The Brigg Raft Re-excavated

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I INTRODUCTION

Although water transport must have been an important element of life in prehistoric Britain, it does not feature prominently in the archaeological record. A number of dugout canoes can be attributed to this period (McGrail, forthcoming survey) and there is a solitary report of a possible skin boat from a site near the mouth of the River Ancholme in north Lincolnshire. Remains of other boat types were unknown until the discovery by E. V. and C. W. Wright of the first Ferriby boat in 1937.

Subsequently, fragments of two other boats were found nearby, and between 1946 and 1963 these three boats were excavated from the banks of the Humber at North Ferriby. (National Grid Reference: SE991252.)

These finds significantly added to our knowledge of prehistoric vessels for they were planked boats of considerable size. Although originally tentatively dated to the Iron Age, no earlier than 500 BC, subsequent radiocarbon dates and more recent research, indicate that they should probably be dated to the second millennium B.C. in radiocarbon years. They are the oldest known planked boats in north west Europe, and are thus of fundamental importance in the history of boatbuilding techniques and in economic studies of prehistoric Britain and Europe.

The remains of the first two Ferriby boats are now in the National Maritime Museum; boat 1 being in a fragmentary state; boat 2, still with some recognisable features stabilised by an epoxy resin mixture. Ferriby 3 is under conservation treatment at Hull Museum. E. V. Wright has published drawings and detailed descriptions of all three boats, and their general characteristics may be summarised as follows. Their massive oak planks are 'sown' together by bindings of yew, the stitching passing over a moss caulking capped by longitudinal laths. Integral with each plank are several cleats cut in the solid, and transverse timbers pass through holes in these cleats thus linking the planks laterally. When found, boat 2 consisted of one bottom plank; boats 1 and 3 have bottom planks and fragments of a side strake.

Interpretation of some features of these fragmentary boats proved difficult, and hypotheses as to their original full shape and their possible use, even more so. E. V. Wright had early realised that complementary evidence might be obtained from the so-called Brigg 'raft', a wooden structure which appeared from a late nineteenth century report, to have features comparable with those of the Ferriby boats. He therefore urged the National Maritime Museum to re-excavate this 'raft' as part of a research programme on prehistoric craft.

II HISTORY OF THE 'RAFT'

The Brigg 'raft' was exposed in 1888 by workmen digging for clay near Coal Dyke End between the Old River Ancholme and the New Cut, one mile to the north west of Brigg (Figure 1). Her position was some 500 metres from the 1886 find spot (SE 997074) of the better known dugout canoe, and approximately 110 metres north of the wooden trackway (SE 992075, SE 993075) exposed in 1884 and again in 1933. Thus the 'raft' has an importance not restricted to nautical archaeology: the combined evidence from the trackway, dugout, and 'raft' sites should shed considerable light on the prehistory of the Ancholme valley.

The primary source for the 'raft' is a report by Thropp, the County Surveyor at Lincoln, which describes the find and gives a drawing of a boat-shaped outline in plan of a five plank structure with a regular pattern of transverse timbers and cleats, ten to a plank. The length overall was given as 40 feet (12.19 metres), with a maximum beam of 9 feet (2.74 metres). (Figure 2). Writing some twenty years after the discovery, the Rev. Alfred Hunt, vicar of Welton, near Lincoln, decided that the structure was a 'Viking Raft or Pontoon Bridge made to rise and fall with the tide', and he was sufficiently confident to identify the builder as Egil Skallagrimsson and the launching date as 937 AD. Hunt's account of the 'raft' appears to rely heavily on Thropp, but he does add that after being exposed to view, the 'raft' was 'again covered up with soil, and is still there now, December 1907.'

In 1958 Smith published two papers in which he concluded on the basis of pollen analysis, that the trackway could be dated to the Bronze Age/Iron Age transition, and the dugout and 'raft' to the Iron Age. Subsequently the Cambridge Radiocarbon Research Laboratory issued two dates: Q 771\(^1\) of wood collected in 1933 from the 'level of prehistoric trackway', giving a date of 602 ± 120 B.C.; and Q 781\(^2\) of wood collected in 1952 said to be from the dugout, giving a date of 834 ± 100 B.C. Neither of these dates can be considered definitive.

Thropp did not state when the 'raft' was found, and Hunt and subsequent writers have given the year as 1886, doubtless on the grounds that Thropp's report was published in 1887. A review in Lincolnshire Notes and Queries\(^3\) makes it clear however that the journal containing Thropp's paper, although nominally 1887, was not published until 1889. Thropp's drawing is in fact dated May 1888 - possibly the editor delayed the journal to accept 'hot' news from Brigg. This 1888 date for the discovery of the 'raft' is confirmed by entries in several North Lincolnshire newspapers for that year. The Hull and Lincolnshire Times for 25 February 1888 refers to 'Another interesting discovery . . . during the past few days . . . a number of regularly placed planks . . . evidently form part of a boat or of a pontoon or a bridge . . . . The same paper in an issue dated 25 June 1888 describes a visit by the Lincoln and Nottingham Architectural and Archaeological Society to see the 'raft' on 15 June 1888. Thus the 'raft' must have been exposed for at least four months of changing environment from winter to summer weather.

The Hull and Lincolnshire Times for 26 May 1888 mentions that Mr. S. Cole has made a 'capital model of the interesting object' for the Earl of Yarborough. There are two small models in Lincoln Museum, unrecorded, but evidently from the same models of the 'raft'. Old photographs show the 'raft' only partly exposed (Figure 3), and from this it seems clear that the clay diggers approached the 'raft' from the east. Lincoln Museum has another unrecorded object which is undoubtedly a cleat from the raft, probably all that has survived of that 'half . . . taken up as well as could be done, and preserved most carefully by Mr. Samuel Cole'.\(^4\)

This cleat is now being conserved by the National Maritime Museum.

III THE EXCAVATION

The site of the 'raft' (SE 9920763) is now owned, most appropriately, by the Glenford Boat Club, and in early 1973 they readily agreed to the National Maritime Museum's proposals for excavation. After brick making finished in this area, the site was used as a municipal rubbish tip, and subsequently more fill was added by the Boat Club to produce a level surface for their hoisted-out boats and their club buildings. On the assumption that the edge of the river bank had remained constant over the years, the 'raft' could be expected to be 2 metres below the present surface. A preliminary excavation was carried out in October
1973 with the aims of relocating the ‘raft’ and of taking samples for identification and radiocarbon analysis and for assessment of the wood’s degradation. Trenches were excavated at right angles to the estimated longitudinal axis of the ‘raft’, and in the second trench portions of two adjacent planks were revealed at the expected depth, on the reported alignment, and with recognisable ‘raft’ features. The find spot was fixed, samples taken, and the trench backfilled.

The main excavation took place from April to June 1974. An area 15 metres by 6 metres was first marked out, based on the furthest-on and furthest-back positions of the 1973 find spot. The twentieth-century and Victorian fill was mechanically removed down to 1.5 m below the surface; excavation by hand then revealed the sand which marked where polythene sheets had been spread over the 1973 find. The geophysical team from the Ancient Monuments Laboratory carried out a resistivity survey within this trench, the aim being to detect the extremities of the ‘raft’ so that an accurate inner trench could be excavated which could be spanned transversely by available planking. They were working in marginal conditions of wet clay, and anomalies could not be detected by an on-site plot of their readings, but an indication of the find’s extent was obtained after plotting their data at the Ancient Monuments Laboratory.

Excavation within an inner trench of 12 m x 3 m revealed a regular pattern of cleat tops. The fill was removed until the surface of the planks could be seen, but leaving a thin layer of clay as a buffer against environmental changes. Work was done from scaffolding platforms spanning the inner trench (Plate I), using trowels and wooden spatulas and then gentle water jets and paint brushes to clean the wood so that maximum information could be recorded in situ, but not to the point where this cleaning caused loss of evidence. A simple matrix identification system was adopted, the planks being numbered successively from the south west, and the cleat rows from the north west: thus cleat 53 was the third cleat on the fifth plank. Detached fragments were recorded by grid and by reference to the nearest cleat, and then lifted and bagged.

Those parts of the ‘raft’ being worked on were kept wet by hand sprays; any wood allowed to dry would have quickly cracked and distorted. Excavated parts not being worked were covered with sodden plastic foam and a layer of polythene. On completion of daily work the whole area of exposed wood was covered with this foam and polythene wrap. Covering and uncovering the wood in this manner could by itself cause surface erosion of the softer areas and so these changes were kept to a minimum, and then done with extreme care. A 14 x 40 foot greenhouse-type plastic tent was used to protect the site from rain, and to reduce the drying effect of strong winds. Until the inner trench was widened the tent could be distorted just sufficiently to straddle the trench and the working platforms.

Plate I  The 1974 Excavation, looking westwards towards the New River Ancholme.
— National Maritime Museum and Glenford Boat Club.

IV DESCRIPTION OF THE FIND

The excavated area was recorded by photography, by 1:10 scale drawings, by photogrammetry, and in detailed notes. The Department of Photogrammetry and Surveying of University College, London, subsequently produced the drawing and the contour plot shown in Figures 4 and 5, from the vertical stereopair photographs they took on site.

Damage had been caused to the find by careless nineteenth century back-filling with stones. Some cleats had become detached from their plank although still apparently in position: this was probably caused by differential shrinkage during the four months exposure in 1888. The edges of the planks were found to be very soft, and the thinner sections of wood have retained hairline cracks. The more central parts of the planks, where the cross section is up to 5 cms thick, are much firmer and apparently relatively strong. The planks are split halves of oak (Quercus) logs, and they had predictably shrunk most
in the tangential plane. Thus, as can be seen in Plate II, the planks were excavated with gaps between them, the surviving caulking or luting of moss being now mixed with the clay fill between the-planking. The stitching itself appears to have survived only inside the holes. The few transverse oak (Quercus) timbers and longitudinal laths of hazel (Corylus) which have survived are in a degraded state.

Comparison of fig. 2, the 1888 drawing, with fig. 4, by University College London reveals two significant differences: the 1974 outline shape is not so boat-like as Thropp’s; and the narrow sixth plank was never recorded by Thropp. These discrepancies diminish confidence in Thropp’s account.

About 60% of the wood reported in 1888 was uncovered in 1974. The majority of this being a five plank section of 29 cleats plus a sixth plank without cleats. To the south east of the sixth row of cleats only minor fragments were found, but these included two pieces in the eastern corner of the trench which by measurement coincide with the tenth row of cleats recorded by Thropp. The ‘raft’ was lying on clay, on a slope from a north west height of 1.010 metres above O.D. to 0.744 metres by the sixth row of cleats. The mean height of the tenth row fragments was 0.793 metres above O.D.: they were lying on the buried surface, and had not been disturbed by the Victorian extraction of cleat rows 7, 8 and 9, cleat 56 and the remainder of row 10. Large holes of varying shape were found through the planking in four places. In one of these a short hazel (Corylus) stake of round cross section had been driven 11 cms into the clay below. Comparison with a photograph taken in 1888 shows that at least one of these holes was made by the Victorians.

The numerous stitch holes surviving in the planking are shown on Fig. 4: more have been found since this photogrammetric drawing was made. Measurement of a small sample of these holes gives their mean diameter as just under one cm; due to normal differential shrinkage they are in fact elliptical with their minor axis across the plank. There is a line of holes on the outer edge of both outer planks (planks 1 and 6) suggesting that further elements were once attached here. The N.W. ends of the planks are not well preserved, and it has not yet been determined whether the original structure ended there. The cleats are of fairly standard size and at a reasonably consistent interval though not as regular as Thropp’s drawing indicates. The cleats of row six and those on plank five are much better preserved than the remainder.

V RECOVERING THE ‘RAFT’

The problem was to devise a method of lifting the timber without damage, and yet permit the maximum retrieval of environmental evidence from the clay immediately under the ‘raft’. Experiments with detached fragments showed that the suction of the clay was less than had been feared. Fingers could release the fragments leaving a relatively unmarked clay, but finger pressure seriously damaged the softer parts of the wood. Cutting horizontally through the

Plate II The method of identification. This is cleat 11, the first cleat on the first plank; the triangle points to the N.W., thus all photographs can be orientated. Note also the white arrows pointing to the sewing holes, and the separation between the planks caused by shrinkage.

The scales are centimetric.

Fig. 4  The 'raft' drawn photogrammetrically.
  — University College, London.
Fig. 5 A photogrammetric contour plot of the 'raft'.
- University College, London.
clay at a depth of 3-5 cms caused a reaction in the wood which sprang clear of the clay; lifting the ‘raft’ on a clay base by hand or by mechanical means was thus not possible. The method finally adopted was to slide a double thickness of heavy duty polythene between the ‘raft’ and the clay, and then to slide the polythene plus ‘raft’ onto an adjacent wooden pallet which was then manhandled from the trench. The ‘raft’ was lifted in sections, natural breaks in the planking being used whenever possible. A section consisted of either a length of a single plank or parts of adjacent planks. Thus a representative selection of contiguous parts was extracted, with parts maintained in their original spatial relationship; for example, the clay/caulkling mix was retained in position between two planks. Factors which were considered when planning the maximum size which could be recovered as a single unit were: the total weight that could be lifted out of the trench; the size of the trailer to be used for road transport; the access to the treatment centre and the dimensions of the present and future conservation tanks at Greenwich. In the event, the distance the polythene could be pulled under the ‘raft’ against increasing friction proved to be the limiting factor, and the maximum units removed were a 2.5 metres length of two cleats on one plank, and a 1.5 metres square consisting of three adjacent cleats on different planks. Loose fragments were secured to their parent unit by plastic netting. Sodden plastic foam was then packed around the wood, and the whole parcelled into a watertight bag secured to its pallet by giant staples and more plastic netting. The pallets were built into a three tier framework on the waiting haulage trailer, and taken to Greenwich where they were immersed in a water storage tank, and the plastic bags split so that the wood would remain waterlogged.

VI ENVIRONMENTAL EVIDENCE

Immediately each section of ‘raft’ was lifted, samples were taken from the buried surface which consisted of clay with reeds. A subsidiary trench was excavated beneath the original position of planks one and two. The dark bluish-grey clay (10BG4/1) on which the boat was lying extended downwards for c. 90 cms (approximately to Ordnance Datum); below this was a bluish-black clay (10BG2/1). Rock was encountered at c. 1.25 metres below the ‘raft’ (c. 0.350 metres below Ordnance Datum). Two monolith samples were taken from this deep trench.

Some two metres beyond the north west end of the ‘raft’ a further trench was excavated to expose a section in and below the eastern face of the river bank. Above the dark bluish-grey clay in this section was a thin layer of peat at c. 1.6 metres above O.D. i.e. some 70 cms above the ‘raft’. This peat layer was also evident in the main trench sections from approximately north of the ‘raft’ through east to south. It is visible in roughly the same position in Hunt’s photograph of the 1888 excavation. Parts of this layer were unconsolidated and in places it had irregular intrusions from above and below. An upper peat was reported prevalent in the area in the late nineteenth century.¹⁶

Plate III  The N.W. end of the Brigg ‘raft’.
— National Maritime Museum and Glanford Boat Club.

¹⁶
The excavation was extended on all sides and below the level of the 'raft'. The surrounding 1888 trench visible in the Hunt photograph was encountered at the north west end. Otherwise, apart from a hazel branch and some fragmentary wood, no further artificial or environmental evidence was recovered.

VII POST-EXCAVATION RESEARCH

The final description of the 'raft' will be an integration of all the records made on site with the evidence arising from the detailed examination of the timber now being undertaken at Greenwich. Evidence is being sought for the criteria used in antiquity to select wood for various parts of the 'raft'; for the methods used to convert logs into structural members; for the required methods of construction; and for the prints and shadows of missing fittings which may help us to deduce more about the original full form of the 'raft'. If this form can be established, then hydrostatic calculations may indicate what sort of loads this structure could safely carry. It is anticipated that further research will include the experimental building of small sections of the 'raft', and in collaboration with E. V. Wright the Ferryby remains and records will be compared with those from Ferryby. In the longer term, the Brig 'raft' will follow the Gravennie boat through the conservation plant at Greenwich and, like her, will in due course be re-assembled.

VIII INTERPRETATION

A full interpretation of the 'raft' and her ancient environment is not yet possible. A preliminary interpretation may be summed under three headings:

What is the 'raft'?

It is a sewn wooden structure with a system of caulking or luting designed to make it watertight. This luting, and the relatively complicated cleat and transverse timbers system, make it unlikely that this was simply a raft, but the topsides of this floatable structure remain for the present conjectural. Although known in the literature since 1888 as a raft, it now appears that the Lincolnshire archaeologists who saw the remains on 15 June 1888 believed her to be a boat. A contemporary review17 had this to say about Thropp's paper: '... a description of the so-called "raft" at Briggg, which is unquestionably not a raft at all, but a flat bottomed boat, as was fully decided, under competent guidance, by the Society last summer, ...'. Who was the competent guide? Certainly not Thropp. Possibly Atkinson, the Engineer to the Anholme Commissioners whose descriptions of the Brig trackway18 and of the Brigg dugout19 show him to have been a competent observer of things both archaeological and nautical.

Boat this may well be, but further research and much lateral thinking are required before hypotheses on her original shape and her possible uses can be formulated.

When was the 'raft' in use?

Stratigraphic and provisional radiocarbon evidence suggest a date in the range 700 to 500 B.C.

Where was the 'raft' abandoned?

Preliminary analysis of the environmental evidence suggests that the Anholme region in the mid first millennium B.C. was a shallow lake or creek open to the Humber estuary.

Research on the evidence from the Brig 'raft' excavation will increase our knowledge of prehistoric North Lincolnshire. Further knowledge could be gained by the re-location and excavation of the Brig track, the site of which may now be determined more accurately by reference to the position of the 'raft'; it appears at present to be free of buildings.

ACKNOWLEDGEMENT:

The excavation was made possible by the enthusiastic co-operation of the Glenford Boat Club, not least by the facilities they afforded the excavation team on site. The Club have generously given the remains of the 'raft' to the National Maritime Museum for public display after research and conservation.

Several local people helped with their recollections of the Island Carr area, especially Mr. Bob Lidgett of Wrawby who worked at the brickyard for many years, as his father did before him. My thanks are also due to E. V. Wright for advice on the Ferryby boats and encouragement on the Brig project; to Philip Holdsworth who was Site Supervisor during the preliminary and main excavations, and to the other members of the team; and to the environmental and physical scientists currently working on material from the excavation.

FOOTNOTES

1 Sheppard, T., 'Roman remains in North Lincolnshire', Transactions of the East Riding Antiquarian Society, 25, 1926, p.171.
8 Wright, E. V., op. cit., 1972 (Note 2), p.3.
18 Q77. Radiocarbon, 1960, p.70.
19 Q78. Radiocarbon, 1961, p.73.
21 Thropp, J., op. cit., 1887 (Note 8), p.95.
22 Hunt, A., op. cit., 1907/8 (Note 9).
23 Wylie, W. M., op. cit., 1884 (Note 7), p.112.
24 Atkinson, A., Unpublished MS letter to John Evans, dated 7 March 1884, now in the archives of the Anholme Internal Drainage Board.
26 Wylie, W. M., op. cit., 1884 (Note 7).
27 Atkinson, A., op. cit., 1887 (Note 6).
Fig. 1  North Lincolnshire and the Humber.
Based on Ordnance Survey maps, with H.M.S.O. permission
Fig. 2 The Brigg 'raft' drawn by J. Thropp 1888. This reproduction is not to the original scale.

— Associated Architectural Societies Reports and Papers.

Fig. 3 A contemporary model of the 'raft'. The scale is centimetric.

— City Museum, Lincoln.