

Some further thoughts on reconstructions, replicas and simulations of ancient boats and ships

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I was very interested to read Sean McGrail's rejoinder to Christer Westerdahl's review of *Building the Trireme* by F. Welsh (Welsh, 1988; McGrail, 1992; Westerdahl, 1992). McGrail has written much on the subject of experimental archaeology in the nautical sphere (e.g., McGrail, 1974, 1986) and his latest comments can be fairly considered a development of the often contentious debate that surrounds both particular projects and the field as a whole. In several places in that note without qualification he is extremely critical of nautical reconstruction projects (McGrail, 1992: 354).

We have learned little about early-boatbuilding and seafaring from the many replicas/reconstructions: a cost effectiveness of almost zero. Many of these projects appear to be aimed at 'learning about oneself' rather than learning about the past.

Whilst many readers of *IJNA*, including myself, might wish to agree with some of the general criticisms raised, it is essential that an alternative view be put before *IJNA* readers. Of specific concern are references to a lack of progress in understanding the development of boatbuilding and the narrowly defined list of acceptable reasons why reconstruction projects should be carried out.

McGrail has propounded the importance of systematic approaches of recording the interpreting of nautical archaeological finds (McGrail, 1987). He describes how features such as the raw materials of which an early vessel was built, and the tools and techniques used to build her, are crucially important attributes of any find. He has also written pre-eminent works, synthesizing our current knowledge of boat- and shipbuilding in particular places and periods (McGrail, 1976, 1981). Clearly this area is one of the fundamental building blocks of the discipline of nautical

archaeology. It is, therefore, particularly hard to reconcile McGrail's previously published work with his statement on the Trireme Project: 'I consider the Trust's approach to research, building and trials has been rigorous'. Leaving aside comments on the actual trials programme it is clear from some of the publications on the Trireme Project (e.g., Welsh, 1988) that the building work was carried out using largely modern technology, and exotic, anachronistic, raw materials from all over the world, such as planking from North America and other timber from sub-Saharan Africa. Thus, as far as the raw materials and shipwrightry work goes, the project cannot be accurately described as 'rigorous', especially in the light of McGrail's own previous statements on the subject (McGrail, 1974: 35–37).

However, this is not to condemn either the Trireme Project or the tremendous contribution of the Trireme Project team to other very important and 'legitimate' areas of nautical archaeology discussed below.

McGrail's blanket condemnation of the lack of advances in our understanding of boat- and shipbuilding through experimental reconstruction work has to be qualified. There are a number of published projects. It is regrettable that many of the Scandinavian experimental reconstructors of ancient vessels have not published detailed accounts of their work in international publications like *IJNA*. However, very significant results have been published in Scandinavia and in the proceedings of various symposia and synthetic papers. Two projects stand out as illustrating the enormous potential of experimental reconstructions to inform us about ancient boatbuilding and related issues: the Roar Ege project, at Roskilde, Denmark (Crumlin-Pedersen, 1986a) and the Arnljot project carried out in

southern Sweden (Johansson & Bill, 1987). Both have produced a number of important published advances in our understanding of the subtleties of early boatbuilding in NW Europe.

To list just one example from each: Crumlin-Pedersen was able to describe in detail the specific types of oak logs from which the planking of the Skuldlev 3 vessel was radially split and hewn (Crumlin-Pedersen, 1986b). He has since been able to use this subtle understanding to highlight how the use of specially long and wide planks in vessels of the Viking period might be interpreted as indicators of high status (1986b: 220). By contrast, the Arnljot project was able to show, in detail, how tools found in local early Viking-period graves could be used to build a reconstruction of a contemporary clinker-built lake boat.

In Britain there had been no 'rigorous' experiments in early boatbuilding until the Ravensbourne project to build an accurate reconstruction of a simple Late-Saxon dugout. A detailed account of the building stage of this project was published immediately (Goodburn & Rednap, 1988), including some initial analysis and criticism of the results and methods used. Further results of the project and the on-going medieval Kentmere boat-replica project have also been published (Goodburn, 1992) and others are in press. After these and two other dugout boatbuilding projects in Britain we can now describe in detail:

- (1) the level of labour investment required to build such small vessels with simple hand tools of the periods concerned;
- (2) the probable size of the work teams that built them;
- (3) the specific types of oak and other trees that were used to build the boats and in general terms the types of extinct landscapes ('treescapes') in which they grew;
- (4) the problems of controlling seasoning at different times of year;
- (5) the trends in hull distortion after building.

Additionally, all the projects led to the re-examination of details of the original finds which had not previously been recorded.

The building of a partial reconstruction (perhaps, a 'simulated hull section') of the Roman Blackfriars boat—for a new Museum of London display on waterfront archaeology—

also provided new information about so-called Romano-Celtic boatbuilding. Although the project was constrained by being a static display which had to be taken apart and lowered down a lift shaft, it was still possible to carry out some serious experimental work. Thus, even this limited project has yielded useful results. Some have already been published and others are in press; for example, we can now reconstruct a series of oak tree types and 'treescapes' which the original builders must have used to build such craft (Goodburn, 1991). The Blackfriars I boat has recently been tree-ring dated to the mid-2nd century AD (Ian Tyers, pers. comm.). As this type of craft must have been fairly numerous, if only as stone-carrying barges to Roman London, we are now able to reconstruct parts of the mid-2nd century landscape of Roman London's hinterland which were totally unknown before (Fig. 1).

The life-sized oak hull section, built largely with appropriate hand tools, has been on display at the Tower Hill Pageant Gallery in London since September 1991. Next to the hull section, through which the visitors walk, are displays on the original find, the port of Roman London and a short video of our experimental woodwork.

The above describe just a few of the published results of experimental projects specifically designed to explore early boatbuilding. However, many other projects have had quite different aims: the Trireme Project, the Årby boat project (Roberts, 1986), the half-scale reconstruction work of Edwin Gifford (Gifford, 1992) and other projects have been primarily aimed at exploring the operation and performance of ancient craft as sailing or rowing 'test beds' rather than experiments in ancient boatbuilding. In this respect, these and many other projects have made very considerable contributions to understanding the use and capabilities of ancient vessels.

Perhaps it would be useful to sum up with a list of potential reasons why reconstructions 'rigorous' and otherwise, will and should, continue to be built:

- (1) to explore early boat- and shipbuilding, dealing with both specific hypothesis-testing and more subtle aspects of research, such as reconstructing the labour investment, skills and woodland resources used to build early craft;

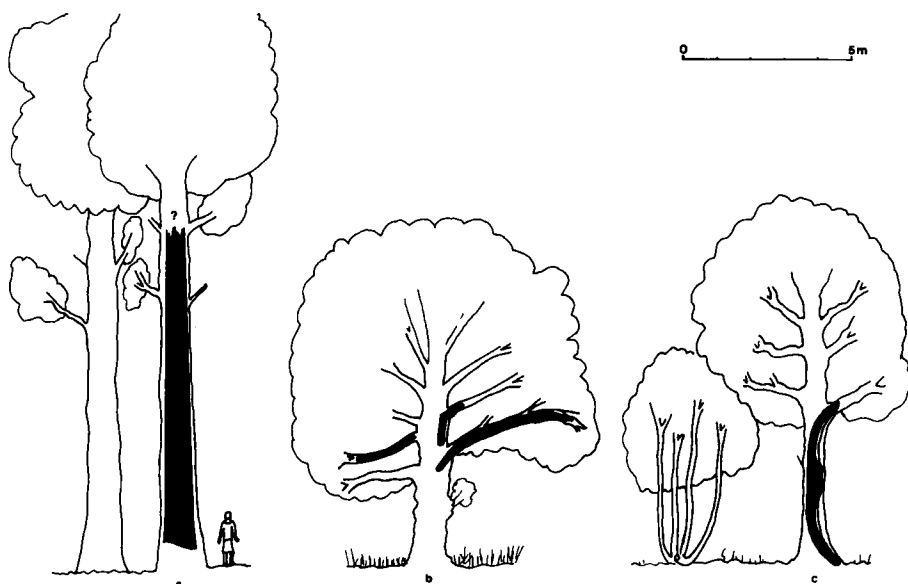


Figure 1. Ancient treescapes reconstructed as a result of a project to build a life-sized hull section of the Roman Blackfriars I boat. (a) The giant 'wildwood oaks' necessary for the hull planking; (b) the open grown 'field oaks' required for the frame, floor and knee timbers; and (c) the managed woodland oak that was used for the replica floor timber.



Figure 2. The Clapton dugout boat replica undergoing familiarization trials on the River Thames using replica oak paddles.

- (2) to explore the performance, handling and rigging of early craft in specific and general terms, often with the use of scale models (Fig. 2);
- (3) to provide three-dimensional displays, mobile or otherwise, videos and publications, educational and entertainment opportunities for a wider public, and draw them into the field of their nautical heritage;
- (4) to provide employment and training for both traditional boatbuilders, archaeologists and others;
- (5) to provide income for museums or local government, and other bodies concerned with protecting, supporting and promoting the nautical past, for instance, through film rights, admission charges and charters;



Figure 3. Archaeologists getting first-hand experience of the early stages of dugout boatbuilding with a hurricane-felled oak in ancient woodland near London.

- (6) to provide 'hands-on' training for archaeology students, established academics and others, in aspects of early technology, thereby improving the quality of future nautical archaeological recording work and research (Fig. 3);
- (7) to provide generally healthy, enjoyable opportunities for recreation and exercise for people with nautical archaeological interests.

It would appear to me that nautical archaeology in its broadest sense is being served by all the above aspects of nautical archaeological reconstruction projects. However, perhaps the most important reason for building reconstructions of early boats and ships is simply to communicate the results and excitement of our work to a wider public outside the limited, dry, two-dimensional academic world of drawings, photographs and text.

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