

## ‘THE TRIERES RECONSTRUCTION: VALUE AND AUTHENTICITY’

### **I Value**

Marine archaeology conserves, recreates from a preserved base, or wholly recreates, relevant artefacts of a given historical period. Examples of the first kind are *Averoff* at Piraeus, *Constitution* at Boston, *Victory* at Portsmouth, *Cutty Sark* at Greenwich. Examples of the second are the Roskilde Viking ships, the Marsala galleys, *Mary Rose* and the *Kyrenia* ship, while *Mayflower*, *Kontiki* and the trieres reconstruction are examples of the third, wholly recreated, kind. It may be worth while dwelling for a few minutes on the reasons for such enterprises in practical marine archaeology all of them costly. What moves individuals and governments to spend large sums of money on them? What in short does a conserved or recreated artefact of a past age do for us?

Objects of daily use retrieved from ships, e.g. in the *Zuyder Zee*, or from the *Mary Rose*, appeal to us, and have precious value as vivid, tangible, links with the people of the past, as do the ships from which they come. Ships which have a historical significance or have participated in famous events, e.g. *Mayflower* and *Cutty Sark*, or those which have had a part in famous actions, the trieres at *Salamis*, *Victory* at *Trafalgar*, *Olympia* at *Manila*, have, for Greeks, British or Americans, an added value on that account. Where ships have become recognised as playing a part in world history and in the development of a civilisation in which many nations have come to share, they have a significance and emotive value crossing national boundaries. For example the trieres has a significance and

emotive value properly for Greeks in the first place, and then also among the wider circle of peoples in Europe and the Americas for whom Greek history and civilisation has been seminal, laying the foundations of the ways in which we think and write and govern ourselves. The marine artefacts mentioned will have value in one or more of these senses, the trieres in all of them.

We may press a little further the question of what the reconstruction of a 16th century Mediterranean galley, a Roman quinquereme, or an Athenian trieres will do for us. Some read history out of intellectual curiosity. For them tangible visual images illustrate their reading and make it more vivid. But the student of history is made of sterner stuff. His mental picture of the people and events of the past is furnished and enriched by those images not as an end in itself but as a means to useful evaluation and probable conclusions. This process is a superficial one, but not, I think, to be dismissed as merely superficial. The value of history as an educational and scientific pursuit is diminished if the imagination cannot be stimulated by true images of the past. The interest and excitement of archaeology lies as much in the restoration and recreation of the past life and behaviour of people as in the discovery of actual remains and artefacts, in themselves often unexciting. However much the sceptic may distrust it, the exercise of the creative imagination, putting flesh on the dead bones, is the reward and culmination of necessarily plodding historical and archaeological work, and the creative imagination needs true images if its exercise is to have value. In the marine sphere these images are provided by the Maritime Museums of the world, for Greece pre-eminently by the magnificent exhibition, *Greece and the Sea*.

The second sense in which the reconstruction of a historical ship, if a working reconstruction, may be of use to the historian is by its performance that is to say, by providing data for the assessment of historical voyages, naval movements and actions, and, more widely, of the potentialities of trade and the effectiveness of sea-power.

There are, further, some particular questions to which a working, reconstructed, trieres may give an answer. The 200 hundred triereis under Themistocles' command at Salamis helped to win, against great odds, a battle which Creasey numbered among the decisive battles of the world. The story is in no need of telling. A very large fleet of Persian triereis manned by Phoenicians, Egyptians, Greeks and non-Greeks from Asia Minor was decisively defeated by a much smaller fleet of those Greeks who resisted, in which the 200 Athenian triereis, "specially built", Plutarch says later, "for speed and quick turning" were outstanding. Athenian triereis continued to display those qualities throughout the period of Athenian naval supremacy. A reconstructed Athenian trieres may be expected to make clear how and to what degree speed and manoeuvrability were achieved, and help us to understand how she proved so effective in that remarkable battle. It is not just the trieres, but the special qualities of the Athenian trieres, which we need to realise.

Again, in the latter part of the fifth century Athens became the richest and

most powerful city in the Mediterranean, largely, it appears (and Pericles claimed) through her ability to dominate a considerable area of sea to her own advantage by the pre-eminent skill of her seamen and commanders in the quick and effective deployment of the trieres. Thus she was in a position to develop the civilisation which remains one of the wonders of the world. How exactly was Athens able to found a political and economic hegemony on skill in building and operating a type of warship which was common to all aspirants to seapower? This is a question which has never been put, let alone answered. Only familiarity with the trieres given by practical experience of it will enable us to do both. Our first steps towards the reconstruction are beginning to indicate the sort of answers we are likely to get.

The Trireme Trust was founded in Britain in 1983 by some philhellenes, including a distinguished naval architect, who had the educational and scientific aim of building a reconstructed trieres. The first step in this direction was to be the design and construction of a 5.5 m section of the hull accurate in all details. An agreement was very happily reached with the Hellenic Navy that they should build and commission the complete ship in Greece. For its part the Trust would supply building drawings and specifications, build in England and send out the Trial Piece when completed, and participate in the sea trials of the whole ship when completed. The Trial Piece proved its worth as a necessary experimental preliminary, serving to identify and solve many practical problems. It was demonstrated under oar in the river Thames at the Royal Henley Regatta in July 1985, where it created quite a stir among the assembled oarsmen, before being shipped out to Greece. In the meantime a scale model of the proposed ship on the specifications provided was made in Greece and is now on exhibition.

Why, it may be asked, are these first steps not sufficient? The ship is now defined by specification, building drawings, a scale model, and by constructing full-scale a tenth part of the hull. Why go to the trouble and expense of building, testing, operating and then maintaining a complete, full-scale ship? The answer is both more simple and more cogent in the case of the trieres than with most past types of ship, for the design and working of the trieres has been particularly inscrutable, and she had a particularly vital role in history. This irritating inscrutability has resisted resolution because the evidence relating to the oar-system, on which the design entirely depends, has been, and to some extent still is, a matter of controversy. The design seems at last to be coming into the light, but the intricacy of the trieres is such that only a full-scale reconstruction, with trained men pulling her, will show whether the oarsystem which the evidence can be claimed to indicate is actually workable in practice.

There is another reason why, in the case of the trieres and of other wholly recreated artefacts, only a complete full-scale reconstruction will do. All the claims that I have made for conserved, partly or wholly recreated artefacts rest on their authenticity. The authenticity of *Averoff*, *Constitution* or *Victory* is beyond doubt, and there is enough surviving of the *Marsala* galleys, *Mary Rose* and the

Kyrenia ship to support a partial recreation. But in the case of the trieres not only has no wreck been found, but no wreck is likely to be found because if holed or swamped she did not sink to the seabed, there to be preserved as so many ancient merchantmen have been. The trieres can only then be recreated by careful piecing together of the evidence from various sources, and authenticity proved by full-scale experiment. The 'trieres project' has then more to gain than most such enterprises; also, of course, it has most to lose.

## **II Authenticity**

An account of the piecing together of the evidence is out of place in this paper. But the story of the controversy is enlightening and may be briefly told. First a few words about the name.

The name 'trieres', 'three-fitted' might have been expected to give a clue to the oar-system. Literature and vasepaintings show oared warships playing an important part in Greek life from the earliest times, as is likely from the geography of the Hellenic world. In the Iliad and Odyssey (eighth century BC) there are twenty-oared ships, and in the Catalogue in Iliad II fifty-oared ships, both types presumably with one file of oarsmen on each side of the ship, as later vasepaintings show. Pride of place in the Catalogue is given to fifty Boeotian ships in which '120 young Boeotians went'. Thucydides says that they all pulled oars, and we are hardly entitled to doubt him. One file of sixty oarsmen is a physical impossibility. The ships then must have employed a two-level system, double manning of oars being unknown at this date. The two-level arrangement is confirmed for the end of the eighth century by a relief showing the evacuation of Tyre in 701, and possibly by an Attic vasepainting found in Thebes. The trieres, with a crew of 200, was invented about the beginning of the next century either in Phoenicia (as M. Basch thinks) or in Corinth (as I think). She could have been developed by the addition of a third file of oarsmen to the two files of oarsmen of the Boeotian-type 120-oared ship (i.e. roughly 30+30+30 a side). The Boeotian sixty-a-side ship seems to have been superseded before it could be given a name. But the two-level system reappears in later centuries in ships with twenty-five and fifteen men a side. These types did not need new names since they were fifty and thirty-oared ships, which already had names, 'pentecontor' and 'triacontor'. However, the new three-level ship did need a new name, and was called 'trieres'. There are plainly two possible ways in which this name could be interpreted. It could refer either to the three levels at which the oarsmen sat, or to the three files of oarsmen on each side of the ship.

Although the Italians in the 15th and 16th centuries used the names *triremi*, *quadriremi*, *quinqueremi* to describe galleys with three, four and five files of oarsmen on each side, there has from the first in modern times been an assumption that the name trieres referred to three levels of oarsmen, an unfortunate assumption because it creates grave difficulties, indeed disbelief, when the names of the later types are considered, the *tetrereis*, *pentereis* and

hexereis built at Syracuse, and the still larger types built by Alexander's successors up to the monster tesseraconteres of Ptolemy Philopator. If trieres means a ship of three levels of oars, tesseraconteres means a ship with forty levels. But this is absurd. The absurdity was resolved, correctly by supposing that the names did not refer to the levels, incorrectly by proceeding to the false conclusion that none of them had more than one level of oarsmen.

Renaissance scholars, curious about the ancient warships, the Greek trieres and the Roman quadrireme and quinquereme, could see in Rome: (i) Trajan's oared three-level undecked flagship on the Column; (ii) the relief, now vanished, which was the original of the dal Pozzo drawing depicting the bow section of a three-level oared warship; and probably also (iii) the relief now at Aquila in Italy showing the stern section of a similar ship. Nevertheless, there were also to be seen in Italian waters galleys which the Venetians called trieremi, quadriremi, quinqueremi with three, four and five files of oarsmen on each side at one level. In the earlier type of galleys *alla sensile* three oarsmen sat on each of many benches on each side of the ship, each oarsman pulling his own 9 m long oar. Later in the *scaloccio* types gangs of three, four and five men together pulled massive 15 m oars. Naturally these were claimed to be the lineal descendants of the ancient Greek and Roman warships, all of which were accordingly, they thought, pulled by oars at one level.

Sir Henry Savile, tutor in Greek to Queen Elizabeth of England, protested against these claims as going against the ancient literature and "the ancient portraytures remaining yet to be scene". The literature he was thinking of probably included the passage (1704) in Aristophanes *Frogs*, where an oarsman is said to have made wind and worse in the face of a *thalamax*, a slang word for *thalamios*, the oarsman who sat in the hold. He noted too that there was no lineal descent from ancient to modern galley since Zosimus in the 5th century AD had said that the building of *trierika ploia* had long been forgotten in his day.

The view Savile represented, that of the scholars, was challenged by, among others, Lazar de Baif, the French ambassador to the Venetian Republic who claimed that a three-level trieres implied a four-level quadrireme and so on *ad absurdum*. The "ancient portraytures" were just wrong. A more formidable challenge was added in 1737 by the commander of Louis XIV's galleys, Barras de la Penne: a three-level oared ship must necessarily have been pulled by oars differing in length, and a synchronised stroke in such a ship would have been impossible.

The battle lines were thus drawn for the next two centuries. The scholars' case was much strengthened by the discovery on the Acropolis at Athens of the Lenormant relief, apparently showing the midships section of an oared ship with oars at three levels, of which the dal Pozzo drawing's original and the Aquila relief might well depict the bow and stern, all three representations being on the same scale. The new relief was confidently dated to the end of the fifth century BC.

In 1861/2 a full-scale reconstruction of a Roman trireme was built on the

Seine at Clichy on Napoleon III's orders. It was a disastrous failure. The scholars were discomfited and the arguments were renewed for a one-level trieres using one or other of the Venetian oarsystems. However, by now the excavation of the Zea shipsheds by Dragatzes revealed the maximum dimension of the trieres (36 m long and 5.5 m broad), and inscriptions showed that the oarsmen numbered 170, and that the oars were no longer than 4.2 m. These hard facts ruled out both the Venetian systems which employed oars very much longer, and although it was possible to design, as Cook and Richardson did, an *alla sensile* galley with oars about the right length, the ship would have had a dangerously low freeboard; and in any case 170 oarsmen could not be accommodated on that system in a ship able to use the Zea shipsheds.

The stalemate was broken in favour of the scholars by meeting the two classical objections to a three-level oared ship. If the meaning of trieres is not a ship of three levels (which it nevertheless was) but a ship with three files of oarsmen on each side (as the word *triremi* meant at Venice), de Baif's objection disappears. The larger ships can be envisaged as having many files of oarsmen (pulling a *scaloccio* i.e. with more than one man to an oar), but at never more than three levels. The more serious practical objection of Barras de la Penne also disappears if it can be shown that a ship of three levels of oars does not need oars differing in length according to the level. My model in 1941 showed that this was the case.

The removal of these objections opened the way to the use of the literary, epigraphical and archaeological evidence in the design of a three-level oared warship. The consistency of such evidence, when pieced together, is remarkable, but by itself does not make a ship for which the claim can be made that it is either an authentic reconstruction of an Athenian trieres of the 5th/4th century or a workable seaworthy ship. The next step, taken by my colleague John Coates, was to apply to the historical data the laws of physics and the evidence about ancient shipbuilding gathered by the underwater archaeologists. The fact that, when this step is taken, only minimal options are open to the designer has made it reasonable to construct first the Trial piece and the model and now the full-scale ship.

To conclude: the trieres under construction is likely to be authentic in her main features, and therefore provide a valuable illustration for the reader of history and tool for the historian. Sea-trials of her under oar and sail will: (i) prove the authenticity of the design; (ii) give a vivid demonstration of an instrument of seapower in a historically important period; and, more particularly (iii) provide hitherto unavailable details of the performance of the trieres (a) under battle conditions and (b) in naval movements.

John Morrison  
Granhams,  
Great Shelford,  
Cambridge, CB2 5JX.  
England

NAUTICAL ARCHAEOLOGY

1st INTERNATIONAL SYMPOSIUM  
ON  
SHIP CONSTRUCTION IN ANTIQUITY  
PIRAEUS, 30 AUGUST — 1 SEPTEMBER 1985  
PROCEEDINGS

SPONSORED BY THE MINISTRY OF CULTURE

**Published by the Organizing Committee of the Symposium, Athens 1989.**

**Editor: Harry E. Tzalas.**

**Cover design and layout: Yannis Pantzopoulos.**

**© Hellenic Institute for the Preservation of Nautical Tradition, 1989.**