Historic England

Ships and Boats: Prehistory to 1840

Introductions to Heritage Assets

Summary

Historic England's Introductions to Heritage Assets (IHAs) are accessible, authoritative, illustrated summaries of what we know about specific types of archaeological site, building, landscape or marine asset. Typically they deal with subjects which lack such a summary. This can either be where the literature is dauntingly voluminous, or alternatively where little has been written. Most often it is the latter, and many IHAs bring understanding of site or building types which are neglected or little understood. Many of these are what might be thought of as 'new heritage', that is they date from after the Second World War.

Principally from the archaeological evidence, this overview identifies and describes pre-Industrial vessels (that is from the earliest times to about 1840) used on inland and coastal waters and the open sea, as well as ones abandoned in coastal areas. It includes vessels buried through reclamation or some other process: many of the most significant early boats and ships have been discovered on land rather than at sea. Vessels and wrecks pre-dating 1840 are relatively rare: the latter comprise just 4 per cent of known sites around the English coast.

This guidance note has been written by Mark Dunkley and edited by Paul Stamper.

It is one is of several guidance documents that can be accessed at
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Front cover
Bronze Age log boat under excavation at
Must Farm, Peterborough.

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Introduction

The receding ice sheets of the last glaciation both isolated and shaped the British Isles about 12-13,000 years ago. Since then, our national story has been inextricably linked to the surrounding seas. Migration, military adventure and commerce over several thousand years, and in recent centuries the evolution of England (and later, Britain) into a major mercantile and naval power, was made possible through the use of ships and boats.

This overview treats vessels (understood here as being simply a general term to describe all kinds of craft designed for transportation on water, such as ships and boats which pre-date 1840) irrespective of the original environment they navigated. Principally from the archaeological evidence, it describes 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. Consideration is also given to vessel remains re-used into another type of asset, such as a building, as well as 'objects' derived from vessels, such as cargo or armament. Ship and boat remains have additional interest and significance because their cargoes provide important information about the social, economic and political circumstances at the time of their build, use or loss, especially when combined with documentary evidence such as port records.

For descriptive purposes, the remains of a vessel which has either sunk or suffered structural damage to the extent where it can no longer function and is buried and/or submerged either in part or in whole will be used synonymously with the term *wreck*.

The number of designated vessels is small, but with some 37,000 known wreck sites and recorded ship losses in the English Territorial Sea (which extends up to 12 nautical miles from the English coast), there is a recognised need for pragmatism in increasing the number of designated sites. This introduction, which in terms of designation interest should be read alongside the selection guide on Ships and Boats, describes vessels from the earliest times to about 1840, when the use of steam tugs and paddle steamers working in estuaries and docks had become relatively common. Wreck sites that pre-date 1840 comprise just 4 per cent of all known and dated sites; the majority of dated sites are post-1914.

As vessels and shipwrecks in archaeological contexts rarely survive in their entirety, both museum exhibits and those vessels forming the National Historic Fleet of the National Register of Historic Vessels (being those vessels of pre-eminent national or regional significance, administered by National Historic Ships UK) and the National Small Boat Register (administered by the National Maritime Museum Cornwall) are included in this narrative.

A complementary guide covers Ships and Boats:1840 to 1950. This includes a section on submarines of all periods.

1 Description and Chronology

A rapid survey of the range and chronology of pre-Industrial vessels in England is presented here based upon key archaeological, technological and historical remains and documentary sources. It identifies significant vessel types, and notes where there are gaps in our understanding: it is not a comprehensive review of known vessels or wreck sites, nor is it a synthesis of British maritime history, for which Friel (2003) and Roger (2004a and b) are recommended.

1.1 Early Prehistoric (500,000-4000 BC)

Speculation about the development of water transport during the early prehistoric period 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.

It is believed that Palaeolithic watercraft in north-west Europe were 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 (that is, before about 10,000 BC). Archaeological opinion remains divided as to whether seaworthy vessels would have been available before the Holocene.

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, meant that contact across the English Channel and southern North Sea required 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.

Although it is probable that dugout canoes were used by Mesolithic peoples as well as log rafts, log boats and bark boats, there is no direct evidence for them in Britain. With the exception of a birch-wood paddle recorded at Star Carr, North Yorkshire, a possible logboat found at Thurlestone, Devon, in the 1920s and a late Mesolithic/early Neolithic burial in a partially burnt dugout canoe found at Parkbury, St. Albans (Hertfordshire) in 1988, physical evidence for vessels in the early prehistoric period remains very scarce (Figure 1).

1.2 Late Prehistoric (4000-54 BC)

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. In England, Neolithic dugout canoes are only known from Bexley, Greater London (discovered 1885), Jaywick, Essex (discovered 1936),

Figure 1
The early prehistoric partially burnt dugout canoe at Parkbury, St Albans, Hertfordshire: the only example of its kind.

© St Albans Museums

Whittlesey, Cambridgeshire (discovered 1979) and East Rea, Peterborough (also discovered 1979), although it is not known whether these vessels would have been capable of offshore navigation.

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) 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 is a collection of three Middle Bronze Age vessels discovered at Ferriby, in the East Riding of 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 earliest vessels known worldwide.

The Ferriby craft is 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 used inland. Two dugouts discovered in northern England (the Chetwynd boat, found in Shropshire in 1981, and the Shardlow boat, found in Derbyshire in 1998) 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 (the distance between the waterline and the lowest point of a vessel where water could come onboard) of about only 0.3m.

The quantity of imported material discovered during archaeological investigation on land indicates the amount of cross-Channel trade taking place before the Roman conquest in 43 AD. The proximity of the Dover Boat to the designated

Figure 2
The Iron Age log boat from Poole, Dorset.
© Borough of Poole Museum Service

Bronze Age artefact assemblage discovered offshore in Langdon Bay, off Kent, suggests cross-Channel trade and contact at that time. Evidence from other designated underwater assemblages at Salcombe (including the only Bronze Age tin ingots found outside the eastern Mediterranean, and a bronze object from Sicily) and Moor Sands, Devon, presumably represents cargo from ocean-going vessels, while finds from off Southend, Hayling Island and Bournemouth are indicative of complex trade routes having been established by the Bronze Age.

As no evidence for the use of sails at this time has yet been discovered, it is assumed 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 blade 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 as a paddle.

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 (the vertical surface forming the stern of a vessel) was discovered in Poole, Dorset, 1964 (Figure 2). 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 various 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.

1.3 Roman (54 BC-AD 410)

In preparation for the second invasion of Britain in 54 BC, Caesar's fleet included transport vessels that had been modified to make them lower and broader than those used in the Mediterranean. These vessels proved to be sturdier and more seaworthy - like the Gallic types noted above – and at least 600 vessels, including warships, were readied: the sight of so many ships was said to have frightened the native defenders.

Presumably the major ports and harbours such as Fishbourne (West Sussex), Dover and London which developed during this period provided services for a range of vessels for inland and overseas trade, as later the Saxon Shore Forts did for Roman naval forces. Archaeological evidence of the particular types of vessels operating in a busy commercial port – local river vessels, fishing boats, seagoing merchant ships and warships – is published in the *Ships of the Port of London* survey (Marsden 1994, 1996).

The recent *Roman Shipwrecks Project*, based at the University of Southampton, has observed that despite the (presumed) vast ship-borne movement of people and merchandise to and from the British Isles during the 460 or so years of Roman contact with Britain, the only Roman vessels discovered in England to date have been three abandoned hulks found in London: the 2nd-century barge at New Guy's House, Bermondsey (discovered 1958; only its north end was excavated. The vessel was scheduled in 1983), the 2nd-century Blackfriars ship 1 (discovered 1962) and a late 3rd-century/early 4th-century ship at County Hall (discovered 1910). Three further vessels of possible Roman origin were recorded in the late 19th and early 20th centuries. *Guy's Hospital Gazette* of January 1889 reported the discovery of 'an old barge' embedded in mud deposits during foundation excavations in Southwark; portions of a 'burnt and mud-buried Roman ship' were discovered in Christchurch Harbour in 1910; while the remains of a vessel was found in 1913 below Storey's Gate, Westminster. None of these vessels were known to survive.

Excavation of the bow and forward part of the 2nd-century 'shallow, open, beamy vessel' discovered within a silted creek of Roman date during foundation excavations at New Guy's House in 1958 demonstrated that it was clearly a river barge, most likely locally built and designed for use in the shallows of the Thames and its tributaries. Although the remainder of the hull was left unexamined, sufficient evidence had been recovered to conclude that the barge had been constructed frame-first (also known as skeleton-built) with planks laid edge-to-edge to form the hull and belonged to a Celtic method of shipbuilding current during the Roman period, termed Romano-Celtic. Since designation in 1983, the vessel has remained buried adjacent to the south-west wing of Guy's Hospital.

The Blackfriars ship 1, another 2nd-century vessel, was also discovered during construction works. Upon discovery, this exhibited flush-laid planking to create a smooth hull (known as carvel-built, in which the side planks are all flush, the edges laid close and caulked to make a smooth finish) and was an unknown type of vessel thought, and later confirmed, to be Romano-Celtic. It is the earliest confirmed seagoing sailing ship yet found in northern Europe and its remains were dispersed between the Museum of London, the Nautical Museums Trust and the Science Museum, London.

The excavation of the partial remains of a 3rd-/4th-century probable 'official Imperial ship' at London's County Hall in 1910 generated great excitement, not least because it was the first identified Roman seagoing vessel found anywhere

Figure 3
Samian ware from the site of a possible late 2nd-century AD Roman shipwreck off Herne Bay, Kent. Such pottery has been dredged up in the area since at least the 18th century.
© Canterbury City Council Museums and Galleries

in the world. The ship appears to have been built in the Mediterranean tradition whereby a shell of flush-laid planks was generally constructed before strengthening frames were added. However, damage, decay and neglect of the material remains coupled with limited detailed recording at the time of discovery prevents a full understanding of the nature of the vessel.

In summary, and although the evidence base is very limited, it appears that the shell-built and plank-sewn vessels of the Late Prehistoric period had been generally replaced by the Roman period by skeleton-built Romano-Celtic ones such as that designated at New Guy's House. Being a river barge, this example was presumably built locally and may reflect a local tradition that influenced an emerging ship-building industry.

The possibility of new discoveries remains high; recoveries of isolated Roman pottery and amphora from around the Isle of Wight and the Goodwin Sands, for example, and a concentration of late 2nd-century Samian pottery from southern Gaul recovered from one location in the Thames Estuary since at least the 18th century, provide evidence of potential wreck sites in the absence of actual vessel remains (Figure 3).

1.4 Post-Roman to Norman Conquest (410 AD-1066)

The Bristol Channel was a major trade route for the import of goods during this period; seaborne contact was extensive with trade centred on the exchange of luxury items from the Mediterranean. However, evidence for pre-Conquest vessels in Britain is sparse; the possible fifth-century boat from Ashby Dell and the sixth-century boat from Snape (both Suffolk, and excavated in the nineteenth-century), the scheduled Sutton Hoo ship burial (Suffolk) and the Graveney Boat, found near Faversham (Kent) may all have been capable of oceanic passage.

Ocean-going vessels of the pre-Conquest period were evolving into three distinct types: the keel

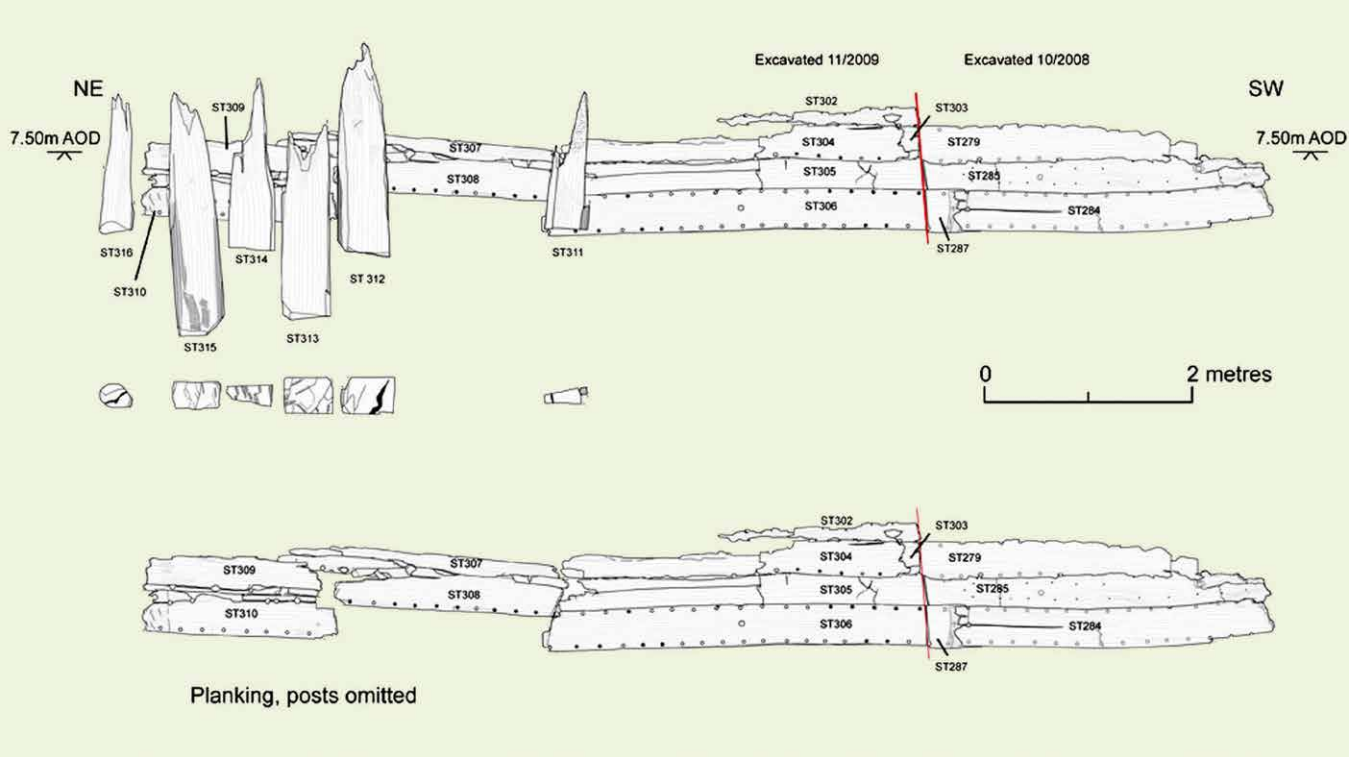

Figure 4
Timbers from a mid 10th-century vessel re-used in a building's wall at Hungate, York.

© York Archaeological Trust

(*ceol* – primarily those of the Anglo-Saxon and Scandinavian tradition), followed later by the cog (a vessel with high sides and comparatively straight stem and stern posts), and the hulk (a vessel with a high stem and stern). These three types bear no developmental relationship with those from the previous period as they all employed a clinker construction technique (in which the lower edge of each side plank overlaps the upper edge of the one below it) but with different ways of building the hull. This is indicative of maritime influences from the North Sea region, and markedly distinct from southern European construction which used flush-laid planking as seen in the Roman ship discovered at County Hall.

Excavated in 1938, the 7th-century Sutton Hoo ship comprised a large double-ended ***ceol*** which had been built clinker-fashion in the Scandinavian tradition, in which the vessel was built up from a keel (the lowest and principal timber of a vessel, extending its entire length) with side planking running roughly horizontally between the stem and stern posts. The vessel represents a huge open boat (27m long) rowed by forty oarsmen and guided through the water by a large steering paddle lashed to the starboard side of the hull. As there was no evidence of a sail, it has been postulated that it may have been more of a royal barge than a practical working ship.

The attack at Portland, Dorset, in 789 marks the beginning of Viking raids in England, and from the 9th century ship-borne Viking raids on London are frequently referred to in the *Anglo-Saxon Chronicle*. Although the 'longship' is the best-known Viking vessel, no example has yet been discovered in England. In 2007 it was reported that an intact Viking vessel had been discovered at Meols, Merseyside, in the 1930s, but the claim has yet to be fully investigated. The remains of a late 9th-century 'Viking fleet' are said to have been identified at Benfleet, Essex, during 19th-century railway works, while a late 9th-century ship burial (determined by the presence and distribution of iron clench-nails) was excavated in 1945 at Balladoole on the Isle of Man.

The Viking incursions precipitated a shipbuilding response in England which has been regarded as the start of a national fleet and, perhaps, the beginning of an indigenous shipbuilding industry. Under the entry for 896, the *Anglo-Saxon Chronicle* records that King Alfred had built a new fleet of sixty-oared warships – suggesting perhaps a standardised design – different from those of the Danes.

An indigenous design may be inferred from timbers excavated in York in 2008 by the York Archaeological Trust. Preliminary investigations indicate that the re-used timbers derive from a clinker-built vessel constructed in the mid 10th century, from timber from south-east England, with wooden fastenings rather than iron clench-nails more usually associated with Scandinavian vessels from this time (Figure 4). These rare timbers, combined with others discovered in London and the south-east, demonstrate a non-Scandinavian tradition of shipbuilding in England at this time.

Dated to the end of the 10th century AD, the Graveney boat, Kent, is another rare example of an Anglo-Saxon clinker-built ***ceol***. Although most of the upper sections and nearly one-third of the stern were missing upon its discovery in 1970, enough material survived (the timbers are currently held in storage by the National Maritime Museum) to demonstrate that the boat was capable of carrying a five-ton cargo with a crew of four. Evidence on board indicated that the vessel was a 'bulk-carrier' and had had contact with the Rhine Valley, perhaps indicative of its ocean-going qualities.

While cogs are recorded in documents from as early as the 9th century, no pre-Conquest examples have yet been located in Britain. Similarly, the earliest documented reference to a *hulk* is from London, about AD 1000, but given that one has never been found, the characteristics of the vessel type have been deduced entirely from iconographic evidence, such as town seals. On the other hand, fragments of several other vessels of the pre-Conquest period have been found in London at waterfront locations, and although they do not show what the vessels themselves looked like, they do all indicate widespread use of clinker construction technique.

At the time of the Norman Conquest the vessels used around the English coasts were clinker-built, having evolved directly from the type found at Sutton Hoo. The Norman invasion fleet of 1066 transported large numbers of men and horses, and the ships had benefited from centuries of constructional refinement; Hutchinson has suggested that by the 11th century shipbuilders had acquired a thorough understanding of the scope and limitations of the materials, the properties of wood, and the behaviour of fastenings and of the performance of hulls in the water.

It is possible that dugout canoes and skin boats were also common at this time and may have been used as ferries, inshore fishing boats and coastal trading vessels. Pre-Conquest dugouts are known from the Thames Valley, Clapton (Essex), Langstone Harbour (Hampshire) and the River Ant (Norfolk), in addition to one recovered off Covehithe (Suffolk) in 1998.

1.5 Medieval and early Tudor (1066-1540)

Maritime trade and warfare continued to be extremely important to England in the Middle Ages: its huge (but dwindling) land possesions in France, along with extensive international trade networks, requiring very considerable fleets.

Clinker-building is generally associated with smaller boats, but during the medieval period very large vessels were built in the keel technique, including twenty English royal war galleys ordered by Edward I in 1294 in preparation for the defence of the coast against the French. However, the emergence of the mercantile Hanseatic League, formed in Lübeck in 1158, influenced the nature of vessel development as the expansion of trade beyond the Baltic and North Sea necessitated the building of bigger ships. Although iconographic evidence suggests

that keels survived until at least the 14th century, they had largely died out when the Hanseatic cog came to prominence in Northern Europe from the 13th to the early 15th centuries.

Extensive documentary evidence, principally from port records which refer to types of seagoing cargo ships as well as isolated recoveries of a 13th-century side-rudder (trawled from Rye Bay in 1983) and a 15th-century sternpost rudder (trawled from Rye Bay in 1987), indicates the size, range and types of vessels within the narrow seas of northern Europe during the medieval period. References to the quantity of cargoes are another useful indication of the size of the larger ships used during this time although no remains of any seagoing vessel from the 11th to the 14th centuries have yet been found in England (although excavations in Parliament Square, London, in 1994, recovered 13th-century hull planking from the lower hull of a vessel built in the cog style).

The wreck of a clinker-built sailing vessel built about 1400 and lost a century later was found in 1970 during excavations near Blackfriars in London. This broad vessel was about 14 m long and its characteristics closely match one of the most common of 14th- and 15th-century types of river transporter, the *shout*. Documentary evidence indicates many other types of vessel were then used on the Thames including *dungboats, chalkboats, farcosts, mangboats and skumers*; little is known about these.

Medieval ship depictions show that from about 1350 the clear divisions between the keel, hulk and cog ship-types were breaking down. In documents, a greater number of specific vessel-types are mentioned including the carrack, which emerges at this time. The carrack was the larger type of European trading vessel of the 14th to the 17th centuries, and was characterised by a rounded hull and high fore- and after-castles. Carracks (possibly developed from the Northern cog or ***cocha*** by Mediterranean shipwrights in the late 13th or early 14th centuries) were the forerunner of the larger three-masted ship which dominated naval architecture until the general introduction of steam propulsion in the mid 19th century.

The wreck of the *Grâce Dieu*, ordered in 1416 and completed in 1418 (and designated in 1974), lies in the River Hamble, Hampshire. This royal warship, the identity of which was confirmed in 1933, which may have been 50m long, and was built in Southampton as an English version of the carrack in that her shipwrights employed the keel-technique for her construction but used three thicknesses of planks. This unique triple-thickness demonstrates how the shipwrights accommodated the challenges of employing clinker-construction for larger vessels; the building accounts record the use of seventeen tons of nails and a thousand beech trees. For comparison, the mid 15th-century clinker-built Newport Ship, discovered in 2002 at the mouth of the River Usk in southern Wales, was at least 25m long and 8m wide.

Northern and southern Europe approached ship construction differently throughout the medieval period. While clinker techniques continued in the north, the planking of ships in southern Europe was flush-laid and fastened end-to-end in the technique called carvel building. Northern Europeans would have had sight of such vessels as Mediterranean merchant vessels regularly visited northern ports from the late 13th century, and southern warships were hired to fight in the north. Documentary evidence points to a *carvel* being built in England in the 1460s, and then adoption of carvel construction in England can be seen in the ship excavated at Roff's Wharf, Woolwich, in 1912. This vessel (believed to be the *Sovereign*, Henry VII's royal ship built in 1488 and rebuilt in 1509) was constructed from re-used timbers from a clinker-built ship.

The *Mary Rose*, built between 1509 and 1511, is celebrated as a high-point in English maritime archaeology: Henry VIII's grand flagship, largely recovered from the Solent in 1982, constitutes the largest vessel discovery from this period anywhere in the world, and is now on public display in Portsmouth. The ship demonstrates the integration of differing construction methods,

for the hull is carvel-planked, although the stern-castle superstructure was lightly planked with overlapping planking (akin to clap-boarding on a building). The *Mary Rose* was also a purpose-built carrack in that it was built with upper deck gunports, and, from about 1536 gunports were added to the main deck, just above the waterline – the most important change for warships and in naval gunnery in the first
half of the 16th century was the development of the lidded gunport, with skeleton construction making it possible to cut rows of openings for guns in the sides of a ship without weakening the hull, something that was impossible in clinker-built vessels. Lidded ports (to keep out the sea) made it possible to place heavier guns lower in the hull of ships without adversely affecting a ship's stability thereby affecting tactics at sea by changing the emphasis of guns from anti-personnel to anti-ship use.

However, the chronology of this advance is still poorly understood. At this time, bronze and iron guns and cannons were being developed which fired stone or iron shot. The *Mary Rose* is the earliest known ship to carry guns fired through purpose-built ports below the weather deck (that is, one that has no overhead protection from the weather); it originally carried 78 and, following a refit in 1536, 91. The *Mary Rose* was lost in 1545 while facing the French during the Battle of the Solent and her remains were designated as a Protected Wreck in 1974. A designated wreck site off the Isle of Lundy in the Bristol Channel is also thought to represent the limited remains of another early Tudor warship, but more research is needed.

Further evidence of late medieval carvel construction may be seen in the 'Axe Boat'. First surveyed in 2002 by the University of Southampton, this 15m-long coastal sailing vessel lies embedded in a bank on the River Axe, Devon, and has been provisionally dated to between 1400 and 1640.

Although shipping had become reasonably international during the early medieval period, the key change in the medieval period was the regular interchange between northern and southern Europe from the 13th century onwards as ships of different regions and shipbuilding traditions rubbed up against each other in harbours all over Europe (and, from 1492, the Americas too). Opportunities for such contacts intensified as the volume of trade and the length of trading voyages increased.

With the exception of the Tudor vessel found in Kent near the River Rother in 1822 (of which no traces now survive), for the whole medieval period the remains of only three merchant vessels are known, all off south-west England; two are almost certainly Iberian. Located (and designated) in 1984, the remains of a probable lightly-armed Spanish merchant vessel were discovered in the approaches to Poole Harbour, Dorset. Following investigation, a total of 750 artefacts have been recovered and, in conjunction with the wreck structure, represents the best example of a late medieval merchantman in the UK. An approximate date of 1520, based on ceramic evidence and hull typology, has been provisionally assigned to the wreck (though the vessel itself may be as early as 1480). In addition, the possible remains of the *St. Anthony* (designated in 1982), a Portuguese carrack which foundered in 1527 during a passage from Lisbon to Antwerp carrying a mixed cargo which included copper and silver ingots, were discovered in Gunwalloe Cove, Cornwall, in 1981, although no hull timbers survive. Finally, a site in the Cattewater Estuary, Plymouth (designated in 1973), is believed to be the remains of an early 16th-century merchantman.

For inland water transport, logboats continued to be used and are known from the Mersey, Kentmere Lake (Cumbria), Giggleswick Tarn (North Yorkshire) and Oak Mere (Cheshire). In addition, a plank-built boat is known from Caldecotte, Buckinghamshire (dated to between the 15th and 17th centuries and excavated by the National Maritime Museum in 1982), while the remains of a substantial clinker-built vessel discovered in 1898 at Kingsteignton, Devon, is thought to have been an undecked early 14th-century working boat designed primarily for river or coastal work (part of this vessel was removed and now survives in Torquay Museum).

Sixteenth-century ship fragments from London show that important changes were taking place amongst smaller vessels, particularly in the type of materials used and in the quality of building. Such changes seem to be consistent with other transformations in shipbuilding of the latter half of the 16th century.

1.6 Mid to late Tudor (1540-1603)

The expansion and development of the royal fleet under Henry VIII was due, in no small part, to the threat England faced from the great Catholic powers of France and the Holy Roman Empire following England's break with Rome in the mid 1530s. Between 1536 and 1547 27 ships were built, rebuilt or bought for the English navy (comprising hulks, galleasses and galleys), and 18 new gun-armed forts and blockhouses were built along the coasts of England and Wales. This constituted the single greatest royal programme of naval expansion hitherto seen, and also involved the creation of royal dockyards at Deptford, Woolwich, Chatham and Portmouth. Further investment in coastal fortifications continued under Elizabeth I, and 61 ships were built and/or rebuilt for the Crown.

War with Spain in 1558 saw the loss of Calais, England's last continental territory, and in the 1560s and 1570s English privateers (vessels authorised by letters of marque to attack foreign shipping) attempted to break into the lucrative Spanish trade from the Americas – acts seen as both illegal and provocative by the Spanish. The subsequent engagements of the Spanish Armada of 1588 have yet to leave any known mark in the English (as opposed to Irish) maritime archaeological record. In the 1590s, most English naval and privateering activity was directed against Spanish shipping routes across the Atlantic. Only two warship wreck sites are known from this period in the UK (discussed in the previous section): the *Mary Rose*, and a site off Alderney, initially thought to be the Elizabethan pinnace – a small vessel, frequently used to take messages from a senior officer to other ships under his command – *Makeshift*. A possible third Elizabethan wreck site is believed to lie off east Kent.

The English galleon – being lower, and more stable than carracks like the *Mary Rose* because of its lower superstructure – was developed during this period as a means to counter the oared galley, a vessel favoured by other European fleets. Developed from oared galleases, the galleon had a low bow with a beakhead projection, a smooth carvel-hull designed for speed and manoeuvrability, three or four masts and heavy guns. By the mid 16th century larger warships commonly had rows of gunports along both sides of the hull, and stand-off gunnery was practised by the English against the Armada ships. However, no such vessels have yet been found in England.

Elizabethan seamanship became renouned. The defeat of the Armada showed clear naval prowess, while increasingly bold voyages of discovery – much vaunted by the Victorians – announced England's emergence as a global nation. Exploration, like Drake's circumnavigation in 1577-80 (in the ***Pelican***, later re-named the *Golden Hind*, the remains of which are believed to be lying in the mud at Deptford), was tied to finding new markets for English goods. Trade was formalised with Russia (1555), Turkey (1581) and Venice (1592). Slave-trading voyages to the Guinea coast and the first English colonies in North America were established in the 1580s, and the founding of the English (later British) East India Company (EIC) in 1599 sought trade with the Far East (as did the Dutch East India Company which was established in 1602 and dissolved in 1795). The size of the English merchant fleet was such that Elizabeth I was able to mobilise 34 royal ships and 192 private ships and privateers to face the 141 ships of the Armada in 1588.

Given the expanding horizons of England's commerce at this time, it is perhaps no surprise that the majority of known and designated wreck sites from the late Tudor period comprise the remains of merchant vessels. A site off Yarmouth, Isle of Wight, appears to be a carrack, probably Spanish and possibly the *Santa Lucia*, lost in 1567 (designated in 1984). Off Teignmouth, Devon, lies the probable remains of a Venetian oared galley, while contemporary designated artefact assemblages lie off Brighton Marina, Dunwich

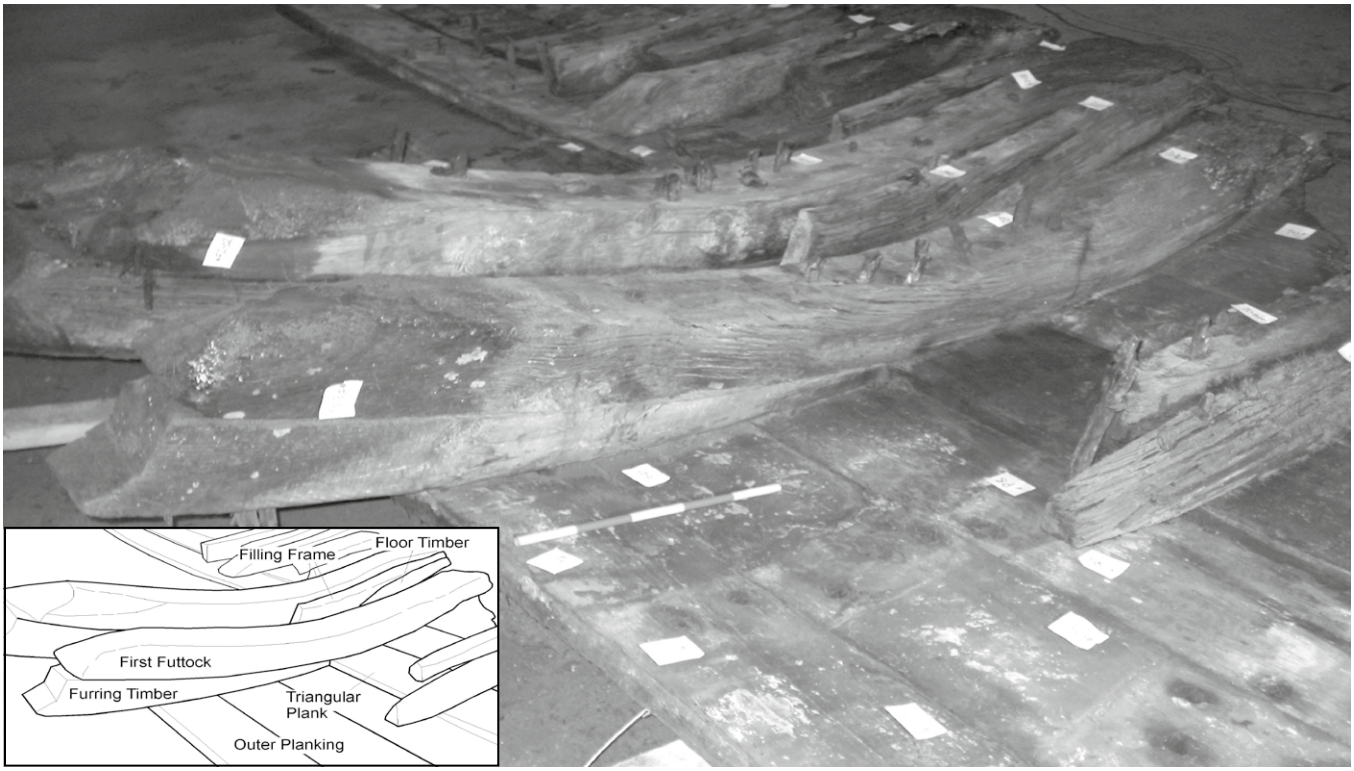

Figure 5
The Thames 'Gresham Ship'. The 'furring' timber provides important evidence of an increase in the beam (width) of the vessel.
© Wessex Archaeology

Bank (Suffolk), the Erme Estuary (Devon) and at Bartholomew Ledges (Isles of Scilly). In the absence of actual vessel structure these four latter sites provided physical evidence of the range and nature of trade during the late Tudor period. Archaeological evidence of hull structure (including unique evidence of its having been rebuilt), cargo and ordnance came with the discovery of the remains of an armed merchant ship in the Thames Estuary in 2003. Subsequently known as the 'Gresham Ship', this extremely rare example of an English-built merchant ship of the period appears on the basis of tree-ring evidence to have been constructed in eastern England soon after 1574 (Figure 5).

1.7 Stuart (1603-1714)

The successes of the Tudor Navy were not matched in the early Stuart period. The effectiveness of the fleet declined through poor investment and corruption during a prolonged period of peace. Poorly executed naval expeditions, such as that in 1620-1 to Africa, usually ended in catastrophe as well as the deaths of thousands of sailors and soldiers through sickness and disease; the siege of La Rochelle (1627) with eighty ships was also a failure.

However, nine new warships, both 'Great Ships' and 'Middling Ships', were built under James I, while the early years of Charles I's reign saw renewed naval ambitions with the royal fleet being in part financed by the unpopular 'Ship Money' tax of 1635. Six ships were financed thereby, including the first three-gun-deck warship *Sovereign of the Seas* of 1637. Rebuilt in 1660, this vessel influenced the future design of later First Rates of 100-guns including the *Britannia* (1682, rebuilt 1719) and *Victory* (launched 1737, wrecked 1744).

The mercantile community relied on its own well-armed vessels to develop new long-distance trading routes. Largely privately-built in yards along the Thames at Blackwall and Deptford (from 1609), vessels of the English East India Company,

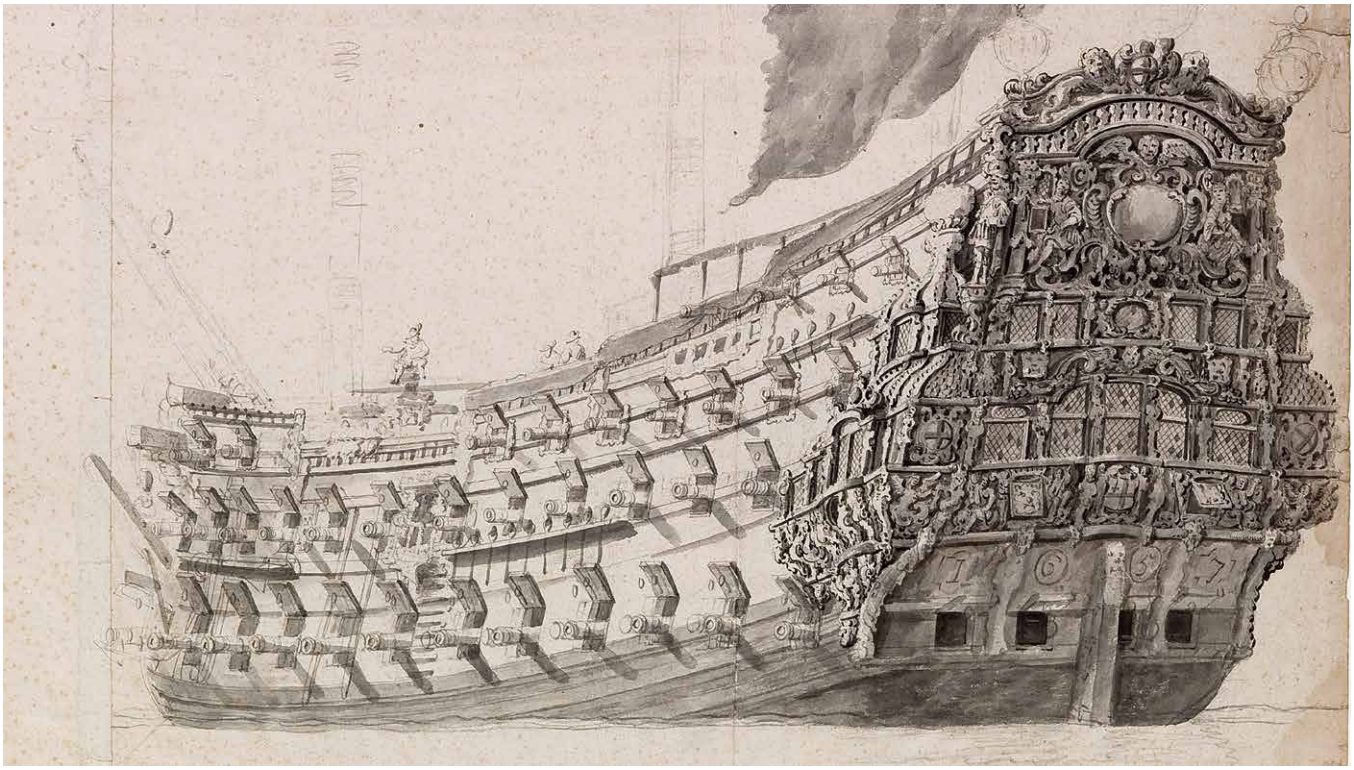

Figure 6
The *London* viewed from the port quarter, by Willem van de Velde, the Younger, 1660-1665
© Atlas Van Stolk, Rotterdam

for example, plied regular routes to the East following early speculative ventures with its own military support in the expectations of profit.

Parliament gained control of the Navy in January 1642, and although the use of the sea was indispensable to both sides during the Civil War, neither was able to fully deny it to the other. During this time, the fleet was continuously occupied in the protection of merchant shipping, provisioning coastal garrisons and patrolling against Royalist privateers. The remains of some vessels from this period are known in Scotland, but none in England.

Following the construction of seven frigates between 1645 and 1647, a Parliamentary Commission for the Admiralty began to order new vessels as the frigates were found to be lacking in 'accommodation for men of war.' The Commission devised the original *Articles of War* and enabled the Navy to convoy merchantmen for the first time. By taking over of responsibility for the safety of merchant vessels at sea, the link between the British Navy and an emergent mercantile empire was forged.

The fact that the Navy had sided with Parliament against the Crown was one of the decisive elements of the Civil War. The *London* (designated in 2008) was constructed in 1654 during a period when the Commonwealth needed to build up a strong navy to ensure its own survival, particularly as England was already engaged in a limited war with France over its right to prevent trade with the Royalist outposts in the Channel Islands, the Isles of Scilly and in Ireland (Figure 6). Quickly recognising the potential of the Navy, Parliament turned the fleet against its commercial rivals, the Dutch.

Throughout the period of the English Civil Wars the Netherlands was securing its position as a powerful commercial rival to England, not least in the Far East through its own East India Company. After the execution of Charles I, the Protectorate

introduced the Navigation Act in 1651 in an attempt to restrict the carriage of English trade to English vessels. The Anglo- Dutch Wars (1652-74) were the direct consequence. During the First Anglo-Dutch War (1652-4) Parliament ordered the building of ten new Second Rate ships (smaller than three-decker First Rate), although only three (including the *London*) were eventually completed. The *London* therefore represents the only known wreck of a ship from the Commonwealth navy. These three ships were an enlargement and a modernisation of the Jacobean 'Great Ship' and influenced the future design of 90-gun Second Rates, such as the *Association* (lost off the Isles of Scilly in 1707 and salvaged following its discovery in 1964).

In 1667 during the Second Anglo-Dutch War (1665-7) the Dutch successfully attacked the naval dockyard at Sheerness in the River Thames, burnt 13 naval vessels in the River Medway and towed away the Fourth Rate *Unity* and First Rate *Royal Charles* (the royal arms from the stern of the *Royal Charles* are displayed in the Rijksmuseum in Amsterdam). The Battle of Solebay (1672) off the Suffolk Coast, which marked the beginning of the Third Anglo- Dutch War (1672-4) and saw the loss of the largest and newest ship in the English fleet, the 100-gun First Rate *Royal James*, was another tactical triumph for the Dutch. The designated *Anne*, lost in the Battle of Beachy Head in 1690, the *Coronation* wrecked in 1691 and possibly the designated wreck in Norman's Bay, off Eastbourne, are the only identified wreck sites of the late 17th century.

By 1706, the Navy had introduced an approved 'establishment' (standardisation) for the dimensions of each rate of warship, intended to fix the design of ships for the foreseeable future. Subsequently, 62 ships were either built or rebuilt such as the designated *Royal Anne*, a Fifth Rate oared frigate built at Woolwich and launched in 1709.

During the War of the Spanish Succession (1702-13), fought in alliance with the Dutch to prevent a union between Spain and France, the Navy suffered two huge losses of life: in 'The Great Storm' of 1703 when many vessels were lost; and when four-fifths of Admiral Sir Cloudesley Shovell's fleet was lost on the Isles of Scilly in 1707 owing to a miscalculation of longitude. These disasters relate to four designated warships: the Third Rates *Stirling Castle, Restoration and Northumberland*, off Kent (1703 losses); and that believed to be the Fourth Rate *Romney* in the Isles of Scilly (the wrecks of the *Association* and fireship *Firebrand* were part of the same fleet lost in 1707).

The connection between the Navy and merchant vessels was forged in the 1640s. English warships undertook operations in the Atlantic, Mediterranean and Caribbean, and the establishment of British naval bases in these areas opened safer markets for the growing merchant fleet. The typical merchant ship of the early 18th century was large and well-armed.

Sites such as the Salcombe Cannon wreck (designated 1997), Devon, and another at West Bay (designated 2005), off Dorset, hint at this type of vessel, while the extensive hull remains and artefacts of a large armed early 17th-century merchantman in the Swash Channel near Poole Harbour (designated 2004), Dorset, provides opportunities for investigation into these types of vessel. The campaigns of the period also brought huge numbers of foreign merchant vessels as prizes, such as the *Schiedam* (designated 1982) – formerly a Dutch *fluit* in the East India service, captured off Gibraltar in 1683. This served in the English fleet as a Sixth Rate and was wrecked off Cornwall in 1684.

By the end of the 17th century, it was not uncommon for East Indiamen of 1,300 tons to be launched into the Thames (for comparison, the 19th-century *Cutty Sark* displaced 921 tons). Mounting up to 70 guns, these vessels allowed the Company to extend its trading posts further and trade in a variety of luxuries. The armed East Indiaman *President*, lost on a homeward voyage in 1684, carried an extremely valuable cargo of spices, indigo, drugs, Indian textiles, 100 tons of pepper, some diamonds and much 'Jewish Treasure of Pearl'. By 1685 the Company had established its own pepper plantations on Sumatra.

As reflected in the text above, maritime histories of the 16th and 17th centuries tend to be dominated by the development of the warship and East Indiaman; everyday and commonplace vessels are overlooked both historically and archaeologically. However, one such example was recorded at Blackfriars in 1969, a clinker-built river vessel, perhaps a lighter. When it sank in about 1670 it was carrying a cargo of bricks, and in its bottom were traces of a previous cargo of coal. Another riverine vessel (the oldest intact vessel of all), Queen Mary's State Barge of 1689, forms part of the National Historic Fleet and is on display at the National Maritime Museum, Greenwich.

1.8 Hanoverian (1714-1837)

The so called 'Blue Water' strategies of British 18th-century foreign policy were designed to avoid terrestrial entanglements: the Royal Navy was already becoming the leading manifestation of British armed might. Trade was the lifeblood of the nation, and it was in overseas trade and overseas colonies that the future of Britain lay. Opponents of the 'Blue Water' strategy claimed the policy was flawed and unrealistic; it was impossible for Britain to concentrate solely on the colonies and ignore continental Europe. By 1740 Britain had been drawn into the War of the Austrian Succession, followed by the Seven Years' War which lasted until 1763.

However, the 25 years from 1714-1739 were the most peaceful of the 18th century. With no defeat in a major engagement since 1690, the naval administration had no cause to change the existing system. All naval shipbuilding was undertaken in the dockyards, and the system of establishments (standards) that had commenced in 1706 became ever more rigid, although a new establishment was adopted in 1719 which laid down almost everything which defined the layout of a hull and structure of a warship. In 1733 proposals were accepted for an increase in the breadth of particular classes of vessels. Of the 95 or so warships built or rebuilt under the 1719 establishment and 1733 proposals, only the wreck of the First Rate *Victory*, launched in 1733, is known (discovered in the English Channel in 2008). Some vessels, such as *Lennox* (launched 1723) and *Dragon* (launched 1736) were sunk as breakwaters during expansion of the dockyards in the mid 1750s (a plan of Sheerness Dockyard of 1755 shows 'sunken ships' placed adjacent to its south-western edge), while others were either rebuilt, hulked, sold, wrecked or broken up and re-used (the Sail Loft at Chatham, for example, is believed to contain timbers dated to the early 18th century).

New proposals in 1741 and 1745 sought to rectify the problem of maintaining the fleet all over the world and in all weather conditions by 'establishing one general and unalterable dimension[s] for a ship of each rank.' Once in service, however, the new ships, although bigger and better armed, were found to sail poorly. Amendments were therefore made to the 1745 'establishment' in 1750, 1752 and 1754. Of the vessels on the ship list for this period, including those captured, the wreck sites of only two are known: the designated Fifth Rate frigate *Assurance*, lost on the Needles, Isle of Wight, in 1753 (designated 1974), and the former French 74-gun *Invincible*, wrecked in the eastern Solent in 1758. The *Invincible* (designated 1980) is important in the development of warships because after her capture by the British in the battle of Finisterre in 1747 it was described as the 'best ship of her class.' Her design was copied in Britain as late as 1796.

In 1755, with the ordering of the *Dublin* class of 74-gun ships, the Admiralty achieved the greatest breakthrough in British naval shipbuilding in the 18th century. Not only were the individual vessels better than any predecessor, but the administration allowed for further improvements. The class was modified in 1756 and again in 1757 and was, in practice, highly successful; it formed part of the fleet that enabled General Wolfe to capture Quebec, and participated in the annihilation of the French fleet in Quiberon Bay. The '74s' set the pace for developments in the other classes of ships of the line, including the 100-gun ***Victory*** (ordered in 1758, launched in 1765 and in active service until 1815). Though not

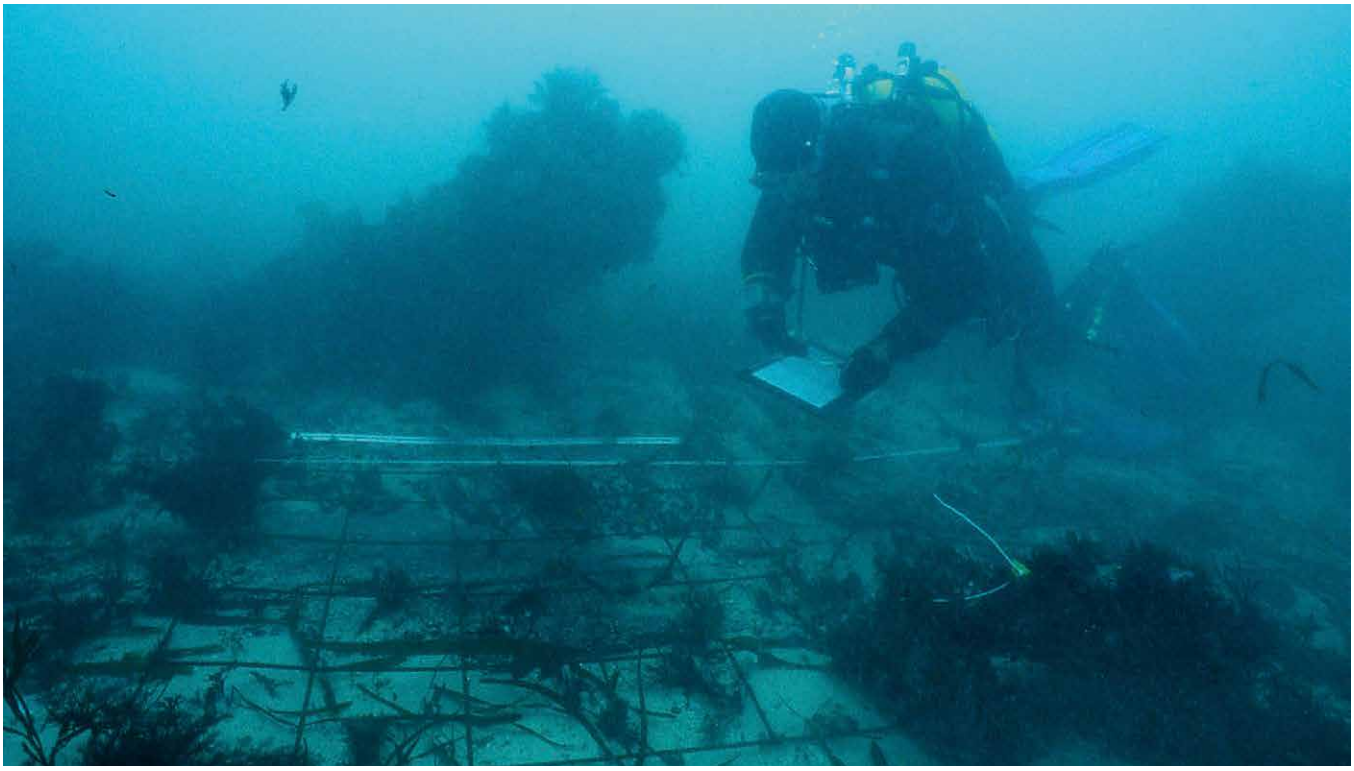

Figure 7
Survey of designated Historic Wreck Site HMS *Colossus* (lost 1798), showing an exposed 18-pound cannon. sticking up from the sea bed to the left of the diver.

© Kevin Camidge, Cornwall and the Isles of Scilly Maritime Archaeological Society

designated owing to her status as the flagship of the Second Sea Lord/Commander-in-Chief Naval Home Command, the *Victory* comprises part of the National Historic Fleet and is on display in Portsmouth Historic Dockyard. Another 100-gun warship, the *Royal George* (built to the 1745 establishment), sank at Spithead in 1782; as she remained a hazard to navigation, much of her hull and ordnance were recovered by 1843.

A period of conservatism, rather than experimentation, followed the end of the Seven Years' War in 1763, with the fleet's backbone being the 74s. By this time, the Navy was thinly spread in guarding colonies in America, the Caribbean and India as well as defending British commerce in almost every ocean. The cheaper 64-gun ship was subsequently developed for convoy escort, patrol and amphibious duties; between 1763 and 1780, 33 of this type (including Nelson's favourite ship, the *Agamemnon*, the remains of which were discovered in 1993 in Maldonado Bay, Uruguay) were ordered compared to just 26 of the 74s.

The Navy was further stretched during the American War of Independence (1775-83); orders for new ships peaked in 1782 and included the designated 74-gun *Colossus* (lost 1798) (Figure 7). By this time, shipbuilding policy was moving towards larger ships influenced by French designs (the *Colossus* was copied from the French *Courageux*, for example). The largest ship of the French Revolutionary Wars was the 120-gun *Caledonia* (ordered 1797, launched 1808, broken up 1875), followed by two First Rates of 110 guns.

The limits of wooden shipbuilding technology were further pushed during the Napoleonic Wars (1793-1815) as timber could only be grown to a finite size and have limited strength; contemporary naval surveyors were sceptical of the possibility of further improvements to British warships. The site of only one vessel of this period is known, the designated Fifth Rate frigate *Pomone* (launched 1805, wrecked 1811 on the Needles off the Isle of Wight). The construction of new ships continued at a reduced rate after 1810

as ship building over the previous four years had all but exhausted both the Treasury and the supply of domestic timber and anyway the French naval threat was much reduced. The frigate *Trincomalee*, launched 1817 (now on display in Hartlepool and part of the National Historic Fleet) is representative of this period, being built in Bombay from teak owing to oak shortages in England.

Although naval power was crucial to the defeat of French ambition during the French Revolutionary and Napoleonic Wars as well as setting the stage for the British Empire, in 1815 many warships were laid up, scrapped or converted into prisons and stores as Britain's navy contracted and set about settling its war debts.

No attempt was made to apply steam power to the battle fleet until 1845. While the Navy's ships remained unchanged in principle from the Elizabethan galleon, naval attitudes to steam power were not just based on conservatism; until the development of the propeller, paddles were the only means of steam-powered propulsion available, and would have been a total liability for a ship of the line. However, the *Comet* (the first commercially operated steamboat in Europe) began operations in 1812 and the Admiralty chartered steam tugs for harbour work from 1821. Two very early steam survivors are the icebreaker *Laplander*, built in 1840 for use in inland waterways, which is now privately operated and forms part of the National Small Boat Register, and the commercially-operated drag-boat *Bertha*, built in 1844 to remove silt from Bridgewater docks, which is now part of the National Historic Fleet.

Experiments in warship design continued although sail remained the preferred means of propulsion. New wooden ships commissioned by the Navy in the early 19th century included a series of two-decked ships, and the fast and weatherly *Vanguard* (launched 1835). Between 1810 and 1840 and as late as 1854, the Admiralty was still experimenting with hull designs for wooden sailing ships (the brig-sloop *Beagle* of Darwinian association, was built in 1820). Features of warships and their ordnance were modified and improved and the frigate *Unicorn*, launched 1824 (now on display in Dundee), is a unique survivor from the transitional period between the wooden and iron steamships. Technical innovation progressed, however, with the steam-driven paddle wheel eventually giving way to the screw propeller for warship propulsion in 1845. As Lavery (1983) has observed, the sailing ship of the line reached the peak of its technology only on the eve of its obsolescence.

While inshore fishing and coasting had been superseded in importance by deep-water cargo and passenger carrying, with whaling following afterwards, a vigorous colonial mercantile marine was thriving. By 1718, the Royal Exchange Assurance Corporation and the London Assurance Company were encouraging hull insurance, and in 1734 a weekly shipping newspaper was published by the owner of Lloyd's coffee house (traditionally, such houses had been the *rendezvous* of shipping brokerage). From 1764, *Lloyd's Register of Shipping* was available, giving details of some 1,500 British merchant ships; this was used by the Admiralty in co-ordinating the convoy system employed during the wars with France.

Between 1700 and 1800, the British merchant fleet had expanded from 3,281 vessels to 20,893 and included a diversity of vessel types not accurately captured through known archaeological remains. New docks, such as London's East India Docks (1810), were opening to accommodate the growing density of merchant shipping. Development of the merchant fleet during the late 18th century was centred on London and the north-eastern yards. The Thames shipbuilders retained the monopoly of building East Indiamen (such as the *Hindostan*, wrecked 1803 off the north Kent coast, the *Earl of Abergavenny*, wrecked 1805 off Dorset, and the designated *Admiral Gardner*, wrecked 1809 off east Kent) while the majority of the large bulk traders were built in yards in Hull, Whitby, Sunderland and Newcastle.

Other yards on the south coast were building vessels like the designated Post Office Packet *Hanover*, built in 1757 to ply between England and Lisbon. With naval vessels the gradual introduction of steam power by the Admiralty

Figure 8
The Dutch East India Company ship *Amsterdam*, grounded near Hastings in 1749.

overlapped with the last decades of sail, and more generally shipyards continued to build sailing vessels throughout the 19th century (the listed *Cutty Sark* was built in 1869) and into the 20th.

Coastal trade during the period is solely represented by the designated wreck at Seaton Carew, Hartlepool. Here, the remains of a locally-built collier-brig (a merchant ship built for coal) were discovered in 1996.

The global nature of maritime trade can be seen in the two designated Dutch East India Company ships *Rooswijk* (1739) and *Amsterdam* (1749) (Figure 8) and a probable late 18th-century Swedish merchant vessel in the Thames Estuary which was carrying a cargo of copper and iron for export to the Indies. Between 1602 and 1796, the Company sent almost a million Europeans to work in the East in 4,785 voyages. In contrast, the rest of Europe combined sent around 880,000 people between 1500 and 1795 while the English East India Company, the nearest commercial rival to the Dutch, sent only 2,690 voyages eastwards.

Throughout history, sea fishing has been an activity that has required a particular way of life, and very specific boats and ships. Despite the recovery via excavation of a wide range of associated remains (such as hooks and the skeletal remains of fish) as well as documentary evidence for boat-based fishing, there is little direct evidence of the vessels being used for catching fish. However, three 19th-century smacks (sailing vessels used for inshore fishing) are recorded by National Historic Ships: the *Boadicea*, a Maldon smack built 1808; the *Katie*, an oyster smack built 1830; and the *William and Emily*, an Essex smack also built 1830.

From 1732 the increasing provision of buoys, beacons and lightvessels (that is, anchored

vessels having the same practical purpose as a lighthouse) assisted safe passage and navigation of the increasing British fleets. Similarly, the growing importance of the preservation of both life and shipping at sea during the 19th century is represented by lifeboats *Zetland* (1802) and *Tyne* (1833) (Figure 9), and the former Spurn (Humber) Light Vessel LV16 (1840) which is now part of the National Historic Fleet.

As in earlier periods, small vernacular craft seemingly do not feature in the archaeological record. One small (but exceptional) vessel is curated as part of the National Historic Fleet: Prince Frederick's State Barge (1732) which was used by the Royal Family until 1849.

One of the first recorded sailing trips entirely for the fun of it was taken by Charles II at Harwich (Essex) in 1666. The British lead in establishing rules and rates for racing yachts saw the introduction of the first recorded sailing match at Cowes in 1788 for a thirty-guinea purse. A small range of leisure craft are recorded by National Historic Ships: the yacht *Peggy* (1789) which is probably one of the first vessels to have been fitted with a sliding keel; the Oxford 1829 racing eight (1828; now on display in Henley-on-Thames) which took part in the first University Boat Race between Oxford and Cambridge Universities; and the *Royal Oak*, a racing four (1812) which forms part of the National Small Boat Register.

Figure 9
The lifeboat *Tyne* (1833), incorporated into a Grade II-listed commemorative monument in South Shields (South Tyneside).
© A Hubbard

2 Further Reading

Good introductions to the subject include P Brown, *Britain's Historic Ships* (2009); S Cant, *From Log-boats to U-Boats* (2013); V Fenwick and A Gale, *Historic Shipwrecks: Discovered, Protected and Investigated* (1998); I Friel, *Maritime History of Britain and Ireland* (2003); R A Gould, *Archaeology and the Social History of Ships* (2000); P Kemp, *The Oxford Companion to Ships and the Sea* (1998); NAM Roger, *The Safeguard of the Sea: A Naval History of Britain, 660-1649* (2004a); NAM Roger, *The Command of the Ocean: A Naval History of Britain, 1649-1815* (2004b); and P Marsden, *Ships and Shipwrecks* (1997). Most known wrecks around the British Isles are listed in R Larn and B Larn, *Shipwreck Index of the British Isles* (1995-2000). For fixtures and fittings see M McCarthy, *Ships' Fastenings: from Sewn Boat to Steamship* (2005).

In terms of period overviews, the following are some of the more recent and valuable studies.

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P Marsden, *Ships of the Port of London: Twelfth to Seventeenth Centuries AD* (1996)

S Rose, *The Medieval Sea* (2007)

2.3 Post-Medieval

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2.4 Websites

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http://nationalhistoricships.org.uk National Historic Ships UK. The website includes databases on Registered Historic Ships and the National Historic Fleet and information about the selection process. [Site accessed: July 2016]

http://thesaurus.historicengland.org.uk/ Historic England Thesaurus (for Maritime Craft Types). [Site accessed: July 2016]

http://archaeologydataservice.ac.uk/archives/view/marinemcd_eh_2008/index.cfm Online project archives for selecting marine sites that are sufficiently archaeologically important to warrant special measures, particularly the Selection Guide: Boats & Ships in Archaeological Contexts. [Site accessed: July 2016]

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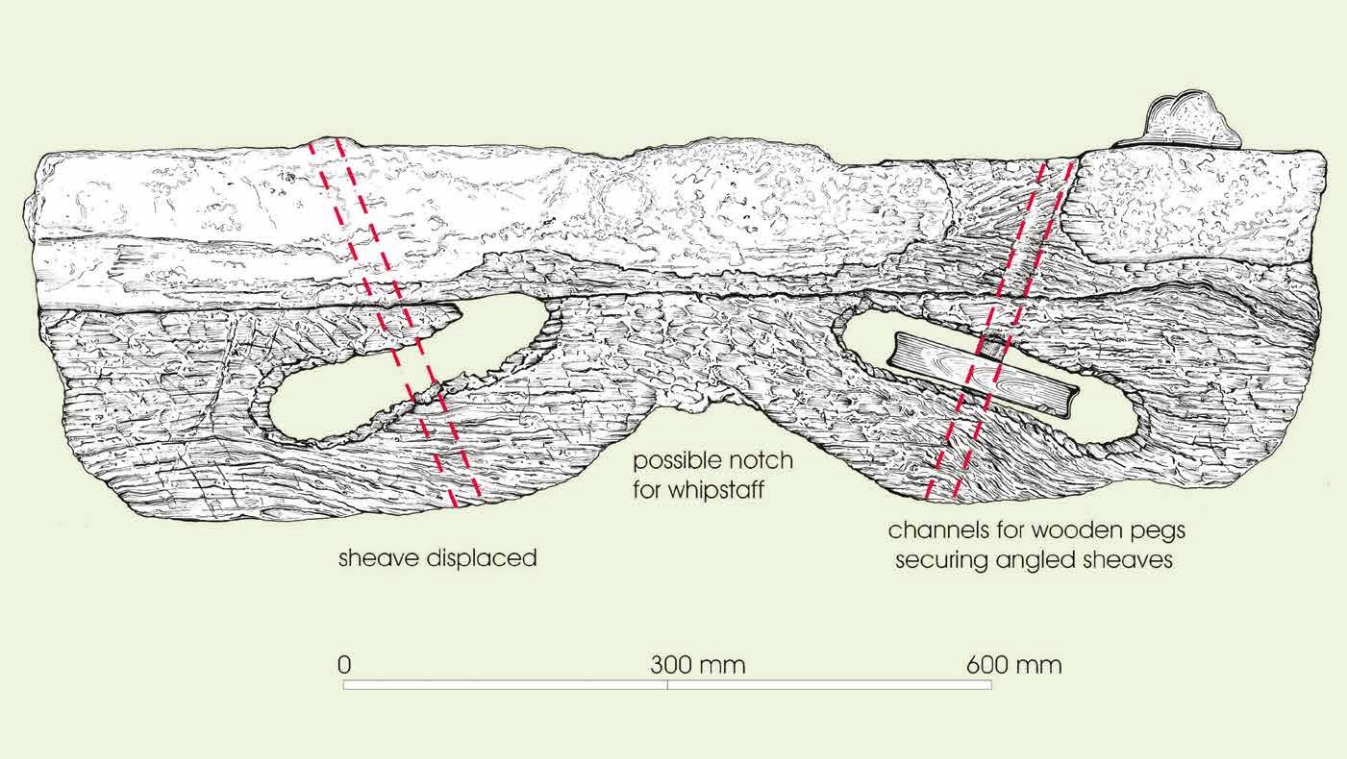

Figure 10
Small surviving portions of vessels can have high evidential value: the wooden fixed block from the designated *Stirling Castle* wreck site may provide evidence of the introduction of the ship's steering wheel about 1701.

3 Acknowledgements

Front cover: Bronze Age log boat under excavation at Must Farm, Peterborough © Historic England, Paul Stamper

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Figure 11: © Vincent Griffin

Figure 11
Chesapeake Mill, Wickham, Hampshire (listed Grade II*). Built from the timbers of the USS *Chesapeake* captured by the British in 1813, this is considered to comprise the best survival of 18th-century re-used ship's timbers in any British building, apart from in the royal dockyards. © Vincent Griffin

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