

**SARDINIAN, VILLANOVIAN AND ETRUSCAN CRAFTS
BETWEEN THE X AND THE VIII CENTURIES BC
FROM BRONZE AND CLAY MODELS.**

Archaic figurative documents show very clearly that drawing techniques did not develop in parallel with building techniques, they had a wide delay which was solved only occasionally in Hellenistic time. Archaic figures, at least for the examples found in Italy, show a mix of traditional elements, realistic and up to date details, overemphasized ornamental aspects, such as animals or parts of them. The result is that on the figure of a boat or of a ship there is the superimposition of different aims, among which the realism of technical details became less important as far as the artist wanted to put more art in his work to achieve a graphical synthesis in terms of geometric fitness to other subjects or to the shape of the object. The following aims can be summarized as follows. According to late Villanovian, orientalizing, Corinthian and early Etruscan styles, the ship could have been given a zoomorphic appearance, as shown by the Padula amber or by the Cerveteri vase at the Louvre or some Corinthian figures, where ships were idealized as fishes, sea monsters or birds. Another aspect is the purpose of these figures as *emblemata* in painting, in modelling lamps or ex votos in shape of boats, in engraving Heracles lying on the raft, or in reproducing Egyptian boats (as in Palestrina gold dish). As we can see in Pythecussae (Ischia) vase, technical features may well be deduced, but as a remembrance which is similar to the appearance of cars in road signals; a good instance is the comparison of no-overtaking signals of 1940-50 with the present ones: we cannot say that they are not realistic, but we are far from a good description of cars. The delay of drawing vs building techniques is clear also from the fragmentation of figures. Something similar can be observed in many Minoan, Mycenaean and Geometric figures and this appears to be bound certainly not to lack of drawing ability, but to the mind of the painter or of the sculptor. A good instance of this mind is shown by the figures of men in Minoan, Mycenaean and Geometric art; they are parts put together, not coordinated bodies; similarly the literary procedure for describing a human body was a list of its parts and only later, after the VI Century BC the comprehensive word *soma* was used.

Similarly the description of boats is by single parts, not necessarily coordinated among them. The prow may be well described, but then only one or two benches or cross beams are indicated, to show the type of ship, but not to tell us how many these benches were (Fig. 4C). Therefore, with this background, the analysis of our anchaic models first of all lets us take the superimpositions (e.g. animals or their parts not part of the ship) away, then concentrate on the details. If the quality of the model allows, the details can be more or less coordinated, to build the possible appearance of the original boat, otherwise we discuss only the details.

Being the models tri-dimensional objects, there are some better chances to come to technical conclusions, because even if the sculptor interpreted the ship as described earlier, he could not overlook completely the aspects of a basic description. Generally it is difficult to find big distortions in the shape of posts, in the angles and slopes of surfaces and details; flat bottomed crafts can be well distinguished from round hulls, even if these latter have been made a little flat to let the model stand.

Sardinian bronze models belong to a period between the X and the VII centuries BC, with some later specimen; a lot of them has been found in Sardinia and in Etruria and the studies made so far did not cover the analysis of nautical aspects. They can be divided into two categories: flat bottomed and round hulled boats. Flat bottomed models appear to have been made more realistically and their features can be better coordinated. Structural details, such as posts, wales, bindings and sewings in many cases are well identified, although general proportions or the proportions of parts among each other are not respected. There is the tendency to build too short, broad and tall hulls, and too large animal heads, when present. By taking these distortions into account and selecting the most indicative examples we can identify smaller and larger flat bottomed crafts.

Small crafts (Fig. 1), well described by Tula (Sassari), Lula (Nuoro), and Oliena (Nuoro) bronze models, appear to have been built around the flat bottom with the addition of posts. These can be straight or slightly curved, to follow the similar shape of the sides. Connection between the bottom and the sides is strengthened by a thicker strake, which was sewn to the shell by sewings which went also in the outer surface of the strake. The upper wale was sewn in a similar way, while the other boards of the shell could have been sewn by *sparta* which did not go to the outer surface of the shell, as in the Etruscan wrecks of Bon Porté and of Giglio. There is little doubt about these *sparta*: Oliena model (Fig. 1 B) shows clearly the sewings of the wales, while no trace is indicated on the rest of the surface of the hull, moreover the Tula model shows how the ends were connected. The

end parts of the shell, of the upper whale and of the topgallant bulwarks were bound by the system A in Fig. 1, while the *akrostolion*, the post and the end parts of the other structures were bound by the system B which followed. There are no indications about inside structures, but it is obvious that there were bottom frames and ribs, not necessarily connected, and the posts. As far as proportions are concerned, they depend on the size of the original boat, but the general knowledge of flat bottomed crafts and the connections among single parts (bottom, sides and their slope) lets us propose those given conjecturally in Fig. 1 A. The shape of the topgallant bulwarks astern, which is common to other Sardinian models, is made in order to give room and a leaning point to the steering device.

Larger Sardinian flat bottomed crafts (Fig. 2) are well described, among the others, by the Costa Nighedda (Oliena, Nuoro), Is Caniles (Padria, Sassari) and the "Noha's Ark" found in the Tomba del Duce in Vetulonia, bronze models. It appears that the increased size of the boat made it necessary to put an intermediate whale for increasing sturdiness of the hull and as a fender. The interest of this double system of whales lies in the fact that, later, Hellenistic and Roman ships were built ideally in "slices", i.e. the shell was growing around a basic single part, with the addition of other "slices" as far as the hull was larger. The references for the shape of the "slices" were the whales or fixed boards of the shell at their boundaries. The presence of the two series of whales in these Sardinian ships appears to be with the same purpose and confirms the nature of similar hints in Geometric figures, thus bringing back to at least the VIII c. BC a procedure which in the past was documented only from the Vth c. BC onwards (tomb of Vele Caicna; Bologna). In some specimen of this type of ship the posts do not protrude outside the planking surfaces (figs 2 A & C): they are just only internal supports for the end parts of the planking of the shell. Its boards join at the prow edge with no scarf at the post and sewings can have been very simple. The type of lashings at the end (Fig. 2 C) indicates that they enclosed the ends of the whales, of the shell, of the internal post and the base of the *akrostolion*: a heavy sculpture of a deer's head. All these elements indicate that the sculpture was fixed to the post by means of a simple scarf and the fact that the post did not protrude was helping tightness of bindings around the end part of the shell. In addition to the lashings, the heavy *akrostolion* was fastened by two side stays (Fig. 2 C) or by a prop (Figs 7 and 8).

In addition to these details we can induce that the hull was open, probably with partial decks at the ends of the larger specimen, but nothing is indicated about the presence of the mast (which almost obviously should have been present at least in the larger crafts) nor about rowing/paddling. Measures can only be

conjectured, while proportions can be reasonably proposed; small crafts could have been from 10 to 15 metres long, larger crafts about 20 to 25, however these assumptions are highly conjectural.

Some clay and bronze models as lamps or ex votos coming mainly from Cerveteri and Vulci represent a symmetrical flat bottomed craft. They are from the X to the VII centuries BC; a little later (VI-V c.) some buccheri represent the same type of boat, in an idealized and heavily decorated way (Boston, Haifa), while a similar shape was given to some clay models of the VIII cent. found in Sasso di Furbara (Cerveteri, Fig. 3C). The original boat had a flat bottom, slightly curved sides, similar ends with posts and protruding points. These points are present in round boats according to the models from Selciatello (Tarquinia, IX century, Fig. 6), and Sardinian models from Sini collection (Nuoro, Fig. 7B) or from Sa Sedda é Sos Carros (Oliena, Nuoro, Fig. 8); with a recent name we could call these points *bittalò*, like those of the traditional *speronare* of Naples, Catania or Malta. In addition to the structural simplicity of this solution which helps easy connections of the end parts of the whales, these *bittalò* could have been used also as a holding tool for lifting the boat when taking it ashore. The information we have about this type of boat is sufficient to give us further details. Bottom frames and ribs were certainly present, stringers were fixed against the ribs to support the beams for partial decks and the benches for the rowers or the paddlers. The hull was painted in stripes of bright colours, as shown by lines and cross markings on two lamps; similar ornamental patterns were present in Cypriot models of XI-XII centuries BC and in subsequent Etruscan frescoes (Tarquinia, VI cent.). We cannot go further with assumptions: mast and sails, number or rowers or paddlers, number of benches, steering devices ... we can only assume a hypothetical length of about 12-15 metres.

The presence of the above flat bottomed crafts along the Tyrrhenian shores can be connected to the preference given to lagoons or mouths of rivers as landing places. In fact many *nuraghi* in Sardinia are near still existing or ancient coastal lagoons. Moreover the distribution of Etruscan centers and the ways of penetration inland confirm the importance of rivers and lagoons: Aleria in Corsica, the mouth lagoons and the courses of the Volturno, Garigliano, Tiber, Fiora, the Lake Prile, the Ombrone and Arno are the framework into which the positions of centres like Capua, Rome, Orvieto, Todi, Perugia, Roselle, Vulci, Ansedonia, Florence and Arezzo fit well with inland navigation. A similar aspect can be found in the later Etruscan centres in Northern Italy which were bound to inland navigation: Ravenna, Spina, Adria, La Bologna, Mantova (Bagnolo S. Vito), the course of the Panàro (named Scultenna, an Etruscan name).

But these flat bottomed crafts did not appear suddenly on these coast lagoons or river mouths around the X century BC. They were certainly the result of the evolution from rafts to flat bottomed plank boats, which, at an undetermined step of our nautical history took place on our rivers and internal lakes. This step could have been occurred in the neolithic or eneolithic periods, according to the technical stage of these periods and to the relevant needs for transport, but it is clear that seagoing flat bottomed crafts, like those discussed above, were adaptations and developments of boats used on the internal courses of rivers and lakes, or on coastal marshes and lagoons for limited local usage (fishing, short transport of materials, hunting, ferrying).

Round hulled models are a little more difficult to interpret, because, if flat bottomed models have a certain realism (or their features are easier to correlate), with an involvement of whom is conscious to represent part of a reality into which he is much bound, and probably proud, round hulls were easier to be distorted, or oversimplified, according to the artistic background of the sculptor.

Villanovian clay models show a variety of types. A vase from Bisenzio of the VIII century BC has a lively figure of a boat with three rowers (Fig. 4A), with a deer in the background. The boat is very simply drawn: a round hull, something protruding at prow, which appears to be the simplification of an animal head with an open mouth, with teeth or beard or similar. This type of boat is obviously connected to some Villanovian clay models (Fig. 4B), like those of Tarquinia (one is in Haifa Nautical Museum). The representation is very schematic, but basic features and a size larger than that of the Bisenzio boat may be drawn as proposed in the sketch of Fig. 4. A similar type of craft is described also by some Sardinian bronze models: an ex voto found in Corinth (Fig. 4C) is very detailed, while a large series of simplified models appears to refer to the same type. The model from Corinth shows one bench, partial decks, keel and posts and the central keelson; the hull has a beautiful hydrodynamic shape. As far as the size is concerned, the Bisenzio painting shows three oarsmen with six oars; the Corinth model shows only one bench. By keeping in mind the function of these models and figures as *emblemata* and the fragmentation of the figures, it is most possible that the benches for the rowers were many more: I proposed six to give the measure of the problem. However, as hinted earlier, Bisenzio boat was smaller than that described by the models, the originals of which should have had more than six rowing benches. This type of boat, although represented very simply, confirm a kind of common nautical traditions along the shores of the Tyrrhenian sea, both on the Etruscan and on the Sardinian side. The Bisenzio vase confirms that Villanovian models were not imitations of Sardinian figures, or vice versa. Connections with Eastern

Mediterranean refer to the ornamental patterns of the *akrostolion*: we have at Bisenzio a simplified head which could be compared to the head of a vase of the VII c. BC. at the British Museum or to a similar animal head of a bronze cauldron found in the Bernardini tomb in Palestrina (VII century BC), a specimen of the orientaling style. The duck's head belongs to the widely discussed, and not yet solved, problem of derivation from the civilization of the "fields of urns" of central Europe; this detail went down to the Mediterranean during early iron age, as shown, among the others, by some bronzes of Macedonia (Tsansitsa, Museum of Thessaloniki, Fig. 4E), by the well known *akrostolia* of the ships of the Peoples of the Sea of Medinet Habou (Fig. 5,II,B) and of the ship painted on the Skyros vase, which is almost contemporary to Medinat Habou relief (XII century BC).

Other Villanovian models from Tarquinia area, always between the X and the IX centuries BC refer to larger crafts, real seagoing ships. One type has symmetrical hull, with birds heads as *akrostolia* at the top of high posts. Posts may have been slightly curved (Fig. 5 I and II) or straight and in one case (Tarquinia Museum, Fig. 5 II) the keel protrudes at both ends. The hulls of these models generally have been flattened to let the model stand, but the shape of the posts and the curve of the sides indicate that the original hull had a keel. The model of Fig. 5,II has a series of holes for oars and for the mast, which originally were of wood. These types of ships are not new in the Mediterranean. Curved symmetrical ends with high posts similar to these are represented in a vase from Phaestos (Stratigraphic Museum, Fig. 5,II), in a clay model from Hagia Triada at Heraklion Museum (reconstruction proposed can be corrected to symmetric posts), in a small clay model from Mycenae at Athens National Museum or in one of the graffiti in Tarxien (Malta, Fig. 5,I). Comparable straight posts with protruding keels are present, among the others, in Medinet Habou relief and in a clay model in Athens National Museum (Fig. 5,II). The implications of the ships of the Peoples of the Sea to Thyrrhenian seafaring can be hinted also by the possible identification of the Mycenaean, Etruscans and Sardinians among them. The shape of the model of Fig. 5 II leave little doubts about the technical links with the above comparisons, although the more recent age of the Villanovian models may also indicate a certain delay of technical developments of Thyrrhenian shipbuilding or the repetition of a shape used in earlier times.

Among the Villanovian models published by Montelius one show a very schematic hull, nicely round, with a cutwater at prow and an animal head as *akrostolion*. This cutwater reminds very closely that of the clay model of Palaikastro (Fig. 5, III) and similar solutions will be used in later times to improve handiness

of the hulls under sail; the Aristonothos vase from Cerveteri (VII century BC) is a good example of such later cutwaters (Fig. 5, III), thus indicating that this technical detail was actually used in the Thyrrhenian in Villanovian times.

To end with seagoing ships of Villanovian culture, there is a nice clay model from Selciatello (Tarquinia, Fig. 6) of the IX century BC. It represents a round hull, well shaped, with a thin prow ending at its highest part with a *bittalò*, like that of the flat bottomed boats discussed before. The stern is high and shaped to give the hull a good hydrodynamic behaviour; this is improved by a cutwater which has a hole, probably for a suspension thread, but it may have been the reproduction of a hole actually driven in the cutwater, to bind the ship with ropes when hoisting it ashore. The presence of such cutwaters in Mediterranean shipbuilding is confirmed by Aegean models and Minoan gems: the bronze model from Crete at the Cincinnati Museum is the best comparison. It can be induced that such cutwaters were connected to steering with a single side rudder. The same function of contrasting lateral displacement was played in some similar way by the shape of the stern of one of the Punic (or Roman) galleys found in Mozia (Marsala); similar devices are present in recent traditions in the *gaita* of Missolongi lagoons or in Northern American or Indonesian canoes. The high stern of this Villanovian ship has a short fence, which most probably surrounded the rised or partial part of the deck where the helmsman was sitting. All these elements indicate that this was a sailing ship, a well developed one, as some details will be found in later Attic figures and the shape of the hull appears to have been accurately studied.

This is what can be derived, with a reasonable confidence and technical realism, from Villanovian clay models. As discussed earlier, they are schematic, but technical details have not been overlooked, mainly if we compare the above models with other Villanovian ship-like objects: perfume burners, lamps or an uncommon bronze found in Bologna. In these cases ships were not the scope of the figures: they just fit, ideally, into the shape of the objects, with a lot of idealization. Also some later Etruscan figures represent ships in such an idealized manner, like in the perfume burner of Artimino (VI century) or a bucchero boat at the Nautical Museum in Haifa: they are graphical devices, but useless nautical documents.

Sardinian bronze models describe also seagoing ships with round hulls, which can be classified as small and large crafts. From the little details given by these simplified figures, the structure of the hull was similar to that of the flat bottomed crafts, i.e. sewing with *sparta* and lashing the *akrostolion* to the stempost; the presence of a keel and of posts, at least internally, is indicated by the model

of Corinth (Fig. 4) and upper wale and partial decks at the ends were common to all these ships. A model from Sini (Nuoro) collection (Fig. 7) shows external bindings around three sections of the hull: bindings were fixed to protruding cross beams at midship and in correspondence of the partial decks at both ends of the ship. Both large and small ships have generally a stempost obliquous with respect to the keel, but some cases are also of stemposts and *akrostolia* perpendicular to the keel. These ships had a mast with a forestay and different fittings for securing it. The type of sail and of rigging can be deduced from earlier documents (Phaestos, Skyros, Medinet Habou, etc.), i.e. a rectangular sail (wider than high) was fastened to a yard, which was suspended by two braces and the sail had two sheets and a series of brails. Sardinian models show the top of the mast with elaborated ornamental details: rings, spheres, birds, horns, etc; hints to a karchesion with a superimposed ornamental sculpture could be guessed, but not proven. Small round ships had a support for the steering device, which was cut in the stern upper edge, like in the small flat bottomed boats (Fig. 7). The suspension systems and the simplification of the lower part of the mast in the models of small ships appear to indicate that the mast could have been bound to a trestle (Fig. 7), like that appearing in some Geometric figures. This structure has interesting implications with the general structure of the hull and with rigging. The impression is that the use of such trestles was dictated by a certain weakness of the hull, in line with early lashing and sewing technique. Moreover this trestle could have been used to support a tent and to bind the ends of ties and brails. A possible indication of the size of these small round ships can be drawn by the Golo wreck, which was about 13 metres long. The shape of this boat, although much more recent, is closely comparable to that of Sardinian small round ships of early Iron Age, while the structure, made of bound ribs, and the half deck, appear to belong to a more developed stage of technics.

Larger seagoing Sardinian ships are identified by a rail and a couple of shrouds at each side of the mast. A bronze model at the Archeological Museum in Florence and a fragment from Sa Sedda é Sos Carros (Oliena, Nuoro, Fig. 8) indicate the presence of arches inside the rails, which are not part of the suspension system of the model as a lamp, but describe a feature of the original ship. They appear to have been part of a light structure, possibly to support a tent or a cabin covering the open part of the hull enclosed by the rails.

The shape of these oared and sailing Sardinian ships follow an archaic pattern comparable to that of Minoan ships and in our case the Homeric epithets *koronis* or *eise* appear as appropriate. The shape of crescent will be found in Etruscan

figures and in Golo wreck. Figures like a graffito from Veio (VI century), the reliefs of urns from Volterra or a similar clay model at the British Museum (IV century) show the superimposition of a light ram to a crescent shaped hull. These rams are similar to that of the III c. found off the coasts of North Africa and now at the Fitzwilliam Museum in Cambridge. These developments of the crescent shape are still to be studied in detail: it is sufficient here to have hinted at the problem, as a comparison to the old shape of Sardinian ships.

In comparison to the fairly archaic appearance of Sardinian ships of early Iron Age, ships used at that time around Tarquinia area appear to have been sturdier and more nautical. In other words they were, even if with some delay, in line with the development of Eastern Mediterranean shipbuilding. The sturdier lines of these Pontine ships, when compared to their Aegean relatives, remind, not as a coincidence, that in XVI century Pontine galleys had taller hulls than the Levantine, due to the conditions of the sea and this compelled to use wider sails. The number of different types betokens a lively nautical activity and in one case (Selciatello) the study of the shape of the hull is particularly accurate. Subsequent Etruscan documents appear to be interested to a more limited range of types, but this appears to be only the effect of artistic preference: the development of a multiplicity of crafts certainly continued and, later, Roman art came back to describe different types.

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ILLUSTRATIONS

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- A from the bronze models of Tula (SS) and Lula (NU), Lilliu n. 316, 325; the details show the different bindings of the ends of the sides (A) and of the bow tip (B).
 - B model from Oliena (Lilliu n. 323), conjectural section with sewings.

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ABSTRACTS - ΠΕΡΙΛΗΨΕΙΣ

IMBARCAZIONI SARDE, VILLANOVIANE ED ETRUSCHE DAL X ALL'VIII SEC. AC DA MODELLI DI BRONZO E DI TERRACOTTA

Una serie numerosa di modelli di bronzo e di terracotta documenta in modo schematico, ma riconducibile a caratteristiche tecniche precise, alcuni tipi d'imbarcazioni. Vi sono barche a fondo piatto, sia in Sardegna che in Etruria, costruite con la tecnica delle cuciture ed in relazione con la scelta delle foci dei fiumi e delle lagune quali approdi e vie di penetrazione all'interno.

Gli scafi a fondo tondo mostrano, per il Villanoviano, una molteplicità collegata a tipi mediterranei più antichi e forme ben sviluppate ed anche locali.

I tipi sardi tondi appaiono stilizzati, con poche varianti, tuttavia i particolari: cuciture, cinte, attrezzature, mostrano caratteri tipici del Tirreno, oltre che il substrato mediterraneo.

SARDINIAN, VILLANOVIAN AND ETRUSCAN CRAFTS BETWEEN THE X AND THE VIII C.BC FROM BRONZE AND CLAY MODELS

A large series of bronze and clay models shows in a schematic way, but with some exact technical details, a number of types of crafts. There are flat bottomed crafts, both in Sardinia and in Etruria, which were sewn and connected to the choice of mouths of rivers and lagoons as landing places and for penetration inland.

Round Villanovian crafts show a multiplicity bound to older Mediterranean types and well developed and local shapes.

Sardinian round ships are simplified models, with little variations, however their details (sewings, wales, fittings, rigging) show a Mediterranean basis and some typical Thyrrhenian features.

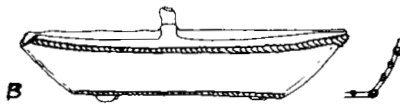
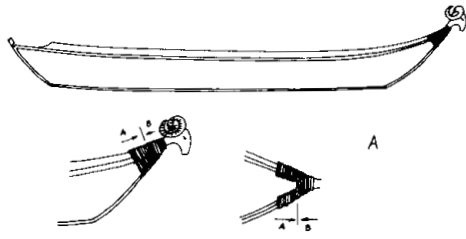


Fig. 1

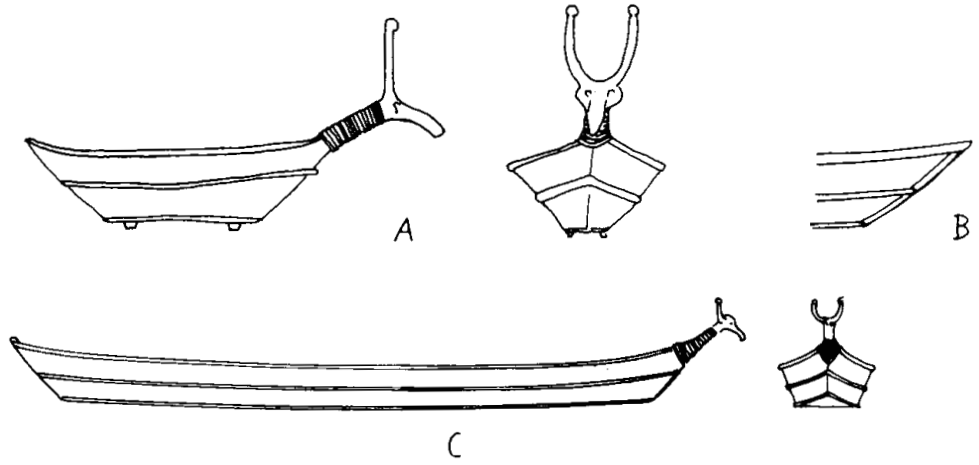


Fig. 2

SARDINIAN, VILLANOVIAN AND ETRUSCAN CRAFTS BETWEEN THE X AND THE VIII CENTURIES BC FROM BRONZE AND CLAY MODELS.

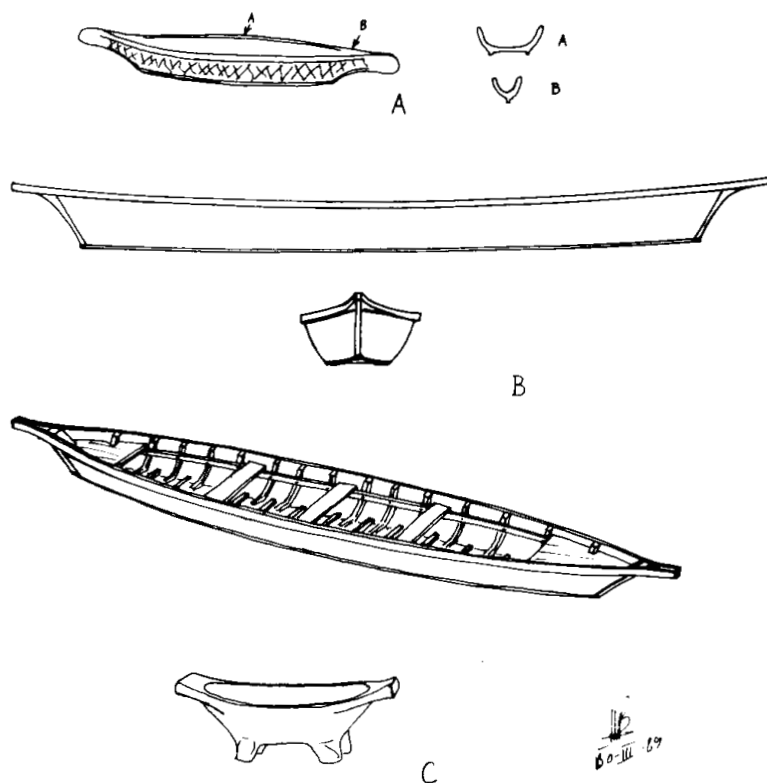


Fig. 3

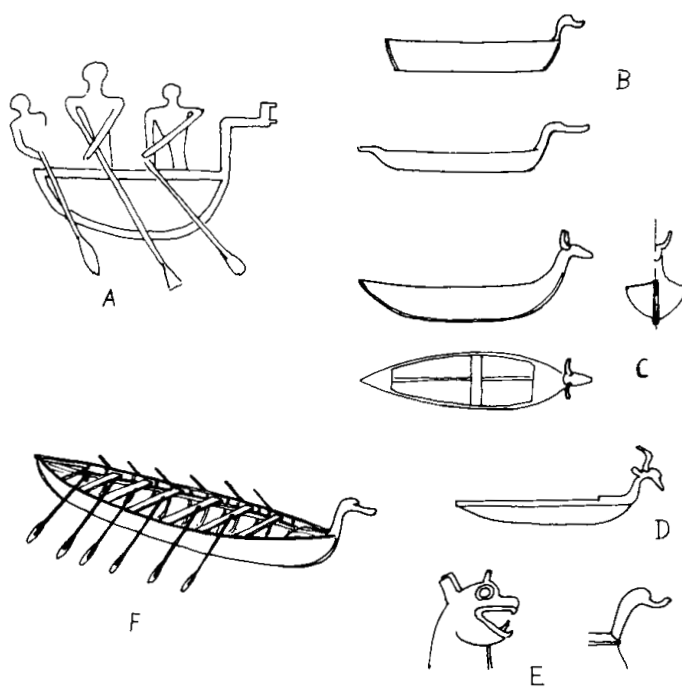


Fig. 4

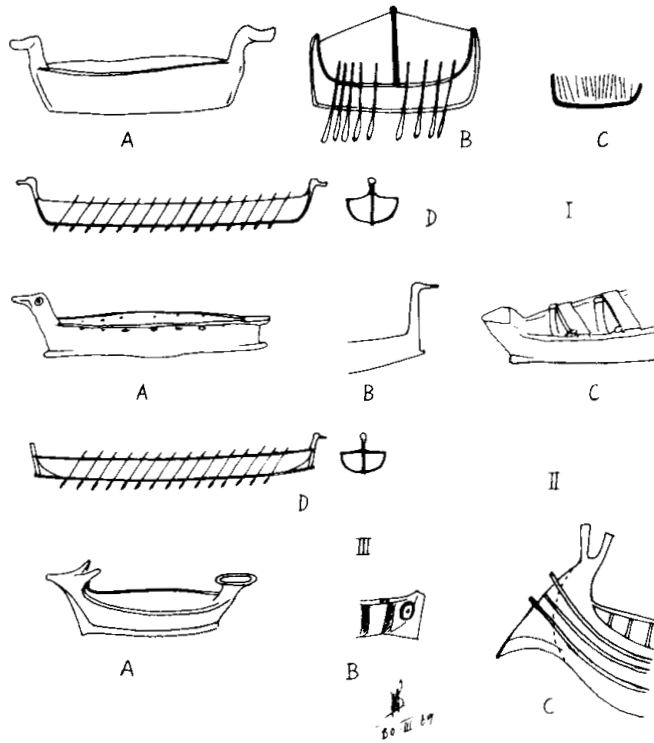


Fig. 5

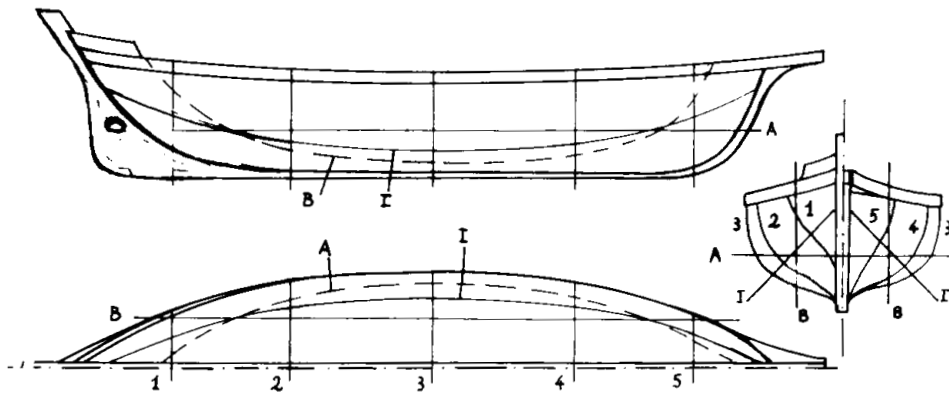


Fig. 6

SARDINIAN, VILLANOVIAN AND ETRUSCAN CRAFTS BETWEEN THE X AND THE VIII CENTURIES BC FROM BRONZE AND CLAY MODELS.

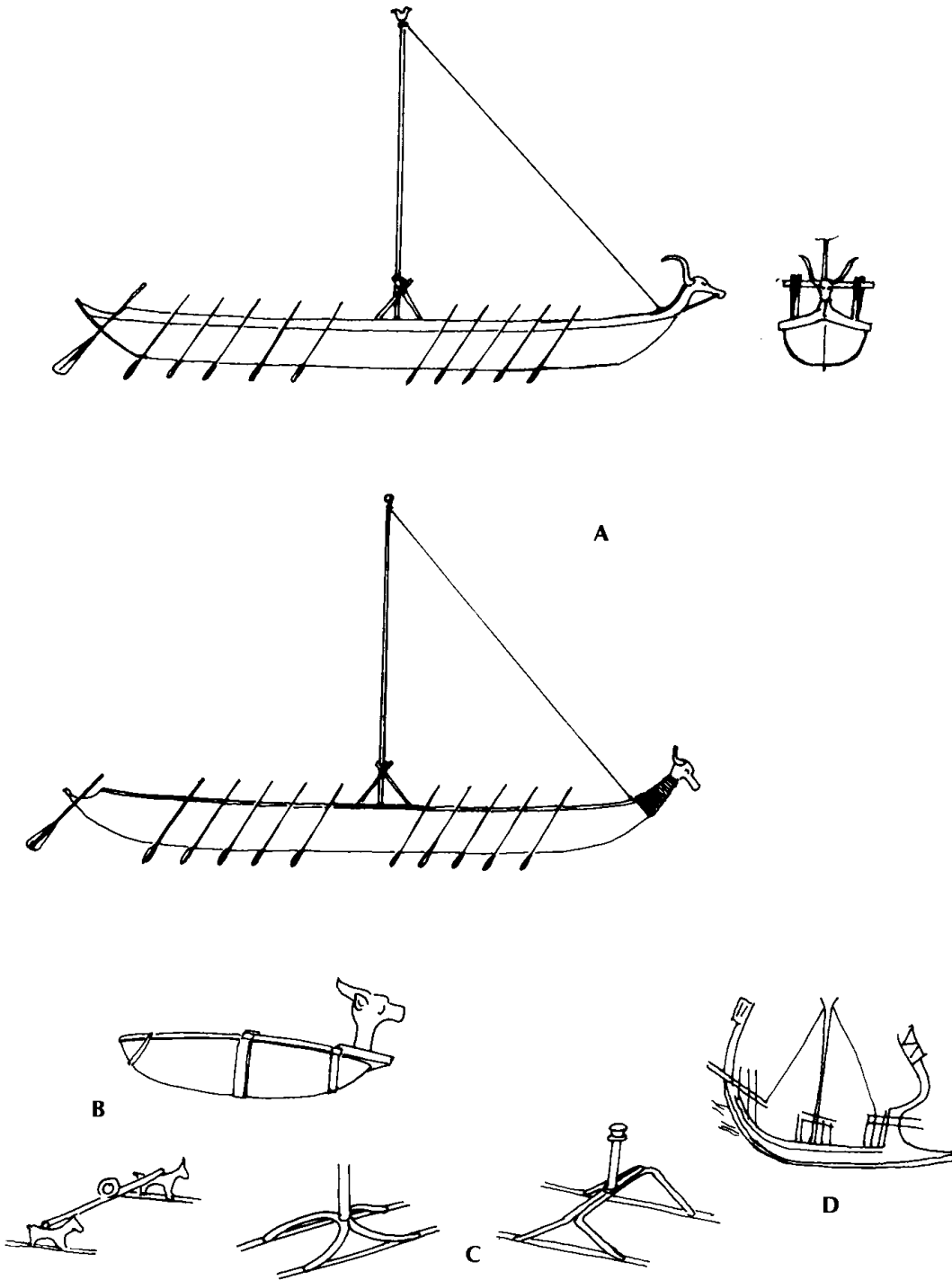


Fig. 7

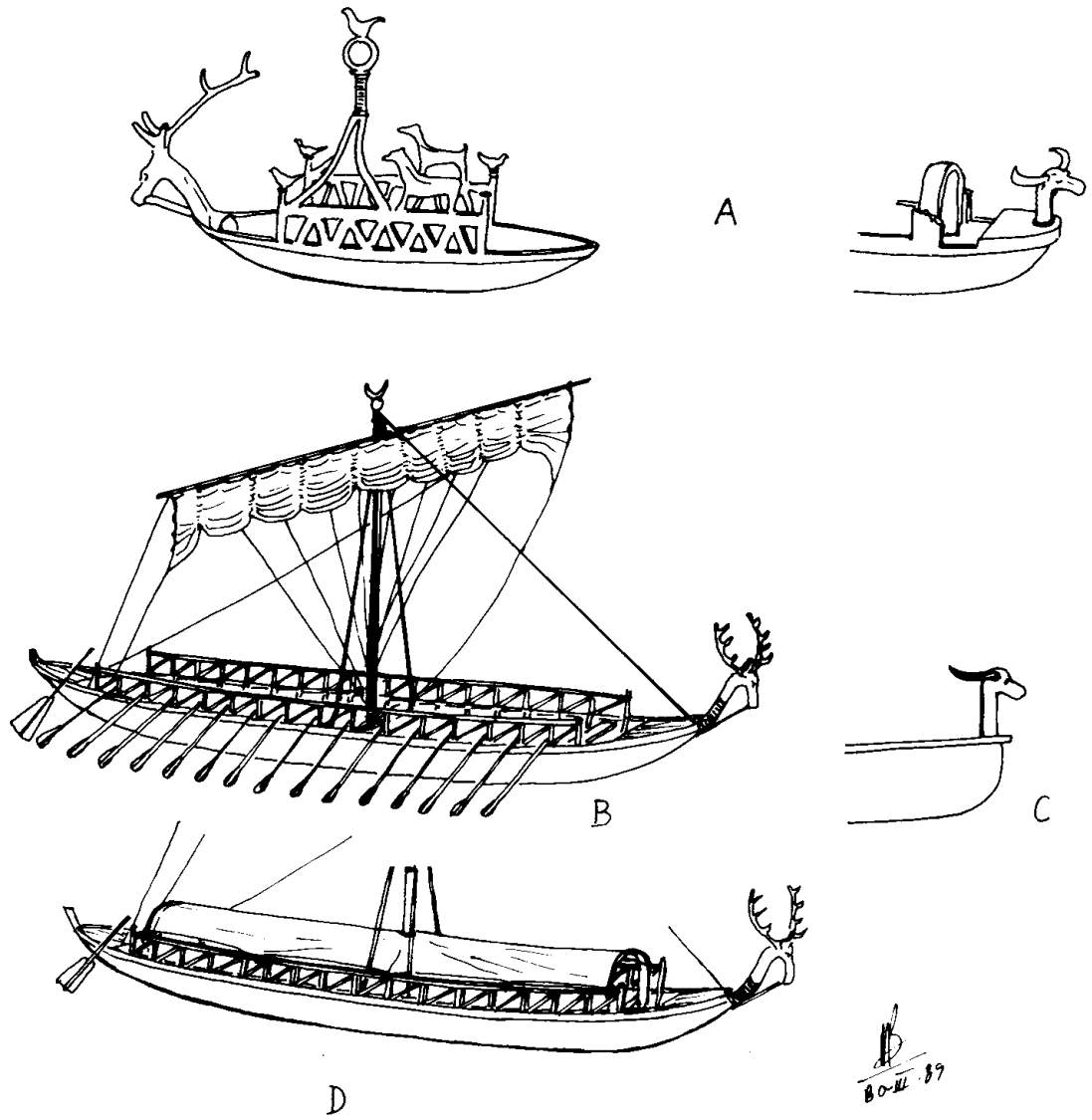


Fig. 8