A summary for dissemination can be found in Brandau *et al.* 2004.

Based on the still identifiable remains of human activity in the plain to the west of Troy and, above all, on the experience in studying hydraulic engineering works at the port of Pylos, E. Zangger has proposed the existence of a complex port system consisting of canals, dams and basins at Troy as well (Zangger, Mutlu 2015, 613-614, figs. 7-8).<sup>17</sup> This system appears to be based on harnessing the waters of the two main streams (the Duzluk and the Karamenderes) that flow into the plain towards a waterway. From here, through a first canal, fresh waters partially purified of debris, could flow into the port basin placed immediately behind the coastline (external port area), to which it was connected by a second canal. From the same lake, through a discharge canal running to the south (Besik Bay), the level of water flow could be kept under constant control. This reconstruction is based on evidence observable on the ground, but remains in many respects hypothetical; however, it presents various aspects of considerable interest. The site of the postulated dock basin appears to be connected by a passage (the so-called “cut of Kesik”, a few hundred metres long) still clearly visible, to the Aegean coast well below the entrance of the Dardanelles. Through it, boats arriving from the south could be beached and transported directly to the dock to the opposite side (just as, during the classical period, boats were taken across the strait of Corinth). They thus avoided the long and difficult route to the western entrance of the strait of the Dardanelles, which the boats of the time could reach only after a long journey around the island of Gökçeada. On the other hand, the Trojan port system offered two different stopping points: the first, the interior one, represented by the artificial basin, the second, the exterior one (connected to the first through a canal), represented by the natural bay that was open to the north and from which ships could easily reach the Dardanelles and, subsequently, the sea of Marmara.

## 5. SOME FINAL CONSIDERATIONS

Though brief, the above observations suggest some reflections both in regard to a ‘systemic’ approach to this issue, and in relation to the maritime scenario described at the start.

- a. The instances considered here clearly indicate that Mediterranean ports, at least in certain key aspects of long-range transmarine relations, are a complex phenomenon already around the middle of the 2nd millennium. We could add a number of other case studies that cannot be discussed here, such as lagoon ports like those linked to the site of Lerna. Equal attention and in-depth study should be reserved for the ports along the Syro-Levantine coast (already partly investigated in Marriner *et al.* 2014).
- b. From the specific point of view of port survey, the aforementioned seaside settlements, which develop in the western Mediterranean starting from the 14th century BC, driven by relations with the Greek-Aegean world, remain a *terra incognita*. Worth mentioning are the most striking instances of Taranto, not only the specific site of Scoglio del Tonno, but the whole complex of the so-called *Mar Piccolo* and the island/peninsula where the Old Town of Taranto stands today; Punta Le Terrare in Brindisi, very likely originally a port-canal; Thapsos in proximity to Syracuse, with the entire Magnisi region; and Cannatello along the south-central coast of Sicily.<sup>18</sup> In this context, little is known about Sardinian ports, assumed to have played a crucial role in the interrelation between the Levant/Aegean world and the western Mediterranean, at the end of the 13th and in the first half of the 12th century BC.
- c. In all these cases, archaeological investigations have focused on the traditional indicators of settlement archaeology, completely neglecting both an effective systematic analysis of the area with which the port site was connected, and above all, a diachronic study of geomorphological mutations. As a consequence, they have ignored the possible constructed elements (detectable by underwater research) in relation to the potential

17 On the port of Troy, and the exact definition of the coastline in the plain to the west of the citadel during this period, scholarly hypotheses often diverge considerably. The director of the German expedition, M. Korfmann, suggested several solutions over time. The entire discussion is summarized critically in Zangger *et al.* 1999, and Zangger, Mutlu 2015. *Contra*, see Kayan 1995; Kayan *et al.* 2003; Kayan 2014 (where, however, the location of the coastline agrees in principle with that proposed by Zangger).

18 On these and other contemporary ports, Marazzi 2008b.

for port building. If we examine the case studies presented briefly above (but also the area of Lerna, which we have called a 'lagoon'; the area of Coppa Nevigata in Apulia; and Efira along the opposite Epirote coast),<sup>19</sup> it becomes immediately apparent that the diachronic reconstruction of morphological changes was crucial for determining the potential organisation of an ancient port, as were the clues derived from underwater investigation.

We thus come to our final point. We can state with some certainty, and, for those cases not examined in depth, hypothesize with a good degree of plausibility, that port construction saw a rapid development in engineering and architectural terms. It became characterized not merely by the topological criteria employed in port site selection (which however remain fundamental even for classical and later ports), but also by massive innovations within the built sphere. These developments took place in parallel with the intensification of the phenomenon of Mediterranean interconnectivity verifiable in macroscopic form starting from the 14th century BC, and in close connection with a series of technical innovations that directly influenced the means of travel (*i.e.* the boats).

Associated with the hydraulic engineering works, the creation of artificial basins, and the building of docks and lighthouses, are construction works that do not directly affect the port complex (dry-docks, water supply points, places for loading and unloading and the storage of goods), such as communication routes and coastal and subcoastal control points, forming what we would now call infrastructure networks.

A separate phenomenon, which cannot be described in depth here but which is worth mentioning, is the possible parallel development of the use and transmission of writing in close connection with the port sites. We now know, through some scenes in Egyptian Ramesside tomb decorations, that at least in the Egyptian and Levantine contexts, the practice of controlling the maritime movement of goods through written records (*i.e.*, directly on the pier at the time of loading or unloading) was widespread (Marazzi 2008c). But to what extent did this practice develop outside directly administered port facilities? Moreover – and above all – to what extent did writing 'travel' together with the ships?

A hint is provided by the presence not only of the well-known waxed wood diptych found in the Uluburun shipwreck but also of a second larger waxed tablet, from the same wreck but hitherto almost unnoticed (Fig. 5).<sup>20</sup> The fact that two wooden waxed writing boards travelled with the boat is an important clue, whose meaning requires proper assessment.

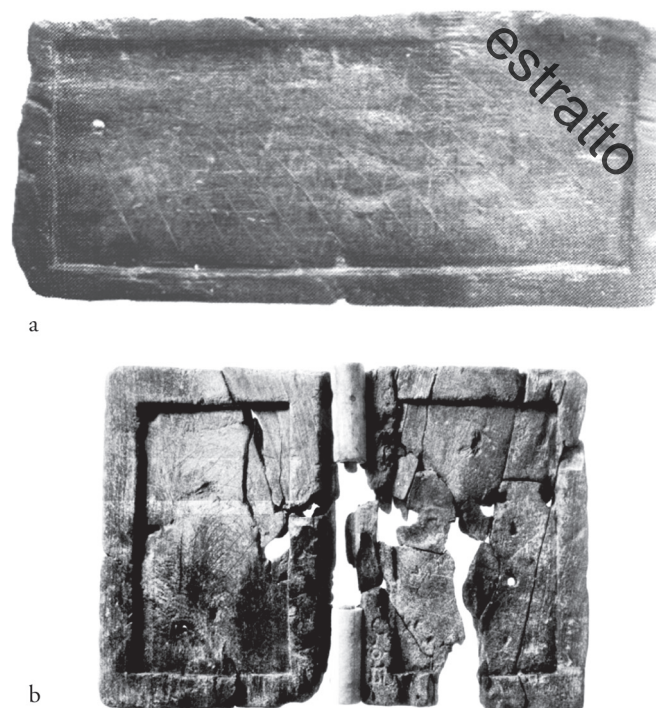


Fig. 5. Wooden tablets from the shipwreck of Uluburun. a: part of wooden diptych, ca 13x6 cm (after Pulak 1994); b: wooden diptych with bone hinges, ca 9.5x13 cm. Photo courtesy C. Pulak.

19 Cf. Tartaron 2004, in particular 145-177; Tartaron 2013, especially 141-150; Besonen *et al.* 2003 for Efira; Cazzella *et al.* 2012 for Coppa Nevigata.

20 On the cargo of Uluburun, the possible links with the international scene of the time and the wooden diptych see Bass *et al.* 1986; Bass 1987; Yalçın *et al.* 2005; Pulak 2008. The second diptych, of a different, roughly rectangular, shape compared to the well-known complete one, was published in Pulak 1994, 11, fig. 6. For additional information on this precious find, I am grateful to my colleagues S. Tusa and C. Pulak.



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Massimiliano Marazzi  
 Università degli Studi "Suor Orsola Benincasa"  
 Via Suor Orsola 10  
 80132 Napoli  
 Italia  
 masmarazzi@yahoo.it

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