

Romano-Celtic boats and ships: characteristic features

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Introduction

The Romano-Celtic tradition of ship and boat building was first recognised by Peter Marsden in his 1967 publication of the Blackfriars 1 ship. Subsequently, Detlev Elmers in 1969 set this vessel and the boat from New Guys House, London (Marsden, 1965) into their historical and archaeological context in his seminal publication *Keltischer Schiffbau*. Since that time, there have been further finds of similar boats in the Netherlands (de Weerd, 1978; 1988; Lehmann, 1978), Germany (Höckmann, 1982), Belgium (de Boe, 1977; Marsden, 1976), Northern France (Arnold, 1978), Switzerland (Arnold, 1992), Guernsey (Rule & Monaghan, 1993), and SE Wales (Nayling *et al.*, 1994). Marsden (1994: table 16, fig. 146) has recently published a list of these finds and a distribution map.

Marsden and Ellmers both recognised that this style of ship and boatbuilding was different from that of the early Mediterranean and from that of early northern Europe; as did Basch (1972: 41) in his important analytical paper on building techniques. Marsden drew attention to similarities between his two boat finds and Caesar's description of the boats of the Veneti (Marsden, 1967: 34–5), whilst Ellmers (1969) called this distinctive style of boatbuilding 'Celtic'. In more recent times, some of these finds have been described as 'Gallo-Roman' (Arnold, 1992; Rule & Monaghan, 1993), but 'Romano-Celtic' seems preferable, notwithstanding Parker's criticism (1991), as it more accurately describes the date and place of these finds. The 'Celtic' part of this binomial reflects their spatial distribution which is, by and large, in regions formerly occupied by Celtic-speaking peoples; and the 'Roman' element reflects the temporal distribution, 1st to 4th century AD, and acknowledges the possibility of Roman technological influence.

The time-span of these ships and boats, as known today, is very short—250 to 300 years—and it may be that both earlier and later finds remain to be discovered. Earlier finds might point towards the prehistoric origins of the Romano-Celtic style of building, and later ones might suggest lines of development from that tradition in post-Roman times. Some scholars have seen parallels between these Romano-Celtic vessels and the prehistoric stitched plank boats of the 15th to 8th century BC, from Ferriby, Dover, Caldicot, Brigg & Goldcliff (Basch: 1972, 42; Arnold, 1977; Wright, 1990); whilst others believe that the medieval cog may be in some way descended from the Romano-Celtic tradition (Ellmers, 1994: 34; Runyan, 1994: 47). There is something to be said for both these suggestions, but, until further evidence is excavated, they must remain speculative.

Boatbuilding traditions

A boatbuilding tradition may be defined as 'the perceived style of building generally used in a certain region during a given time range'. As with all classification schemes, building traditions are an abstraction from reality. Not being mass-produced, finds are bound to be unique in some way or another and, in ultimate detail, each forms a class of its own. Only by simplifying complexities of structure and form, and ignoring particular dimensions and details can we claim that, for example, Skuldelev wreck 3 and wreck 6 (Olsen & Crumlin-Pedersen, 1967) are similar and therefore members of the same tradition. Moreover, for the purposes of such classification, these traditions must be given arbitrary start and stop dates, although it is clear that in many cases their earliest and latest phases merge into other traditions. If classification schemes are

too complex, they run the risk of obscuring patterns; if too simple, the classifier may be tempted to drive them too far and drawn unwarranted conclusions. Furthermore, these schemes cannot be static: as further finds are excavated or fresh analytical tools become available, they may need to be revised to fit the facts.

Notwithstanding these drawbacks, classification schemes are useful in maritime studies, both archaeological and ethnographical, because of the wide range of materials and techniques that have been used in the past to build rafts, boats and ships. They have two main advantages:

- (a) superficially disparate data can be ordered and thereby become more readily understandable;
- (b) patterns can be recognised, significant similarities and differences highlighted, and a picture of groupings emerge.

Within one class of artefacts or structures (in this present paper, a particular boatbuilding tradition), it is not necessary that all members have all attributes (features, characteristics) in common. In *polythetic* groups, which are considered to be 'natural' by numerical taxonomists, each member shares with every other member a large number of characteristics in common, but no one characteristic *has* to be possessed by all members, although, of course, it may (Doran & Hodson, 1975: 160). In this respect, such groupings reflect an intuitive understanding of the real world.

The Romano-Celtic tradition

Although much detail is missing from the publications of some of the finds thought to be of the Romano-Celtic tradition, it is possible to identify those characteristics which are generally present in these vessels. Such characteristics are the features by which we recognise, for example, that the Barland's Farm boat (Nayling *et al.*, 1994) is from the same tradition as Blackfriars 1 (Marsden, 1994): they are also the features by which we recognise that early Nordic boats, such as Nydam 2 (Crumlin-Pedersen, 1990) are *not* members of this tradition.

In general terms, without precise definitions and with little attempt at quantification, the

characteristic features of the Romano-Celtic tradition, as known at present, seem to be:

1. Built with non-edge fastened, flush-laid planking.
2. Large nails, driven through treenails and clenched by turning the emerging point through 180 degrees ('hooked'), fasten planking to framework.
3. The framing consists of relatively massive and relatively closely-spaced groups of framing timbers, including floors spanning bottom and bilges, asymmetric timbers spanning the bottom and one side, and side timbers. At any one station, framing units may be composite, but individual timbers are not fastened together (McGrail, 1987: 141–146).
4. Hulls are either (a) flat-bottomed, keel-less and without stems, or (b) full-bodied with stems and a plank-keel.
5. The mast-step, towing and/or sailing, is placed well forward of amidships.

Several of the boats and ships said to be Romano-Celtic have all these features, but some have one or two features missing or the evidence is unclear. Boats and ships in the latter categories are not thereby excluded from this tradition as it is a polythetic grouping. Furthermore, it is the *combination* of these general characteristics (or a significant number of them), and not individual features, that defines this group of vessels as 'Romano-Celtic', for each one of these characteristics, unless defined with extreme precision, may be found in other traditions. For example: 'built with non-edge-fastened, flush-laid planking' appears in the Mediterranean in the 11th-century AD ship from Serçe Limani (Steffy, 1994: 85–91). Moreover, the second Romano-Celtic characteristic listed above—'large nails driven through treenails and clenched by turning the emerging point through 180 degrees ('hooked'), fasten planking to framework'—may be seen in Mediterranean ships of the 1st millennium BC: for example, in the 4th century BC Kyrenia ship (Steffy, 1994: 42–59). In this latter case, a subtle distinction may be made: in the Kyrenia ship these nails fastened framing to planking; whereas in the Romano-Celtic tradition, they fastened planking to framing, i.e., a different building sequence.

Skeleton-built, part-skeleton-built or bottom-built?

Those scholars who have investigated Romano-Celtic vessels in detail have found it difficult to describe their building sequence using the conventional terminology. For example, Basch (1972: 41) concluded that the Blackfriars 1 ship was 'neither skeleton nor shell technique'. Marsden (1994: 79) is also undecided for, although he considers Blackfriars 1 to be 'primarily skeleton-built', he qualifies this by saying that this ship was 'essentially skeleton-built at the sides but the bottom could have been in part shell-built'. In like manner, Margaret Rule believes that the St. Peter Port 1 ship was 'neither wholly skeleton-first, nor shell-first, but a step-wise alternation of the two' (1993: 28). Furthermore, B  at Arnold has concluded that the flat-bottomed Lake Neuch  tel boats, Bevaix & Yverdon 1 & 2, were 'neither based upon the shell-first principle, nor upon skeleton construction but rather upon a bottom-based construction; in other words, the flat bottom constitutes a base for the entire construction' (1992: 120; 1991: 22–3).

Frame-orientated and plank-orientated approaches

The difficulties experienced by Basch, Marsden and Rule in classifying these finds stem from the use of the terms 'shell-built', 'shell-first', 'skeleton-built' and 'skeleton-first', which focuses their analysis onto the precise sequence of construction. These terms are undoubtedly useful archaeological constructs and analytical tools, but not concepts that ancient boat-builders had at the forefront of their minds. On the contrary, *they* had first to work out how to build the required shape of hull (Basch, 1972: 34; Pomey, 1994). Before drawings and models came into common use, boatbuilders had, in some way, to visualize the hull shape of the vessel about to be built. Archaeological and ethnographic evidence, worldwide, suggests that for keel boats this visualization may take two forms: primarily in terms of the planking; or primarily in terms of the framing.

A principal thesis of this paper is that these 'visualization' concepts are to be preferred to the 'sequence' concepts when analyzing and classifying early boat and ship structures (see also Pomey, 1994). The terms 'frame-

orientated' and 'plank-orientated' have demonstrable advantages over 'skeleton-first' and 'shell-first' when describing hulls which do not fully conform to recent practice. 'Frame-orientated' does not imply that a full skeleton (as known in the 19th century) was erected before any planking was undertaken: the framework may be extended as the building proceeds, possibly only just ahead of the next series of strakes; indeed, some frames may not be added until after the planking is completed. Furthermore, the framing timbers at any one station do not necessarily have to be fastened together. The essential feature is that elements of the framing should define and determine the hull shape: in the Basch (1972) terminology, these framing elements are *active*. Correspondingly, 'plank-orientated' does not imply that the entire planking was completed before any framing was added; the framing (*passive*) may be built up in stages, keeping pace with, but *after*, phases of planking: the planking defines and determines the hull shape (Basch, 1972; Pomey, 1994).

Romano-Celtic vessels with keels

In the frame-orientated approach to the building of a keeled vessel (keel or plank-keel), the initial shape of the hull is determined by the keel and posts, and then by other elements (not necessarily the entirety) of the framework or skeleton. The builder visualises the hull in terms of the framing. In the plank-orientated approach, the shape of the hull is initially determined (as in the frame-orientated approach) by keel and posts: after this the hull shape is determined by the planking. The builder visualises the hull in terms of the planking.

From Marsden's analysis of the structure of the round-hulled Blackfriars 1 ship (1994: 76–9), it is clear that the initial shape of her hull was determined by the posts and the plank-keel (the two thicker, central planks—see Fig. 1). As Marsden's building sequence diagram shows, her subsequent hull shape was also determined by framing elements; floors up to the fourth side strake, and, from the fifth to the ninth side strakes, by side timbers (1994: fig. 70). The builder of Blackfriars 1 was 'frame-orientated': this ship was 'frame-based'.

Rule's description of the lower hull of the St. Peter Port 1 ship (1993: 13–28) suggests

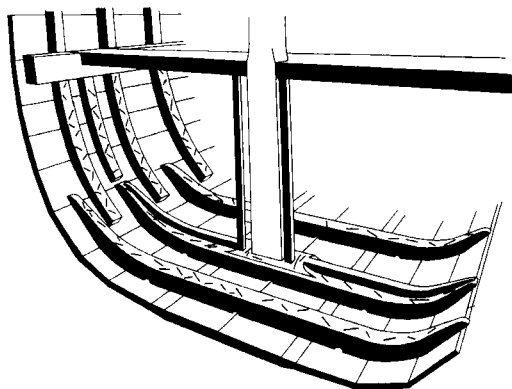


Figure 1. Reconstruction drawing of part of the hull of Blackfriars 1, near the mast-step. The two central bottom planks form the plank-keel. (Drawing: Peter Marsden.)

that three small framing timbers at each end were fitted *after* the planking had been fastened (1993: 27, fig. 14, stages 13 and 15), and thus the shape of these six floors had to be made to conform to the planking, which, in the 'sequence' terminology, would introduce a 'shell-first' element into the building sequence. However, if the evidence is examined from the boatbuilder's view of how the shape of this rounded hull was determined, it is clear that these six timbers (which extend over only 2.5 m, that is approximately 10% of the overall length) had no influence on hull shape, for they were fitted after the run of the planking had been fixed and the lower hull shape determined by the posts, the plank-keel composed of three thicker central planks (Fig. 2) and some (all?) of the other 34 floor timbers. Other evidence (1993: fig. 14, stage 16) suggests that the shape of the upper hull was determined by side timbers. Like the

builder of Blackfriars 1, the builder of St. Peter Port 1 was 'frame-orientated': this ship was 'frame-based'.

Romano-Celtic keel-less boats

The truly flat-bottomed boats in this Romano-Celtic tradition—those without keels—are difficult to analyse in terms of 'shell' and 'skeleton' sequences of building. It is possible to gain some insight, however, by once again asking how did the builder visualise his boat—was he plank- or frame-orientated?

As Arnold (1991) has suggested, the initial shape of such hulls comes from the shape of the bottom planking which is obtained by placing shaped planks of equal thickness, alongside one another. At this stage the floor timbers conform to the shape of the bottom planking and merely bind it together. The starting point for the side planking is also the bottom—the position in space of the outer edges of the bottom. The angle at which this side-planking lies to the bottom may, however, be determined in one of two ways: if the builder is frame-orientated, that angle will be determined by the uprising elements of the framing; on the other hand, if the builder is plank-orientated, that angle will be determined by a bevel worked on the outer edges of the bottom, and/or on the lower edges of the lowest side strakes. In the special case of flat-bottomed boats with transition strakes (*iles*; chine-girders), the shape of the lowest part of the sides may be determined by the uprising element of this strake, as visualised by a plank-orientated builder; or this transition strake may be shaped to conform to the uprising elements of the framing by a frame-orientated builder. This analysis may be extended to higher side strakes.

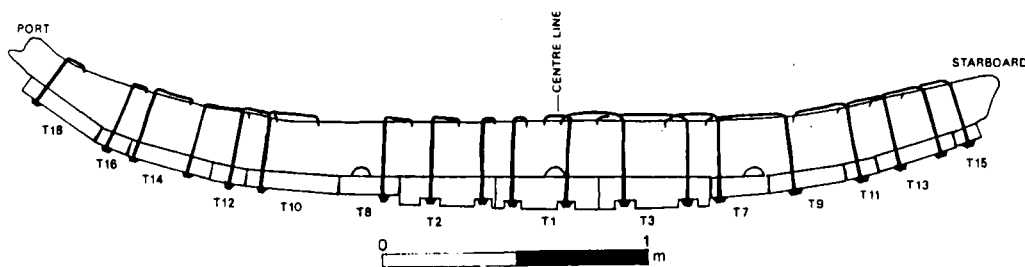


Figure 2. Reconstruction of the transverse section of the lower hull of the St. Peter Port 1 ship, at the station by floor timber T42. Planks T2, T1 and T3 form the plank-keel. (Drawing: Margaret Rule.)

It is suggested, then, that ancient builders visualised the shape of their flat-bottomed boats as a combination of two elements: initially bottom-based; and then either plank or frame determined. The 19th-century boat from Tredunnoc on the River Usk, SE Wales, may be quoted as an example of this dual approach. The hull of this flat-bottomed canal barge was initially bottom-based, but after the first side strake had been fitted, her builder adopted the frame-orientated approach, and the shape of the upper hull was determined by the knees (McGrail & Parry, 1991). The published data on those boats of the Romano-Celtic tradition which are keel-less and have flat bottoms are, in most cases, not sufficiently detailed for their boatbuilders' orientation to be determined, but it may be that, like the builders of the flat-bottomed barge from Tredunnoc, they were frame-orientated. Perhaps the excavators of these boats would now publish their own analyses?

Vessels in other traditions

These visualisation concepts may also prove useful in the analysis of hull structures from other traditions. For example, the hull of the 4th-century BC Kyrenia ship (Steffy, 1994: 42–59) was visualized by her builder in terms of the planking, whilst the 11th century AD Serge Limani ship (Steffy, 1994: 85–91) was visualized in terms of the framing. On the other hand, the builder of the 7th-century AD Yassi Ada 2 ship, with a 'transitional' structure (Steffy, 1994: 80–3), and the builder of the 20th-century South Vietnamese ship noted by Basch (1972: 31–4), both had a dual approach: in terms of the planking to the turn of the bilge; beyond that, in terms of the framing.

Certain 17th-century round-hulled Dutch ships were evidently built by temporarily clamping their flush-laid planking together, then inserting the framework and permanently fastening the planking to it (Maarleveld, 1994). It is difficult to describe these hulls in the 'sequence' terminology. However, in the 'shape visualization' terminology advocated in this paper, we can say that the builders of these vessels were clearly plank-orientated. Although this planking was not fastened together but was fastened to the framing, the shape of the hull was derived from the planking.

Functional sub-groups within the Romano-Celtic tradition

There are a number of technological differences between individual boats and ships of the Romano-Celtic tradition (McGrail, 1981a: 23–4). Such variability may be due to differences in function or in operating environment, or to changes over time, or it may indicate regional groupings. The evidence at present available suggests that there are two sub-groups within this tradition which differ in their operating environment. On the one hand, in sub-group A, are the lake, river and canal boats such as Bevaix, Zwammerdam and Pommeroeul (McGrail, 1981a: 23); and on the other hand there are the sea-going vessels of sub-group B, such as Blackfriars 1 and St. Peter Port 1 (Marsden, 1994; Rule and Monaghan, 1993).

These two sub-groups differ in four respects:

1. Hull shape in transverse section:
Sub-group A is flat-bottomed with flared or vertical sides; sub-group B has a full form with rounded sides.
2. Builder's visualisation of shape:
A, a dual approach: first bottom-based and then probably frame- or possibly plank-orientated (the published evidence is not clear on this point); B is frame-orientated.
3. Structural elements:
A is keel-less and without end posts; whereas B has both keel and posts. It may be relevant in this context to note that the prehistoric round-hulled Ferriby stitched boats had plank-keels (Wright, 1990), whereas the Brigg 'raft', of 'lidless box' shape, was keel-less (McGrail, 1981b); possibly a pointer to the origins of the two Romano-Celtic sub-groups?
4. Propulsion:
A by paddle, pole, oar or tow, and possibly by sail in winds from the stern sector; B by oar and by a sailing rig (a lugsail?) which probably enabled them to sail 'by-and-large'.

The Barland's Farm boat

Post-excavation work on the 3rd-century AD Barland's Farm boat from SE Wales, is still underway (Nayling *et al.*, 1994), but it is already clear that this boat has features which identify it as a member of the Romano-Celtic

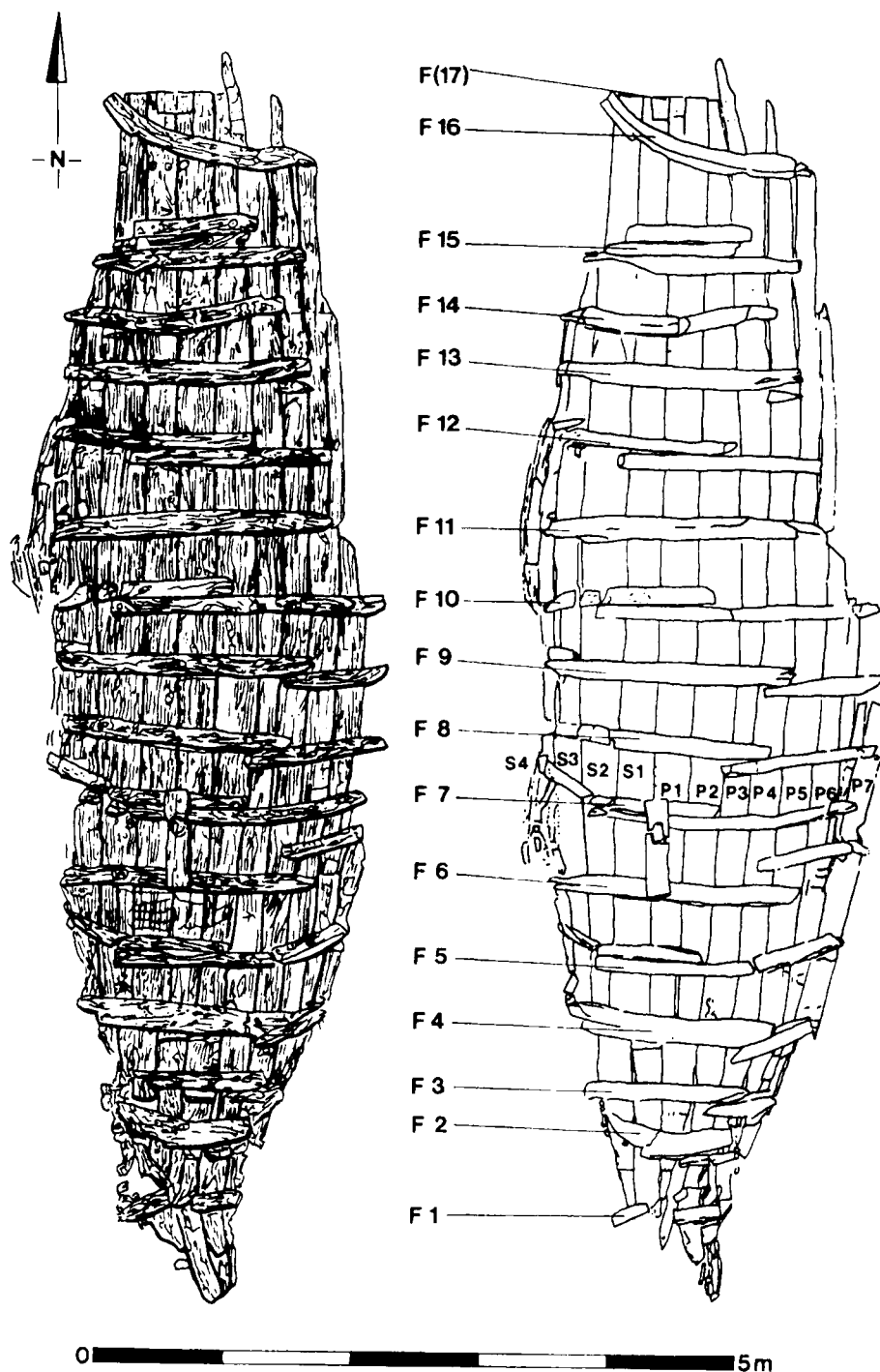


Figure 3. Plan of the Barland's Farm boat derived from photogrammetry and field drawings. Planks S1 and P1 form the plank-keel. (Drawing: Glamorgan Gwent Archaeological Trust.)

tradition (Fig. 3). Her builder was undoubtedly frame-orientated and she was frame-based: large iron nails fasten the planking to relatively massive and closely-spaced framing; her mast-step is about one-third her overall length from forward; and she has posts and a plank-keel. These last two features, and other characteristics, place her in sub-group B, with Blackfriars 1 and the St. Peter Port ship. She may not have been fully seagoing, but it seems likely that she was an estuary boat, capable of voyages between Wales and England in appropriate weather conditions, and of using the

tides to go up and down the many rivers that entered the Severn Estuary.

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