AEGEAN BRONZE AGE SHIP IMAGERY: REGIONALISMS, A MINOAN BIAS, AND A 'THALASSOCRACY' *

Preamble

Man's extra-somatic means of adaptation [1], the artefacts he creates to ensure the survival of the species, if globally characterized, may be designated examples of variability - endless variation across time and space, guided in its development by the operational environment, by the precise function, by the previously encoded patterns, by the ideational realm [2]. If each microcosm has the potential to generate artefacts specific to the parameters in action, it follows that a given microcosm can be characterized by its constellation, and that geographically

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As presented at Calvi, the paper bore the title "Identifying Regional Traits in Aegean Bronze Age Ship Architecture". Further reflection has altered the scope and demands an adjustment.

In addition to the standard abbreviations in the *Bulletin de Correspondance Hellénique*, the following have been used:

AHS : D. GRAY, *Seewesen, Archaeologia Homerica, Band I, Kapitel G* (Göttingen, 1974).

AR : *Archaeological Reports.*

ÄSMM : P. YULE, "Einige ägäische Siegel aus dem Metropolitan Museum", *Kadmos* 19 (1980), 97-105.

CMS : *Corpus der minoischen und mykenischen Siegel.*

EHC : J.-C. POURSAT, L. GODART, J.-P. OLIVIER, *Fouilles exécutées à Mallia. Le Quarter Mu. I. Introduction générale. Ecriture hiéroglyphique crétoise* (*EtCrét* XXIII, Paris, 1978).

EMA : R. LAFFINEUR, "Early Mycenaean Art: Some evidence from the West House in Thera", *BullInstClSt* 30 (1983), 111-122.

EPM : T. D. ATKINSON *et al.*, *Excavations at Phylakapi in Melos, JHS* Suppl. vol. 4 (London, 1904).

MCM : S. MARINATOS, "La marine créto-mycénienne", *BCH* 57 (1933), 170-235.

MEMF : W.- D. NIEMEIER, "Mycenaean Elements in the Miniature Fresco from Thera ?" in , *Thera and the Aegean World* III *Proceedings of the Third International Congress Santorini, Greece, 3-9 September 1989*, I, Archaeology (1990), p. 37-52.

MIMA : L. BASCH, *Le musée imaginaire de la marine antique* (Athens, 1987).

MM : *The Mariner's Mirror.*

MTMR : *The Minoan Thalassocracy. Myth and Reality. Proceedings of the Third International Symposium at the Swedish Institute in Athens, 31 May - 5 June, 1982* (Stockholm, 1984).

SSAW : L. CASSON, *Ships and Seamanship in the Ancient World* (Princeton, 1971).

1 The term stems from L. White, quoted by L. BINFORD, *An Archaeological Perspective* (1972), at p. 22.

2 Randomly and non-exhaustively enumerated.

separate but similar microcosms may cause a parallel evolution, either concurrently or successively, without necessary contact and diffusion of ideas. Precisely this spatially and temporally localized diversity renders the work of the archaeologist viable: formal differences allow the assignation to groups, cultures, regions, of the objects discovered in excavation, or, as so often is the case, acquired out of context.

Divergency may also appear within a single region, attributable, if not to any of the factors alluded to, then, in the end, to the innate artistic disposition that characterizes most of man's activities. While no correlation between size or complexity and degree of potential individualization can be established, it may be noted that a smaller object, whose shaping has its source in the individual, has a greater range of possible variations than artefacts resulting from group cooperation. Yet no human being operates in a vacuum: artefacts are shaped within traditions, the patterns that universalize, and provide the backdrop against which the individual signalizes his/her willingness to be different.

The present paper proposes to analyse one example of variation in an attempt to assign variants to particular regions. The topic for investigation is the presence, or absence, of geographically characteristic traits in the Aegean Bronze Age ship building traditions, as transmitted by the representations. Although the problem has its antecedents, no serious attempts have been made to push the concept of regional specificity beyond the confines of the monolithic cultural nomenclature embodied in "Cycladic", "Minoan", "Helladic", and "Mycenaean" [3].

August Köster, seacaptain and nautical scholar, gave, already in the 1920's, a voice to the basic assumption upon which the present paper takes purchase. In one of the earliest comprehensive studies to appreciate the achievements of the Aegean Bronze Age ship builders, he wrote:

"Den verschiedenen Gegenden entsprechend finden sich in den ältesten Zeiten unter den Schiffen des östlichen Mittelmeeres bereits mehrere Typen vertreten, die sich später einander angleichen und ineinander aufgehen, aber bei manchen Fahrzeugen doch immer noch ihren Ursprung erkennen lassen. Auch heute noch hat jede griechische Insel, auf der Schiffe gebaut werden, ihren eigenen Typ. Die Abweichungen sind nicht wesentlich, aber so charakteristisch, daß es mir nicht schwer wurde, auf einer Inselreise bereits nach einigen Wochen jedes Kaik ohne weiteres seinem Heimathafen zuzuweisen" [4].

The material at his disposal did not permit a detailed analysis and the question was left only implicitly formulated by the two statements just quoted. Later scholars, working with a larger database, turned to problems of typology, while appearing satisfied with the terminology in use [5]. Recent work on other extra-somatic means of adaptation have revealed an as yet embryonic, and in many regards unclear, image of regional styles and particularities [6]. It is therefore suggested that a similar situation might have been operative for the various classes of water transport employed by the Bronze Age populations of the Aegean. Evidence from the historical period, here called upon to witness as paradigm cases, suggests the type of data that may be sought for.

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3 In the defence of previous scholars working with the material it should be noted that the available material has gained considerably in quality only comparatively late. A criticism, particularly in the crucial area of the identification of bow and stern, of earlier work must take into account this evidential short-coming. It is however not obliged to accept the often negligent theoretical groundwork.

4 A. KÖSTER, *Das antike Seewesen* (1923), 60.

5 The main studies are *MCM*, *AHS*, and *MIMA*.

6 For example: studies of regional ceramic styles on Crete and the Mainland, which due to the bulk of the available provenanced material show considerable promise.

Although the trieres was to become so common a ship during the Classical period that few regional differences can be traced in the representations [7], tradition, as reported by Thoukydides, associated its invention with Corinth [8]. It is thus possible that this particular type of vessel, in its earliest stages, was known as a particularly Corinthian ship, in the same manner as one development of its distant antecedent, the pentekontor, was known as the "Samaina". This sixth-century multiple purpose craft was "low and flat in the prow, so as to look snubnosed, but wide and large and well-spread in the hold, by which it carries a large cargo and sails well. And it was so called, because the first of that kind was seen at Samos, having been built by order of Polykrates the tyrant" [9].

Other examples, less well localized due to a far greater distribution, are offered by the Phoenician hippos, so named after its characteristic stem and stern post [10]; by the triemiolia, a mid second century BC Rhodian adaption of a fast aphract model of the trieres with the purpose of fighting piracy [11]; and by the Roman liburnia, originally an Illyrian type named after the Liburni, but destined to become the prototype for all Roman warships from the days of Caesar onwards [12].

Largely untouched upon by Aegean nautical scholars, the question of localizing given vessel-types has, by virtue of a recent debate, been invested with sudden prominence: the so-called "controversy" pitting Mycenaeanists and Minoanists in a duel over the ethnic appurtenance of the ships on the Akrotiri Miniature Fresco [13]. To date the dialogue has concentrated on distinguishing Mycenaean from Minoan decorative motives (or in reclaiming them as Minoan) in an attempt to determine whether the large ships on the wall painting support either of the two, as formulated, essentially incompatible views that there was either a dominant Minoan or Mycenaean presence on the island in the period prior to the Santorini eruption. It should not go unnoticed that the Cycladic people themselves have not benefited from an explicit

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7 Differences are essentially related to functions (ship of the line, troop- or horse-transport), inbuilt characteristics of the hull (material, decking, additional equipment), or ratings based on speed and age (first, second, third); cf. J.S. MORRISON, J.F. COATES, *The Athenian Triereme. The history and reconstruction of an ancient warship* (1986), 151-158; Cf. J. S. MORRISON, R.T. WILLIAMS, *Greek Oared Ships 900-323 BC* (1968), 246-249; also *SSAW*, 92-94; *MIMA*, 294-299.

8 THOUKYDIDES, *The Peloponnesian War*, 1.13. Whether the statement is true or not is irrelevant. The important point is that the type was associated by Thoukydides and his contemporaries with a single locality. Cf. MORRISON, WILLIAMS, *op. cit.* (n. 7), 158-159.

9 PLOUTARCHOS, *Life of Perikles*, 26.3-4 (in the translation by John Dryden, Modern Library edition, New York, n. d., p. 202); cf. also *SSAW*, 63 n. 104. The Samaina raises interesting questions regarding the often too rigidly applied dichotomy merchantman/warship in the earlier Aegean ship architecture. While it is iconographically supported for the Archaic period (cf. C.H. ERICSSON, *Navis Oneraria. The Cargo Carrier of Late Antiquity, Studies in Ancient Ship Carpentry* [1984], 25-26 for a short list of merchantmen; *SSAW*, 65-68), the case for the Bronze and Geometric Ages demands careful scrutiny - on another occasion.

10 Cf., most recently, E. LINDER, "The so-called 'Phoenician hippos merchantman': the case for a local boat misinterpreted", in *Local Boats. Fourth International Symposium on Boat and Ship Archaeology, Porto, 1985, British Archaeological Reports, S438* (1988), 293-303.

11 Cf. *SSAW*, 130-131, and L. CASSON, *JHS* 78 (1958), 14-18, particularly 16-18. An aphract is an open galley without a superstructure, having a light, slender - and swift - hull. The rowers are seated on a single level. It first appears in the Geometric Age, but the term is retained for any craft of this description. Cf. *SSAW*, 50, 75-76, General Index (403) s.v. aphract. The vessels to be surveyed below as Type VI are, by this definition, aphracts.

12 *SSAW*, 141-142.

13 The main statements are contained in *EMA*, and *MEMF*. Cf. also R. LAFFINEUR, "Iconographie mycénienne et symbolisme guerrier", *Art & Fact, Revue des historiens d'art, archéologues, musicologues et orientalistes de l'Université de Liège* 2 (1983), 38-49, and ID., "Mycenaneans on Thera: Further Evidence" in *MTMR*, 133-138. These references are, of course, far from exhaustive.

champion, although a number of scholars show a tendency towards underlining the importance of the islands in the Bronze Age and the Theran elements in the Miniature Fresco [14].

The inquiry into the probable origin of various motives appearing in the decoration of these ships has not reaped clear-cut distinctions, partly due to the nature of the evidence, but primarily from avoidance of doing the theoretical groundwork necessary for a study of Aegean Bronze Age imagery. While numerous studies have been presented, a complete overview of all the factors involved has yet to be undertaken [15]. In an attempt at diversifying the range of data employed, the present paper proposes to analyse the question from the point of view of the ship representations, hoping that, if no solution can be attained, it will at least be possible to learn more about the distribution of the ship types, as well as about the historical reality as it is perceived by the archaeologist through his/her understanding of the evidence.

Methodological considerations

The object of enquiry will be "regionalisms". A regionalism is here defined as a feature manifesting a statistical affiliation with a restricted geographical area comprising a specific site, an island, a coastal stretch, or a district exhibiting sufficient physical distinction from its neighbors. The requirements for such a study are provenanced data, typological clusters, and sufficient resolution in individual representations, as well as a methodology which takes into account the particularities of the database.

Each of the three requirements invite preliminary remarks. In matters of origin, biases in distribution have been created by patterns of investigation, causing the evidence to be weighted both in favor of particular regions, and of individual sites. While not a flaw in itself, this state of affairs invites circumspection. Provenance is customarily symbolized by a dot on a map. But each dot merely indicates the spatial occurrence of a given artefact in archaeological terms, the final station before discovery, not necessarily the object's cultural context, nor the agent behind the distribution. Thus an invisible dot, or the absence of a dot, may be as significant as its presence. No simple equation suffices to translate the fact of discovery into a hermeneutically relevant statement, capable of taking into account the status of each dot, present or invisible, and all the factors at play. A provenance, even when guaranteed by a scientifically conducted excavation, need not mirror a past state of affairs [16]. A more serious problem is created by the flourishing century-old trade in antiquities. By depriving objects of their dots, it has cut swathes

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14 C. DOUMAS, *Thera. Pompeii of the ancient Aegean* (1983), 130-131 assigns maritime transport duties to the Cycladites but offers no substantiation. The Mycenaean presence on Thera is accepted (132-133). L. MORGAN, *The Miniature Wall Paintings of Thera. A Study in Aegean Culture and Iconography* (1988), underlines "the impact of Theran iconography" on Cretan and Mainland art (167), and more generally the role of the island sites, with Thera at the vanguard, as "stepping stones" across the Aegean (172). E.N. DAVIS in W.G. MOON (ed.), *Greek Art and Iconography* (1983), 3-14, argues for Therans and a Theran fleet but does not extend this view to include an explicit statement concerning the hulls themselves.

15 This is less neophytic irreverence, more statement of fact: it is insufficient to merely claim decorative motives as particular to a given civilization in preparation for a cultural high noon. Shared motives, parallel inventions, flux and reflux may all have played a role in establishing a repertoire, and this all the more in a so autonomous and internally interconnected region as the Aegean. The unidirectionality sometimes implicitly advocated by Minoanists is, certainly, the cheapest solution, but does it correspond to reality ? As J. Crowley correctly remarked in a discussion, it is time to declare a moratorium on this type of approach and turn to understanding the processes behind transfer and sharing of decorative elements. The horizon must be widened to include ethnological case-studies as possible sources for analogies.

16 Cf. D. OLAUSSON, "Dots on a Map - thoughts about the way archaeologists study prehistoric trade and exchange -" in *Trade and Exchange in Prehistory. Studies in Honor of Berta Stjernquist* (1988), 15-24. This is not the place to quote the overwhelmingly rich bibliography on interpreting spatial distributions.

into the potential information, branding numerous catalogue entries with the mark "provenance unknown". Yet others are fortuitous finds, at least accompanied by general indications.

If the artefact under study is a representation, both the image and the support are subject to variability. The image purports to render an artist's vision of a given object, which can be provided with a name by the archaeologist when it corresponds to something within his/her range of experience. It is then assumed that the artist depicted the subject as it appeared within his conceptual framework, making allowances for unspecified factors influencing the final picture. Unspecified since only the artist's copy remains, nothing of the environment, nor anything of the original object. Several renditions of the same subject, in this case SHIP, by different artists may be united to form a cluster, raising the question of meaningful variation within the group, as opposed to indicators suggestive of an autonomous type. The variability observed may stem from different media imposing a different notation, from divergent dispositions, or, it may be surmised, from an unequal distance from the original subject induced by the use of patterns [17], a distance which may stem both from differences in exact date small enough to slip through the fifty to a hundred year mesh viable in prehistoric Aegean archaeology, or from divergent copies of the patterns, physical or conceptual, in use.

A cluster thus becomes a nucleus of representations compatible with each other, surrounded by developments that gradually spin out into the foggy borders dividing one cluster from another. The individuals admit to conflicting interpretations that have the potential to generate an inflation in types and subtypes until the typology no longer constitutes feasible means for classification. Behind these remarks lies the very essence of art: transformation of received patterns, improvisation, schematization, processes wreaking havoc with classificatory schemes, but embodying the life of a culture's artistic existence.

The identification of parent forms and various degrees of transformation, whenever the material allows such a process to advance beyond the status of a mind-game of the archaeologist, need not represent more than the residue of a mind-game of the prehistoric artist, making a transitional type merely the echo of a creative process, or even a mere whim, within one or more workshops, not, in the case of ship images, a reflection of changes in the way the ship architects shaped their vessels.

The main concern when facing the problem of identifying regional traits in Aegean Bronze Age ship architecture must, therefore, be the methodological and practical problems involved in decoding a database which may be characterized both by its comparative poverty, and by its richness.

The research is founded on 315 representations considered in the literature and/or by the author to depict ships [18]. They range from sealstones and script signs over sherds, vases and models, to larnakes and frescoes. Almost a third defies typological clustering either due to breakage or to the absence of comparative images permitting the formation of a cluster, while half derive from unknown contexts.

Despite these restrictions, analysis is meaningful: a sufficient number of documents admit to reliable clustering, permitting the establishment of a typological sequence covering the timespan from the middle Early Bronze Age to the last phases of the Late Bronze Age. Here, the six main types will briefly be examined, laying the emphasis on provenance questions [19]. The

17 As H. van Effenterre suggested in a discussion.

18 The present paper reports on research in progress. An earlier paper, read in August 1989 (cf. n. 19 in *Tropis* III), was founded on 284 representations which at that moment had been fully integrated into the database. The total number of known (fully published, mentioned, unpublished) documents manifestedly or putatively representing a ship amounts to 3408 individuals.

19 The typology was first presented in a paper entitled "The 'Ring of Minos' and beyond: thought on directional determination in Aegean Bronze Age ship iconography", forthcoming in *Hydra. Working Papers in Middle Bronze Age Studies* 7 (1989), and then, in greater detail, in "Bow and Stern in Early Aegean

so-called "talismanic" ships are excluded from the analysis due to the crippling preponderance of unprovenanced individuals [20]. Also excluded is the amorphous cluster termed, for want of a better designation capable of catching all the nuances within the group, "cultboats" [21]. Similar problems preclude, at this moment and in this context, a discussion concerning what appears to be small vessels, whose existence is mainly postulated on certain traits common to a number of models [22].

Fundamentals of typological clustering

Prior to presenting the various types, it is necessary to justify their formation by a short introduction to the method employed, to the terminology adopted, and to the philosophical stance taken in regards to the use made of the evidence.

The establishment of a typology is rendered viable by the universal tendency of objects belonging to a single artefact category to partake in a limited number of variously generated shapes. Functional constraints, ideational prescriptions, whims of fashion, restrict the formal variations so as to permit identification of a common appurtenance to a single family. Differentiating details within this family then lead to the isolation of smaller bodies of data, the various types, be they named by recourse to numbers, shape-names, provenances.

Thus alike objects form clusters around a common shape. This shape, in its essence, may be characterized by the underlying master-type, the ideal form shared, to varying degrees, by all the members. So as to be rendered tangible, the master-type may be represented by the paradigm case, the most typical individual, the formal mean of all the variation observed within the cluster. The master-type, then, is physically non-existent: it is a concept, an idea, to be formulated in general terms, ignoring particularizing traits.

If a cluster population has been submitted to scrutiny and been shown to contain no false inclusions, to embody an independent cluster, not a subdivision of another cluster, and to withstand confrontation with unclustered documents, it may be termed a type.

In the present context, a type designation also implies a successful directional determination: since a typology extends over time and space, and thus constitutes a historical record susceptible to being called upon to buttress an account of the ship-architectural development, a ship type cannot take its position unless bow and stern can be identified. Therefore, the confrontation with unclustered documents must be undertaken: it is conceivable that such an individual embodies important, and contradictory, material having a bearing on the designated travel direction.

It follows that a hierarchical conceptual relationship exists between the terms to be employed below : cluster, type, master-type, in ascending order.

The members of a cluster, by the very nature of its constitution, answer as a single individual to basic statements concerning the most characteristic features. Here such statements will concern the identification and description of the bow and the stern, the general shape of the hull, the relationship of relative height between the extremities, the presence of a superstructure,

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Bronze Age Ship Imagery - A Re-analysis", forthcoming in *Tropis III. Proceedings of the Third International Symposium on Ship Construction in Antiquity, Athens 1989.*

20 The term "talismanic" itself is in dire need of a proper definition. The present author suspects that it should be considered as purely arbitrary, coined on a basis of incorrect a priori assumptions, and that its sole merit resides in its conventional application to a body of data.

21 Further research suggests that the "cultboat" question is far more complex than it appears in the *Hydra* paper referred to in n. 19. A detailed criticism of J. VANSCHOONWINKEL, "La barque dans le culte et la religion créto-mycéniens", *Revue des archéologues et historiens d'art de Louvain* 15 (1982), 20-56, must await a later occasion (the author is grateful to Prof. Laffineur for providing a copy).

22 For a detailed discussion of these clusters cf. the author's thesis, in progress.

or of any appendages. Substantial disagreement should be indicative of an incorrectly clustered individual [23].

A time-factor [24] enters the process of constituting a cluster: the members must represent a chronological unit, dating to contiguous periods. Whereas it is not to be excluded that a cluster may possess distant precursors, the nature of the evidence suggets substantial chronological compactness within each cluster. Therefore tight clusters have generally been preferred to sprawling ones with invisible tentacles stretching out across intervening time to single documents [25].

Furthermore, a question of the analytical filters to be employed arises: different sizes of the mesh employed to filter out the clusters will affect the number of clusters established and the size of the populations. If each trait is assigned equal importance, a basis for cluster-formation ceases to exist. It has seemed preferable to work with fewer clusters containing larger populations: the database, it is believed, supports this approach.

The single most important factor, and the source of substantial disagreement among scholars, in typological clustering of ship representations is the directional determination. While it cannot be a priori excluded that prehistoric vessels could navigate in both directions, the case for bidirectionality of Aegean Bronze Age ships has not been convincingly argued [26]. The data, when analysed on this point, show differentiation either by major morphological features, or by secondary traits [27]. It will therefore be assumed that each ship type had a clearly designated bow and stern, and that the data echo this. Various attempts at identifying the travel direction have been employed, most lacking a substructure of carefully reasoned methodology [28]. It is

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23 A different approach is taken by C. Marangou in her unpublished mémoire de maîtrise at the Sorbonne (1977), a copy of which she has generously made available to the author. Marangou clusters the representations according to the mode of propulsion: paddled, rowed, rowed and sailed. In doing so, however, various hullshapes are clustered together. Since the silhouettes are the only means available for a typology, it would seem that greater importance should be accorded to them.

24 The problem of Aegean Bronze Age chronology, despite P. WARREN, V. HANKEY, *Aegean Bronze Age Chronology* (1989), remains unsolved: witness the new date proposed at the *Thera and the Aegean World III* congress for the destruction of Thera, a date that cannot be rejected out of hand by the archaeologist, although it causes concern. The author has chosen to work with the conventional tripartite relative chronology nomenclature since the representations are generally dated within this system. The typological clusters that have emerged indicate that the evolution of Aegean Bronze Age ship architecture largely follows phases co-terminous with the Levi/Mallia system, presenting essentially one Cycladic (Early Cycladic II), three Minoan (Early Minoan III-Middle Minoan II, Middle Minoan I-Middle Minoan II, Middle Minoan III-Late Minoan II), and one Mycenaean (Late Helladic III B-C) development phase. The absolute dates are interesting only when comparing with data beyond the Aegean area; such comparisons are kept to a strict minimum.

25 For the unsatisfactory exception, Type IV, see the next section.

26 Cf. A. RABAN, *AJA* 88 (1984), 11-19; S. STUCCHI, *Quaderni di archeologia della Libia* 8 (1976), 25-73, particularly 40-55 and 49 fig. 15-16.

27 Major morphological features include hull shape, bow and stern morphology, and relative differences in the height of the extremities. Secondary traits include bow and stern appendages, superstructures, and standards and banners.

28 The most serious error identified in earlier attempts to determine the travel direction is the "single item solution fallacy" which maintains (implicitly, since the concern for theory among the scholars to have written on the subject has generally been absent) that it is methodologically admissible to operate a bow/stern identification valid for all representations on the basis of a single document. Such is the approach of C. RENFREW, *AJA* 71 (1967), 1-20, at p. 5 (compounded by the morphological incompatibility between the Naxos lead boats and the Syros "frying pan" vessels), of Casson in *SSAW*, 30-31, 41 (with disregard for the questionable applicability of comparanda from distant time periods and/or geographical areas), of I. SAKELLARAKIS, *ArchEph* 1971, 188-233 (where the identification of the object under study with a ship is never questioned, although Sakellarakis inadvertedly but irrefutably shows that it should be considered as a duck-shaped pyxis), of C. DAVARAS, *ArchEph* 1984, 55-95, particularly 67-72 (where the

here argued that only an internal indicator, that is an element included within the image under consideration, and not imposed upon it from functional arguments, or from appeals to analogy from other cultural contexts, or merely by scholarly authority (identification by decree), constitutes a valid approach. If such an indicator can be identified, a directional determination imposed by the image itself ensues. If it cannot, the analysis breaks down, or at best, may be pursued on a purely hypothetical basis.

The present paper, taking purchase on previous work by the author, will accept a single such indicator: the steering oar [29]. An examination of other traits having been suggested as viable bow/stern indicators shows that they either cannot be considered as exclusively associated with the one or the other extremity, or that the basic assumptions underlying their designation as such are erroneous, or that an *a priori* directional determination is implicit [30]. The steering oar, on the other hand, is almost exclusively to be found at the stern: exceptions to this rule generally have a readily apparent explanation, and do not invalidate the statement [31].

Steering oars on Aegean Bronze Age ship images are not a common feature, yet sufficiently well represented, and, most importantly, associated with a number of different hull shapes, well integrated in comparatively populous clusters, to permit the establishment of a skeleton of directionally determined types, to which individuals devoid of a steering oar can be attached [32]. The main feature of the system of typological clustering employed here is that once a cluster has been established and tested for verisimilitude, the bow/stern identification suggested by one or two members can, by virtue of understanding all the individuals thus clustered as depicting a single ship type, be extended to all the members [33].

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model undoubtedly has a stempost raised above the level of the stern, but where the doubtful applicability of this observation to the entire corpus is never questioned). Marinatos is the only scholar to have attempted the development of a method (in *MCM*, 182-191), based on the direction of the writing on various tablets and the relationship of the ships to this, for objectively determining bow and stern. The approach eventually proved to be a failure both due to questionable premises, and to later finds contradicting the conclusions. Gray (*AHS*, 75-81) attempts to elucidate elements associated exclusively with the one or the other extremity but commits too many reading-errors, and is singularly disserved by the decision not to update, to the extent of not taking into account the Miniature Fresco ships, published as an appendix by Marinatos, a manuscript having lain fallow for ten years (*AHS* 166, and S.C. HUMPHREYS in *Classical Philology* 72 [1977], 348).

29 I. Vichos presented a paper at the *Second International Symposion on Ship Construction in Antiquity*, Delphi, 1987, forthcoming in *Tropis* II, in which he suggested the steering-oar as means towards identifying the stern.

30 The dangers of employing such a feature as an animal head as a reliable bow indicator are illustrated by a number of examples where the head (or a similar element) terminates the sternpost: three 8th C. Cypriote vases, one in the British Museum (*MIMA*, 261 fig. 564A, B), one in the Metropolitan Museum of Art (*MIMA*, 261 fig. 567), and one in the Archaeological Museum of Nicosia (*MIMA*, 260 fig. 563); a ship from the relief of Sennacherib's (705-681 BC) palace at Kuyundijk (*MIMA*, 314 fig. 660-661). Although much later, they underline the fact that a post terminal can only then be employed in the absence of a steering-oar when other members of the relevant cluster indicate, by the presence of a steering-oar, that the terminal is always associated with one extremity alone.

31 Two exceptions, both from the Near East, *SSAW*, fig. 4, and LINDER, *op. cit.* (n. 9), 299 fig. 6, are being employed for riverine navigation. There are no cases with steering-oars at bow and stern in the corpus of Aegean Bronze Age ship representations (the supposed image on a sherd from Mycenae, *SSAW*, fig. 49, cannot be understood as depicting a watercraft, even when reverting to a desperate designation as "cultboat", cf. C. LAVIOSA, *AnnScAtene* 47-48 [1969-70], 7-40, on p. 20).

32 Steering-oars appear on 25 complete and 14 fragmentary representations. The repertory of bow and stern variants is greatly reduced by the fact that the pithos from Kolonna constitutes three and the Miniature Fresco ten identical cases among the complete images. The directional determinations derived at by the author employ the complete individuals, referring to fragmentary individuals only as further corroboration once a type has been defined.

33 For more details on this topic cf. the papers referred to in n. 19.

Where the steering oar is absent on all members of a cluster, an alternate procedure is employed. By comparing morphological traits exclusively associated in directionally determined groups with either the one or the other end, and present in the cluster without images exhibiting steering oars, a tentative bow/stern identification may be suggested.

Final means for verifying the typological clusters created, the types derived from them, and the ensuing outline of a historical reconstruction, are embodied in what may be called the hermeneutical vision of the scholar, the basic assumptions subjacent to the analysis, and a global understanding of the processes that resulted in the images available for study. Since it is impossible to eliminate the archaeologist from the investigation, a fact particularly significant when the subject is imagery, it is necessary to incorporate the human factor in a meaningful manner in the final equation. Without resorting to psychological analysis, it is quite possible to specify the hermeneutical baggage the scholar introduces, invariably and unavoidably, into his/her work.

To illustrate: if it is assumed that the various hullshapes, by virtue of depicting distinct types from a single functional environment, from a period in time manifestedly forming a single unit with a definite beginning and end (however artificial they are and wherever they are placed in absolute terms), and from a cultural realm exhibiting continuity greater than the regionally restricted discontinuities, then it is probable that the various types will exhibit some degree of interconnection. In representational terms: it is assumed that there is a connection between the raised extremity on the earliest Minoan ships, and the raised extremity on the Early Cycladic type. It is also assumed that various types associated with Minoan Crete are related. It is suggested as probable that the Mycenaean type, appearing at the end of the Bronze Age, is related to the preceding development.

The methodology here suggested as applicable to the present subject seeks intra-Aegean explanatory paradigms for the morphological change observed between types, in preference to diffusion from external sources. Rather than interpretational isolationism, this should be considered advisable prudence in view of the exceedingly slim Levantine database, and the predominantly riverine nature of Nilotic navigation. If an Egyptian parallel is to be invoked as the source for a technological advance in the Aegean area, it is necessary to elucidate the means of transmission. As the coastal area between these two centers, the Aegean and the Nile, cannot testify to the potentially rich ship architecture of the Levantine people, and as direct contact with Egypt during the earliest phases of Aegean ship building requires more substantial proof than disparate finds giving no indication as to their route and carriers, a wide-ranging Egyptian influence ought not be postulated, despite certain similarities [34].

Finally, this hermeneutical approach has confidence in the possibility of suggesting meaningful solutions to the various problems, or, if failing that, of suggesting tentative reconstructions to explain enigmatic features. However: all statements made are open to revision if new evidence or methodological advances warrant it. They should not be considered as more than the most likely explanation given the current database.

34 Thereby the radical view of A. Nibbi is not embraced. For a concise reaffirmation of this hypothesis, which denies Egypt all access to the sea, cf. A. NIBBI, *MM* 70 (1984), 247-266, particularly 260-264.

Towards a typology of Aegean Bronze Age ship representations

The six types to pass review in the present section have all been established on the principles briefly outlined above. Each cluster has been tested for verisimilitude against the entire catalogue, and for internal coherence against the suggested master-type and the paradigm case chosen as the most adequate approximation of the master-type. All the types, excluding Type I, are directionally determined on the presence of one or more individuals in the cluster being equipped with a steering oar. Type I derives its bow/ stern identification from a perceived analogy in hull morphology with Type II (The discussion may be followed on Pl. XXIV).

Type I: the earliest hull-form to constitute a cluster is the shape illustrated by the "frying pans" from Syros, and the associated craft from Naxos, Palaikastro and Orchomenos [35]. The hull is defined as low and flat, having one extremity rising at an angle around seventy degrees to a height equal to thirty to fifty percent of the length overall, the other occasionally showing a slight rise, and always equipped with a projection, here termed a "spur". Locomotive force is provided by numerous short strokes understood, due to their great number, rather as paddles than as oars [36]. A mast or elements of rigging never appear. The chronological range is restricted, with one exception [37], to Early Cycladic II and equivalent Mainland and Cretan phases [38].

The common source for eleven of fourteen "frying pans", the Chalandriani cemetery, the remaining three having no known origin, but being presumed to come from the Cyclades, suggests that these craft are of Syran origin. The non-Syran members, the incised design on a sherd from Orchomenos, the two marble plaques from Korphi t'Aroniou (Naxos), and the terracotta model from Palaikastro, corroborate a conception of this type as being of vessels actually in use in the Early Bronze Age Aegean, rather than a mere figment of Syran artists' imagination.

Type II: related to the Syros craft are the earliest Minoan ships, known exclusively from sealstones [39]. This restriction of the picture surface to a single medium is a recurrent problem,

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35 Syros: conveniently collected in *MIMA*, 79-82, figs. 158-168; add a fragment in the Archäologisches Seminar, Berlin, *AA*, 1935 (col. 657 fig. 3), and the pans in the Fitzwilliam Museum in Cambridge (*AR* 1965-66, 44 fig. 1), and the Ashmolean Museum in Oxford (J. THIMME [ed.], *Art and Culture of the Cyclades* [1977], 354 n. 405). Naxos: *ArchDelt*, Mel. 20 (1965), 49 fig. 4 and 53 fig. 7; Palaikastro: *MIMA*, 83, fig. 170-171; Orchomenos: *MIMA*, fig. 172.

36 Unless the lines merely signify "many crewmembers", it is here suggested that means of excluding oars as the mode of propulsion may be sought in the Vitruvian formula for calculating the length overall of a hull given the number of rowers. The multiplier, 0.92 m, when applied to a craft with as many crewmen as *MIMA*, 81 fig. 168C, or 82 fig. 168G, would generate a craft superior in size to the largest ships known from the Aegean Bronze Age, the paddled ships on the Miniature Fresco. Using a shortened multiplier of 0.75 m, as suggested by Marinatos for a paddled craft (in *AHS*, 151), there results a craft which would appear, at least subjectively, more appropriate.

37 The Ashmolean specimen (cf. n. 35) is dated to the transition to Early Cycladic III.

38 On the Syros craft and their position in Syran society, cf. most recently, C. BROADBANK, *AJA* 93 (1989), 319-337. Cf. also J.E. COLEMAN, *AJA* 89 (1985), 191-219 on the "frying pans" in general O.T.P. ROBERTS, "Wind-power and the boats from the Cyclades", *IJNA* 16 (1987), 309-311, for a functional explanation of the raised stern. For a similar approach, cf. I. VICHOS, *Enalia* 1.2 (1989), 14-15.

39 The cluster population comprises the following representations (giving provenance if known, date, and reference to an illustration) (all further listings will adhere to this model):

1.	Palaikastro	EM III	*CMS* II.2, 261b
2.	"Adromyloi"	EM III	*CMS* II.2, 276b
3.	Mallia	EM III or MM I	*AHS*, 41 fig. 6d
4.	Provenance unknown	EM III-MM I	*AHS*, 41 fig. 6e (top)
5.	Provenance unknown	EM III-MM I	*AHS*, 41 fig. 6e (bottom)
6.	Mallia	EM III-MM I	*AHS*, 41 fig. 6c

precluding the verification of interpretative statements against a variety of different classes of representations. The earliest members, dating to Early Minoan III, reproduce the general lines established by Type I with some differences in detail: 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 [40] - show a more gradual transition between keel and sternpost [41] 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, if, in fact, it is question of more than mere artistic licence. The sternpost-terminal morphology exhibits three different, but related shapes, either a bi- a tri-, or a quadri-furcation. The bifurcation present on three members allow establishing a connection with the sternpost-terminal of Type III, and thereby the directional determination, corroborated by three steering-oars on one individual in the cluster [42]. The variability observed in the treatment of the extremities cannot be assigned to a particular time or place. Attempts at theoretical seriation merely testify to an indiscriminate presence of all bow and stern variants throughout the temporal range of the type.

A grave spatial problem is encountered in this cluster: eleven of the twenty-one members are from unknown contexts. Of the remaining ten, half are from Mallia, three from the Siteia, and the remaining two from the Mesara area. No regional assignation can be offered with any

7. Mallia	MM I	*MCM*, pl. XV. 36
8. Platanos Tholos Tomb B	MM I	*AHS*, 43 fig. 8b
9. Provenance unknown	MM II	*MIMA*, 102 D4
10. Provenance unknown	MM II or III	*AHS*, 41 fig. 6n
11. Provenance unknown	MM II or III	*CMS* XI, 144a
12. Mochlos Grave III	MM III	*CMS* II.2, 249
To which now also add:		
13. Soupata Kousé	EM III-MM I	*AR* 1987-88, 71 fig. 100
14. Provenance unknown	EM III-MM I	*CMS* XIII, 15D
and possibly (?):		
15. Provenance unknown	MM I B-II	*MIMA*, 99 B6
16. Provenance unknown	MM I B-II	*ÄSMM*, pl. II. 9
17. Provenance unknown	MM I B-II	*ÄSMM*, pl. II. 13
18. Provenance unknown	MM I B-II	*ÄSMM*, pl. III. 17
19. Mallia	MM II B	*CMS II.* 2, 195c
20. Provenance unknown	MM II (?)	*CMS* XI, 81a
21. Mallia	MM	*MCM*, pl. 16. 65

Whether the ships on the Phaistos Disc (*MIMA*, 137 fig. 285) belongs to this type, as suggested by *MIMA*, 138 fig. 286 remains uncertain.

40 Typologically, the individuals dated to Middle Minoan III belong to a type superceded at this point in the evolution by two more advanced hullshapes, Types III and IV. A continuity, as a regional backwardness, perhaps, cannot be excluded, nor, unfortunately, geographically localized. It should be noted that the glyptic workshop in Mallia was producing, in MM IIB, alongside later styles, seals which from the point of view of design and material did not constitute the latest fashion. For the Mallia "workshops" being a single unit, cf. J.-C. POURSAT, in *Studien zur minoischen und helladischen Glyptik. Beiträge zum 2. Marburger Siegel-Symposium 26.-30. September 1978, CMS*, Beiheft 1 (1981), 159-164, at p. 160. The same phenomenon can be observed in the Malliote pottery production (*op. cit.*, 164).

41 The keel/stempost transition on the ship from Mochlos Grave III is less sharp than generally illustrated, as an inspection of an impression at the *CMS* archives in Marburg has shown. The term "keel" is employed as a convenience, rather than as a sign of certainty as to the existence of the keel in the earliest Minoan ships. It is so used throughout the paper.

42 The individual in question is nr 9 in the list in n. 39. The visit to Marburg mentioned in n. 41 has raised the possibility that an oblique line at the stern of nr 3 (incorrectly illustrated in *AHS*) could be a steering-oar. A corrected drawing will be published in the thesis.

degree of confidence due to this overwhelming proportion of unprovenanced individuals. The frequency with which Mallia appears in the provenance-listing need, on the other hand, not be more than the backlash from a particularly favorable find situation: the discovery of a stonecutters' workshop. The presence of such an establishment at the site contributes to Mallia's prominence among the Type III provenanced data. Although only one individual of Type II is explicitly associated with this workshop [43] an effect on this cluster as well cannot be excluded.

Type III [44]: at this point [45] in the history of Aegean Bronze Age ship architecture, there occurs a decisive change in the manner the shipwrights designed the bow. From the angular lines with differentiation in the bow/stern height characteristic for both Type I and II, to the curved hull with equally high extremities of Type III, a significant step has been taken. To consider Types II and 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 a bowsprit. The curvature of the hull may already be observed on several members 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 [46].

A single representation on a clay nodule from Quartier Mu, Building V, at Mallia, may constitute something akin to a transitional shape [47]. The hull is curved at both extremities. The stern is bifurcated in an 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. The evidence is necessarily tenuous, but the alternatives, an independent, local development, or an impulse from without, cannot be confirmed, the former due to the many unprovenanced individuals in

43 Cf. n. 39 nr 19.

44 The cluster population comprises the following individuals:

1.	Knossos	MM	*MCM*, pl. 16. 60
2.	Kolonna	MH II	*MTMR*, 29 fig. 2
3.	Provenance unknown	MM	*CMS* XIII, 90a
4.	Provenance unknown	MM II or III	*AHS*, 41 fig. 6o
5.	Provenance unknown	MM I	*AHS*, 41 fig. 6i
6.	Mallia	MM I	*MCM*, 235 fig. 16
7.	Provenance unknown	MM II A	*CMS* VII, 254a
8.	Mallia	MM I	*CMS* II.2, 100a
9.	Mallia	MM II B	*CMS* II.2, 163c
10.	Mallia	MM II B	*CMS* II.2, 177b
11.	Mallia	MM II	*EHC*, 84
12.	Mallia	MM II	*EHC*, 88
13.	Mallia	MM II or III	*AHS*, 41 fig. 6q
	and possibly:		
14.	Olous	MM I	*MIMA* 102 D1

45 As can be seen from the listings in n. 39 and 44, there is considerable chronological overlap between Types II and III. An explanation must be speculative: one may wonder, particularly in view of some very early representations provisionally clustered in Type IV, whether Type III represents another building tradition, rather than an evolution from Type II. The early Type IV data is too scanty to permit a convincing analysis of this phenomenon.

46 To continue the thought sketched in n. 45: the decreasing angle between stempost and spur on Type II would then not be a result of a general evolution towards Type III but rather an influence of Type III on Type II. Thus it is doubly a shame that the examination stumbles on the unprovenanced data.

47 Cf. *EHC*, 83.

Type III, the latter to the numerous problems involved with the transfer of technology, the lack of clear prototypes in Egypt and the almost total blank in the evidence for the Levant [48].

The sixteen complete or fragmentary individuals of the cluster, are, in terms of provenance, divided on three sources: nine from North Central Crete (Mallia 6, Knossos 2, Olous 1), unprovenanced amounting to four, and the pithos found at Kolonna on Aigina accounting for three (a total of seven fragments) [49]. It would, then, appear possible to assign this ship type to North Central Crete. The unprovenanced documents are all Minoan sealstones, and thus have an equal chance of coming from this area, as from any other, probably East Cretan region. The Malliote find situation (three derive from the stonecutters' workshop, two from Building III in Quartier Mu), however, cannot be ignored, nor should the sudden appearance of Aigina on the distribution map go unnoticed. The size of the clusters are sensitive to single, rich finds, which, however, cannot, alone, suffice to alter the picture.

Type IV: the hull of Type III is characterized by the bifurcated extremity, clearly indicated in three cases by a steering-oar to be the stern, and the opposite, pointed or arrow-headed end, the bow. The relationship of this shape to the following type, 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 [50]. The connection is further underscored by the Kolonna pithos, where the ships - as far as can be ascertained from the remaining fragments - 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 [51].

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 of sealstones. The Akrotiri data, on the other hand, composes a third of the cluster, but once again one 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

48 The author professes to prefer searching for an explanation within the Bronze Age Aegean, rather than setting off on long expeditions through time and space, an attitude connected with a hope that this discipline will slowly come of age and show a capability for generating own explanations and own theoretical frameworks.

49 The material was exhibited at the 'Greece and the Sea' exhibition in Piraeus in 1985 as part of the *Athens, Cultural Capital of Europe* programme. It is being published by W. Wohlmayr. One fragment depicting a bow and a stern section has been previously published by S. Hiller (cf. n. 44 nr 2).

50 The ships on the Miniature Fresco are sufficiently well-known not to require independent listing. With the new material presented by C.A. TELEVANTOU, "New Light on the West House Wall-Paintings, in *Thera and the Aegean World* III *Proceedings of the Third International Congress Santorini, Greece, 3-9 September 1989*, I, Archaeology (1990), p. 309-326, the total number of craft has risen to nineteen medium- and large-sized vessels. Further significant members of the cluster are:

1.	Lyttos	MM III	*MIMA*, 100 C4
2.	Mirabello District	MM III	*CMS* II.3, 298
3.	Provenance unknown	MM III-LM I	*CMS* XIII, 14
4.	Knossos area	MM III-LM I	*MIMA*, 100 C2
5.	Provenance unknown	MM III-LM I	*CMS* X, 227
6.	Provenance unknown	MM III-LM I	*CMS* X, 100
7.	Lasithi	LM I	*MIMA*, 101 C6
8.	Knossos area	LM I	*MCM*, pl. 15. 41
9.	Provenance unknown	LM I B	*CMS* VIII, 106
10.	Central Crete	LM III B	*MIMA*, 101 C11

51 The close parallels are noted by S. Hiller in *MTMR*, 28.

grounds for dividing into smaller clusters [52]. As the cluster now stands, it contains all representations of ships characterized by two, more or less equally high, pointed extremities, as well as such images that may be understood to tend towards such a description. An argument from dating may be invoked as a supplementary indicator that the borders, particularly backwards in time, are not as cleanly cut as they could be. There are ephemeral indications of a precursor, possibly independent of Type III, but convincing analysis is, as yet, not viable. A final remark regarding Type IV is not without interest to the Minoanist/Mycenaeanist 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 representations attest.

Type V: when a ship appears that can be termed "Mycenaean", it does so in two distinct hull-forms incapable of being temporally serialized, Types V and VI. Type V is characterized by a straight-keeled hull with a raised sternpost, 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 on Type VI, constitutes the main reason for recognizing two different clusters. Type V suffers, at the time of writing, from a low population: a single representation should be considered irrefutable, the ship on the Skyros stirrup-jar, a further two as possible, while three exist only as stern fragments and could belong to either Type V or Type VI [53].

It is obvious that Type V stands or falls on the attitude taken to the stempost terminal. The available data are insufficient to fully establish this cluster in its own right. Once known, but to date unpublished, individuals are made generally available, it will be seen that Type V is in fact a justified concept. Due to the role played in the Levant by the animal- or bird-headed stempost (and the case of the Sea People craft from Medinet Habu, an identical sternpost) during the outgoing 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 [54].

Type VI: with the continuation of the keel into a spur projecting beyond the straight stempost, the Mycenaeans created a new hull-form, best represented by the vessels on the pyxis from Tragana and the larnax from Gazi [55]. The keel is flat, the sternpost generally straight with

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52 Such a hypothetical division could comprise an early cluster dating to EM III-MM I times, the cluster listed in n. 50, and a LM/LH III cluster (including in its population n. 50 nr 10), although the last-mentioned remains to date difficult to define due to the as yet unresolved small craft question.

53 Population as follows:

1.	Syros	LH III C	*MIMA*, 142 fig. 295
2.	Enkomi	LH III B	*MIMA*, 148 fig. 311 left
3.	Enkomi	LH III B	*MIMA*, 148 fig; 311 right
4.	Phylakopi	LH III C	*EPM*, pl. XXXII. 12
5.	Phylakopi	LH III C	*MCM*, 219 fig. 10 left
6.	Phylakopi	LH III C	*MCM*, 219 fig. 10 right

54 Cf. S. WACHSMANN, *IJNA* 10 (1981), 187-220.

55 Population:

1.	Gazi	LH III B	*MIMA*, 145 fig. 303
2.	Tiryns	LH III B	*AA* 1988, 140 fig. 37. 8
3.	Amphiareion	LH III B	*MIMA*, 150 fig. 317
4.	Dramesi	LH III B	*MIMA*, 145 fig. 302B
5.	Tragana	LH III C	*MIMA*, 142 fig. 298C
6.	Asine	LH III C	*MIMA*, 147 fig. 309
7.	Phaistos	LH III C	*MIMA*, 132 fig. 272
	Morphologically relevant bow sections:		
8.	Phylakopi	LH III C	*MIMA*, 147 fig. 308
9.	Agia Irini	LH III C	*Hesperia* 31 (1962), pl. 99d
10.	Athens	LH III C	*AHS*, pl. Ic

a slight curvature at the junction; essentially, then, the shape established by the Skyros craft - both types share the loose-footed sail [56] common at the end of the Late Bronze Age and not attested for Minoan ships - 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 to 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 [57].

The population size of Type VI amounts to seven certain and three uncertain individuals, the latter all being bow fragments, in addition to the three stern fragments mentioned in conjunction with Type V, which, of course, could equally well have exhibited the spur-equipped bow of Type VI. Chronologically, the shape ranges, as does Type V, from Late Helladic III B to III C times. From the point of view employed in this paper, that of regionally restricted types, very little can be said: the members are distributed across the Aegean, from Boiotia to Crete via Argolis, Athens, and the Cyclades. Only Phylakopi on Melos presents more than a single specimen, and here it is question of one bow fragment, one stern fragment, and two sherds which cannot, together, provide a complete reconstruction, vitiating any attempt at trenching in matters of type assignation, Type V or VI.

Despite the chronological parallelism, it is tempting to consider Type V as the direct precursor of Type VI. Attempts to read the major characteristics of Type VI into earlier representations, primarily the two sherds from Iolkos, but also the Town Mosaic faience fragment and the Temple Tomb graffito, cannot be judged successful [58]. The evidence is too fragmentary to allow convincing interpretation as representing ships. A connection with the previous type to exhibit the characteristic projection, Type II, cannot be maintained over so long a period devoid of testimonia. Type VI should be considered as the first link, on ground ably prepared by Type V, in a long chain which leads to the ultimate ship of the type nascent in the lines of the Tragana ship, the trieres. This new concept in ship design, baptized "Mycenaean" on temporal and spatial grounds in general, constitutes a sharp break with over three hundred years of Minoan ship building tradition.

Interpreting the evidence

Exception made of the Early Cycladic II and the Late Mycenaean III B and C periods, the evidence for Aegean Bronze Age ship architecture is dominated by a linear succession of ship types defined by the artefact distribution as Minoan (Types II, III and IV) - with some chronological overlap. If one assumes - and such an assumption is implicit, or explicit, in most research done on the Aegean Bronze Age - that the finds and their contexts reflect a past reality, then the evidence would suggest a dominant Minoan role in Aegean ship building - a possible reflection of Thoukydides' Minoan "thalassocracy" [59]. The near exclusivity of a single type to any given time period is sufficient grounds for concern: an apparent multiplicity of types in the

56 Cf. the paper by O.T.P. Roberts in the present volume.

57 On ramming cf. J.R. STEFFY, "The Athlit Ram. A preliminary investigation of its structure", *MM* 69 (1983), 229-247, particularly 240-242, and J.G. LANDELS, *Engineering in the Ancient World* (1978), 146-150. Attempts to prove the use of the ram in the Bronze Age have been fruitless, and need not be referred to here.

58 Iolkos sherds (MH III): *MIMA*, 92 fig. 191; Town Mosaic faience fragment (MM III A): EVANS, *PM* I, 310 fig. 229a ; Temple Tomb graffito (MM III-LM I): EVANS, *PM* IV, Suppl. pl. 66b.

59 Cf. HERODOTOS, *The Histories*, I.171, III.122; THOUKYDIDES, *The Peloponnesian War*, 1.4, 8

Early Bronze Age [60], perhaps more sensed than shown, appears to lead to a monopoly of the one Minoan shape as embodied in the evolution from Type III to IV. It cannot, however, be excluded that behind the unclustered and often fragmentary individuals there lurk further types which future finds could define. Models constitute an additional problem: generally very summarily executed, they are difficult to interpret (large or small craft ? for quotidian or ritual use ?), and have therefore, perhaps wrongly, been prejudiced against.

If it is assumed that the Mycenaeans, or the Cycladites, had access to ships of their own prior to, in the former case, or subsequent to, in the latter case, the appearance in the data of a distinctive shape directly attributable to them, then the apparent Minoan domination in matters of ship building suggests that these people employed ships essentially identical to the prevaling Minoan type. If a Mycenaean "ship" is postulated for the early Late Bronze Age - in the absence of a Mycenaean "ship-type" - some means of distinguishing it from a Minoan ship would then be required. Since hull and superstructure cannot be called upon, some sort of standard or element of decoration could be sought.

A paradigm for the concept envisaged may be given by the Naqada II ships of Predynastic Egypt [61]. Fastened to the aftmost cabin is a pole carrying a device whose exact significance, be it an indicator of origin or a religious symbol, need not enter into consideration here. The main function, in structuralist terms, of this device is to distinguish ships of almost rigorously identical shape. If the postulated relationship with the later nome signs [62] is correct, the standard would then indicate whence came the vessel, and would answer to the definition proposed above regarding regionalisms, even though the ships in themselves are identical.

The rapid overview has indicated that such elements are restricted to two groups, the "frying pans" from Syros, and the large ships on the Miniature Fresco. The ships on the "frying pans" all carry a single device, the fish, suggesting, if these fishes do in fact indicate the home port, that all the ships thus equipped originated from a single area, a conclusion already arrived at from the spatial distribution. The absence on the other, non-Syran, members of the cluster can be explained both in terms of not belonging to this single area, and in terms of material or artistic restraints causing it not to be rendered.

A somewhat greater differentiation is seen on the bowsprits on the Miniature Fresco. Exactly what they signify is unknown, be it the ship's name, appurtenance to the fleet, provenance, or a marker of a religious nature [63]. No two sprits are decorated in an identical fashion, although a star appears, in the five cases permitting any degree of analysis, to be the common denominator. It may be alone, or combined with a bird, a butterfly (in two cases, the second with two butterflies), or dolphins. Speculation as to what is meant would, in view of the present knowledge, be idle. An ethnic attribution, be it Minoan, Mycenaean, or even Cycladic,

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60 Hypothetical types, only residually present in the data, with putative population, and one representative document: 1. bow and stern with spur and post: to date only the EM II Mochlos model (*MIMA*, 133 fig. 276) - M in Pl. XXIV; 2. pointed raised bow, raised stern with transom, long narrow hull: the four EC II Naxos lead models (*MIMA*, 79 fig. 156) - N in Pl. XXIV; 3. pointed bow and stern: a possible four individuals, the MM I Mirabello area seal (*MIMA*, 105 G2) as paradigm - ? in Pl. XXIV.

61 Cf. W.M.F. PETRIE, J.E. QUIBELL, *Naqada and Ballas* (1896), pls. LXVI-LXVII.

62 Already suggested by Petrie in *Naqada and Ballas*, 19-20; developed by P.E. Newberry, cf. *MIMA*, 52 n. 4, and 44 fig. 64.

63 Marinatos, in *AHS*, 145, speaks generally of a προβόλαιον or an ἀκροστόλιον, and assigns a purely decorative function to them. MORGAN, *op. cit.* (n. 14), 133-134 refers to the dolphin, bird, and butterfly as "emblems of transport", and symbols of speed, and considers them as individual name devices. The star, being common to all the ships, is interpreted as the insignia of the fleet. In the current climate of increased religion-orientated speculation in Aegean archaeology, a reading as sacred symbols is in line with *l'esprit du jour*.

cannot be undertaken on the available evidence. If an answer to the Minoanist/Mycenaeanist "controversy" is hidden in these, and other, decorative devices, it remains beyond our grasp [64].

The problem, as formulated in the preamble, butts against several obstacles, not only related to the poor state of the data when a question such as this is approached. Too little is known of the relationships that existed between the different areas of the Aegean during the period of expanding Minoan influence. The illiterate, or at best proto-literate, societies concerned have left no written evidence, leaving it up to the archaeologist to decode the scrambled scraps made available to him/her by time and by the vagaries of research. The analysis demands careful calibration of all relevant known, and unknown, factors before an overall picture can be offered.

Akrotiri is a case in point. The Miniature Fresco constitutes the greatest concentration of large and medium-sized ships of Type IV. Fragments of identical ships are known from Agia Irini. When, in addition, the Kolonna material is brought to bear on the question of regional types, these provenanced representations suggest that the islanders played a greater role than a simple assignation of Types III and IV to Crete allows for. If, that is, the distribution of Type III and IV dots on the map should be read on face value. A postulated Cycladic tradition in wall painting should also have an influence on how the ships on the Theran fresco are viewed.

To conclude the present section: the small size and high proportion of unclustered and unprovenanced documents severly limit the contribution from the ship representations to the study of regionalisms in Aegean Bronze Age ship architecture. While an attribution of Type I to Syros may be considered probable, and of Type III to North Central Crete possible, Types II IV, V and VI defy, on present evidence, a more selective spatial orientation.

Understanding the database [65]

The inquiry has produced negative results. The hypothesis regarding the identification of regionally specific traits on Aegean Bronze Age ships cannot be substantiated by the data due to three factors: the proportion of unprovenanced representations vitiates any attempt at spatially orientated approaches, the low resolution of the individual images eliminates second-order characteristics thought to contain the necessary information, and, it is suggested, the Minoan bias in the evidence does not fully reflect the real situation. The first two factors are common enough problems faced, on a regular basis, by most Aegean archaeologists turning to the pictorial record for the answers to their questions. The third requires analysis, and justification.

It would be incorrect, when attempting to understand the Minoan bias, to plead Cycladic and Helladic cultural retardation during the period of Minoan expansion: cultural achievement is not exclusively translated into archaeological artefacts alone - one of the many unknowns in archaeology. A deeper understanding may be achieved by formulating, and analysing, if not answering, a number of questions, not only directly related to the find situation, but also connected with the manner in which the data are translated into historical reconstructions. Thereby, some of the basic assumptions subjacent to the hermeneutical framework demand elucidation.

In the total repertory of decorative devices constituting Aegean Bronze Age iconography, ship images represent a minority category. Their number stands in no relationship to the role

64 P.F. JOHNSTON, *Temple University Aegean Symposium* 7 (1982), 1-8, at p. 5 suggests that the lion and the bird/griffin at the stern on the Miniature Fresco ships functioned as an ensign, a use he also admits as probable for the bowsprit.

65 The final section represents personal thoughts generated by reflections on a failure. The foot-notation, as a consequence, is less than complete. The author asks for understanding and hopes to return, fully armed, at a later date.

played by the sea in the economic, political, and ideational systems - if quantification, in a moment's suspension of disbelief, is conceived as possible. The obvious question to rise is whether iconography does, in fact, mirror society. A linked question may be formulated as an inquiry into the capacity granted the archaeologist of realizing whether or not it does. A negative answer - in, it should be noted, a domain of human activity so essential to all populations having inhabited the Aegean throughout history: the direct interaction with the sea via the use of watercraft - would render the archaeologist's position untenable. Although tempting, so radical a scepticism will not be espoused here, other than as a faint cloud hanging over the answers proposed by the archaeologist: justified belief, not certain knowledge is his/her lot when proceeding beyond the recording of artificially designated artefacts in artificially constituted and labelled excavational levels.

It appears preferable to examine, within such limits set to obtaining valid answers, the images thought to depict ships, and their relationship to society, and to suggest lines of thought conducive to attaining a more differentiated understanding of the ship as a constituent part of the Aegean Bronze Age.

Little research has been implemented into the iconographic and social contexts of the ship representations. An image, whatever it may depict, be it a non-figural or a figural subject, is part of an overall strategy: the artist decorates and communicates, either in the personal mode, or as a spokesperson for a patron, single or collective, human or corporate. The constituent components are chosen to convey a message: in choosing so seldom to employ a ship as decoration on a vase, or as subject of a glyptic engraving, or as model for a terracotta object, the artist, it is assumed, is following personal or external dictates.

To examine an example: the so-called "talismanic" ship representations, a group numbering some fifty individuals, amount to approximately a seventh of the total available material upon which a study of Aegean Bronze Age ship architecture can be undertaken. These fifty documents constitute an infinitely smaller fraction of all "talismanic" motives, in the same manner that seals and sealings depicting ships comprise less than two percent of all glyptic motives. Similar numbers for vase-paintings, or terracotta objects, or wall paintings, are unknown, but discouraging totals are to be expected. The truth of the matter is: ships did not belong to the category of frequently depicted subjects.

To answer the question "why ?" entails an excursion into the conjectural, a step to be avoided in a paper richly endowed with assumptions and hypotheses. However, a few comments on the consequences cannot be avoided. Ship representations are rare throughout the Aegean in the Early Bronze Age. Rising numbers are noted for the Middle Bronze Age, becoming significant in the final phase, a fact largely connected with the arbitrary cut operated between Middle Minoan III and Late Minoan I. The explosive increase in the Late Bronze Age mirrors an incremental augmentation in the available database across the entire spectrum of extra-somatic means of adaptation. An important factor is played by non-quotidian representations of ships, be it "cultboats", "talismanic" images, or canonical craft shown in unusual contexts.

Thus the nature of Aegean Bronze Age ship representations must be raised: a mirror of quotidian practices or "special" vessels ? The alternative profane/sacred raises the difficult problem of drawing the lines as firmly as the archaeologist, burdened by a modern cultural baggage, is wont to do. The Bronze Age cultures of the Aegean do not appear to conceive of existence in terms of such a dichotomy, justifying the question how to distinguish the one from the other. Models, to take one instance, are a poorly represented category in the catalogue. If some derive from funerary contexts, they are insufficient to affirm that the voyage to the Blessed Islands aboard a watercraft was a essential part of the belief in an afterworld (since, if such was the case, they ought to be more numerous), and morphologically too anonymous, in

the majority of cases, to permit determining whether they depict ships or small craft, not an uninteresting question in view of Charon's skiff in later times.

Should an attempt be made to define the sacred craft as that which derives from a tomb or a sanctuary, appears in a cultscene, or bears the marks (yet to be defined) of a ritually heightened context, the conclusion would have to be formulated - by applying the same method of generating interpretative statements on the basis of clusters, not individual representations, implemented when identifying bow and stern on the basis of the steering-oar - in the following, or similar, terms: all six types defined here, as well as hitherto untreated individuals, depict cult craft [66].

To illustrate: among the seven certain members of Type VI, one decorates a vase from a tholos tomb, one a larnax, one a stela found in proximity to a tholos tomb of substantially earlier date [67]. If a single individual with a steering oar is to be deemed sufficient to directionally determine an entire cluster, then three out of seven members should suffice to designate a hull type as ritual. Two alternatives present themselves: one, to forget method and trust the archaeologist, two, to admit that a given context does not dictate the correct interpretation. Differently formulated: iconography and its spatial and temporal distribution do not mirror society or historical realities. The consequence: the archaeologist must erect a theoretical framework within which to interpret the data.

There are, then, flaws in the glass: it is here suggested that there exists a gray zone between what the data appear to be saying, and what the archaeologist suspect they are not, but ought to be saying. The coherency of the signals received from the representations as an overall phenomenon may be taken to task. In a discipline where all relevant and vital parameters are never united, there is always room for reasoned doubt, for competing hypotheses, in short, for approaching distribution maps as useful aids rather than reality revealed.

To return to the subject of investigation: it appears necessary to incorporate geographical factors, such as the necessity for the islanders to take to the sea in the pursuit of the basic requirements of life. If this element is incorporated into the theoretical framework, any statement postulating a total Minoan domination of sea transport is faulty. If, furthermore, the distribution of Mycenaean pottery in the Cyclades and beyond is consulted, a Mycenaean presence on the Aegean sea should follow, unless it is admitted as potentially true that Minoan bottoms moved Mainland products, goods possibly competing with the Cretan out-put for a market.

If one then turns to the so-called Minoan "thalassocracy" and attempts to further buttress this hypothesis with an argument based on the Minoan predominance in maritime traffic during the relevant time period, it is necessary to postulate the existence of a Cycladic "thalassocracy" [68] in the preceding, and a Mycenaean "thalassocracy" in the subsequent time-

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66 Cf. VANSCHOONWINKEL, *op. cit.* (n. 21). Cf. also the conclusion of J. BETTS, "Ship on Minoan Seals", in *Marine Archaeology* (*Colston Papers*, 23, 1973), 325-336, at p. 334: "Almost all the ships occur on Middle I-II three-sided prisms and on Middle Minoan III-Late Minoan talismatic gems. Neither type had much sphragistic use. Both had an amuletic function, apparently based as much on their material and shape. This curious fact, along with the evidence of boat votives and 'bateaux de culte', indicates that, despite Minoan Crete's reputation in later antiquity as a sea power, the ships which occur in Minoan art almost all have some kind of symbolic, semi-religious or occult significance. The illustrations tend, especially in the Late Minoan period, to be schematic and to over-emphasize certain features of the ship, perhaps those which had some special magico-religious significance. More or less naturalistic representations of ships are rarely found".

67 Vase from tholos tomb: Tragana; larnax: Gazi; on stela: Dramesi (cf. n. 55, nrs 5, 1, and 4 respectively).

68 Three papers in *MTMR* may be cited in this respect. N. Platon speaks of the "great naval power of the Cyclades" and denies an Early Bronze Age importance to a Minoan naval presence (65-66). J.B. Rutter and C. W. Zerner characterize the Cycladites, on three occasions, as "middlemen" in the early Aegean trade (75, 75, 77). Finally, Z.A. Stos-Gale and N.H. Gale emphasize the Cycladic element in Minoan trade: "it may

periods, due to the respective ascendancies manifest in the data. Although a Mainland "thalassocracy" has been contemplated [69], it has been down-played due to an inability to conceive of the Mycenaeans as capable of exercising effective political control over scattered settlements, the very command the Minoans are thought to have achieved. Yet the Mycenaeans developed a ship type well adapted for lightning visits to recalcitrant subjects, as well as for opportunist raids on non-aligned settlements.

Therefore a more balanced reconstruction of "thalassocracies" should be espoused, than the ultra-radical version suggested by the Minoanist view, which if correct, suggests a Minoan fleet capable of surgical strikes throughout the Aegean [70]. The "Minoan flower lovers" [71], imbued with "the grace of life" [72] exit stage left, irrevocably consigned to the scrap-pile of history, to make way for the post-modern Minoan, a military, economic, and cultural imperialist, imposing decorative elements, among other things, on all cultures within the Aegean realm [73].

The decorative elements appear to be the crux of the matter. The Mycenaeanist view seeks and finds parallels in the Shaft Graves, and offers a tentative historical reconstruction on this basis [74]. The unstated assumption appears to be that the contents of the Shaft Graves are culturally untainted by admixture of foreign elements, and Mainland in origin. Since there are no antecedents to such wealth in Middle Helladic Greece, nor an artistic tradition that permits a seemless continuity, the origin of the Shaft Graves and their contents should remain open [75]. The Minoanist view stresses the Minoan antecedents of all the decorative elements on the Akrotiri ships [76], yet appears to exclude any other possibility than Minoan artists working for Minoan patrons, or, at the very least, patrons professing fealty to Minoan overlords. If, however, one is to speak of a Minoan koine, a common pool containing the fruits of civilization, under an initial tutorship by the Minoans, the possibility of Early Mycenaean patrons adopting - or adapting - originally Minoan elements to their needs and commissioning artists (of undefined origin) to proceed accordingly, cannot be ignored. Koine, another term in search of a definition, suggests a vision less bellicose than that painted in the previous paragraph.

If a more sensitive interpretation of the Minoan koine, whether supported by a Minoan fleet or not, is adopted, the strict one-way flow of decorative elements, and the mechanical equations proposed should be disgarded. The very moment frozen by the Santorini eruption, however it be dated absolutely, fossilized a constellation of decorative elements employed in the

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rather be that the Cycladic islanders acted as middlemen (even entrepreneurs) in the [metals] trade and provided the ship and personnel to carry it on" (63). Cf. also n. 14.

69 C. MEE, "A Mycenaean Thalassocracy in the Eastern Aegean ?", in *Problems in Greek Prehistory, Papers Presented at the Centenary Conference of the British School of Archaeology at Athens, Manchester April 1986* (1988), 301-306; rejected p. 304.

70 *MEMF*, 42.

71 Plucked from the title of C.G. Starr's paper in *MTMR*.

72 Quoted by C.G. Starr's (*MTMR*, 9) from H.A. GROENEWEGEN-FRANKFORT, *Arrest and Movement* (1951), 216.

73 S. Hiller notes presence of weapons in Minoan society in his *MTMR* paper (27-30, particularly nn. 3, 5, 12, 17, 19). Cf. also the first two paragraphs of S. Hood's *MTMR* paper.

74 *EMA*, 116-117. The present author refers to *MEMF* for an adequate bibliography on the Minoanist/ Mycenaenist issue.

75 Cf. J.T. HOOKER, *Mycenaean Greece* (1976), 54-58 (and Chapter 3 in general). Such is also the tenor of O.T.P.K. DICKINSON, *The Origins of Mycenaean Civilization* (*SIMA* XLIX, 1977), 51-56, 107-110. Cf. papers by O.T.P.K. DICKINSON and S. HILLER, *Transition. Le monde égéen du Bronze moyen au Bronze récent. Actes de la deuxième Rencontre égéenne internationale de l'Université de Liège (18-20 avril 1988)*, in *Aegaeum* 3 (1989), 131-136 and 137-144.

76 *MEMF*, *passim*, with historical reconstruction 41-42.

Aegean area. Further research may, or may not, reveal whether these elements had come directly from Crete, as the Minoanist insists, or whether a more circuitous route, with non-Minoan contributions, may be envisaged for some of them.

These factors are not drawn into the present argument in the aim of combatting the Minoan bias by devicing procedures enabling it to be beaten into a more acceptable shape. The purpose is to understand, if possible, why so many representations are Minoan, and why so few derive from the other Aegean Bronze Age cultural spheres. There exist, in fact, further data attaching the crescent-shaped hull less exclusively to Minoan Crete, but these are either fragmentary and therefore not amenable to confident clustering, such as the bronze model from a Late Minoan I B/Late Helladic II A context in the temple at Agia Irini, the Middle Helladic sherd from Phylakopi, a Middle Helladic III sherd from Aigina, and an enigmatic Middle Helladic sherd from the Akropolis North Slope, or they are to date little known, and constitute information from a single source, such as the seven craft painted on a Middle Helladic jug from a grave in Argos [77]. Insufficient to greatly change the picture, they do, nonetheless, suggest how some of the perceived gaps in the database may be filled.

An attempt has been made to draw attention to problems involved in the study of a mere fraction of the documents available for the reconstruction of Aegean Bronze Age society. In the process, an oblique spotlight has been aimed at the arguments marshalled on both sides of the Minoanist/Mycenaeanist divide. The original aim, to question the corpus of ship representations concerning regionalisms, which, it was hoped, could contribute to the Akrotiri ship "controversy", proved itself to be presumptuous considering the nature of the evidence. Out of the failure rise important questions regarding the mechanics of cultural dominance and interchange, and perhaps most importantly, an invitation to reexamine the database employed, and the assumptions subjacent to the reconstruction with which the archaeologist endeavors to understand the data and the dots, and thereby to write the history of the Aegean Bronze Age.

Michael WEDDE

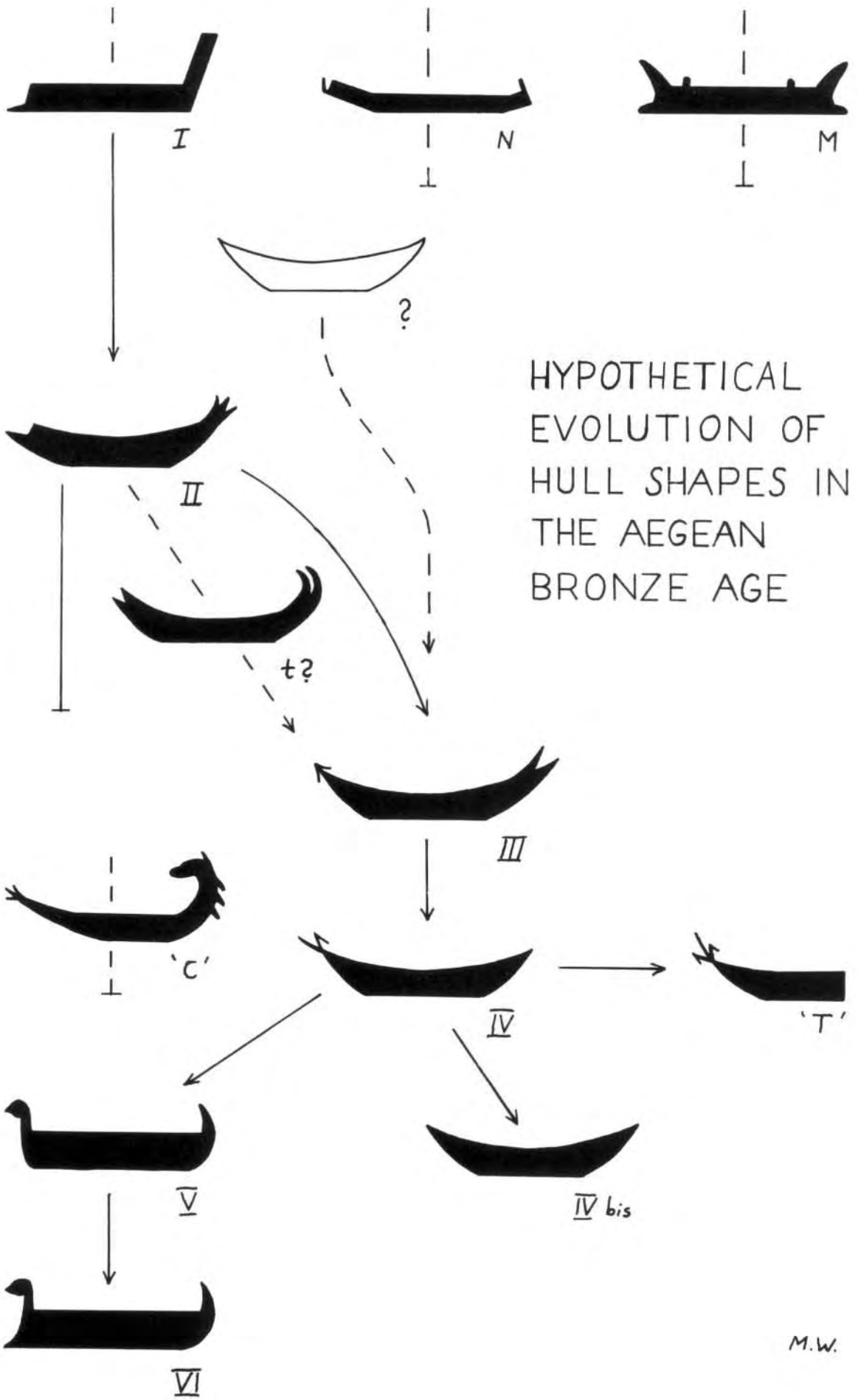
77 Listing:

1. Agia Irini	LM I B/LH II A	*Hesperia* 33 (1964), pl. 56c
2. Phylakopi	MH	*EPM*, pl. 12.23
3. Aigina	MH III	*MTMR*, 28 fig. 1
4. Athens, Akropolis	MH	*Hesperia* 2 (1933), 362 fig. 33a
5. Argos	MH III	E. PROTONOTARIOU-DEILAKI, *Tymboi tou Argous* (*Argos* I) (1980), pl. Δ, 7. 2-3.

The final item was presented in detail by E. Protonotariou-Deilaki at the Second International Symposium *Ship Construction in Antiquity* in Delphi, August 1987. It has also been published by the same author, "La céramique prémycénienne des tumuli d'Argos", in *Etudes argiennes*, *BCH* Suppl. VI (1980), 41-52, cf. p. 51 fig. 26.

ILLUSTRATION

Pl. XXIV : Hypothetical Evolution of Hull Shapes in the Aegean Bronze Age.
A suggested reconstruction of the phylogenetic interrelationship between the various hull shapes recognized in the data. Roman numerals I - VI denote the types discussed in this paper. M = Mochlos model (n. 60 nr 1); N = Naxos models (n. 60 nr 2); ? = questionable Type IV predecessor (n. 60 nr 3); t ? = possible transitional shape between Types II and III (cf. n. 47 and text); 'C' = "cultboats"; 'T' = "talismanic" ships; IV bis = suggested continuity of Type IV to the end of the Aegean Bronze Age. Solid lines with arrow head indicate developments thought of as probable, broken lines unknown or suggested alternative developments. End-stopped lines signal absence of known continuity (in the case of Type II, there is continued use of the earlier shape concurrently with the more evolved Type III). Not included are small craft, and a second group of "cultboats" whih reproduce the shape of Type IV. The illustration should be regarded as provisional, subject to change if the evidence warrants it.


I
N
M
?
HYPOTHETICAL EVOLUTION OF HULL SHAPES IN THE AEGEAN BRONZE AGE
II
t?
III
'C'
IV
'T'
V
IV bis
VI
M.W.