

DECKED VESSELS IN EARLY GREEK SHIP ARCHITECTURE*

Introduction

Writing the history of ancient Aegean ship construction involves the creation of a narrative founded on the available evidence. It is largely representational. Whereas physical remains, if present, contribute towards reconstructing single instances, or detailing specific constructional features, images provide, by virtue of their relative bulk, the data for tracing the evolution. Individual moments contrast with general tendencies—if, as rarely is the case, wrecks can be compared directly with images. For the earliest phases, the material is exclusively pictorial: there are no wrecks in the Aegean datable to the Bronze and early Iron Ages which have provided sufficient remains to permit a reconstruction.¹

However, pictures are not perfect. Any narrative based on imagery must face the nature of the evidence. On the one hand, it is dependent on the vagaries of fashion: certain ship types gained the favor of the artist and the patron, others were never or rarely depicted.² On the other, it is tributary to the filters of conservation: statistical analysis will document the material available at a given moment, not the original state.³ Finally, the resulting narrative is generated from the interaction between the originating artist and the interpreting beholder. It would, thus, be justified to surmise that the study of early Aegean ship architecture, as witnessed in the scholarly literature, has faced the theoretical and methodological issues involved, and established an interpretative framework within which to approach the data.

This is not the case.⁴

The study of ship representations has not evolved with the advances in theory and method evident in the analysis of ancient imagery in general. It has remained, by virtue of the source for its raw material, bound to tradition, eschewing

the questing and questioning nature of Archaeology particular to the post-1968 schools.⁵ Yet there is much to gain from a more theoretical approach, particularly in terms of a more exact charting of the interpretative acts undertaken by the specialist.

Reading images is an act of decoding, assuming the presence of an originating creator, the ensuing representation and a receiving beholder, united by an intellectual process. The mechanics of this transmission is very rarely made transparent. Behind the gnostic approach prevalent in the literature lies both time-consuming analysis and flashes of brilliant insight, yet this work remains beyond reconstruction for the reader.

The present paper attempts to initiate a dialogue on the theoretical and methodological requirements of a transparent treatment of the representational evidence for early Greek ship architecture. It will adopt the author's elsewhere documented stance regarding the reliability of the evidence—essentially an on-face-value acceptance of each document within the framework of a cluster-approach—in preference to examining each image in terms of its individual reliability.⁶ It will strive to problematize the narrative it generates in the belief that greater self-awareness contributes to understanding how and why interpretations are created.

So as to achieve this goal, it is necessary to:

- (1) explicit the theoretical framework within which the endeavor is undertaken;
- (2) formulate hypotheses to be tested against material from the time period of immediate concern, but also against material from other phases of the development of shipbuilding in an attempt to gauge their universal value;
- (3) document the tools created for questioning the data;
- (4) evidence the systematical application of identical procedures over a range of individual representations.

The theoretical framework

The two salient features of the early Greek representational data relevant to the ship architecture of the Bronze, Geometric, and early Archaic Ages are linearity and profile view. This combination creates a major problem for the beholder: whereas the longitudinal outline of the hull and its superstructure can be reconstituted through reference to several indetical or sufficiently similar instances, the third dimension, and with it all constructional details which are reduced to single lines in the side view, are lost. The deck is the prime example of an important structural element disappear-

ing when depicted in profile. To further the identification of hulls partially or fully decked, it is necessary to recognize relevant indicators, and learn to translate their testimony into the third dimension. Such an undertaking can only bear fruit through an interplay of method and data, whereby it is imperative to recognize that the resulting narrative will depend on both the method and how the data are handled—whence the need for transparency.

A deck is defined as a horizontal surface covering part or all of the hull to a variable extent from post to post and gunwale to gunwale. It may be found at the bow, the stern or at the center, longitudinally along the gunwales, or down the centerline. The bow and/or stern quarterdeck can be combined with the central or lateral longitudinal deck. Finally, it may also be a watertight deck with a hatch permitting access below.

To recognize these various configurations, it is necessary to formulate a criterion: if elements of the superstructure, or members of the crew are positioned in such a manner as to necessitate an extensive flat surface, it may be postulated that the hull was decked at this point. It is important to stress that the presence of elements in need of support by a plane at one point of the hull need not imply a continuation to another point. Nor are there, in hypothetical terms, any automatic combinations: if a stern quarterdeck can be identified, it does not permit the *a priori* reconstruction of a bow quarterdeck, or a longitudinal deck.

The appeal to permanent structural or momentary human indicators, when applied to the database, faces the relative penury of either element. The human figure is rare in connection with vessels, and when present, frequently restricted to the helmsman, and/or the heads of the rowers, as well as the occasional passenger.

Thus the cluster approach in itself raises the issue of comprehensiveness: it is argued that the members of a cluster will answer collectively to a number of interpretative statements constituting the basis for a classification as a single type. This procedure assumes similarities in primary features, not merely in secondary traits. In a database constituted by profile views the diagnostic elements must be sought among those which can be easily detected, given the mode of depiction. This would entirely exclude the deck, yet, if present, it constitutes a major characteristic of the hull. If one, or possibly several, but not all, members can be identified as decked, it could be postulated that more than these instances within the cluster population are to be understood as decked, or even that the type is decked by definition. The problem is not easily solved. It depends on the attitude taken to the following queries:

- (1) the percentage of cluster members exhibiting the same trait necessary for it to be considered dominant and interpreted into the typological make-up of the individuals who do not answer unambiguously to the suggested description;
- (2) the effects of a shared idiom;
- (3) the role of the deck in the clustering process;
- (4) the relevance of an evolutionary stance on the overall image, and the effect it will have on the treatment of individual representations.

These four issues cannot be discussed in rigorous separation since intimately related. They all play an important role in how the beholder perceives the cluster, its population, the manner in which the individual images are rendered, and the proportion of decked hulls, if present. Given that the recognition of a deck depends on the presence of external indicators, the deck cannot be deemed a primary feature in the clustering process—despite the important differences between a covered (even partially) and an open hull.⁷ Yet when a cluster is placed in the development of earlier Aegean ship building, its technical environment may suggest a general reading as decked, if some members exhibit the prerequisite traits, and if the deck is part of the vocabulary of the shipwright at that time. The manner in which the ship is depicted may prove related to certain structural characteristics if sufficient individuals share both structures and idiom.

These considerations, which will be expanded upon below with reference to specific depictions, suggest a tripartite interpretative construct—in conjunction with the key terms cluster, evolution, and idiom—modulating the certainty with which a vessel can be spoken of as being decked:

- (1) reliable inanimate or animate indicators suggest that the hull is decked, partially or more extensively;
- (2) potential indicators are evident, but exact statements cannot be formulated;
- (3) reference to kindred images, in the absence of clear indications, suggest that the hull may be decked.

Bow and stern quarterdecks

The quarterdeck is the earliest attested form of partially covered hull in the Aegean.⁸ Such a construction is implied at the stern on the large ships on the Akrotiri

wallpainting to support the *ikrion* and the helmsman, the alternative, attachment to, and balancing on, thwarts being unlikely.⁹ These same ships, in the form in which they are depicted in the so-called “Battle Scene”, appear, at first glance, to have a bow quarterdeck upon which is fastened the balustraded “fighting platform” or forecastle.¹⁰ This need, however, not be so.

If compared with the forecastle of the LH IIIc Tragana ship (Fig. 1),¹¹ it will be noted that the Akrotiri “fighting platform” is a mobile addition (as the ships in the “Procession Scene” —identical in terms of hull construction except for this feature—indicate) which does not need a deck by definition: it may have been included in the construction which was fastened to crossbeams or thwarts. The Tragana ship illustrates the subsequent stage, the incorporation into the bow morphology of a raised forecastle, necessitating a redesign of the stem,¹² but not, by definition, a deck at gunwale level.

Contrasting the Tragana bow with that of LG ships (Fig. 7) indicates both the close relationship between the Akrotiri and the Tragana ships in terms of this feature, and the intermediary position of the latter in the development towards the evolved forecastle. On the Iron Age vessels the quarterdeck is fully integrated with the bow morphology, with access to the quarterdeck gained by a ladder.¹³ Little change beyond the addition of sidescreens at the bow can be noted in the images of the 7th and 6th centuries.¹⁴

The stern quarterdeck, rare in the Bronze Age except for on the Akrotiri ships (and the aftercastle on the Tragana and large Pyrgos Livanaton [Fig. 3] ships), is clearly attested to in the LG period by the position of the helmsman.¹⁵ It frequently is part of the longitudinal deck. In the 7th and 6th centuries, the helmsman is depicted raised above the rowers, whether the vessel is decked or not.¹⁶

Longitudinal decks

Of far greater interest is the longitudinal deck—yet it is also far more difficult to recognize. No Aegean ships are, for obvious reasons of stability in a maritime environment, depicted with the cabins known from Egypt.¹⁷ The deck becomes apparent only if there is movement upon it—that is, movement necessitating a larger support than that provided by the thwarts or a central runway. Yet when questioning the data, three problems arise: distinguishing lateral decks from a central deck, mistaking a central runway for a deck, and creating a deck where only thwarts or a railing existed. Moreover, extrapolation from one member of a cluster to another, devoid of the necessary indicators, does not automatically follow.

In clusters that adhere more loosely to a common mastertype, such as the LH III type best represented by the Skyros ship, a general similarity in lines need not imply identity in details.¹⁸ It is here suggested that the Enkomi ships are surely longitudinally decked, although it must remain open whether the entire hull was covered.¹⁹ Similarly, the large Pyrgos Livanaton ship (Fig.3), by virtue of the warriors, but also of the suggested rowing gallery with the substantial beam above it, can be read as decked, either centrally or laterally.²⁰ The small Pyrgos vessel (Fig.2) appears to be decked, although the beam is absent.²¹ The Skyros ship exhibits no clear evidence for a deck, given the method employed.²²

Rare are the cases so clearly decked as the ships on the MG II Metropolitan krater (Fig. 5):²³ the deck is raised upon struts above the railing and the tholes, and supports a number of warriors, including one seated on deck and dangling his feet into an uncovered section. Whether central or lateral must remain open.

LG I ships are two-leveled, as argued by the author at the Tropis IV symposium, and decked (Fig.7).²⁴ Attempts to read them as depicting both the port and the starboard sides, the one above the other, are considered methodologically flawed, and are therefore rejected.²⁵ The available representations²⁶ indicate that the deck did not cover the entire width of the hull since warriors could stand on the lower thwart or runway and rise above the deck.²⁷ The deck was sufficiently raised to allow rowers to be seated below,²⁸ suggesting that LG I vessels were longitudinally decked laterally, not centrally (see discussion below).²⁹

If the LG II sherds from the Akropolis,³⁰ and the EPA sherd from Phaleron³¹ are related to the Dipylon vessels, a deck should be postulated, since these craft appear to depict an evolution of the earlier ships. The sidescreens, for the protection of the rowers, gain their full sense if the rowers were seated relatively close to them —again arguing for a lateral longitudinal deck.

Although the necessary criteria are not present, it is possible to attach the Toronto bowl to this group by virtue of the clear similarities to the ships on the three sherds.³² In doing so it must be underlined that the proof for a deck is provided by the Dipylon vessels, and that any mention of a deck on the other four is an extrapolation. Two levels do not, as illustrated by the 6th c. *dieres*, demand a decked construction.³³

A further extrapolation would allow arguing for a deck on the Toumba Tomb 61 MG I craft (Fig. 4),³⁴ by reference to the pictorial similarities to two vessels which bracket it chronologically, the 300 year older Pyrgos Livanaton ship (Fig. 3), and the 100 year younger Dipylon type (Fig. 7). All three are characterized by the substantial beam, variously indicated in each case,³⁵ above the rowers. This would place the

Toumba ship, with the Metropolitan krater vessels (Fig. 5), in the evolution towards the second level with rowers on deck.

The LG II Katsaros sherds from Argos depicts rowers seated on stools on the line upon which stands the horse.³⁶ In reference to the criteria employed this would indicate a deck,³⁷ but whether a single-level (as the Metropolitan craft) or a two-leveled ship (as the Dipylon vessels) rowed from the upper level alone is depicted remains unknown. It is interesting to note that such stools have been postulated for the rowers of the upper level on the Dipylon ships.³⁸

At this point the problems begin. Method, since it is an externally imposed tool employed by the beholder to order the evidence, is not always as accommodating as the ancient artist. The Eleusis 741 skyphos (Fig. 6)³⁹ depicts figures floating above the hull—the presence of a deck cannot be ascertained, although it should be noted that the warriors on the other side of the vase are also weightless, as is the warrior to the left of the bow.⁴⁰ The tholes above the horizontal line suggests that it is the gunwale.⁴¹

When contrasted with the Eleusis vessel, the Copenhagen oinochoe exhibits certain similarities:⁴² the vessel is rendered by a thick line attached to a thin one by oblique struts—essentially the approach taken on the Eleusis cup, yet tholes are not depicted; upon the upper line sits the helmsman, and stand two warriors. Since this line also represents the gunwale, a reading as runway rather than deck cannot be excluded.⁴³ Comparing the Copenhagen oinochoe with the University of Tasmania cup⁴⁴ suggests that, on the latter, the small figures in the rooms below the line upon which is seated the lower torso with dangling legs are rowers—thus possibly signifying a decked craft.⁴⁵

The ship on the Sounion plaque (Fig. 8)⁴⁶ has, in the literature, been treated both as decked and open.⁴⁷ The double horizontal line above the hull, if read as a rail, necessitates arguing that the legs of the hoplites disappear into the hull. A reading as deck, upon which stand small men behind large shields, butts against the absence of similar stunted hoplites in EPA pottery,⁴⁸ but it should be noted that most figurative vases of the period are decorated with larger compositions. The stunted hoplite is known from EC aryballoi, but these are up to 150 years later, and therefore cannot have a direct bearing on the present problem.⁴⁹

Four EPA sherds, contemporary with the Sounion plaque, are of interest. Whereas the three Agora sherds⁵⁰ cannot be securely related to the Sounion plaque in terms of the ship type represented, the Akropolis fragment (Fig. 9)⁵¹ appears to depict a very similar stern. Despite severe damage, the sherd retains

one crucial element: in the position occupied by the sternmost hoplite on the Sounion plaque, there stands a small full-length figure. The size-relationship helmsman/standing crewmember is comparable to that of helmsman/hoplite, suggesting that the hoplites are depicted in their entirety. Either the stern quarterdeck extends as far as the standing man but no longer. Or the line beginning at the uprights, in an analogous relationship to the balustrade as the contentious lines on the Sounion plaque, is a longitudinal deck. It is, however, not possible to determine the height of the putative deck above the hull, and thereby venture to suggest whether the vessel is centrally or laterally decked. The problems involved in interpreting the Sounion plaque require a separate study—the suggestion that a decked hull is intended remains problematic.

The somewhat later ivory plaque from the Artemis Orthia sanctuary in Sparta does not contradict a reading as a decked hull for the Sounion vessel.⁵² The shields are not held by hoplites on a deck, but attached to the rail above the gunwale. The heads appearing above must be those of the rowers, although their bodies do not continue between the rail and the hull. The two men manipulating the rigging stand either on thwarts or on a central runway.⁵³

Both ships on the Aristonothos krater (Figs 10-11),⁵⁴ although very different in type, are decked, if the criteria employed are valid.⁵⁵ Two approaches to the deck, known from other images, are employed. On the left ship (Fig. 10), the deck is shown above the heads of the rowers, with the absence of struts explained by a desire for clarity—as on some of the Dipylon ships.⁵⁶ On the right ship (Fig. 11), the rowers are absent, permitting the addition of the struts. Whereas the left ship can be recognized as a decked *moneres* with the oars passing through ports—an innovation—the ship on the right does not follow established patterns. Similarities with the stern of the Sounion vessel (Fig. 8), with the bow of some Etruscan craft, can be noted; again further study is required.

In the 6th c., the deck disappears—or so the method employed suggests.⁵⁷ The Nikosthenic kylix Louvre F 123 is representative of the open-hulled *moneres* which dominates the material.⁵⁸ When a crew is depicted, which is rarely, it is shown standing on a central runway, as on the British Museum kylix B 436, an open *dieres*.⁵⁹

Discussion

Two important issues rise from the above:

- (1) the use of arguments from idiom and evolution;
- (2) the distinction between a central or a lateral deck.

Extrapolation by bracketing on the basis of idiom and evolution, as was attempted above for the Toumba Tomb 61 craft, assumes a common pictorial language remaining, beyond dialectal variation, largely unchanged over long periods of time. To a certain extent such an assumption can be supported by the evidence: there is sufficient similarity in the means employed by Mycenaean and Geometric artists to render the longship of their time. This becomes particularly evident through the rereading of the Geometric corpus as employing a profile view only.

Nonetheless, problems arise. By reference to the criteria employed, there can be little doubt that the large Pyrgos Livanaton vessel (Fig. 3) is decked, and substantially so. Its smaller sistership (Fig. 2), although the horizontal line does not attain a comparable thickness, is likewise decked, the line serving as base for two warriors. It is likely that the struts supporting the deck have been suppressed and replaced by the oblique oarlines. The vessel would, then, in terms of the midship section at least, present itself very much like the Tragana ship (Fig. 1): a thick line representing the hull itself, and a thinner line joined to it by short vertical strokes. On its own, the Tragana ship, through the absence of figures on the latter line, appears to be undecked, the images depicting a massive keel, frames, and the gunwale, in the "x-ray" approach.

The right ship on the Aristonothos krater (Fig. 11), ignoring the morphological differences and interpretation of the bow, and concentrating on the midship section, witnesses to a similar treatment, although the lower line is appreciably thicker, and clearly represents the entire hull, from keel to gunwale. The thin line on struts renders, by virtue of the warriors (the warrior at the bow attests in favor of them standing on the line, not of disappearing behind it), a deck of unknown extension, but sufficient to serve as a fighting platform.

The much earlier Eleusis 741 vessel (Fig. 6) sheds a different light on the problem. The thicker line does not appear to render the hull in its entirety: the thin line is clearly the gunwale with tholes, the oblique strokes again being the frames, and not fulfilling a merely decorative purpose.⁶⁰ The largely contemporary ships on the cup NM 18471 are of the same type.⁶¹ Here the frames and tholes form single lines. Tholes are exceedingly rare in Bronze Age ship images and appear on none of the larger oared vessels of the Mycenaean period.⁶² Therefore they cannot be reconstituted to the Tragana vessel (Fig. 1), leaving the problem unresolved as to whether it is open or decked.⁶³

Likewise problematic remains the Gazi ship:⁶⁴ the vessel is rendered by three parallel horizontal lines, a thicker one running from the sternpost out into

the bow projection, and two thinner. They are joined by vertical strokes from the thick “keelline” to the uppermost thin line—they do not continue up into the triangle below the furled sail, this area being filled by an independent set of lines. Whether the middle horizontal line represents the gunwale or a wale cannot be ascertained.⁶⁵ If the former obtained, the upper line would by necessity be that of a raised deck, although the triangular area renders the presence of a human indicator impossible.

Finally, despite the obvious morphological differences, the LG I Warsawa 142172 krater fragments⁶⁶ exhibit a number of conceptual parallels to the Tragana ship. The amidship section of the hull is depicted by a thick horizontal line with a thinner one above it; at the junction with bow and stern, the hull gains in mass (the raised castles on the Mycenaean ship) before sweeping into the posts. The thin line on the Iron Age vessel is not a deck, as indicated by the figures standing behind it,⁶⁷ and by the sistership on the krater Louvre A522.⁶⁸ It is likely that vertical strokes need to be reconstituted to complete the image of a ship in the “x-ray” manner.⁶⁹

The second issue, whether a central deck can be distinguished from a lateral one in a profile view, goes to the heart of the modern understanding of ancient ship building. A clear indication that the deck does not stretch unbroken from gunwale to gunwale is provided only by the Dipylon ships, as well as for the much later *trieres*, at least in the *Olympias* reconstruction.⁷⁰ Within an evolutionary scheme, provided with the two datum points just mentioned, it is possible to argue that between the two, and probably before the first, a laterally discontinuous deck may be assumed. This would imply that the longitudinal deck consisted of two parts, one along each gunwale, thereby imposing such a configuration on, for example, the Metropolitan MG II craft (Fig.5).

Such an implication needs to be confronted with a putative reconstruction of the path taken from the open hull to the decked variant. Although it cannot be proven by reference to actual representations to the effect, it is quite possible that the earliest form of platform in the central section of the hull was the runway, permitting safe passage between bow and stern. Raising the runway above the heads of the rowers would create something of a prototype to a longitudinal deck, albeit rather too narrow to serve as a fighting platform—assuming an elongated shape for a galley propelled by a large complement of oarsmen.⁷¹ It would also require transformation into a *de facto* laterally continuous deck to accommodate a second level of rowers.

As was stressed above in connection with the EPA Sounion plaque and the Akropolis sherd (Figs 8-9), the distance between the putative deck and the gunwale

on the image need not render a precise relationship, but merely indicate that the one is higher than the other.

If the suggestion made in connection with the LG II Akropolis and Phaleron sherds depicting craft with the rowers protected behind leather or wicker screens, that maximum protection would result when the rower sat as close as the gear-ratio permits, is acceptable, a deck running along the gunwale would ensue. Such a configuration would require raising the deck above the heads of the rowers (which is not obligatory for a raised runway-type deck down the centerline of the hull), yet allowing open space for raising and lowering of the mast. Not until the lower level of rowers worked their oars through ports would such a design become really effective in terms of stability.⁷²

If the present author opts for the lateral longitudinal deck as the path to decked craft in general, it is done in full cognizance of how such a choice was operated. It does not exclude a development from the raised runway, but considers this latter option, primarily due to the problem facing operations involving the mast, as an evolutionary dead-end. Moreover, there exists a very real necessity of naval architects attempting reconstructions –at least on paper– to test the various possible configurations.⁷³

Conclusions

Three strains in early Greek longship architecture thus appear with tolerable clarity in the evidence:

- (1) the single-leveled, open hull, invented in LH IIIB (Fig. 1) and continuing through-out Geometric and Archaic times;
- (2) the single-leveled, decked hull, introduced in LH IIIC (Figs 2-3) and continuing at least into the 7th c. with the Sounion (Fig.8) and Aristonothos vessels (Figs 10-11);
- (3) the double-leveled, decked hull, of the LG IA period (Fig. 7), continuing into the 7th c.

A number of observations may conclude the present discussion. Statistically, decked hulls are rare in the database since the criteria deemed necessary to recognize their presence are seldom filled. The line to be read as a deck must be shown functioning in some capacity congruent with such a function. Representations which depict the deck as a separate line from both gunwale and thwart have a

greater chance at passing through the filter. It is quite possible that further examples lurk in the evidence, but they cannot be recognized as such.

By working from clusters downwards to individual documents, and applying the lessons learnt while analysing the former, it is occasionally possible to formulate speculative statements concerning craft which do not clearly designate themselves as decked by the cues which the method has specified as valid. Comparisons in terms of idiom, within an evolutionary conception of early Aegean ship architecture, reveals interesting correlations across time which may contribute to the examination.

In the Bronze Age, longitudinally decked vessels appear only in two contexts, the Enkomi amphoroid krater, and the two sherds from Pyrgos Livanaton (Figs 2-3). The main Mycenaean type, best represented by the Tragana ship (Fig. 1), is not decked, yet it is this shape, with the bow projection, which will evolve into the decked Toumba ship in MG times (Fig. 4).

A comparison between the documents assigned to the two types which cluster around, respectively, the Skyros and the Tragana ships, suggests that the Mycenaean developed two different variants of the same basic longship concept for distinct tasks. The one (the Skyros cluster), without the bow projection but decked, was employed as cargo carrier, but also as a fighting platform, should the need arise. The second (the Tragana cluster), with the bow projection which was to evolve –much later– into the ram and undecked, functioned as the swift counterpart for rapid deployment.⁷⁴ The Geometric data indicate that this dichotomy was retained.⁷⁵

Unless the almost total lack of ship images on vases after the end of the Black-Figure style hides important evidence, the appearance of single- and double-leveled decked craft is essentially an 8th and 7th c. phenomenon. If this is so, then the deck may have some connection with the search for speed and ramming-strength which eventually led to the *trieres*, as a first step towards adding a further level of rowers, and providing structural rigidity.

This development, in its earliest phase, would have proceeded from the advent of the deck raised above the rowers (the Pyrgos, Toumba, and Metropolitan ships Figs 2-3, 4-5) to the placing of rowers on it (the Dipylon ships Fig. 7) to the addition of protective screens (the Akropolis sherd cf. n 30). The crucial step, placing the lower banks in the hull, rowing through ports, was taken in a second phase in the 7th c., and led to the open *dieres*, the deck no longer necessary.

The decked, single-leveled ship appears to have retained favor for its ability to carry troops and function as a fighting platform. This is suggested by the two

ships on the 7th c. Aristonothos krater (Figs 10-11), perhaps also the Sounion and Akropolis ships, as well as the less certain 8th c. instances of the Copenhagen oinochoe and the University of Tasmania cup.

Such would be the conclusion to a first attempt to apply specific criteria to the data. There is much uncertainty, and the historical reconstruction is speculative. But by asking the question, one possible development from open single-level to closed multi-level hulls becomes apparent.⁷⁶ Moreover, it illustrates how the rereading of the LG material proposed in Tropis IV places the Dipylon ship into an evolution from *moneresto dieresto trieres*. If one accepts the *Olympias* reconstruction, then, so this paper contends, such a Late Geometric decked dieres constitutes a crucial step.

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Loutropyrgos
Nea Peramos

NOTES

- * The author is grateful to Mrs Ethel Wedde for comments and criticism on the text, and to Mr Harry E. Tzalas for the opportunity to speak. The present paper constitutes a preliminary formulation; a more substantial treatment awaits the maturation of the ideas herewithin contained.
- Periodicals are abbreviated as laid out in *American Journal of Archaeology* 90, 1986, 384-394, and 92, 1988, 629-630, with the exception of *MarM* (*Mariner's Mirror*).
- Further abbreviations used:
BM British Museum, London
CMS *Corpus der minoischen und mykenischen Siegel*
NM National Archaeological Museum, Athens.
- Chronological terms are abbreviated as follows: MH, LH (Middle, Late Helladic), LM (Late Minoan), MG, LG (Middle, Late Geometric), EPA (Early Proto Attic), EC (Early Corinthian).
1. For Bronze Age wrecks in the Aegean, cf. Parker 1992, catalogue numbers 208, 362, 544, 1193.
 2. Small craft, throughout history, and merchantmen, when the type is developed, are rarely illustrated. On the latter, cf. Ericsson 1984.
 3. Absences in the database are a major issue very rarely considered; for attempts, cf. Wedde 1991A, 1996.
 4. This holds true of the basic bibliography: Basch 1987, Casson 1971, Gray 1974, Kirk 1949, Köster 1923, Morrison/Williams 1968, Williams 1949-50, 1958.
 5. It is not the purpose of the present paper, or the author's efforts in general, to denigrate the work done in the field, but to attempt an application of clearly formulated methods within a specific theoretical stance and specified framing assumptions to a familiar database in the hope of learning more about how ships were constructed in the earlier periods of Aegean history.
This necessitates a critical confrontation with the bibliography.

6. Cf. Wedde *forthc.*: Chapter One.
7. The exclusion of the deck as a primary typological feature is valid only in terms of the problems involved in the identification of decked craft in the representational data.
8. Abstraction must be made of the Egyptian material due to the entirely different conditions governing the navigation to which Nilotic craft were subjected. Egyptian shipbuilding is essentially riverine, subsequently adapted to a maritime environment. Decks were adopted early due to the nature of Egyptian ship design which did not provide a hold for goods.
9. Marinatos 1974:col.pl.9. Cf. also the seal Basch 1987:100 C2.
10. Marinatos 1974:col.pl.7.
11. Basch 1987:142 fig.298. On this ship, cf. Korres 1985.
12. A relationship of causality (desire for forecastle enforcing a redesign) is not implied. The factors leading to the radical change in the bow design were certainly more complex.
13. Cf., for instance, Louvre A528 (Basch 1987:166 fig. 336).
14. For the 7th c.: *id.*:193 figs 407-409; 6th c.: *id.*:207 fig.428, 209-210 fig.434A-E, 211 fig.438.
15. *id.*:171-173 figs 350, 352, 355, 357.
16. For instance, *id.*:184 fig. 388, 202-203 figs 421, 424, 205 fig. 425, 207-208 fig. 428A-E, 208, fig. 430, 210 fig. 435, 211 fig. 437 etc. The helmsman is frequently enclosed within a railing or a screen.
17. The awning on the Akrotiri ships (Marinatos 1974:col.pl.9) do not require decking: the occupants are seated on the thwarts. The near identical feature on the ships of the MH Kolonna krater from Aigina (Siedentopf 1991:frontisp., pls 35-37) is to be interpreted in the same manner. The reading of Basch 1986:424 (support for lances) constitutes the secondary function as indicated by the Akrotiri vessels.
18. On the Skyros cluster, cf. Wedde *forthc.*:Section 2.9.
19. Basch 1987:148 fig. 311.
20. Dakoronia 1987:122 fig. 2. Considered decked, *id.*:119, 120.
21. *id.*:fig.1. Considered decked, *id.*:118.
22. Basch 1987:142 fig. 295. Marinatos 1933:194 reads two fragmentary LM III sealings from Knossos (Basch 1987:103 F2, 104 F3) as decked craft. The curious Agia Triada model (Johnston 1985:25 BA 15) has what appears to be a deck below the thwarts (Marinatos 1933:195).
23. *id.*:178 fig. 374. On the date, the author follows Coldstream 1968:23, 26, 349. Cf. Wedde 1991B:n75. Kirk 1949:99 and Casson 1971:52 see a decked craft, contrary to Morrison/Williams 1968:31 and Basch 1987: 178-179.
24. Wedde 1991B, *forthc.*:Section 5.7. Casson 1971:51, 55, Kirk 1949:100-108, Köster 1923:87-88, Pernice 1892:293-294, Tzahou-Alexandri 1987:341 understand the Dipylon ships as decked, Basch 1987:163-169, Gray 1974:84-90, Höckmann 1985:43, Morrison/Williams 1968:15-17 as undecked.
25. A short account of the author's stance is given in Wedde 1991B, summarized in *id.* 1996:145-147, and *id.*:*forthc.*: the traditional view postulating a combination of profile and plan views, and, therefore, reading the Dipylon ships as single-level ignores substantial evidence which undermines the foundation for such a conception (treatment of chariots, biers, shrouds). A major methodological, historiographical, and interpretational study is in preparation.
26. Usefully and comprehensibly illustrated by Basch 1987:166-175.
27. *id.*:166 figs 333-335.
28. *id.*:172-173 figs 354-359.
29. A deck is indicated by *id.*:166-167 figs 336-337, 172 fig.356, possibly also by 173 fig.357.
30. *id.*:182-183 figs 384-385.
31. *id.*:183 fig.386.
32. *id.*:184 figs 387-388. Cf. Tzahou-Alexandri 1987:343.
33. Basch 1987:208 fig. 429, 222 fig. 463, 226 fig. 470B, 238 figs 498, 499, 240 figs 501-504. Possibly also 211 figs 437, 438, 227 fig.472.

34. Kalligas 1987:83 fig. 1.
35. Pyrgos: two thin parallel horizontal lines with semi-circles attached to and filling the distance between them; Toumba: three thin parallel horizontal lines; Dipylon: three parallel horizontal lines, the central substantially thicker.
36. Tzahou-Alexandri 1987:360-361 figs 23-24.
37. *Id.*:339.
38. Köster 1923:92. Casson 1971:83 and n33 derives θρανίτης from θρῆνυς (stool), Wallinga 1993:44 and n40 from θρᾶνος (bench).
39. Basch 1987:177 fig.372. For the date, Transitional MG II/LG I, cf. Coldstream 1968:22. Cf. Wedde 1991B:nn75-76.
40. The Eleusis vessel raises the specter of artists adding warriors to any craft, whether decked or not. Although major incongruencies may be ruled out through reference to the contextual beholder's ability to read the image far better than the modern scholar, it should be underlined that the interpretative process is always at mercy to the vagaries of the individual artist. This fact renders it imperative that all statements be placed within the larger framework of clusters and evolution, and not refer to single instances.
41. Kirk 1949:96-97 considers the Eleusis ship, along with the two Anavysos vessels (Basch 1987:176 figs 368-369) as decked. Casson 1971:52 concurs on the Eleusis craft. Morrison/Williams 1968:32 and Basch 1987:175-176 make no mention of a deck.
42. *Id.*:177 fig.373.
43. Not decked: Morrison/Williams 1968:33.
44. Basch 1987: 171 fig.371.
45. Hood 1967:84 reads an upper and lower deck (i.e. a two-level, decked craft).
46. Basch 1987:202 fig.421.
47. Decked: Kirk 1949:119, Delivorrias 1987:165 nr 62. Not decked: Morrison/Williams 1968:73-74 Arch 2, Basch 1987:202-203.
48. Greenhalgh 1973:50 fig.35, 58 fig.37, 70 fig.43, 72 fig.44. The second and third examples depict large shields. Generally, the shield covers the body from the shoulder to the knees, as on Buschor 1969:30-31 figs 34-36, 56 fig.62, 60 fig.66, 71 fig.78. On the ship to the right on the Aristonothos krater, the warriors carry shields comparable to those of the Sounion soldiers in the reading proposed here.
49. Cf., for example, Thessaloniki 1988:cat.nr 155.
50. Basch 1987:203 figs 422, 423, Brann 1962:pl.22.383. The first sherd lacks the rails, thus being irrelevant. The second places rowers at the railing, showing no traces of being decked. The third is broken at the crucial point, but depicts a row of hoplites with their shields immediately above the rail, as on the Sounion plaque.
51. Basch 1987:203 fig.424.
52. *Id.*.241 figs 506-508.
53. Kirk 1949:121-122 suggests a deck on a higher level, and claims that "this ship looks unusually seaworthy".
54. Basch 1987:233 fig. 482.
55. Cf. Kirk 1949:121, Morrison/Coates 1986:25 (but contrast 27), 28. Morrison/Williams 1968:80-81 see neither as decked, Basch 1987:233 the right ship as decked, the left as undecked, but his arguments should be contrasted with *id.*:171.
56. *Id.*:172-173 figs 354-359.
57. The disappearance of the deck from *moneres* and *dieres* in the 6th c. is probably connected with the appearance of the *trieres* (the date constitutes too large an issue to be adequately treated here), which superceded the smaller vessels in their purely military function. Cf., however, the "Argo" on the metope from the Sikyonian Treasury at Delphi (Basch 1987:240 fig. 501): Orpheus and Littos stand on a deck (as suggested by Themelis 1981:32) which stretches into the area occupied by the rowers. On this vessel, cf. Salviat 1984 (although the question of a deck is not raised).

58. Basch 1987:227 fig. 472.
59. *Id.*:221 fig.461.
60. *Id.*:175 (Eleusis 741), 176 (Copenhagen 1628) argues for a mere (and unlikely) decorative function for the lines.
61. *Id.*:176 fig.368; not lost, as Tzahou-Alexandri 1987:353 fig.4 and Tzahou-Alexandri/Spathari 1987:79 nr 42 (exhibited) indicate.
62. The sherd from Phylakopi NM 12099 (Atkinson *et al.* 1904:pl.XXXII.12) indicates the crew by vertical strokes, whereas the sherd Akropolis AP2655 has incompletely drawn frames. The author is grateful for access to the drawings of Dr P.A.Mountjoy for these two documents.
63. Kirk 1949:118, 116 considers it, and the Phylakopi ships (Basch 1987:147 fig.307) decked (cf. also Marinatos 1933:194), although thereby contradicting his statement (p.117) that the Enkomi ships are the sole decked ships of the Bronze Age. Morrison/Williams 1968:8 reject a reading as decked for the Tragana ship.
64. Basch 1987:145 fig.303.
65. Depictions of recognizable wales are exceedingly rare, when not non-existent, in the Bronze Age ship imagery of the Aegean.
66. *Id.*: 174 fig. 360.
67. Cf. also the Louvre fragment A536 (*id.*:fig.363, incomplete illustration).
68. *Id.*:175 fig. 362.
69. It must remain entirely open whether the same argument can be applied to the Skyros ship to read the second line as a gunwale with omitted struts, or even a deck, the latter on the strength of the decked Enkomi and Pyrgos Livanaton ships which form the bulk of the cluster to which the Skyros ship belongs.
70. Thoukydides I.14.3, Ploutarkhos, *Life of Kimon* 12.2.
71. The effect could gradually resemble some modern reconstructions offered for the ships of King Luli, cf. Landström 1961:32-33. That particular reconstruction for the Luli ships (and that of A.Salonen, cf. Basch 1987:317 fig.667) is rejected by Basch 1987:318 fig.671, A.Sleeswyk this volume.
72. This does not occur until the ships of King Luli, c.700 BC. The author would argue that the Phoenicians improved upon a Greek design, thus endowing multiple level ships with serious viability.
73. Further decked craft: Basch 1987:182 fig. 382, 164 fig. 328, 227 fig. 473, 248 fig. 524, 249 fig. 526, 411 figs 878, 879.
74. An attempt to place the development of the Mycenaean ship into its historical context is being prepared by the author. Cf. also Wedde 1996.
75. The same dichotomy can be observed in King Luli's fleet: Basch 1987:313-314, figs 659-660.
76. Cf. Casson 1971:53-57, Coates 1987:111-113.

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ILLUSTRATIONS

- Fig. 1 Tragana (drawing by author from Korres 1985:200, with reconstruction of stempost).
Fig. 2 Pyrgos Livanaton (drawing by author from Dakoronia 1989:147 fig. 1).
Fig. 3 Pyrgos Livanaton (drawing by author from *id.* 1987:122 fig. 2).
Fig. 4 Lefkandi-Toumba Tomb 61 (Popham 1987:357 fig. 4).
Fig. 5 Metropolitan Museum 34.11.2 (drawing by author from Basch 1987:179 fig.375, A and B combined).
Fig. 6 Eleusis 741 (drawing by author from *id.*:177 fig. 372).
Fig. 7 Louvre A528 (drawing by author from *id.*:166 fig. 336).
Fig. 8 Sounion (drawing by author from *id.*:202 fig. 421A).
Fig. 9 Akropolis (drawing by author from *id.*:203 fig. 424).
Fig. 10 Aristonothos krater, left ship (*id.*:233 fig. 482 left).
Fig. 11 Aristonothos krater, right ship (*id.* right).

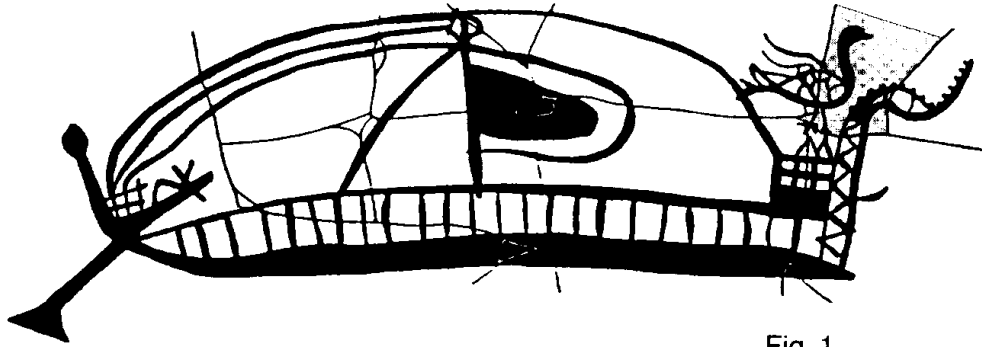


Fig. 1

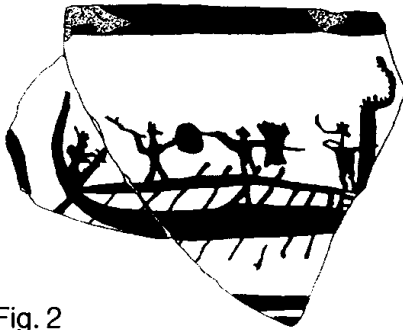


Fig. 2

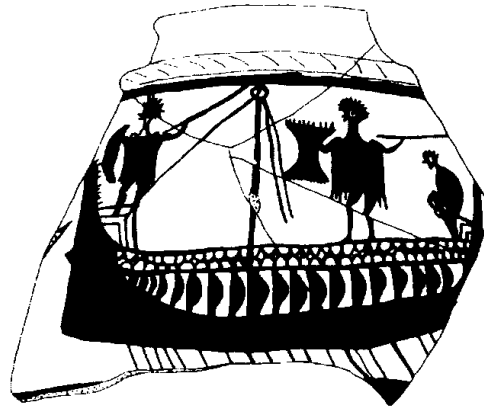


Fig. 3

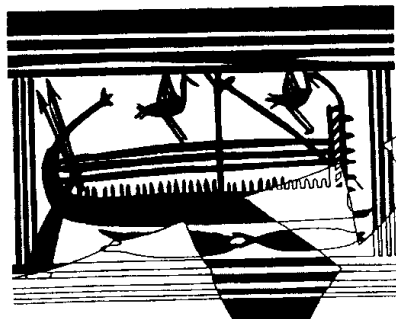


Fig. 4

DECKED VESSELS IN EARLY GREEK
SHIP ARCHITECTURE

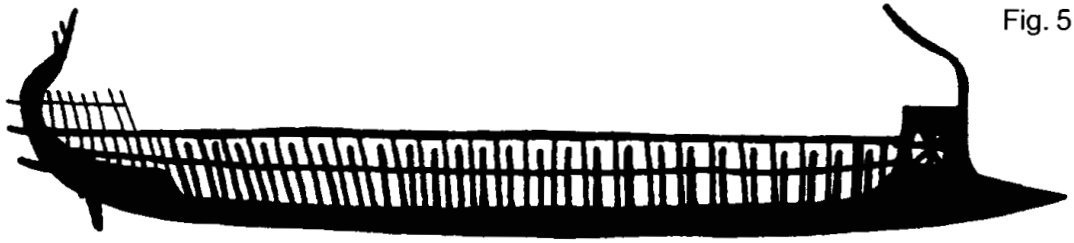


Fig. 5



Fig. 6



Fig. 7

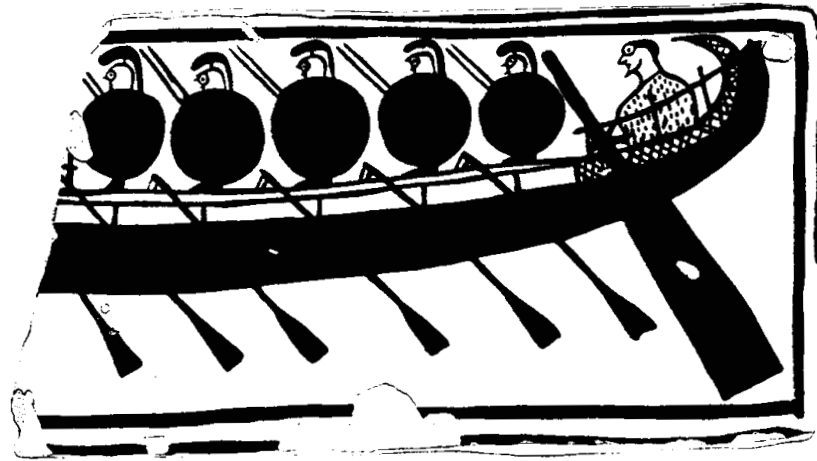


Fig. 8



Fig. 9

Fig. 10



Fig. 11