

Travelling by water: A chronology of prehistoric boat archaeology/mobility in England

Mark Dunkley, English Heritage

Introduction

On a clear day, it is possible for one to see the coast of France from Deal, east of Dover, to Hythe, west of Folkestone. The light also plays a part, for visibility for those viewing south-east England from the Continent will be better because of the position of the sun. As the most recent increase in sea levels approached current levels at the start of the Neolithic period, it is not hard to imagine our ancestors looking north from Nord-Pas-de-Calais and marvelling at those who had the wherewithal to cross the ocean.

This paper presents a rapid survey of the range and chronology of prehistoric watercraft as they relate to England, based upon key archaeological discoveries. Significant vessel types are identified irrespective of the original environment they navigated, and gaps in our understanding are noted. It is not intended to set out a comprehensive review of known craft or archaeological sites nor is it a synthesis of very early British maritime history but it does address vessels used on inland waters, coastal waters and the open sea, as well as those vessels now abandoned in coastal areas. It includes vessels that are buried under the ground where reclamation or some other process has caused a former waterway to be covered by dry land: many of the most significant early boats and ships have been discovered on land rather than at sea.

Above all, this paper seeks to present watercraft as a *means* of mobility and to draw attention to such craft in the study of movement, migration and trade throughout prehistory. The opportunities for mobility presented by watercraft enabled our ancestors to undertake riverine, estuarine, coastal and oceanic passage.

Watercraft remains, including their cargoes, provide important information about social, economic and political circumstances at the time of their build, use or loss. It is therefore important to remember that objective assessments of evidential, historical, aesthetic and communal values associated with vessel remains can assist in articulating their special interest and informing conservation management.

(Pre-)Historical Overview

Early Prehistoric (500,000 – 4000 BC)

It is believed that Palaeolithic watercraft in North-West Europe was most likely limited to the use of log or hide floats and/or rafts in inland waters, particularly as there is no evidence for the waterborne movement of peoples between the British landmass and Continental Europe during pre-Holocene interglacial periods (*i.e.* before c. 12,000 BP).

Given that the settlement of the Inner Hebrides and Ireland during the 9th millennium BP, for example, would have been impossible without an effective means of water

transport, it is easy to speculate on the development of water transport during the early Prehistoric period. Such speculation is widespread and some commentators have even suggested that the first boat, as opposed to a log 'raft', may have simply been a log hollowed out by disease. However, there is parallel evidence of early 'boat'-building capabilities in the form of paddles dated to the 10th - 5th millennia BP in northern Europe, particularly from areas surrounding the Baltic Sea (Burov 1996). In every case, paddles appear much earlier than logboats in the same areas thus giving rise to the likelihood that other vessels must have been utilised which, Lanting (1997) has argued, were almost certainly skin- or barkboats.

The clearest evidence for boat-based mobility in the early prehistoric period derives from **Alta**, northern Norway, in the form of rock carvings. Recently re-assessed to date from the late 7th millennium BP (Gjerde 2010), the art shows a culture adept at boat building (**Figure 1**). Small fishing boats appear from the earliest drawings onward with later drawings showing larger boats, some carrying up to 30 people and being equipped with elaborate, animal-shaped decorations on bow and stern (which may be interpreted as the predecessor to figureheads).

In his thesis, Gjerde (2010) argues that the rock art of northern Norway acts as geographical references to the hunter-fisher-gatherer landscape from the deliberate choice of the rock art site to the placing of the rock art on the actual rock surface.

Archeological evidence for such craft is incredibly rare: worked reindeer antlers from the area Schleswig-Holstein in northern Germany, which may have been used as frames on skinboats, have been dated to the Ahrensburg. This nomadic culture extended from western Poland to south east England during the Late Upper Palaeolithic c. 11,500 BP and it is likely that the skinboats would have been limited to use on inland waters associated with reindeer migration. Data compiled by Luukkanen (2009) indicates that the skills needed to build such craft were developed in the tundra or tundra/taiga border zones associated with reindeer territories, first along rivers and coastal areas, before becoming fully adapted to maritime environments in order to hunt marine mammals. Boat-based mobility, therefore, may well have commenced as a response to early subsistence modes (i.e. hunting and artisan fishing) rather than as a means to enable human migration in the late Pleistocene. Such evidence is not yet known in Britain, but the recent discovery of a reindeer carving in Cathole Cave, south Wales, with a confirmed minimum date of 14,505 ± 560 BP (BBC News 2012) hints at comparative skinboat-based hunting across the continent.

However, the separation of the British Isles from the north-west European peninsula at the end of the last Glacial period around 12-13,000 years ago necessitated contact across the English Channel and southern North Sea to be by some form of vessel: multiple-hide boats, perhaps similar to coracles, and basket boats are thought to have been capable of sea voyages at this time. Indeed, Van de Noort (2011: 7) has suggested that as a series of islands may have existed in the southern North Sea basin during the glacial retreat, contact across the wider Channel area may have taken 'the form, for a relatively short period, of short-distance island-hopping rather than sea crossings.' Such 'islands' are likely to have included the Dogger Bank, Leman and Ower Banks and Brown Bank which survive as topographic shoals within the

North Sea basin and Dover Strait area, from which Early Mesolithic artefacts, together with a limited amount of Neolithic material, have been recovered.¹

On the basis of the current evidence, boat-based mobility during the very early Holocene relevant to this paper appears focussed across the Southern Bight area, that is, the area of the southern North Sea between Flanders and the Thames Estuary.

While Western European peoples of the Early Mesolithic were able to burn out large cavities in wood, there is no certainty that objects such as the 4.5m long Perth 'dugout' discovered in the mid-nineteenth century (with a cavity 1.8m long and 0.6m deep) were used for water transport. However, migrations and subsistence economies associated in Mesolithic north-eastern Europe which permitted a shift toward sedentism in places favourable for it seems to have enabled a new development of water transport (Burov 1996).

Logboats (also referred to as 'dugouts' and called 'monoxyls' in many European languages, from the Greek *mono* – single and *xylon* – tree) from the Early/Late Mesolithic transition are known in central north-west Europe, such as those from the Seine valley area south-east of Paris (Bonnin 2000), Pesse in the Netherlands and Hardinxveld-Giessendam also in the Netherlands (Lanting 1998). While the oldest logboats are made from pine (as relicts of the Post-glacial forests), there appears to be a clear shift towards soft and easily workable woods such as lime, alder and poplar/aspens during the Late Mesolithic (Lanting 1997/8: 645). Oak appears to have been exploited only from the Neolithic, most likely reflecting tool adaptation and climate change. However, none of these craft are associated with coastal navigation, rather they appear limited to use on inland waterways, perhaps aligned with traditions associated with faunal migration.

Logboats are well suited to the relatively gentle pace of river travel, though greater effort is clearly needed for control in fast-flowing water and to paddle upstream. Distances of up to 40km downstream during sufficient daylight hours are likely to have been achievable (based on this author's own, if exhausting, experience on the River Wye, Herefordshire).

By the 4th millennium BC logboats were being adapted to include the use of a transom (a vertical board that forms the flat back panel at the stern of a vessel), such as that recorded at Tybrind Vig in southern Denmark (Anderson 1987). This site, lying some 250 m from the present shoreline, once comprised a sheltered inlet/lagoon protected from the open marine environment by a reef or barrier island. Significantly, Pickard and Bonsall (2007) note that the inlet was connected to the sea in the north-west and it may be that this marine connection played some part in enabling logboat development. The additional carrying-capacity afforded to a logboat by a transom may have enabled greater ranges to be achieved and explored thus the transom may have some association with coastal passage and mobility (though Burov (1996) suggests that the skin boats represented in Norwegian Stone Age rock carvings with a direct keel, steep bow and frame with projections provide an

¹ For a summary of archaeological assemblages recovered from the North Sea area, see Peeters, Murphy & Flemming (2009: 22).

indication of the nature of Mesolithic craft and would also have provided a viable means of sea transport).

While the early logboats in Europe are concentrated on the Continental side of the Southern Bight and Dover Strait, the diffusion of construction technologies and use towards the north and west is far from clear. With the exception of a birch-wood paddle recorded at Star Carr, Yorkshire, and a Late Mesolithic / Early Neolithic burial in a partially burnt dugout canoe found at Parkbury, St. Albans in 1988 (Niblett 2001), physical evidence for vessels in the Early Prehistoric period in England remains elusive. As the earliest dated logboats in Ireland are Late Mesolithic / Early Neolithic compared to Early Bronze Age for Britain, Lanting (1997/8) offers a simple, though fiercely contested, observation that British logboats may have developed from those introduced into Ireland during the Neolithic. Although it is probable that dugout canoes were used by Mesolithic peoples as well as log rafts, log boats and bark boats, as yet, there is no direct evidence of their use as watercraft in Britain.

Late Prehistoric (4000 – 54 BC)

Evidence from the North Sea shows a consistent sequence of events; a period of marine regression followed by one of transgression. Similar evidence is recorded on the French coast from Picardy to Normandy and Brittany, though the most recent increase in sea levels approached current levels at the start of the Neolithic around 6,000 years ago. Vessels traversing the western seaways were fundamental to the spread of Neolithic farming, funerary and other systems from the Continent during the early part of the Late Prehistoric period. Debate about indigenous or immigrant origins for the Neolithic in Britain was re-opened recently by the identification of a saddle-quern at Maiden Castle, Dorset, which originated in central Normandy (Peacock and Cutler, 2010). The quern is the largest and heaviest Neolithic import yet identified and has led to an examination of the type of boat that crossed the Channel during this early period.

There is evidence of considerable mobility during the Neolithic: for example, the wide distribution of axes from specialised quarries, the movement of pottery from Cornwall into Wessex and cross-Channel contact evidenced by a few Breton axes from Plussulien, Brittany, in the Wessex area. In particular, a concentration of jadeitite axes derived from the Italian Alps and concentrated in the Wessex region are likely to have arrived as a result of exchange, although Sheridan (2007) claims they could equally have been treasured heirlooms of immigrant people. The current *Stepping stones to the Neolithic* research project aims to answer important research questions about the arrival of the Neolithic in and around Britain and Ireland c. 4000 BC arguing that change most likely happened across the western seaways – an arc of sea extending approximately from the Channel Islands in the south, through the Isles of Scilly, the Isle of Man and the Hebrides, around to Orkney in the north.² It is noteworthy that this proposes a shift in contact/migration contrasting with the very early Holocene where evidence is focussed across the Southern Bight area.

Clearly, Neolithic peoples were accomplished seafarers and able to cross the English Channel (which is some 29km at its narrowest point between Dover and Cap Gris-

² *Stepping stones to the Neolithic? Islands, maritime connectivity and the 'western seaways' of Britain, 5000-3500 BC.* http://www.neolithicsteppingstones.org/_/Home.html

Nez). This whole area is shallow and contains a number of dangerous sandbanks in mid-channel which, when combined with strong winds, give rise to dangerous breakers. In addition, seiches (short period oscillations in sea level) may be caused by abrupt changes in meteorological conditions, such as the passage of an intense depression – the English Channel area is frequently affected by east-moving depressions from the North Atlantic Ocean. Persistent strong winds from any quarter can induce a surface current which may exceed the rate of tidal streams through the Strait and thus, when coupled with topographic shoals and seiches would have caused additional dangers for early navigators in whatever type of craft they employed.

Deer skin (inclusive here of elk and moose hides, for simplicity) canoes are known from the reindeer zone, that is from the boreal forest to the sea coasts in the north and are largely associated with riverine mobility. Fastened by various techniques of lashing or sewing, the skin boats may well have been carried at portages in the interior of Eurasia. While the earliest evidence of a skin-covered kayak is dated c. 2000 BP, Luukkanen (2009) claims that the tradition is much older with a convergence on the Arctic north along the great rivers, enabling the development of craft used in the open sea or at the coast for whaling, sealing, and polar dolphin or walrus hunting. The reconstructed skin boat in the **Alta museum** is representative of such craft (**Figure 2**) while a wooden elk head dated ca 5700 BP from Lake Lehtojärvi, North Finland may have been used as a figure-head similar to those depicted on the rock carvings at Alta.

Luukkanen (2009) observes that in reindeer territories, the traditional hunting method was to spear the wild reindeers from small deer skin canoes at a water crossing, on their seasonal migration from the forest to the coast in spring and back to the forest in autumn. Close to the big river estuaries in the north, where dolphins were hunted, similar deer skin boats were probably used.

However, there is **no evidence of large-scale mobility or migration in skin (or birch bark for that matter) boats** during the later prehistoric period, and no evidence for their use in maritime contexts in southern Europe (though it is reported that in 1974 a Welsh coracle piloted by one Bernard Thomas of Llechryd crossed the Channel in 13½ hours and Tim Severin's reconstructed Brendan Voyage made such crossings a possibility in antiquity).

This, then, brings us to the type of vessel capable of transporting the Maiden Castle quern across the Channel. In England, **Neolithic dugout canoes are only known from Bexley, Greater London (discovered 1885), Jaywick, Essex (discovered 1936), Whittlesey, Cambridgeshire (discovered 1979) and East Rea, Peterborough (also discovered 1979), although it is not known whether these vessels would have been suitable for offshore navigation.** The Czech *Monoxylon* expeditions of 1995 and 1998 led by Radomír Tichý however, saw the reconstruction of logboats (monoxyls) able to cross 300 km between Aegean Islands and tested on the Atlantic seaboard of Portugal. Remarkably, these logboats were able to navigate in Force 7 to 9 winds (i.e. high winds to strong gales) and 2 m high swells. On the Atlantic coast, as strong surf and wave breakers made it impossible for the monoxyls to land outside protected harbours, the importance of sheltered places like Christchurch Harbour/Hengistbury Head, the Solent estuaries and Poole Harbour in the Neolithic can be appreciated

for the opportunities they presented for cabotage, that is, the practice of trade or navigation along a coast from one inlet or harbour to another.

Navigation across the Channel would not have been easy. The predominant surface current flows from west to east as a rate of about 1 knot, but persistent strong winds can induce a wind-driven current which can exceed the rate of tidal streams. In particular, strong winds from the east can give rise of rough and very rough seas. Indeed, whenever a strong tidal stream is running in the opposite direction to a strong wind, the height and steepness of the waves are increased. The addition of a sail to aid such cross-Channel passage in antiquity is not an unreasonable assumption for in 1953 parts of a logboat (dated to 160 ± 44 AD) were found in the **Lecker Creek, Schleswig-Holstein**, Germany, having traces of a mast foot (Ellmers 2008). Peacock and Cutler (2010) argue that logboats, for which there is evidence, should not be overlooked in favour of skin-boats for which there is none as a means for watercraft mobility in the Neolithic.

At present there is a paucity of evidence for the continued use of logboats during the Early Bronze Age in England, despite evidence of continued cross-Channel contact, such as the Amesbury Archer (whose burial supports interpreters who claim that the diffusion of Beaker Culture pottery was the result of population movement, rather than just the widespread adoption of an artefact type).

Recent work by Mainberger (2008) has audited the large number of Early Bronze Age logboats discovered in southern Germany. One in particular, catalogued as '**Degersee 2004**', comprises the oldest known watercraft in Germany (dated to 3550 ± 15 BP). Importantly, Degersee 2004 exhibits the earliest identified use of a transom in the Bronze Age enabling the craft to have a greater load capacity. The alder transom board fits into a transverse slot in the logboat with moss serving as a caulking material to fill gaps between the slot on the board.

The earliest use of a transom so far identified in England comes from the **Must Farm** assemblage, Cambridgeshire. Here, the Cambridge Archaeological Unit, University of Cambridge, in collaboration with Hanson UK, continue to excavate intact deposits that were lost to rising sea levels over three thousand years ago. Here, bands of waterlain sediments have preserved evidence of prehistoric occupation including remarkable organic remains. Neolithic pavements, Early Bronze Age fence lines and Late Bronze Age pile dwellings represent just a few of the discoveries and, most recently, the investigation of 150m of prehistoric river channel has uncovered nine logboats.

These boats survived deep within the waterlogged sediments of a later Bronze Age / earlier Iron Age watercourse that Knight (2012) has described as once meandering across the southern half of the Flag Fen basin. Coupled with other structures (hurdles, posts, fish-weirs and traps) and artefacts (including swords and spears), the boats provide evidence of a once bustling waterway (Knight 2012), not unlike conditions associated with the **Federsee Bog** in Upper Swabia, some 40 km north of Lake Constance. Here, Mainberger (2008) describes 'a tangle of waters, with areas of open water interconnected by shallow channels, reeds and bogs, and with arable land only on the drumlin islands.' At Must Farm, Knight (2012) describes the watercourse perched within a roddon or levee; 'we can envisage a natural causeway

that flanked a small stream...that made its way through a saturated landscape of marsh and reed swamp. The people who navigated up and down the channel could also have walked along its banks.'

It is unnecessary to emphasise that the availability of watercraft must have been essential in such an environment and Mainberger (2008) has even suggested that the physical vessel might easily have had a function beyond simple use for fishing and transportation, particularly in relation to cosmologies and rituals. Parallels here might easily be drawn in relation to the 'sun boat' on the Nebra sky disc.

As with Degersee 2004, many of the boats in the Must Farm assemblage demonstrate use of a transom and are dated to the early 13th century BC. While these boats can claim the earliest evidence of a transom so far identified in England, they must derive from an earlier tradition of mobility.

One of the Must Farm boats has an integral cleat carved in to its bow end (Figure 3). One interpretation of the use of this cleat is that it provides a suitable place for securing a bowline but comparisons with the Siljan logboat (discovered in 1930 in Telemark, Norway) is that the cleat was most likely used as a handle (Nymoer 2007). The Siljan boat (c.240±70 AD) was discovered in the middle of a system of waterways extending 24 km from the fjord town of Larvik to a broad mountainous region in the north. Combined with place-name evidence, Nymoer (2007) suggests that the cleats on the Siljan boat would have facilitated portage along the watercourses at appropriate places; comparable to the roddons at Must Farm.

However, the most far-reaching innovation in vessel construction at this time was the introduction of plank construction, whereby cut planks were fastened (in most cases, stitched with yew withies) together to form a watertight hull. Although the precise date of this innovation is not known, it has been suggested (although no examples have been found) that simple plank boats may have traversed inland waterways during the Neolithic. The earliest seagoing stitched boats yet discovered are a collection of three Middle Bronze Age vessels discovered at Ferriby, Yorkshire, in 1937 and the Dover Boat discovered in 1992 in addition to fragments from the Test Estuary near Southampton and Kilnsea in the Humber region: these are, in fact, the oldest known examples in the world.

The location of these discoveries, either at the coast or in estuaries, has given rise to the belief that sewn-plank boats were used for oceanic passages, though their suitability for such journeys continues to be debated. The Ferriby craft are thought to have been around 16m long while that at Dover has a minimum length of 9.5m. Such vessels were probably too large to navigate in inland waters and, in the absence of smaller plank-built vessels, it is likely that dugout canoes were utilised in these contexts. In addition to those at Must Farm, only two other dugouts discovered in northern England (the Chetwynd boat, found in Shropshire in 1981, and the Shardlow boat, found in Derbyshire in 1998 with its cargo of sandstone) may represent such craft. However, a 12m long flat-bottomed raft was discovered at Brigg, Lincolnshire, in 1888 which was clearly unsuitable for coastal passage having a freeboard of about only 0.3m.

However, the sea-going capabilities of sewn-plank craft were tested on a half-size replica of the Dover Bronze Age boat, named *Boat 1550 BC*, in May 2012. Unfortunately, sea trials were aborted when the vessel began to take on water. Nevertheless, it is relevant to the new mobilities paradigm that this EU-funded replica was ‘undertaken as a celebration of the technological skills of our Bronze Age ancestors and a symbol of the maritime links that brought together the prehistoric communities of the [cross-channel euroregion]’ (Canterbury Archaeological Trust, news release). Another current project to build a replica a Bronze Age sewn-plank boat comprises collaboration between the University of Exeter and the National Maritime Museum Cornwall. This project intends ‘to find out more about the processes behind building a sewn-plank boat, to examine the seaworthiness of such vessels [and thus determine endurance] and to understand how it was built and sailed.’ At the time of writing, the full scale prehistoric replica has yet to be launched on Falmouth’s waters.

The quantity of imported material discovered during terrestrial archaeological investigation indicates the amount of cross-Channel trade taking place before the Roman conquest in 43 AD. The proximity of the **Dover Boat** to the protected Bronze Age artefact assemblage discovered offshore in **Langdon Bay**, off Kent, provides *in situ* evidence of cross-Channel trade and contact. Material from other protected underwater assemblages off **Salcombe and Moor Sands**, Devon, possibly represents cargo from ocean-going vessels. Here, discovery by the South West Maritime Archaeological Group of an enigmatic *strumento con immanicatura a cannone* (literally, an implement with a cannon-shaped handle; accessioned by the British Museum, registration number: 2005,0503.3) is paralleled only on a class of object peculiar and exclusive to Sicilian late prehistory (Parham, Needham & Palmer 2006). Further finds (though, sadly, no organic boat remains) from off **Southend, Hayling Island** and **Bournemouth**, coupled with a possible Bronze Age assemblage of tin ingots discovered from a protected site at the mouth of the **River Erme** in Devon, indicate complex trade routes having been established by this time; such connections have frequently been deduced from terrestrial discoveries, but are rarely attested directly.

Other than Lecker Creek logboat referred to above, no firm evidence for the use of sails at this time has yet been discovered. As such, it is believed that propulsion was by punting (for rivers) or paddling; it is thought that the Dover Boat could accommodate at least 18 paddlers. A 2m long oak paddle discovered at Canewdon, Essex, in 1983 showed no traces of having been used as an oar or steering oar, suggesting its use was most likely used as a paddle.

Intriguingly, a recent discovery from the **Isles of Scilly** may provide evidence of the earliest image of a masted ship yet found in Britain. A fragment of Late Bronze Age pottery (dated c. 1000-800 BC), found during an excavation in 2012 had a series of lines scratched on to the surface before the object was fired which, if confirmed, appears to represent the hull and mast of a boat pre-dating other known images of this kind of vessel by centuries (*Current Archaeology*, November 2012). Previous representations of masted boats were not known in England until the first century BC and we can only begin to speculate as to what cargo capacity such a vessel may have had and where and how such a vessel may have been built. Indeed, could this fragment of pottery be the earliest representation of a *ship* in England?

Nevertheless, the continued use of plank-built vessels into the Iron Age has not yet been proven. A dugout canoe constructed from a single oak tree but with a fitted transom was discovered in Poole, Dorset, 1964. Here, the added transom demonstrates a method employed to extend a vessel's length; now on display in Poole Museum the vessel is thought to have been capable of carrying up to 18 people. The numerous Iron Age dugouts discovered throughout England in both coastal and inland locations, most recently in 2001 when two 7m-long oak dugouts were found in peat alongside the River Witham at Fiskerton near Lincoln, suggests their widespread use at this time.

By the Late Iron Age ships had evolved in Northern Europe, and Julius Caesar's *Gallic Wars* evidences a range and type of ocean-going vessels. Describing fighting on the Atlantic coast in 56 BC, Caesar comments that the Gauls' ships were rigged differently to Roman ones; that their exceptionally high bows and sterns fitted them for use in heavy seas; while oak hulls allowed them to withstand shock and rough usage. Significantly, Caesar remarks that some of these vessels' timbers comprised beams a foot wide fastened with iron bolts 'as thick as a man's thumb.' Sadly, the remains of such sturdy vessels are not yet known in England despite evidence of cross-Channel trade at places like Hengistbury Head, Dorset, since at least the Neolithic period.

In antiquity a boat's master would have worked by rule of thumb to ensure safe operational freeboard and adequate stability for his craft. McGrail (1989) argued that it is possible that part-cargoes of stone or heavy metals/alloys (such as lead, copper, tin and bronze) found on protected sites off the south coast of England could remain in a vessel as ballast, or as compensatory low stowage factor materials, until another similar consignment was obtained.

Conclusion

Archaeological remains of ships and boats are usually viewed in a functional way and separate from the peoples who fashioned, built, used and moved them to exchange goods and ideas. This paper has shown that from at least the start of the Holocene ships and boats provided the only *means* for peoples to move across the seaways surrounding Britain (that is until Blanchard's Dover to Guînes balloon flight in 1785).

On the basis of current evidence, it would seem that there is a shift in early Holocene boat-based mobility from the Southern Bight area in the east to the western seaways by the Neolithic. While more research is needed to understand this shift in greater detail, it is suggested that the change may, in part, be related to the inundation of the southern North Sea shoals prohibiting previous island-hopping coupled with later migration towards the Cotentin peninsula. The extent to which the technologies of (log)boat construction effected this shift in cross-Channel mobility is not yet understood. By the Bronze Age however, perhaps as a result of plank-built construction, this mobility was unlimited.

Watercraft, whether skin- or logboats, sewn or later trenailed craft, provided a *means* of mobility for our prehistoric ancestors. The typological development of early watercraft is not fully understood, and there are gaps in our understanding. Skin boats, for example, continue to remain absent from the archaeological record

while 'extended' logboats (where rows of planks are attached to the sides of logboats to increase its freeboard enabling Crumlin-Pedersen's so-called *magical transformation* to clinker-built craft) are not yet known in England. Common logboats, that is those types where the finished vessel does not extend beyond the original dimensions of the original tree trunk, are distinguished from expanded craft.

Portage (i.e. the practice of carrying watercraft/cargo over land between river passages) has been evidenced on cleats identified by Nymoer (2008) on the Siljan boat. These parallel those noted by the author at the Must Farm assemblage. While it is easy, in the absence of alternative evidence, to extend comparisons with the *voyageurs* of the North American fur trade (where portages of up to 19km are not uncommon), it is noteworthy that *Tarbert* is a common place name in Scotland and Ireland indicating the site of a portage. The *Canoeist's Guide to Expedition Skills* (Conover 1990) shows that poling, lining, portaging and maneuvering through ice are all possible for the determined traveller: skills not beyond the means of early boat builders.

By the Bronze Age, maritime networks extended along the Atlantic seaboard of Europe and linked to others spanning the Mediterranean though direct evidence of shipping itself is sparse. The Czech *Monoxydon* expeditions demonstrated the possibility of long-distance passage and such mobility may be evidenced by the discoveries made at Salcombe. This assemblage, combined with other limited sites off England's south coast, provide rare chances to view objects in transit; the nearest that archaeology can get to witnessing trade in action rather than trade as inferred from redistributed material. The assemblages contain material of largely northern French in origin, and some of the items from the Langdon Bay site had been cut up to facilitate packing and handling – and perhaps retained a ballast. These sites have the potential to contribute significantly to our understanding of the nature and purpose of Bronze Age exchange, and the extent to which it underpinned social structures and economic growth.

The vessels themselves were well suited to cabotage - the practice of trade or navigation in coastal waters. This necessitated both geographic and navigational knowledge and it is possible that the knowledge of nautical astronomy derived from observations of the relative movements of the sun, moon, planets and stars was built into a tradition to determine direction, time and season.

The relationship of the prehistoric metaphysical importance of watercraft and mobility has not fully been explored in this paper. The 'solar barge' (i.e. the mythological representation of the sun riding in a vessel), as interpreted across the ancient world within Neolithic and Bronze Age petroglyphs, the Nebra sky disc and of course Egyptian sun deities, clearly has a relationship with movement (i.e. the passage of the sun) and navigation. Our association with, and longing for, the sea has a connection with spiritual belief and may explain why, for some, the sea is in their blood. It may be that the ancient mariners hoped to return from voyages in the same way that Ra emerges in the east in his solar barge each morning.

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