



The Greek Age of Bronze

Ships



The Aegean has since prehistoric times been a sea that has united rather than separated the large or small islands. Between these islands, there were narrow sea passages and shallow gulfs, accessible by some primitive sailing means. Navigation in the Aegean, has been testified by the tools made of Melian obsidian which were found in Franchthi Cave in *Hermionid* (at the eastern coast of the Peloponnese, a distance of 80 nautical miles (approximately 150 kilometers) from *Melos*. Tools made of Melian obsidian also found on Crete (*Knossos*) and on Cyprus, substantiate the existence of sea routes in the Aegean from the Early till the Final Neolithic (6800-3200 BC). They made a boat exclusively from papyrus, an aquatic plant which can be found near water areas of Greece (as well as on the river Nile in Egypt). A similar boat was used until recently in *Kerkyra*. The "papyrela" could easily travel from *Lavrion* to *Milos*. Its crew would use kayak oars for navigation. It has also been proven that men in the Greek prehistoric period could travel by sea using natural material offered by the domestic world of Greece and also using simple techniques such as the one of straw mats.

Evidence for ship construction in Aegean Bronze Age comprises 358 catalogue entries, these being 44 models, 173 linear representations (wall paintings, vase paintings, incisions) and 141 glyptic images. Crete provides over 55 per cent of the catalogue, the islands and the mainland less than 25 per cent each. Whereas the Minoan material is spread out over a timespan of a millenium (2500-1500 BC), the Cycladic documents are concentrated to the Early Cycladic II period, and to the site of *Akrotiri* in Late Minoan IA, while the mainland sees a scattering of inconsequential evidence down to the final phases of the Bronze Age, when a slight increase becomes manifest.

The typological classification of the Aegean ship is mainly based on the evolution of hull shapes as per Dr. Michael Wedde works (*0)

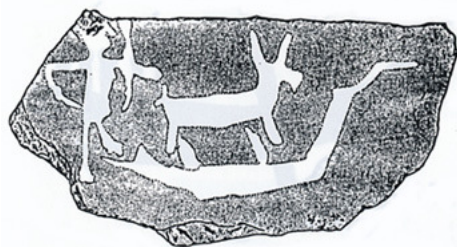
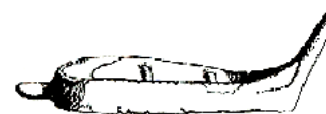
TYPE I "Syros Cluster"

The earliest hull-form to constitute a cluster is the shape illustrated by the Cycladic "frying pans" from *Syros* and the associated craft from *Naxos*, *Palaikastro* and *Orchomenos*. The hull is defined as low and flat, having one extremity rising and always equipped with a projection or "spur". Locomotive force is provided by numerous short strokes understood, due to their great number, rather as paddles than as oars. A mast or elements of rigging never appear.

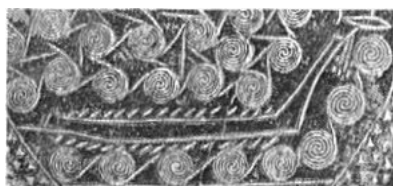


One of the very early representation of boat in the Aegean area is a graffito from Thessaly dated around 4500-3300 BC. Based on the general shape of the hull this boat could be identify as a precursor of the **Type I**

This clay model from *Palaikastro* Crete dated around 3000 BC is also one of the early representation of **Type I** Aegean ship. In this model the hull terminates at one in a lofty vertical or nearly vertical post, while the other, with no upright fixture at all, trails off into horizontal extension at the waterline.



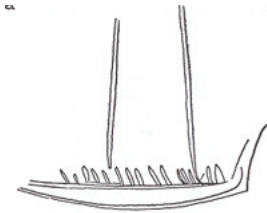
One of the earliest cycladic **Type I** ship representation is on a fragment of white marble from *Naxos* dated around 2500-2000 BC. It has a flat hull rising to bow with type 2 spur. Stern rises near vertically, surmounted by appendance departing obliquely aft to level out to horizontal at half its length. Two oblique projections from hull, understood as tholes. Above craft, animal (goat) and man holding weapons in both hands (right: knife?; left: stick? or bow?).



Another early large Aegean **Type I** ship is represented in this Cycladic terracotta "frying pan" from *Syros* dated around 2500-2000 BC. This multi-oared galley has a long vertical prow with a fish symbol mounted on top, perhaps acting as a wind vane to detect wind direction relative to the vessel. Also the cords or beams hanging below the fish symbol might conceivably act as some sort of wind catching element. Note the waves shown as spirals, indicative of the orbital motion of real sea waves.

Type I ships with similar design and fish symbol on top of prow are well attested in several Cycladic representation dated around 2500-2000 BC. This type of ship was more likely the earliest wreck discovered near the island of Dokos.

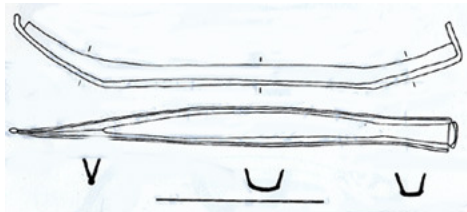




This **Type I** ship drawings dated **EH II** (about 2300 BC) were imitated as far inland as *Orchomenos* where the sketcher added a mast. The Aegean were not the only trading ships at sea, of course, (*1) but they were among the most active and adventurous.

UNCLUSTERED EARLY AEGEAN SHIPS

A ship which show similarity with the **Type I** Cycladic design and with later types of hull design is one of the symbols of the still undeciphered disk from *Phaistos* dated 2000-1700 BC. This boat has a flat hull with raised, curving extremity to left, vertical post with slight projection at base to right. Post surmounted by horizontal element, from which hangs banner-like device. Just left of post, oblique line with ball terminal.



Lead boat model from *Naxos* dated about 2500-2000 BC which shows both similarity and differences in the hull design and vertical prow respect to the contemporary typical **Type I** ships

Clay model from *Mochlos* Crete date around 3000-2700 BC represent a small craft with bifid stem-projecting forefoot together with raised stem. This kind of ship distinguished by straight lines, angled ends, and a lofty prow seems to be a prototype for the later Greek warship and commercial ship. Also in this case the general design of this ship shows both similarity and differences with the contemporary **Type I** boats.

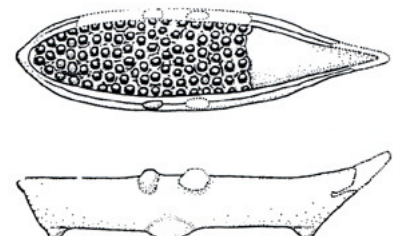


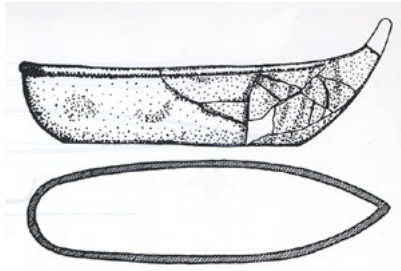
A similar clay model dated **EM II** (about 2300 BC) is also attested from *Mochlos*. It has a flat hull with undifferentiated extremities rising to posts. Triangular cross-section and distinct axial curvature.



Another boat of a separate type from the contemporary **Type I** and **Type II** is represented in a scene restored from three small pottery fragments from *Iolkos* dated in the **Middle Helladic** period (about 2000-1700 BC). In this scene there are perhaps two ships and no people. The polychrome design shows a short vessel, thickly outlined, the reserved interior filled with zigzag pattern; there is a stout curved ram on the prow, and a steering oar. The polychromy is in the Cycladic tradition.

Another unclustered type of early Aegean ship is represented in this clay model of unknown provenance probably dated **MM I** (about 2000 BC). It is a flat-bottomed craft on four feet, placed one at bow and stern, two amidship. Vertical sides curving slightly inwards at top. Bow rises above gunwale level to point. Stern pointed plat.





Alabaster model of unclastered boat from *Agia Triada* Crete dated **LM I** or **LM II** (about 1550-1500 BC). It has elongated hull with rounded stern and curved bow rising to point.

TYPE II "Platanos Cluster"

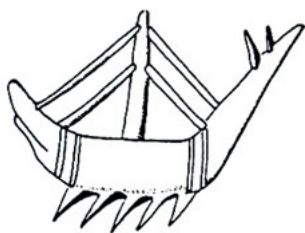
Related to *Syros* craft are the earliest Minoan ships, known exclusively from sealstone. The earliest members, dating to Early Minoan III, reproduce the general lines established by **Type I** with some differences in details: the stern rises to a height equal to a lesser percentage of the length overall, and a pronounced stempost appears occasionally to receive the forestays. The presence of a mast, and the use of oars rather than paddles, however, indicate that a significant increase in the beam has taken place.

Later members (the type disappears at the end of Middle Minoan II) show a more gradual transition between keel and stempost as well as greater variability in bow morphology: the angle between the spur and the post appears to equal either ninety, forty-five, or thirty-three degrees. The stempost-terminal morphology exhibits three different, but related shapes, either a bi-, tri-, or a quadri-furcation. The bifurcation present on three members allows establishing a connection with the stempost-terminal of **Type III**.



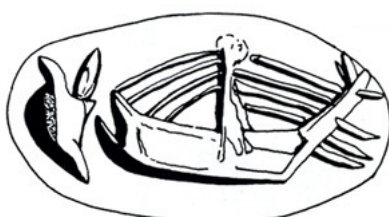
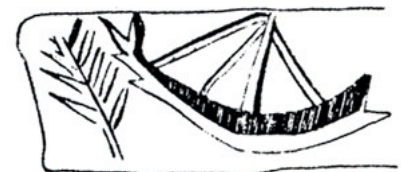
Minoan seal dated around 2000 BC with **Type II** boats representation. These ships also show an asymmetrical profile, a high stem at one end and low extension at the other. Even if the illustrations are very schematic, the repetition of certain details adds credibility to the depictions. For example the forked appearance of the lofty stem.

Another Minoan seal from *Paleocastro* also dated around 2000 BC shows a **Type II** ship with high stem at one end and also high extension at the other.



Type II ship representation on a seal from *Mokhlos* dated **MM III**. It shows curved hull with low bow comprising stempost and spur, raised sternpost terminated by trifurcation.

Another Minoan seal from Crete dated **MM IIMM III** shows a **Type II** ship with curved hull, spur and stempost, raised sternpost terminated by quadrifurcation.



Type II ship representation on a seal from unknown provenance dated **MM II**. It has a flat hull, bow with stempost and spur, raised sternpost with quadrifurcation.

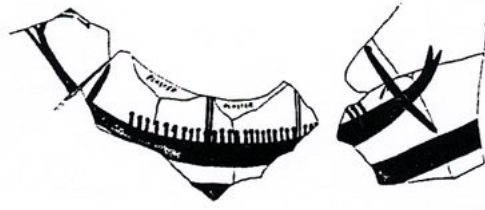
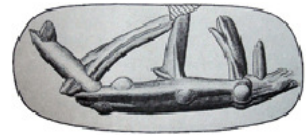
TYPE III "Kolonna Cluster"

The **Type III** boats show a decisive change in the manner the shipwrights designed the bow. From the angular lines with differentiation in the bow/stern height characteristic for **Type I** and **Type II** to the rounded hull with equal height terminations of **Type III**, a significant step back has taken place. To consider **Type II**

characteristic for both **type I** and **type II**, to the curved hull with equally high extremities of **type III**, a significant step has been taken. To consider **type II** and **type III** part of a single evolutionary continuum requires common elements. These may be found in the treatment of the stern: the bifurcation seen on three members of **type II** is universal to **type III** wherever the stern has not been subject to foreshortening, or to damage. In such cases the inclusion in the cluster may be operated by the presence of a stempost-terminal in the shape of an arrow head, one of two alternatives, the other being a pointed bow, with or without bowsprit. The curvature of the hull may already be observed on several member of the **type II** cluster, and the decreased angle between spur and stempost, if mirroring an actual state, tends towards the pointed bow of **type III**.

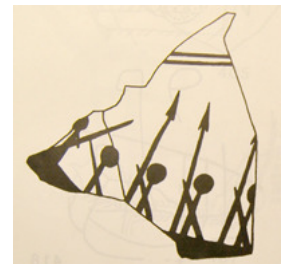
A single representation on a clay nodule from Quartier Mu, Building V at *Mallia* may constitute something akin to a transitional shape. The hull is curved at both extremities. The stern is bifurcated in unusual, sweeping manner, whereas the bow appears to exhibit a spur-and-stempost morphology as seen on **type II** craft. Although a steering-oar is lacking, sufficient indicators are present to assure a confident bow/stern identification.

This Minoan ship, represented on a seal stone from *Pseira* dated around 1800-1675 BC, has a beak shaped prow, high stern and single mast connected to the vessel by ropes. It show similarity with **type III** boats.



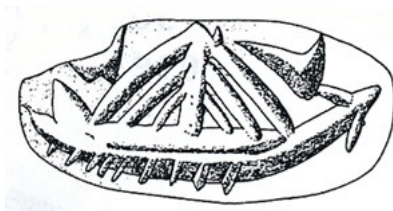
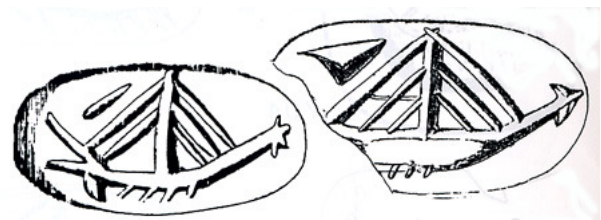
type III ships are depicted on a vase from *Kolonna Aigina* dated **MM II** (about 1800-1650 BC). Because of the intensive commercial trade between the Aegean population and the Near Eastern Kingdoms some of the early Aegean ships show several similarity in general shape and design with the Egyptian ships of the same period.

A detail of one of the fragments from the *Kolonna* vase. Five stick figures, four crossed by oblique line, here interpreted as oars, disappearing into the hull, three long spears are also represented.



type III ships from a seals of unknown provenance dated respectively **MM I** and **MM II A**. These boats both show curved hull with arrow-headed stempost and sternpost with bifurcation.

type III ships represented on a steatite three-side prism from *Malia* dated **MM IIB**. The ships have flat hull with arrow-headed stempost. Original state suggests sternpost with bifurcation.



type III ship representation from *Malia* dated **MM IIB**. It has a flat hull rising to oblique stempost with arrowhead, stern with bifurcation. Mast with three fore and backstays. Nine oars.



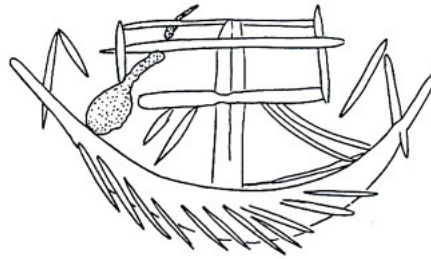
Type III ship representation from *Mokhlos* found in **LM I** context but **MM II** in date. It has a flat hull with pointed extremities of unequal height. At stern line curving towards bow, probable bifurcation.



TYPE IV "Akrotiri Cluster"

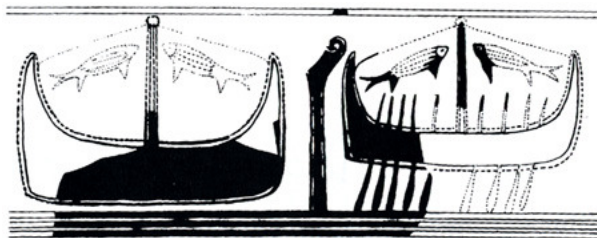
The relationship of the **Type III** boat shape and the following **Type IV**, should be immediately clear: **Type III** is the forerunner to the crescent-shaped hull common to all the ships on the miniature fresco, and to a further thirty representations of very uneven quality. The connection is further underscored by the *Kolonna* pithos, where the ships are equipped with an exuberant bowsprit and an awning, and where the passengers are shown seated along the length of the hull, possibly, though not necessarily, facing the bow. **Type IV** is far more scattered in space, and time. In spatial terms, there is a manifest bias towards Central and Eastern Crete, largely caused by the incidence sealstones. The *Akrotiri* data, on the other hand, composes a third of the cluster, but once exceptional and rich find has completely changed the picture. The total population amounts to some fifty individuals but it is not inconceivable that the lack of resolution obscures differences that could constitute grounds for dividing into smaller clusters. A further remark regarding **Type IV** is not without interest to the Minoan/Achaean confrontation: this hull-form constitutes the only shape in use in the Aegean from Middle Minoan III to Late Minoan III to whose existence the representation attest.

Several seals with various **Type IV** ship representations dated from 1800-1500 BC are attested from Crete.



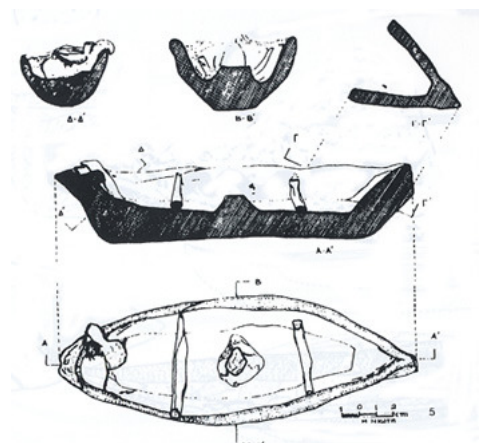
Type IV ship represented on a seal from unknown provenance (probably *Knossos* area) dated around 1600 BC. It has a curved hull with bird symbol, pointed sternpost and ten parallel oblique lines, probable oars. Mast with yard and boom, sail surface delimited vertically by cut lunette-like lines, cross-hatching.

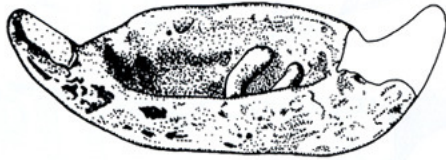
Another similar ship is represented in this carnelian lentoid of unknown provenance dated **LM IB** (about 1570 BC). It has curved hull tapering to points at each extremity. Below hull, keelline, cutting across ten parallel oblique oarlines pointing to left. Slightly to left of amidship, mast, upper end split into two, with square-panelled sail on yard and boom.



Type IV ship represented on a fragmentary pitharaki from *Phaistos* Palace dated **LM III**. are still visible fragment of flat hull with left extremity rising at right angle. Across hull, five oars thickening to blades at lower extremity, remains of stay. Above hull remains of mast.

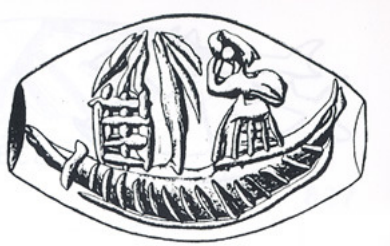
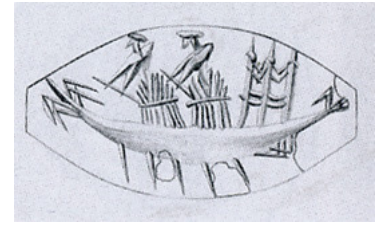
A Late Helladic clay model of **Type IV** ship from *Argos*. It is a flat-bottomed craft with pointed extremities, and sides sloping outwards. Right extremity interpreted as bow.





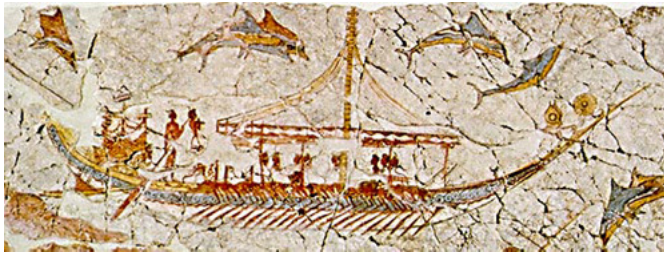
Another clay model of a **Type IV** ship from the Chambertomb 79 in *Mycenae* dated **LH IIA-B** (about 1370-1300).

A religious craft reproducing the **Type IV** shape is well represented on this stone amygdaloid of unknown provenance (probably in the region of *Thebes*) dated **MM IIIB-LM I**. It shows a crescent-shaped hull with pointed extremities equipped with bird symbols, two at bow, one at stern.



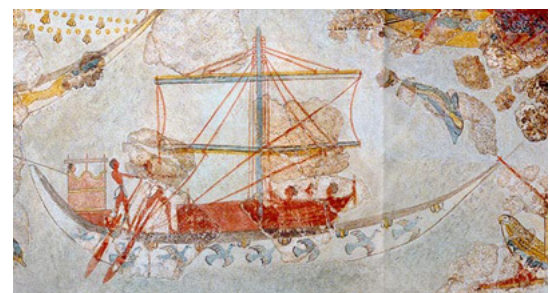
Another religious craft of **Type IV** from *Makrygialos* Crete dated **LM I**. It has a crescent-shaped hull with pointed extremities, right somewhat higher. 14 short parallel oblique to vertical strokes depicting ribs, square construction with three to four uprights, and four crossbar (*ikrion*).

Several **Type IV** ships are depicted in the famous fresco from *Akrotiri* in the Thera island dated around 1600 BC (*2). This images shows a small boat with 10 oars one steering oar and a "skipper" or high rank passenger.



The Thera ships have one other interesting feature, namely the flat projection extending outwards from the stern just above the supposed waterline level. Interestingly, these illustrations seem to indicate the feature was added to the hull. The stem is long and slender with mysterious objects attached, similar to the Aegean "frying pan ship". If a storm wind came against the side of the vessel, the stem would catch the wind while the stern appendage drags in the water, turning the vessel around until the stern points into the waves.

This other high decorated medium size ship shows the mast, the sail, two steering oars, some passengers and the "ship captain" in the relevant cabin located on the back of the ship. The stern appendage was not present in the small and medium size ships it seems a prerogative of the large vessels.



Another examples of the stern appendage is shown in this ship. The extended feature is clearly stem. This has been the subject of considerable scholarly debate both in terms of the relationship between the Thera ships and other contemporary ships known to exist on the same area, and of the function of the stern projection on the ships themselves.

This other large size ship was probably composed by a crew of 42 to 46 oars one steering oar, the captain, two attendants of the captain and some passengers wearing either tunics or long robes. It is reasonable to suggest that they represent people of higher status. Also in this representation the ship has the stern appendage, long stem with ornaments, central feature and captain's cabin.





Closer detail of one of the Thera ships captain cabins. They consist of wooden poles wrapped by ox-hide sometimes decorated with religious symbols both Aegean and Egyptian. On top the cabin's central pole a strange object which seems to be a boar tusked helmet is placed. In the Thera ships these cabins were placed on the back of the ship, for this reason this features have been also identified as cabins for "VIP people" or elements with ceremonial significance. On Egyptian ships the captain's cabin was normally placed in the front so that he could have a good view ahead of him whereas the ceremonial cabin of the king or queen was placed in the middle. Some of these cabins have been also represented alone in the West house's room 4 fresco. They could allude to the marine festival which is depicted in the room 5 and with which the West house was connected. It is even possible to interpret them as emblems of the religious leader of the largest ship. These cabins were probably movable so they could be placed on or off the ships. This would suggest a ceremonial usage which is supported also by the evidence from seals where these cabins appears lone, possibly as emblems with some intrinsic importance.

The *Akrotiri* West house room 5 fresco is probably also representing the oldest sea battle so far attested. A conflict and naval engagement between Aegean warrior and non-Aegean enemies (Lybian pirates?) seems to have taken place, and the outcome was victory for the Aegeans. The Aegean warriors arrived with their ships to protect the town and they have succeeded. We see the moment of victory when they are marching on the shore in triumph.

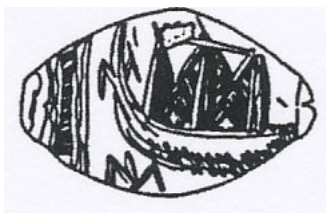
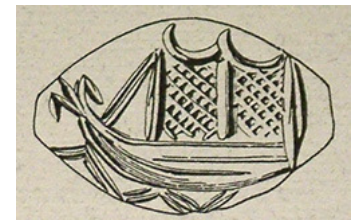


Based on the Thera fresco representations this very interesting and awesome model of a typical **Type IV** large ship of this period has been reconstructed.

A Minoan shipwreck discovered in the 2010 brings to the light 209 ceramic vessels, about 80 of which are nearly whole and clearly identifiable as types of amphoras and large jars that would have transported liquids, possibly wine and olive oil, though no residues remain. A handful of artifacts, including cooking pots, jugs, a few cups, and fishing weights, likely belonged to the ship's crew. Even though no wood from the ship survives, the archaeologists are convinced they belong to a wreck because they are an unusually large group of ceramic vessels that all date to the same period **MM IIB**, (1800-1700/1675 BC) and were all made on east Crete. Furthermore, the pottery that was still in place was found upside down, which seems to indicate the ship completely capsized and wound up with the hull uppermost and the cargo down. The ceramics broaden into a roughly oval-shaped concentration that extends over an area 50 by 65 feet, from which it is possible to estimate -by the distribution of objects- the ship to have been between 32 and 50 feet long.

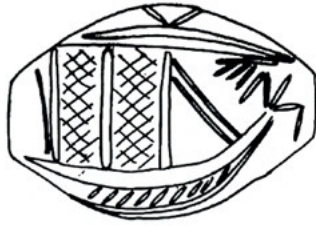
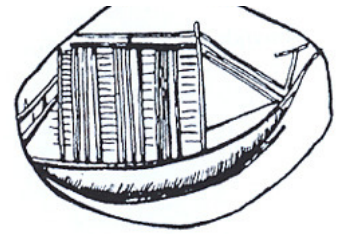
RELATED WITH TYPE IV "TALISMANIC" SHIPS

From Crete is also this amygdaloid seal dated around 1600-1500 BC with a representation of a "Talismanic" boat image which is related with the **type IV** ships even if with some differences are present in the forked lofty stem, mast and sails.



Same kind of "Talismanic" ship related with the **Type IV**, is also represented on this seal of unknown provenance dated **MM III-LM I**. It shows curved hull with pointed extremity and bird symbol and cabin-like structure.

Related to **Type IV** "Talismanic" ship representation dated from 1800-1500 BC from Crete. It has a curved hull with pointed extremity and bird symbol. Cabin-like construction at what appears to be amidship.



Similar "Talismanic" ship related with the **Type IV**, is also represented on this seal from *Malia-Khrysolakkos* dated **LM I**.

Another typical related to **Type IV** "Talismanic" ship representation from *Smari* Crete dated **LM IB**. It has a stright thick hull with pointed extremity and bird symbol. Keelline joined to hull by nine oar-lines.



UNCLASTERED REPRESENTATIONS RELATED WITH TYPE IV SHIPS



Unclustered boat representation on a gold ring found near *Kandia* probably from Harbour Town of *Knossos* dated about 1550 BC. It has flat hull with curving extremities, right end somewhat higher Zig-zag line along hull. Globule at tip of post, perhaps part of bifurcation.

What appears to be a papyrus craft with a steering-oar and three oars is represented in this gold ring from *Tiryns* dated around 1500 BC. This unclustered type of Achaean ship shows some similitude with the **Type IV** Minoan ships represented in the fresco from *Thera* also with steering oar and two passengers in the central cab.



There is another interesting seal from *Knossos* dated more likely in the final phase of **LM III** (about 1200 BC). This seal, probably used as a warranty mark for the traded goods, shows a huge Achaean style horse placed over a single mast medium size possible **Type IV** ship with oarsmen.

Fragment of marble rhyton from *Epidauros* found in disturbed layers with **EH-LH** ceramics and idols. At lower right a ship cabin is represented. At base of square, protome dolphin rears up. To left shore line with marching men. Lower left at least two men behind body-shields and long baton or spear. In this case it is not possible to identify the ship even if a **Type IV** is very likely.



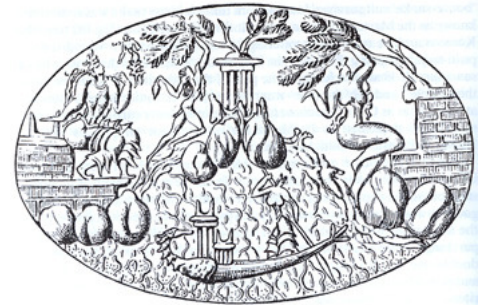


UNCLUSTERED CULT BOATS



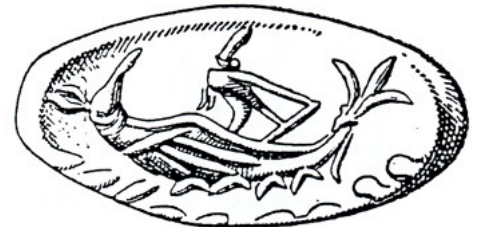
On this clay seal impression from *Knossos* dated around 1600 BC a fearful sea creature with a doglike head, attacking a small ship is depicted. This "sea-monster" has been interpreted by Sir **Arthur Evans** as a prototype of *Scylla*, and though her monster heads were multiplied and modified by later Mycenaean tradition. Also in this case it is not possible to identify the type of the ship which could be also a "cult" or "ritual" boat.

A very interesting "cult" or "ritual" ship is represented on this ring from Crete named "Ring of Minos" dated around 1500 BC (*3). In this ring a priestess steering a shrine-laden boat across a bay is depicted. The small boat seems to be decorated with a sea-horse head representation and two ceremonial shrine or altars with sacral horns seem apparently built or transported on the afterdeck. This representation offers some additional support for the idea of a sea-shore cult involving both fixed shrines built on the land and portable shrines ferried coastwise by priestesses.



A similar scene with a "cult" boat is also represented in this other gold signet ring from the port of *Mochlos*.

Cult boat representation on clay seal from *Agia Triada* dated **LM I**. It seems to be a vessel in shape of a bird lying on its back, head with beak, eye and crest, tail with three feathers, wing feathers discernible along flank.



TYPE V "Skyros Cluster"

When a ship appears that can be termed as Achaean it does so in two distinct hull-forms incapable of being temporally serialized, **Type V** and **Type VI**. The **Type V** is characterized by a straight-keeled hull with a raised stempost, either straight or gracefully swung back in over the rear and exhibiting a bifurcation. The stempost is vertical, and terminated by an animal- or a bird-head. The absence of a spur, present in the **Type VI**, constitutes the main reason for recognizing two different clusters.

Due to the played in the Levant by the animal- or bird-headed stempost (and the case of Sea People craft from *Medinet Habu*, an identical stempost) during the out-going Late Bronze Age, and the appearance of similar stempost terminals in later periods, the presence, in the Aegean data, of a hull exhibiting such traits, not combined with a spur, is of particular interest to the history of East Mediterranean ship architecture.

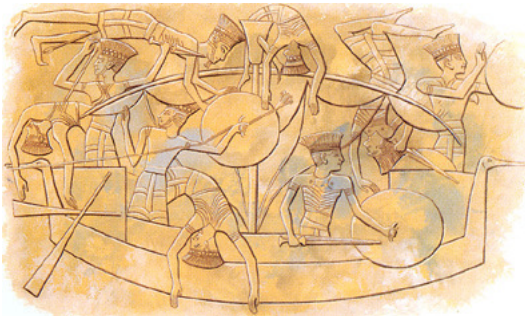


This amphoroid krater fragments from *Enkomi* Cyprus dated around **LH IIIB** (about 1350 BC) show elaborate representation of **Type V** ship and two classes of men: the huge warriors with spotted robes, helmets, and swords, who stand on the deck or the shore, and the little nude men who toil below the decks. This is the first full naval scene in the history of Achaean pictorial painting (as opposed to the above shown isolate Middle Cycladic or Helladic pictures of ships, or the naval fresco from Thera). The scene seems almost the same on each side: the ship, with three or four lilies on the stem, a mast with stacked rigging rings or deadeyes, and a bird prow, support two large figures on the upper deck, facing each other across the mast, and four small figures on the lower deck, facing each other in pairs across the mast-step. It is clearly a military scene, not a pure commercial venture, nor a festival voyage as on Thera, and it fits well with the recorded Sea Peoples raids of the thirteenth century, a prototype for ship-raiding scenes in **Homer**.



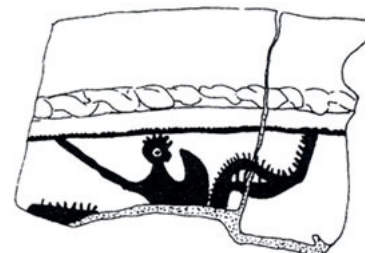
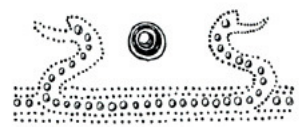
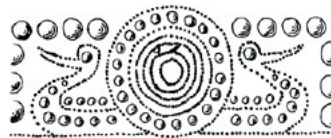
A stirrup jar from *Skyros* dated **LH III C** has a long bird-headed **Type V** ship. It is drawn with a long narrow hull made of two lines that angle up as a triangular-bladed steering oar obliquely across it, and the stern curves up and over into a double tail. The mast is centered and surmounted with a ring or halyard deadeye; below it two tautened stays run to stern and prow. No sail is set.

Very interesting bird-boat motif painted on a krater sherd from *Tiryns* dated **LH III C**. This **Type V** boat with two headed bird symbol shows closer similarity with the Sea Peoples's ones represented on the *Medinet Habu* relief.



If there is no doubt between the similarity of the ship represented in the *Tiryns* krater sherd and the ones of the Sea Peoples as shown on the *Medinet Habu* relief, how far the above mentioned ship from *Skyros* jar is influenced by the bird-headed ship of the Sea Peoples, or by "Philistine" contacts in the twelfth century is not clear; *Skyros* was a natural home for pirates and sea rovers, who would have seen innovative ship in the Levant and across the Aegean.

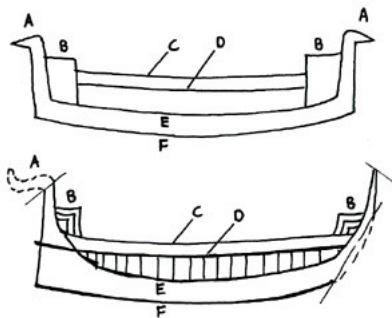
The above mentioned representation of Aegean double-headed bird-boats show closer and very interesting similarity with some ships models or representations of the Late Bronze Age found the Central Europe as these embossed Urnfield ornaments from Slovakia and Pomerania.



The excavation in *Pyrgos Livanates* in East *Locris* and in all likelihood the site of *Kynos*, the home of *Ajax Oileus* in the *Iliad*, has disclosed a major **LH III C** site with an extensive building complex. The pottery produced at the site includes vessels with striking depictions of **Type V** ships, warriors and sea battles. The ships depicted appear to include both wide-bodied merchantmen and narrow warships. A terracotta ship model recovered in the excavation may originally have contained fifty oars, matching the description of ships in Homer as well as the *Jason's* mythical ship *Argo*. A depiction of a similar oared galley appears on an angular alabastron dated around 1100 BC found in a reused **LH III A** tholos tomb at *Tragana* near the palace of *Pylos*.

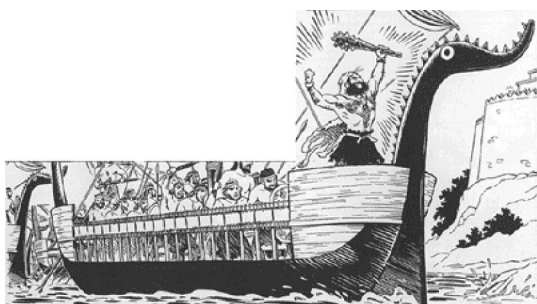
The construction details comparison between the Sea Peoples's ship represented in the *Medinet Habu* temple and the **Type V** Achaeans one from *Kynos* show closer common elements like the bird headed

The Greek Age of Bronze - Ships



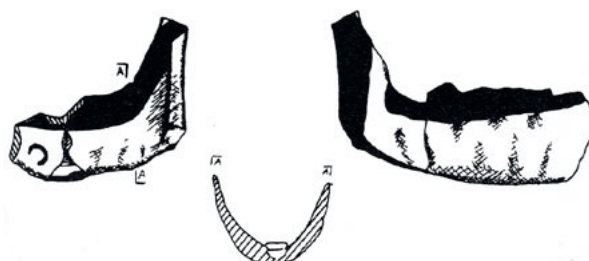
proW (A), the two platforms (B), the bulwark protecting rowers (C-D), the wooden hull (E-F) were the F representing the line of the keel or keel-plank and the E the caprail. The above shown ship iconography confirms the significant interconnection between Achaeans and Sea Peoples, documented so well in other aspects of material cultures (see also the page dedicated to the Sea Peoples)

A Narrow medium size **Type V** ship, warriors and steering oar involved in a sea battle is also represented in this other pottery fragment from *Kynos* dated **LH III C**. The ship has an high indented stem and a long stern. These warships were shallow-draught vessels and could be beached in sandy bay. **Homer** describes the Achaean ships as being dragged up onto the beach and held upright with props (*4)



A beautiful representation of a **Type V** Achaean warship has been made by **Eric Shanower** in the number 3 of his awesome mythologically and archaeologically based comic serie **AGE OF BRONZE THE STORY OF THE TROJAN WAR**. The scene and the ship, more likely based on the above shown pottery fragment from *Kynos*, is related to the mythical first Achaean attack to Troy lead by **Herakles** and his followers.

Terracotta model of a **Type V** ship's bow fragment from *Pyrgos Livanaton* dated **LH III C**.



Possible Aegean-style ship of **Type V** engraved on a seal from *Beit Shemesh* . **Philistine** wares are prevalent at *Beit Shemesh* . Therefore, it seems probable that the prototype of the ship engraved on the seal was **Philistine**

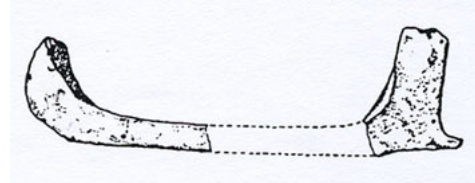
TYPE VI "Tragana Cluster"

With the continuation of the keel into a spur projecting beyond the straight sterpost, the Achaeans created a new hull-form, best represented by the vessels on the pyxis from *Tragana* and the larnax from *Gazi*. The keel is flat, the sterpost generally straight with a slight curvature at the junction; essentially, then, the shape established by *Skyros* craft- both types share the loose-footed sail common at the end of the Late Bronze Age and not attested for Minoan ship- with the addition of the spur. This must have amounted to a complete redesigning of the bow, a task which, taking into account the conservatism prevalent among shipbuilders, surely was undertaken with a definite purpose in mind, in view of a net gain in performance. A speculative reason behind this development may be sought in the ability to beach at speed without damage the bow. Any suggestion of employing the spur as a ram is groundless: in every case the stempost extends beyond the spur, implying potential damage to the ramming ship.



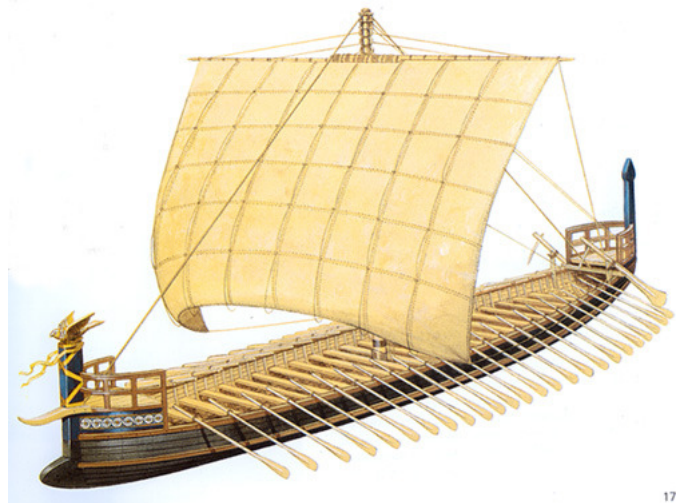
Very interesting developed clay of a **Type VI** ship model from *Tiryns* dated **LH IIIB** (about 1300 BC).

Other teccacotta model of a **Type VI** ship dated **LH IIIC** (about 1200 BC).



A typical **Type VI** Late Achaean ship is represented on a pyxis from the *Tragana* tholos tomb near *Pylos* dated **LH IIIC** (about 1200 BC). It is a long lean ship with a low gunwale, equipped with a ram as on the Middle Helladic *Iolkos* fragments but more swift-looking and narrow. It is probably meant to represent a warship or one suited to pirate raids, not a merchantman. The mast is centered, with an oval sail, whose form is more influenced by the filled concentric arcs on the ornamental panels of the pyxis than by marine facts.

An interesting and reasonable reconstruction of the Achaean **Type VI** ship depicted in the *Tragana* pyxis has been made by **Peter Connoly** (*5). This heavy warship had 50 oars and it is shown with both sails and oars but more likely these would not be used at the same time being the sails only used when the wind was in the right direction. The latticework panels popular in the period are used for the steering platform in the stern, underneath which the steering oar and tiller project on the diagonal, and for the lookout platform or windscreen in the high stem. In the *Iliad* the Achaean's ship are described as black (*6), probably because their keels were tarred. Of course in the upper parts they could have been decorated in any colour, for instance **Odysseus** refers to crimson-painted ship (*7).

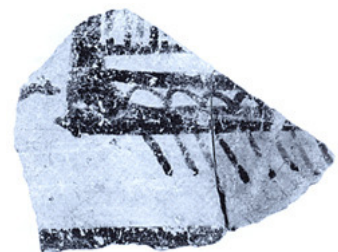


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The **Type VI** ship on the stirrup jar from *Asine* dated **LH IIIC** is miniature and poorly drawn. Probably it is sailing right, with an incurved bow and a slight ram, a fringed curved screen or relic of the fish standard on the prow, a centered sail, square and crosshatched, with the mast off-center at the left corner, eleven oars, a tall laddered steering platform, and a steering oar lying almost level in the water.

Another **Type VI** war ship is depicted in this **LH IIIC** pottery fragment from *Kynos*. Although it is only partially preserved, we can recognise an oar-propelled galley with low angular hull, a rather high stem or stern and many oars.





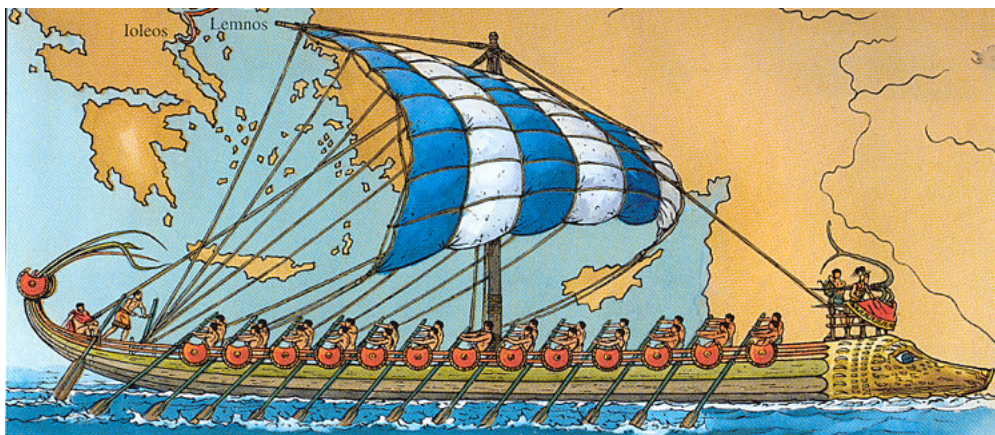
A **Type VI** ship seems to be also represented on this graffito from *Dramesi* dated **LH IIIB**

A **Type VI** ship it is very likely represented on this cup sherd from *Phaistos* dated **LM IIIC**

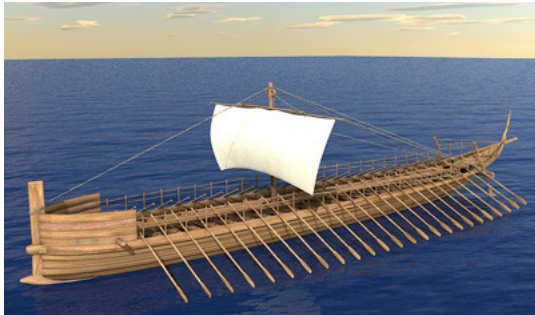


Bow fragment of a probably **Type VI** ship from *Athens* dated **LH IIIC**. This model is displayed at the Kropolis museum, dated **LM IIIC**

A **Type VI** large Achaean warship is very likely also represented in this pottery fragment from *Kastanas* dated **LH IIIC**. The drawing is very schematic but it is possible to identify one of the platforms normally located in the high stem or in the stern area, the sail and the oars. In the *Iliad* is mentioned that the rowers were numbered in leg and arm by the toil of smiting the sea-water with their blades of polished pine (*8).



An interesting representation of the mythical **Jason's** ship **Argo** has been made by **Marc Henniquiau** and **Jacques Martin** (*9). According to ancient Greek mythology **Aeson** was the rightful king of *Iolcos*, but his brother **Pelias** usurped the throne. It was **Pelias** who sent **Aeson's** son **Jason** and his Argonauts to look for the Golden Fleece. The ship **Argo** set sail from *Iolcos* with a crew of fifty demigods and princes under **Jason's** leadership in the 13th century B.C. **Jason** assembled a great group of heroes known as the Argonauts. They included **Heracles**, **Philoctetes**, **Peleus**, **Telamon**, **Nauplios**, **Argus**, **Orpheus**, **Castor** and **Polydeuces**, **Atalanta** and **Euphemus**. Their mission was to reach *Colchis* in *Aea* at the eastern seaboard of the Black Sea and reclaim and bring back the Golden Fleece, a symbol of the opening of new trade routes. Along with the Golden Fleece **Jason** brought a wife, the sorceress **Medea**, king **Aeetes'** daughter, granddaughter of the Sun, niece of **Circe**, princess of *Aea*, and later queen of *Iolkos*, *Korinth* and *Aea*, and also slayer of her brother **Apsyrtus** and her two sons from **Jason**, a tragic figure whose trials and tribulations were artfully dramatized in the much staged **Euripides' Medea**. The place of ancient *Iolcos* is believed to be located in modern-day nearby *Dimini*, where a Mycenaean palace was recently excavated.



The boat **Argo** was constructed with the help of Goddess Athena. The shipbuilder was **Argus**, and so the ship was named after him, **Argus** meaning swift. The wood came from the pine trees of Mountain Pelion, and from the talking oak trees of **Dodone**, and as such the boat was endowed with the gift of speech. The Municipality of *Volos*, in conjunction with the local Municipal Tourist Bureau and the research team of "Navdomos", reconstructed the myth and the ambitious project, which took years of painstaking enquiry and relevant studies, at the end materialized, with the newly built replica of the mythical Argo and its launching on September 17, 2006, in the presence of Prime Minister **Costas Karamanlis**. The building of the ship, with Bronze Age tools to the specifications of a Mycenaean-era vessel, took place at the shipbuilding yard in *Pefkakia*, near *Volos*. The 28.5 meter long and 4 meter wide vessel have on 50 oarsmen. The 50 rowers are citizens from all the member-states of the European Union. **Argo** travels to the ancient Colchis, present-day Georgia, symbolically looking for the "Golden Fleece" of our times.



A similar **Type VI** large ship with large sail and several oars is represented in this larnax from Crete dated around XII century BC.

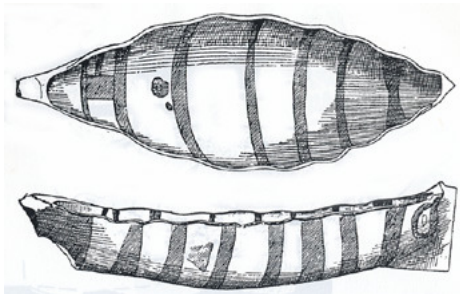
Hypothetical analysis of
Type III-IV, V, and VI warfare capabilities

Nr	Aspect	Type III-IV	Type V	Type VI
I	Rapid deployment	Good (overhangs reduce maximum crew at oars)	Very good (maximum oar-crew, but added weight of deck)	Excellent (maximum oar-crew, lightweight hull)
II	Rapid landing	Limited (crescent-shaped hull against)	Limited (no keel projection to protect bow)	Good: keel projection protects bow
III	Ship as weapon (not ramming)	Unlikely	Limited (shunting at moment of engagement)	Limited (shunting at moment of engagement)
IV	Additions to hull for warlike use	Bow and stern fighting platforms	None; forecastle integrated into bow; rare instances of stern castle	

	for warfare use	fighting platforms	later instances of stern casate	
V	Use as fighting platform	Limited to good (mainly forecastle)	Excellent along length of hull	Good (mainly forecastle)
VI	Tactics	Long naval spear, encounter at distance	Short spear, shield, boarding, man-to-man	No data (probably as Type V)
VII	Ability to transport troops, plunder, prisoners	Very good (craft functions with skeleton crew)	Good (but requires full oarcrew)	Limited (requires full oarcrew)
VIII	Crew doubles as soldiers	Yes	Yes (with warriors on deck)	Yes
IX	Fate of ship during land operations	Able to stand off with sail and skeleton crew	Possibly immobile and unmanned	Probably immobile and unmanned
X	Further development	Limited (invisible in the data)	Form basis for all further galley developments in Greece	

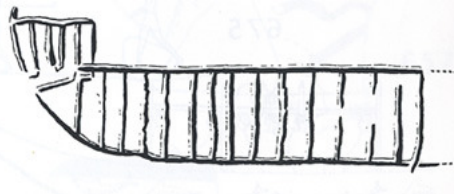
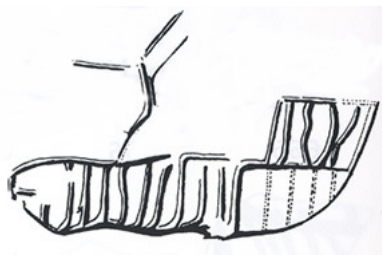
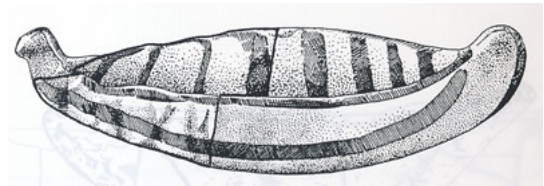
Hypothetical analysis of Type III-IV, V, and VI warfare capability performed by Dr. Michael Wedde (*10)

UNCLUSTERED LATE AEGEAN SHIPS



A beautiful clay model of unclustered type of Late Aegean ship from *Phylakopi* of uncertain datation (LCyc I-II to LH III). It has an almond-shaped hull with gunwale forming wavy line, stern outside painted black. Eye and cutwater at bow.

Clay model of unclustered ship from *Asine* probably dated LH IIIC. Half of hull extant, sweeping stern and bow-figure being modern restorations.



Unclustered late Aegean ships represented in the stela from *Dramesi* dated LH III. These boats show flat hull with keel and gunwale lines joined by 15 vertical parallel strokes.



A very unique and interesting representation of ship is present on this table from Ithaca. This Late Helladic clay table of uncertain dating has been found by the Archaeologists Thanasis Papadopoulos and Litsa Kontorli in the same area of a recently discovered Achaean palace. The clay table is very likely representing an episode from the *Odyssey*-the ship with *Odysseus* bound to the mast- with monster-like motifs on either side and markings which are probably **Linear B** script like the sigh AB09 "SE".

UNCLUSTERED FRAGMENTARY REPRESENTATIONS OF GALLEY

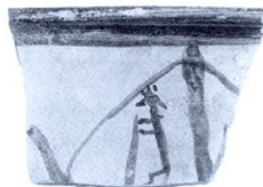


Achaean sherd dated **LH III C1b** (about 1200-1190 BC) from *Ashkelon* Israel with lower legs of human figure standing on bird's head curved line of a possible ship's stern.

On this **LH III C** ship representation from *Kynos* we can see the feet of a warrior standing on a ship deck and underneath a waid bulwark runs along the side of the ship. Its decoration shows a common motif used to fill decorative bands on Achaean vases. Below the bulwark the low hull of the ship can be seen and eleven oars are depicted, extending from above the gunwale down below the keel.



On another fragment from *Kynos* dated **LH III C** a part of undecked rowing-ship is pictured. It seems that both type of war-ships, decked and undecked, existed at the same time and were used to transport troops.



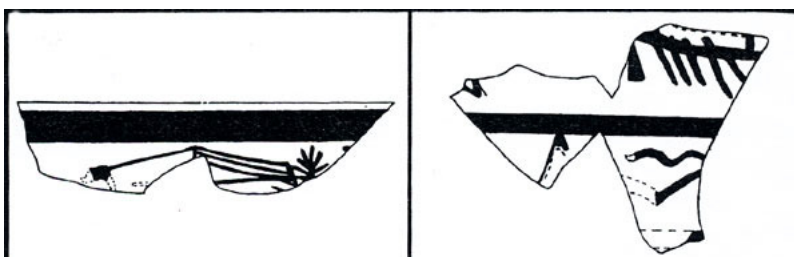
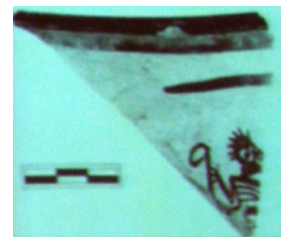
A small sailing ship, or rather a sailingboat is depicted in this fragment of a krater from *Kynos* also dated **LH III C**. Preserved on the sherd are the mast, a backstay and a forestay and one of the boat extremities that rise well above the gunwale or the deck (if there was one). The standing figure between mast and stay facing this end perhaps suggests that we are dealing with a stern.

On these two pottery fragments, perhaps belong to the same krater, warriors with helmets and rectangular shields on board of war-ships are picture. In the left piece we distinguish the mast of a ship, at the top of which two brails hang from a double ring. The horizontal line under the rings should be the yard of the sail, and the hanging festoon-like semicircles obviously represent the brailed-up sail. In the right piece a warrior seems to be standing below the construction behind him. This construction could be a rail or a bulwark, than the warrior is probably standing in the hull of an undecked ship.

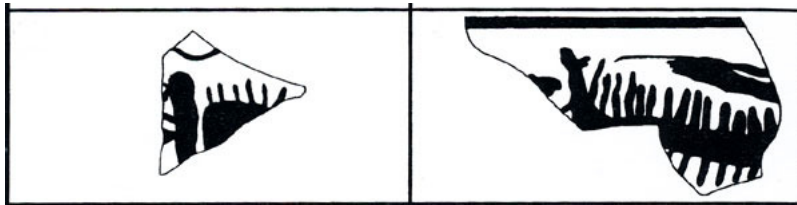


Warriors with hedgehog helmets behind a ship's prow are depicted in this fragment of a krater from *Kynos* also dated **LH III C**.

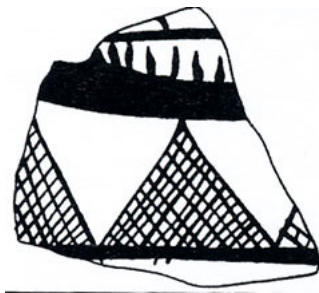
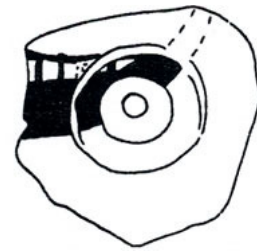
A warrior with hedgehog helmet and possible banded cuirass on a ship is also attested on this krater fragment from *Kynos* also dated **LH III C**



Fragments of sherd with ships representataion from *Phylakopi* dated **LH III C**

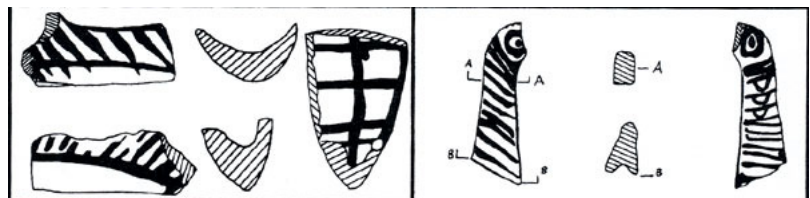


Ship's stern represented on a krater sherd fragment from *Kalapodi* dated **LH III C**



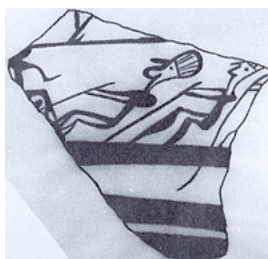
Ship's hull section represented on a krater sherd fragment from *Athens* dated **LH III C**. This specimen is displayed in the Akropolis museum.

Terracotta ships model fragments representing bow and stempost from *Pyrgos Livanaton* dated **LH III C**



Naval battle is also depicted in this krater from *Bademgedigi Tepe* in the west Anataolia dated **LH III C**. Sea battles are clearly one of the most popular theme in the final phase of the Late Heladic period and they are not only a Greek mainland phenomenon, but also appear on the islands and the coast of Asia Minor. They are probably evidence of a new kind of warfare. The fact that similar scenes were found across the Aegean could suggest that war at sea was more common than before.

A detail of the same krater fragment from the Anatolian site of *Bademgedigi Tepe* shows the rowers in the bellow deck. The more fully preserved rower on the right shows that the rowers have both hands on the oars which rise up to the deck above.



Two oarsmen are well attested in this pottery fragment from *Kos Seragio* dated around 1200-1100 BC. The fragment shows the lower deck of a ship being rowd right by two sailors in baggy turbans. The ship is shown in cross section, as on the *Enkomy* vase.

Men on oared ship are depicted in this sherd fragment from *Xeropolis Lefkandi* also dated **LH III C**.





Two warriors rowing are also well depicted on this pottery fragment from *Voudeni* dated around 1200-1100 BC. The warriors seem to be equipped with decorated or embossed helmet and corselet.

CYPRIOTE COMPARANDA

Some boat representations in stone stele graffito and in ship-shaped rhyta, are known from Cyprus. The graffito, although very schematic, may be assigned to **Type VI** with confidence: the curving stern, the bow projection and birdheaded stempost. Three of the rhyta are devoid of bow projection and should be assigned to **Type V**, but it should be noted that the inward lean of the post is reminiscent of the Achaean ship from *Asine*. The fourth ship-shaped rhyta exhibits the same inward-leaning stempost, but has a projection.

Very schematic ships, probably of **Type VI**, representation from Late Cypriote stone stele dated 1200-1100 BC



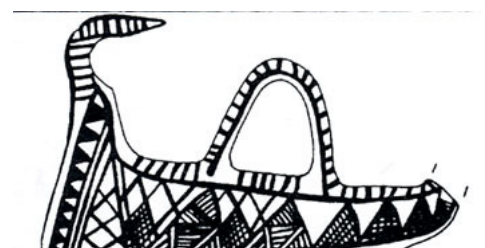
Vase of Proto-White painted ware, in the form of a warship probably of **Type V** from *Lapithos* (Tomb 74) Cyprus date around 1150-1050 BC. The surface is covered with painted geometric patterns. Long and swift warships were no doubt used to bring the Achaean immigrants to Cyprus and other places where they settled at the end of the Late Bronze Age.

Similar askoi of Proto-White painted ware in the form of warship, probably of **Type VI** always from Cyprus dated around 1150-1050 BC. Also in this case the surface is covered with painted geometric patterns. Whether the newcomers are called raiders or refugees seeking to settle in a new home in Cyprus, it is clear at any rate that those who came from the Aegean must have come to the island in organized groups, with aristocratic leaders who could afford to arrange their transport in warships during a period when piracy made traveling in the Mediterranean difficult.



Vase of Proto-White painted ware, in the form of a warship, probably of **Type V** from *Lapithos* Cyprus date around 1150-1050 BC. Also in this model the surface is covered with painted geometric patterns.

Vase of Proto-White painted ware, in the form of a warship probably of **Type V** from *Lapithos* Cyprus date around 1150-1050 BC. In this case the bird-head stempost is still preserved.





COMMERCIAL BOATS



Clay model of a boat of Plain White Handmade ware, from *Kazaphani* Cyprus dated around 1350 BC. The model has holes on either side below the rim and dowel hole for mast. This is one of the largest models of a ship from the Late Bronze Age. Such models become commoner during the Cypro-Archaic period but they begin to appear in Cyprus already in the Middle Bronze Age Late Cypriote I-II period. This model represents more likely a large commercial ship similar to the ship that wrecked at *Uluburun*.

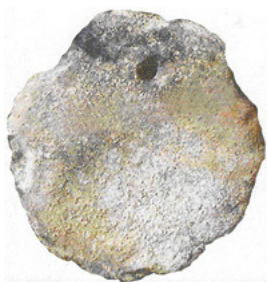


The *Uluburun* wreck is located at *Uluburun*, which is on the southwestern coast of Turkey near *Kas*. The wreck is located at a depth of more than 40 meters. The ship has been dated to the Late Bronze Age, with the more specific date of 1300 BC given by dendrochronological testing performed on dunnage or firewood found on the wreck. The *Uluburun* wreck has been crucial to the understanding of ship construction and trade in the Late Bronze Age. **Pulak** describes the wreck as "one of the wealthiest and largest known assemblages of Late Bronze Age trade goods yet discovered in the Mediterranean". The cargo included nearly a ton of tin ingots and around ten tons of copper ingots from Cyprus. Other cargo finds include elephant and hippopotamus ivory, glass ingots, and bronze tools and weaponry. Interestingly, by examining the personal effects of the ship's passengers as well as the cargo, archaeologists have hypothesized that there were at least two Mycenaean aboard, likely men of rank serving as envoys. Some indications of the provenance of the ship and the "nationality" of its crew or merchants on board the ship may be gained from the utility wares (i.e. Cypriot jugs and Mycenaean deep bowls and cook-pots), perhaps also from the incised "trade marks" on the handles of amphora which can be claimed to be connected to the Cypro-Minoan I Script. These facts, taken with the location of the wreck, point to the coast of Cyprus, as the probable base of the ship, where large naval centres flourished at *Enkomi*, *Kition*, the site at *Hala Sultan Tekke* (*Alyke*), *Palaipaphos* and *Maa-Palaiokastro* or to the south coast of the Argolid, to important centres of naval power, also known from the Catalogue of Ships in the *Iliad* (*4) and from Hesiod's Catalogue of Women (*11) to well-fortified *Tiryns*, *Mases*, and well-harbouring *Hermione* and *Asine*

The largest seagoing merchantmen in the Mediterranean and Gulf during the Bronze Age (about 3000-1150 BC) were probably not much larger than the ship that wrecked at *Uluburun* about 20 tons capacity and 16 meters long. A 13th c. letter from *Ugarit*, long interpreted as indicative of much larger ships, is reinterpreted in the context of available texts, archaeology, and iconography. Available iconographical evidence points toward a 20 meter maximum length, and the evidence of the *Uluburun* shipwreck only nominally exceeds the maximum size of seagoing ships appearing in Mesopotamian records. Storage jars from shipwrecks, including those found at *Uluburun*, are used to address problematical aspects of the textual evidence, wherein the capacity of ships is given in volumetric units. Though problematical, all available evidence suggests that reconstructions of Bronze Age trade networks should assume smaller ship capacities.



ANCHORS



The earliest shipwreck so far discovered dated around 2200 BC has been found near the island of *Dokos* at the entrance of the *Argolikos Kolpos* gulf. This ship was carrying many ceramic objects dated around 2700-2200 BC coming from different areas of Peloponnesian. Very few parts of the ship survived as for instance more than 10.000 pottery fragments and the big anchor which is about 50 cm high and very heavy.

Beautiful Aegean stone anchor decorated in the form of an octopus. Even if this element has been also interpreted as a religious ritual stele its identification as a ship anchor, based on general dimensions weight and design, is more reasonable.





Other two stone anchors from the Achaean period. The one at the top had two stakes through it to stop it dragging along the sea bed.

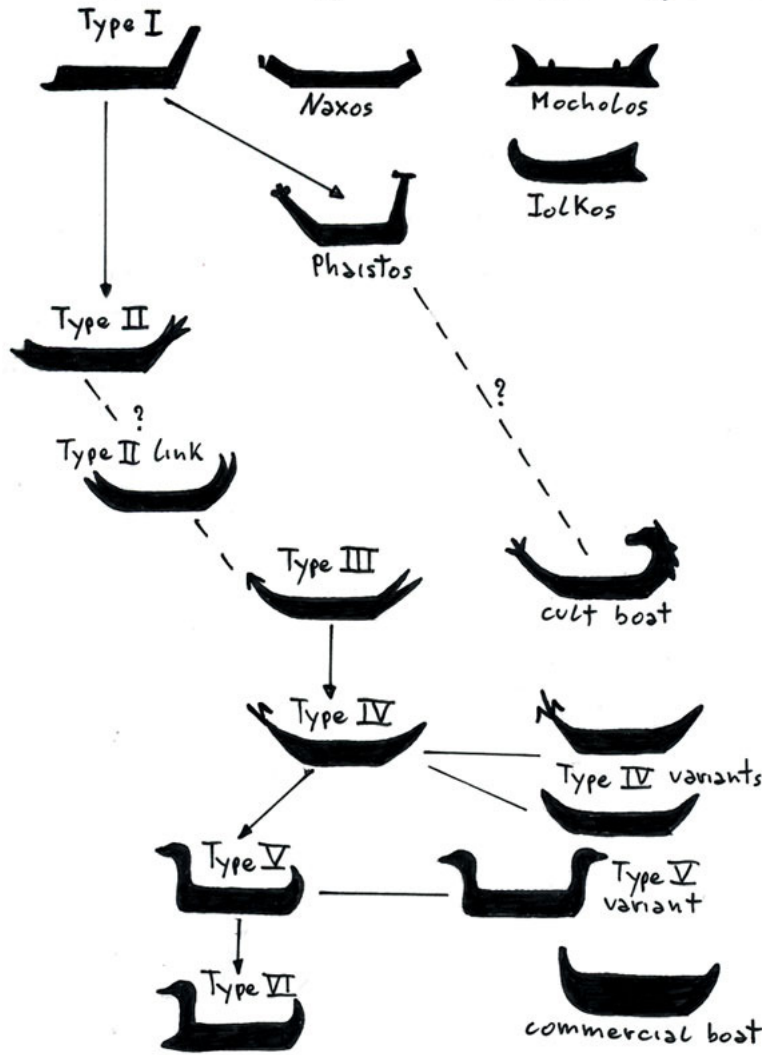
This large stone anchor weighing approx. 220 kg. was one of 24 recovered from the Uluburun wreck. All but two of the smallest anchors are of sandstone. The two small limestone anchors found on the wreck, weighing between 21 and 25 kg. These anchors were originally stowed near the bow.



Similar Late Bronze Age Cypriote stone anchors have been found at other sites in the Mediterranean like these two specimens respectively from Gulf of *Cugnana* near *Olbia* Sardinia and from the shipwreck at Cape Iriain the Gulf of *Argos*. Though the ethnicity of the ship cannot be determined with certainty, the Cypriote connection of the cargo is undoubted.



Hypothetical evolution of hull shapes in Aegean Bronze Age



PYLOS ROWERS AND COASTGUARD



Aegean Trade routes

Some **Linear B** tablets from *Pylos* are referring to naval/military subject-matter (*12). The specific subject of the naval tablets is indicated by the word "rowers" which appears in the first line of three tablets. The first is a list of the numbers of rowers to be provided by various town for an expedition to *Pleuron*. The second is probably somewhat similar, but the heading is almost all lost, and the numerals are much larger; in all 443 men are recorded. These numbers make it certain that we are not here concerned with a peaceful mercantile venture, but a naval operation; and it would be unlikely that the business of trade would be thus organized by a central authority. It is possible that the thirty men specified (PY An12) is the complement of a Mycenaean ship or part of the complement for a larger ship with fifty oarsmen. The second tablet then appears to allow for at least nine ships. The third tablet is more enigmatic, the heading speaks clearly of "rowers who are absent" (without leave?).

In these tablets an important coastal town is mentioned **Ro-o-wa** which provides eight of the thirty men for *Pleuron*; it is the seat of a coastal command (PY An43). As the Lawagetas and other important people are associated with it here, it may well be the port of *Pylos* itself. In the **linear B** the terms **na-u-do-o** was the ship builders, **o-pi-ka-pe-e-we** seems related to the superintendants of the hulls or boats, **e-re-e-u** was the responsible for oarsmen, **e-re-ta** were the rowers, and **ka-ko-na-wi-jo** is related to naval bronzes.

CONCLUSIONS

The history of the Aegean ships and Naval trades does not have a concrete point of beginning. Its roots are lost in the depths of centuries of the history of mankind. In a geographical area of which any part is no more than 150 km. away from the sea, the Greeks Aegean areas populations developed from the Prehistoric Age societies which were coastal in their majority. There, they learned to exploit the marine resources and loved the sea. Automatically, the need for protecting and further spreading the cultures that they had developed was created, having as a result the progressive development of the first organised units of the Aegean sea power. Since the cycladic period several pictorial evidences and shipwreck attested a large development of ships used both as warship and

commercialship. These early Aegean ships were characterized by a lean long design and a long vertical prow with symbols mounted on top. In the Greek mainland ships with the typical curved ram on the prow, are attested since the Middle Helladic period. Because of the intensive commercial trade between the Aegean population and the Near Eastern Kingdoms some of the early Aegean ships show also several similarity in general shape and design with the Egyptian ships of the same period, as well attested in pottery representation and in the famous fresco from *Akrotiri* in the Thera island dated around 1600 BC. Different type of Minoan ships in size and general design are well represented on several Seals, pottery, fresco and jewellery. Some of the early Aegean ships were similar to Minoan ships, the later design was still characterized by the typical long lean design and a long vertical prow with symbols but with a ram and the platforms located in the stern and in the high stem. the largest of these ships could accommodate up to 50 oarsmen. large sail was also used probably only when the wind was in the right direction. Sea battles represented on Greek pottery dated during the final phase of the Late Helladic periods seem related to these kind of large or medium size Aegean ships which are also attested in pottery/stone depictions, or askoi coming from Anatolian coast settlements and islands.

TOP

(*0) MICHAEL WEDDE, From Classification to Narrative: The contribution of Iconography towards Writing a History of Early Aegean Shipbuilding; on Mediterranean Historic Review 2008;

MICHAEL WEDDE, Towards a Hermeneutics of Aegean Bronze Age Ship Imagery, Mannheim (1992)

(*1) Egypt, the Levant, Anatolia, and Crete all illustrate their ships in this period. Even if the sword-blade inlaid with ship from the mysterious Dorak Treasure contemporary with Troy II should prove genuine, the ship do not look quite Cycladic (Illustrated London News 28 November 1959, 754)

(*2) This fresco was clearly painted before the destruction of the island by an earthquake followed by the volcano's eruption and ashes fallout which based on the most recent analysis seems occurred not later of 1600 BC.

(*3) The genuineness of the Ring of Minos has been sometimes questioned and for many years the ring was lost, but in the 2002 it was found and the Greek archaeological authority declared it officially authentic.

(*4) Iliad II, 180 and Iliad II, 559-564

(*5) PETER CONNOLLY; THE LEGEND OF ODYSSEUS, Oxford University Press 1986

(*6) Iliad VIII, 258

(*7) Odyssey XXIII, 270

(*8) Iliad VII, 5-6

(*9) MARC HENNIQUIAU, JACQUES MARTIN; LA MARINE ANTIQUE 1, Dargaud Editeur 1997

(*10) MICHAEL WEDDE, WAR AT SEA: THE MYCENAEAN AND EARLY IRON AGE OARED GALLEY; *Aegaeum* n.19

(*11) 39, 94.96, b 14-11.

(*12) MICHAEL VENTRIS, JOHN CHADWICK; DOCUMENTS IN THE MYCENAEAN GREEK, Cambridge University Press 1956