Appendix 4: Original Early Medieval Period Working Group Document

The Early Medieval Period

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Executive Summary

The archaeological study of Early Medieval maritime Britain has a high capacity to illuminate the history of sea-going and inland waterborne traffic, processes of fluctuating economy and ideology and the changing relationship between the English and the sea.

The search for new evidence from boats, harbours, landing places, reclaimed land and settlement requires intimate knowledge of coastal geography and new methods of prospection.

New research emphasises the value of integrated multi-diciplinary studies of coastal settlement areas for the understanding of social change and political development.

To take advantage of the research opportunities offered by coastal development in the face of climate change and the construction of power units, tighter curational control will be required, fed by pre-emptive and pro-active evaluations of the whole coastal and estuarine historic environment.

Recommended Priority Research Areas

*The *aquatic geography*, of rivers, coasts and blue water crossings remains a priority item on the agenda.

*The *archaeology of harbours and landing places*, inland and coastal, is top priority given their role in social and economic change, and given their developmental pressure from rising sea levels.

*The period is in urgent need of more *well-preserved and well-studied boats*, both inland and sea-going. This requires focus on tidal creeks and flats.

**New methods, approaches and prospection devices* will need to be invented to find wrecks, harbours and waterways.

*The *construction of replicas* is an important aid to research and outreach that has died out in Britain. It requires urgent resusitation with help from Denmark.

*The most powerful current analysis for understanding *the crossing of the seas* is provided O/Sr isotopes to track people and animals, and trace elements to track artefcats. This requires further investment and case studies.

**Theoretical studies* are needed to show how material culture can distinguish between migration, slavery, gift exchange and trade.

*The *Study of the* wics, remains a priority research area. In particular, the publication of Ipswich must be ruthlessly accelerated. Equally, *The transition from wic to port* is a major research priority.

**Detailed studies of coastal settlement zones*. EH should give considertion to adopting this now tightly disciplined and professional method of delivery. Priority targets can be listed from the Tweed to the Thames, across the Channel coast, and from the Lizard peninsula to the Wirral.

**International Collaboration* has to be a feature of future research and conservation projects, especially with Ireland, Scotland, Wales, France, Holland, Belgium and Scandinavia.

* *Administrative measures* to protect the resource and raise its public profile are essential. These should inckude an active policy of protection and controlled research for the waterfronts of all known wics, and guidance on the procedures and resources required in the event of the discovery of wreck or other preserved timber structures.

1. **Introduction**

Martin Carver and Chris Loveluck

This review explores the research opportunities and priorities currently presented by the maritime zone in the Early Medieval period. Within the maritime zone we have embraced rivers, coastal areas and sea crossings, and the chronological scope of the study extends from *circa* AD 400 to 1100.

At this period the island was inhabited by a number of peoples, with slightly different geographical foci: the Anglo-Saxons (south and east), Britons (west and north-east) and Scots (north-west). These peoples and regions are fossilised in the modern administrative system, although the brief for this study, strictly speaking, relates to only England. However, since the subject is the investigation of maritime space, the real target of the inquiry is the three seas round Britain, which involves not only Wales, Ireland and Scotland but Scandinavia, the Low Countries, the Rhineland and France. To help square this circle we focus on England but refer to the wider ocean peoples.

The aim of the report is to identify priority areas for research in the maritime context in the early medieval period. In **Setting the Agenda** (section 2) we review current thinking about the principal components of the topic: the use of the sea, the use of rivers, and the nautical technology available to travel along them (2.1-2.3). The focus is then turned on the principal ports so far known and their role in society (2.4). Modern archaeological researchers appreciate that a key goal is to get inside the heads of the people we study; we thus consider the way the Anglo-Saxons perceived the sea (2.5) and how these perceptions changed over time (2.6). Throughout this report we remain conscious that the period we study is 700 years long and one of archaeology's major duties is to identify and explain the changes that occurred.

Maritime studies in the early medieval scholarship as elsewhere, has tended to collect in small communities of archaeologists, for good practical reasons, including safety underwater, and the need for specialist techniques of investigation and recording. However the modern trend is to try to unite the sea and the land, something which will lead to greater historical understanding and should serve better the goals set by English Heritage at a time of climate change. Several leads are given in **Methods of Investigation** (section 3) and some

successful approaches are described in more detail in **Case Studies** (section 4). It should be emphasised that these examples of recently designed projects, summarised by their investigators, provide the best indications we have for the potential of future work.

Curatorship, archives and outreach (section 5) situates our study in its current social context, and **Research Agendas** (section 6) summarises the problems awaiting solution, and how they might be addressed in the remit of English Heritage.

Archaeological theory over the past few decades has influenced the archaeological agenda in a way that is sometimes seen as evolutionary. Researchers in the Fifties attempted to create schemes of cultural history and to focus on filling gaps in their sequences. In this case a maritime strategy would focus on defining types of water transport, mapping coastal settlement and looking for similar artefacts either side of the seas whih might imply migration, diplomacy, trade or ideological alignment. In the Sixties archaologists turned their attention to the study of process, and typical goals were chronicling the increasing in social difference and rank and the formation of states. In the Seventies and Eighties, researchers became aware of the agency of past people, particularly when they built monuments, with a tendency to express aspirations rather than report social or economic conditions. In the Nineties and Noughties, this anxiety about the multiple meanings of material culture was extended to researchers themselves, who became more reflexive (self-critical) in their interpretations.

In practice each of these theoretical positions has contributed to the meaning of the past for us today, and each remains a valid underpinning of archaeological inquiry. In the Teenies we expect there to be a continuing increase in ethical sensitivity amiong resaearchers, and a focus on the big questions (the origins of agriculture) in order to win rsearch funding. But the biggest problem is likely to gain some research dividend out of the millions of pounds worth of archaeological intervention undertaken in the name of CRM mitigation.

Accordingly we have here included historical gap-filling, social process, behaviorial trends and the expression of attitudes, as being among the objectives of further research that are expected to bear fruit in the general area of the Anglo-Saxons and the sea. At the same time we have attempted to search for and indicate methods by which these broader goals could be

addressed in the context of commercial intervention, the theatre in which English Heritage is credited with a broad oversight and advisory guidance.

2. Setting the Agenda

2.1 Use of the seas

Martin Carver

The Anglo-Saxons and Britons found themselves on an island surrounded by three seas. Each of these seas had been regularly crossed by the Bronze Age, and arguably by the Mesolithic, so we are not concerned with people discovering new land but with an evolving practice (see Marcus 1980, Cunliffe 2001, 2008). The conditions are different in each of our three seas, and, in consequence, so is the technology of the boats and their means of navigation.

On the Irish Sea, travel is characterized by short-haul pottering between beaches on rocky foreshores and islands, and there are numerous inshore lakes and narrow necks of land inviting portages. Journeys offer a few long runs and numerous byways. We hear of hide boats with sails here from the Iron Age, and from early medieval Irish documents we pick up tales of navigation by island-hopping and when the land runs out they followed the geese, by sight and sound, north in spring and south in autumn (Marcus 1980, 9-10). The natural axis is north-south, one which, as Barry Cunliffe has emphasized, provided an ideologically unified community from the coasts of Spain and Brittany, to Ireland, Wales, western Scotland and the northern Isles (Cunliffe 2001, 558). [FIG 1] These 'Gulf streamers' first expressed their ideological cohesion in megaliths, but it will not have escaped the casual observer that later religious affiliations shared this corridor (Carver 2009). In the western seas, navigation was powerfully aided by dead reckoning, since although visibility is famously capricious; there are a large number of islands. The litoral cultures of the Irish Sea suggest frequent interaction over a long period, although the actual movement of people has not yet been the subject of stable isotope analysis. The early Christian missionaries were famously intrepid, and likely to have reached all the British and Irish islands, the Faroes, Iceland and perhaps even Greenland.

Fig 1: The Atlantic Zone (After Cunliffe 2001)

On the east side there was a fiercer sea with longer hauls and areas of protected water take the form of long inlets – firths in the north, estuaries in the south - which will naturally tend to attract and cannalise deep-water traffic. The winds in the North Sea are pretty variable, but if it is legitimate to average the wind roses of the Admiralty charts, they appear to constitute a

home-blowing system in favour of Scandinavia (Carver 1990) [FIG 2].

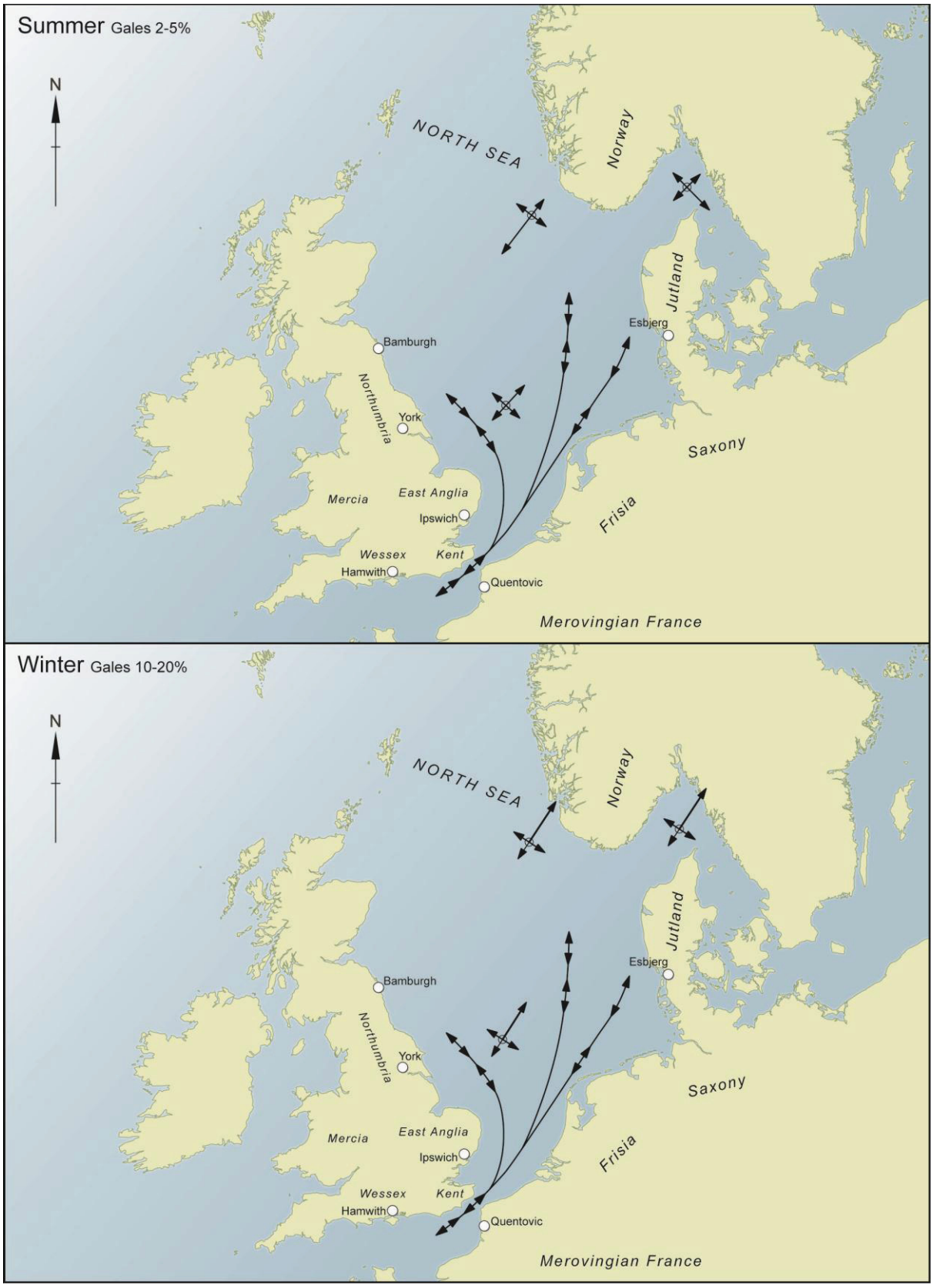

Fig 2: North Sea Home-blowing wind system

In other words, a mariner from Norway or Denmark with a sail would, in general, find

favourable winds in spring to take him to Britain, and favourable winds in autumn to take him back home. The corrolary is that the English seafarer is at the corresponding disadvantage.

In the North Sea, navigation is not a big problem, since from any point in western Scandinavia, the island of Britain is hard to miss. Nevertheless, folklore tells us about following fish and the birds, and the mother swell, and when near land, of listening to the characteristic noise of the sea breaking on a particular piece of coast by putting one's ear to the gunnel. We also make assumptions about early medieval use of the sun and stars to gauge latitude. These assumptions seem reasonable, because we know that peoples of Britain throughout their Roman period were in contact with mariners from the Mediterranean where such navigation was routine. The use of a compass in the North Sea remains uncertain (See Thirslund 2007).

Firthland, eastuary and riverine traffic (see below) was enhanced by penetration into numerous tidal creeks which lattice the flatter coasts – the veins of communication feeding the arteries of the seas. As Chris Loveluck and Dries Tys have shown in Flanders, tidal creeks either side of the Channel alter the perception of settlement quite radically (Loveluck and Tys 2006). Traditionally this coastline has been seen as subject to marine transgression and sea level changes which drove settlement off the flats. But according to their interpretation, drawn from sediment cores collected by Cecile Baeteman, linked to high resolution c14 dates, the coastal plain remained permanently settled on stable sites from the 4th to the 17th century. The initial sandy islands of settlement expanded until in the 10/11th centuries the Counts of Flanders accelerated the process by building dykes. But at this stage at least the purpose was not protection from the sea, but the service of new policies of landscape organization and social control.

The networks of tidal creeks raise thoughts about a still largely invisible world in which trade and nucleated settlements may have been gestating long before the traditional rebirth of the later 7th century, inspired by strong leaders or Christian realpolitik (Hodges 1989, Ch 4). If there is a maritime nursery of economic and social exchange in action along the north-west coast of the continent during the 4th-6th centuries, it suggests that there was a thriving but unregulated exchange system in the Channel and North Sea. The appearance of the wics in the 8th century would then not mark an upthrust of trade, but rather its control and

concentration for tax purposes.

But the further we travel north, the less this putative mud-flat settlement system is likely to obtain. The coastal lands are less friendly, the approaches more severe. Research by yachtsman and medievalist John Makepeace, pinpointed only a dozen havens along the coast of Northumbria – none of them easy and the majority coincident with monastic sites: Tynemouth, Jarrow, Wearmouth, Whitby, Hartlepool (Makepeace 1995). At Jarrow as late as 1693 the monastery stood by the Slake, a large safe harbour which was covered twice a day by the tide and provided turning for shallow draft vessels, as well as a place for seasoning timbers. This fine tidal harbour has now been covered up completely and finally by a massive park for unsold cars.

The front door to Bernicia, for the modern yachtsman at least, is neither Bamburgh nor Lindisfarne, but Budle Bay which lies between them. A little way up the Budle River is the start of the ancient roadway that leads to Yeavering. In general the sailing times are not prohibitive. Jarrow is two hours from Wearmouth and it is possible to reach Budle Bay, landfall for Lindisfarne and Yeavering in a day from Wearmouth. From the Humber to the Forth – the coast of greater Northumbria – can be sailed in a yacht in 32 hours – say three days. There is no need to conceive Jarrow and Lindisfarne as significantly separated by geography, and that Northumbria was a kingdom that could be unified by boat.

TABLE 1: Sailing times on the Northumbrian coast (after Makepeace)
assuming steady wind on the starboard quarter (easterly) and a speed of 5knots.

Humber- Scarborough 9.5 hours
Scarborough – Whitby 2.5 hours
Whitby- Wearmouth 7 hours
Wearmouth to Jarrow 2 hours
Wearmouth to Budle Bay 10 hours
Budle Bay to St Abbs 4 hours
St Abbs to The Forth 3 hours
Humber to the Forth 36 hours

Coastal journeys were no doubt the norm for the English, Frisian and Scandivanian seafarers (see now Crumlin-Pedersen 2010, Ch 5 for the use of Scandinavian maritime space). But there is no prime facie reason to deny the feasibility of direct crossings out of sight of land, the so-called blue water crossings. If the weather was reasonable the crossing could be fast compared with land journeys (Carver 1990). Fair winds in the right drection were mostly to be encountered in summer, and thus we expect blue water voyages to be largely seasonal.

However these observations about the ease of passage through the seaways are largely conjectural, since unlike Scandinavia, the coasts of Britain have not been subjected to intensive experimental voyages. Our impressions of the waterways can be enhanced by studying the continuation of the arterial system inland via the rivers.

2.2 Coastal Subsistence: farming, salt, fish and coastal wildfowling

Chris Loveluck

There is evidence of a variety of subsistence activities and coastal 'industries' in the coastal landscapes of Early Medieval England, including mixed arable farming, salt production, fisheries of different kinds, as well as coastal wildfowling. For example, within the marshland landscape along the east coast from the Humber to the Fens, the results of the *Fenland Survey* (Hall & Coles 1994) and subsequent excavations indicate a landscape of farmsteads or small hamlets sited on sand islands (also known as roddons) within less well-drained marshland, sometimes located in proximity to tidal creek waterways (see Loveluck's case study 4.1 below). The landscape of small hamlets and farmsteads, dating from the seventh to tenth centuries (and later) excavated at Gosberton, in the Lincolnshire Fens, and the settlement on a sand spur adjacent to a tidal channel at Fishtoft, near Boston, Lincolnshire, provide the best examples of such settlements to date (see Crowson et al 2005; Cope-Faulkner forthcoming), and these hamlets appear to have been permanently occupied, with mixed farming economies suited to salt-marsh environments. Due to the environmental conditions, however, there was a significant bias towards the raising of cattle, sheep and horses, reflected by the preponderance of young and sub-adult animals at the Gosberton sites, although barley, a salt-tolerant cereal, was also grown.

The circumstances of their living environments, therefore, resulted in coastal marshland communities with a predisposition for the production of specialist products and the need for

exchange for their daily needs. A recurrent pattern of iron smithing was also found, probably exploiting a bog-iron ore source, and possible hints of salt production were also identified (Crowson et al 2005). At Fishtoft definitive evidence of salt production dating from the eighth and ninth centuries was recovered, in the form of large quantities of securely stratified briquetage (Morris pers comm.; Cope-Faulkner forthcoming). There remains, however, limited archaeological evidence for Early Medieval salt production, in contrast to the extensive Domesday evidence for salt production in 1066. The only other excavation of a coastal salt-producing site with good stratigraphic evidence from this period, dating from the late ninth to eleventh centuries, comes from Marsh Chapel, in the Lincolnshire sea marshes; a location which also evidences a focus on animal husbandry (Fenwick 2001). The occupants of the these marshland hamlets, who concentrated on the raising of livestock and production of salt, with more limited cereal production and inshore fishing, may have been loosely incorporated into estate structures or may have been free proprietors. Whatever their tenurial relations, however, they would have needed to enter into exchange or redistributive relations to support aspects of their dietary, raw material and other life needs. Importantly, if they were tied to estate structures this did not diminish their ability to profit via direct maritime exchange with mariners (Loveluck in press a).

Of particular importance on the eastern and south-eastern coasts were the sea fisheries. The chronology of the development of sea fisheries, and the intensification of their exploitation is complex and less well understood than recently thought. Detailed studies of the development of deep sea fisheries in the North Sea and Channel had suggested that their exploitation may have been linked to stimulation under Scandinavian influence. The work of James Barrett and others certainly demonstrates that there was a huge change in the scale of exploitation of deep sea fisheries in the northern Isles, with Scandinavian settlement, acculturation and hegemony (Barrett et al. 2001; Barrett & Richards 2004). Although, fish like cod, haddock, whiting and others were already exploited by the native inhabitants of sites in the Shetlands, such as Scalloway, as a result of inshore fishing before Scandinavian influence changed the scale of exploitation (Cerón-Carrasco 1998, 112-116). The onset of the greater exploitation of sea fish seen to a certain extent in tenth and eleventh-century coastal and riverside towns in England cannot be attributed to Scandinavian influence alone, however. Recent excavations at Mid to Late Saxon rural settlements on the Channel coast of England, at Bishopstone, Sussex, and Lyminge, Kent, by Gabor Thomas, have yielded significant quantities of large members of the *gadid* family – cod, haddock, ling, whiting etc., which could have been derived from deep-sea

rather than coastal fishing from the eighth to ninth centuries onwards (Rebecca Reynolds pers comm.). Other coastal and estuarine settlements, such as Flixborough, Lincolnshire, also exhibit freshwater, estuarine and deep sea species, with little change in fish consumption patterns between the eighth and tenth centuries (Barrettt 2007). Whilst the perhaps seasonally occupied coastal port at Sandtun, at West Hythe, in Kent, dating from the seventh century to c.850-900, has produced a full range of marine and estuarine fish, ranging from cod, herring, haddock, ling, and whiting among others, demonstrating coastal fishing, at least (Gardiner et al 2001; Hamilton-Dyer 2001, 256-261).

Fisherman supplying settlements such as Bishopstone, Lyminge, Flixborough and presumably those living at Sandtun, seasonally or permanently, could have been exploiting the larger deep-sea fish when they came closer to inshore waters, although this may be significantly underestimating fishing abilities in deep water between the seventh and ninth centuries. The evidence collated by Barrett undoubtedly shows an increase in fishing for deep-sea species, during the tenth and eleventh centuries, which may also be linked to sustaining growing urban populations, an increasing concentration of shipping in tenth- and eleventh-century ports, and hence also growing markets for fish within the context of religious observance (Barrett et al 2004). In some circumstances, the presence of large numbers of cetaceans, in the form of porpoises or dolphins can be explained as a social marker of the status of settlement inhabitants, rather than a reflection of subsistence-based consumption. The consumption of perhaps up to thirty dolphins at Flixborough appears to be a practice of the secular aristocratic phases of that settlement's history, in the eighth and tenth century respectively (Loveluck 2007; Dobney et al 2007). Gardiner has also noted that access to beached cetaceans tended to be a preserve of elites, when such action could be policed (Gardiner 1997).

Herring fisheries, in particular, were also an important part of the late Early Medieval economy at least from the eleventh century (see Pelteret's discussion in the next section); herring was transported up-river by boat when necessary, as a herring processing factory in York, dating from the early tenth century at the latest, indicates (Cramp 1967, 18-19). Campbell (2002) has explored the implications of the evidence in Domesday Book for herring renders, which are recorded for the shires of Kent, Surrey, Sussex, Norfolk, and Suffolk. The quantities are large: Dunwich for example supplied 60,000 herrings to the king. The total renders for East Anglia in 1086 amounted to 164,900 herrings, which he conjectures could have amounted to a total catch of well over 3,000,000 fish. Moreover, Campbell suggests

more than five tons of salt would have been needed to conserve the herring catch (Campbell 2002; Morely & Cooper 1922, 4). Campbell also provides plausible evidence that the inhabitants of the inland, riverine settlement of Frostenden in Suffolk used boats to reach the sea to fish along the coast. The herring and other fisheries would have been, therefore, at the centre of a vast web of economic enterprises and social relationships and the connections between these deserve further research.

Recently, there has been work done through documentary sources on the development of fishing settlements, particularly in the south-west (Fox 2007), but further studies of the archaeological evidence of these communities and industries is required. In addition it appears that in a number of locations sea fishing was combined with other fisheries, notably estuarine fish traps. At Tidenham in Gloucestershire, for example, sixty-five basket weirs produced catches including sturgeon, herring and, even, porpoise (Murphy 2009, 47). Further evidence of the role of certain species as status-markers is reflected in the provision of porpoises to the Tidenham estate centre at Christmas. Archaeological survey have identified the widespread construction of fish weirs in the Severn Estuary and north Devon, although only the weirs in Bridgewater Bay have been dated, dendrochronologically to AD932 and 966 (Groves et al 2004). On the east coast, radiocarbon dating of fish traps, on the Essex coast at Bradwell-on-Sea, in the Blackwater Estuary and in Suffolk at Holbrook Bay on the Stour and on several sites in Norfolk, suggest an intensification of activity in the seventh to ninth centuries (Murphy 2009, 48). Such sites are increasingly being identified in other locations on the English coast (see Cowie & Blackmore 2008; Cohen 2003; Strachan 1995; 1998; Wallis & Waughmann 1998), but though there are a number of types of fish trap, including composite stone/timber traps (and numerous local variants), there is as yet no typology, nor any clear sense of how these fisheries fitted into local or regional economic networks of the lives of the communities who built and used them.

There is also some evidence of the exploitation of shell fisheries during this period. In general, oysters predominate in Early Medieval deposits (Murphy 2009, 50), though mussels are also common in waterfront deposits at Whitefriars Street, Norwich (Ayers & Murphy 1983). There is evidence for the management of oyster beds during the Roman and Medieval periods (Winder 1992), but there is so far little evidence of this during the Early Medieval period and the collection, potential management and consumption of shellfish during this period would benefit from further research. Finally, coastal wildfowling was also practiced, as

highlighted in the discussion of Flixborough in Section 5.1 (see also Loveluck 2007). Baker (2005) notes the presence of the bones of wild geese, duck, coot, small waders and a harrier in domestic deposits from fenland sites in Lincolnshire and the occasional consumption of sea birds is also demonstrated at monastic sites, such as Hartlepool (Loveluck 2007; Rackham 2007). Again, large-scale of exploitation of coastal and marshland wildfowl seems to have been a marker of secular elite exploitation and control of landscapes, as seems to be reflected at Flixborough in its likely secular elite phases, in the eighth and tenth century respectively. Exploitation of wildfowl at monasteries or monastic estate centres seems to have been more limited to occasional exploitation, as reflected by the huge decrease in wildfowl at Flixborough at the end of the eighth and through the ninth century (when literacy and items, such as window glass were also present). The eating of seabirds at Hartlepool seems to have been very occasional.

2.2 Rivers in History

David A. E. Pelteret

Geography

The rivers of England do not impinge much on the consciousness of modern travellers as they are swept along at speed by car or train over bridge and viaduct. In recent centuries English rivers have been much abused by being canalized, diverted, embanked, and, in the case of the River Fleet in London, even sent underground in a sewer, a reality that users of Google Earth need to bear in mind if using that tool to try to visualise the geography of the English past. To appreciate the experience of the Anglo-Saxons one needs to think oneself into another world in which water was a major, perhaps *the* major means of communication, where its characteristics were vital to trade and to agriculture, and where the mode of travel was not the internal combustion engine but initially, at least, an oared boat with manpower as the engine that drove it. English rivers and the coastlines they penetrate tend to be taken for granted by early medieval historians. There is abundant mention of them in the literature, of course, but little consideration of their importance in shaping the distinctive political, ecclesiastical, and economic history of the country as a whole.

A map of England depicting watercourses reveals that few areas of the country are situated far from a river. The position of the watersheds and attendant drainage basins divides the rivers naturally into three ‘provinces’, which have been termed the North Sea, the Channel,

and the Irish Sea Province. The first, extending along the whole eastern coastline down to Ipswich (Suffolk), contains watercourses that drain into the North Sea. The second includes the rivers of Essex from the Stour southwards, the tributaries that flow into the Thames, and the rivers that flow down to the south coast as far west as Poole Harbour. Watercourses west of Dorchester and those flowing into the Bristol Channel (notable the Severn) and west into the Irish Sea comprise the third group. It is worth noting that Essex remained an area distinct from Suffolk and Norfolk through much of the Anglo-Saxon period (Williamson 2008, 130-8).

The parts of England closest to the Continent lie from the Wash on the northern edge of East Anglia, south past the Thames estuary, round Kent and Sussex to the Isle of Wight opposite Brittany (Hill 1981; Steers 1964). They remain to this day the commonest ferry crossings. The coastline just described has a characteristic that must have enhanced its attractiveness to potential settlers, for it contains many rivers that offer access to the heart of the country. They are, in fact, topographical features that have shaped English settlement history not just in the early medieval period but also in prehistoric times (Ekwall 1928, Jackson 1953, Sherratt 1996). For instance, into the Wash flow the Welland (which passes through Stamford), the Nene (which gives access to Northampton), the Great Ouse (whose upper reaches extend to Bedford) and the Cam (which flows close to Ely and contributes its name to Cambridge) (Summers 1973). Shorter rivers such as the Alde and the Deben, near where the Snape and Sutton Hoo boat burials were located, lead into the interior of Suffolk (Filmer--Sankey and Pestell 2001; Carver 2005). The most dramatic in size, the Thames, can transport the traveller up past Kent, Essex, Middlesex, Surrey, Berkshire, (and Buckinghamshire into the heart of Oxfordshire.

The Sea Level Research Unit in the Department of Geography at the University of Durham is investigating coastal evolution and since 1978 a trilateral cooperation agreement between The Netherlands, Germany, and Denmark has fostered a great deal of research into the Wadden Sea, a fragile section of the North Sea coastline that is shared by all three countries. The North Sea is a shallow body of water that gets shallower towards the Straits of Dover and every fifty years or so a combination of high tides and gale-force winds can lead to huge storm surges. The storm surge of 1897 was far exceeded by the devastating surge of 1953 that led to considerable loss of life in Essex and The Netherlands. Weather forecasters warned of the risk of another surge in November 2007; fortunately weather conditions changed slightly,

thus averting severe flooding, though the seas came within four inches of topping the sea walls at Great Yarmouth. Irregular events of this kind in the past could have led to major coastal transformations at a local level, as the floods of 1953 showed, which in turn can affect where rivers discharge into the sea and the shape of their estuaries (Steers 1964, 395; Lamb and Frydendahl 1991, 150).

Though the basic outline of the English east and southeast coast has not changed fundamentally since the early Middle Ages, there have been considerable local changes for a variety of reasons. A few examples that have been well-mapped are worth mentioning here because they are likely to have affected both settlement patterns and economic and social development. For instance, today the Humber estuary is much narrower than it would have been in the early Middle Ages (Loveluck 2007, 77). The River Trent flowed into the Humber estuary after merging with the outflow of the River Ouse. (This is a different Ouse from the Great Ouse mentioned above; like the river-names Avon, Don, and Stour the name applies to several rivers in England.) Into the Trent itself, near its junction with the Ouse, originally flowed the River Don until the seventeenth century, when the Dutch-born Sir Cornelius Vermuyden, focused its water in a single channel and, after initially leading it into the River Aire, dug the Dutch River that brought it into the Ouse at Goole (Jones 1993, 248-58). In Norfolk the port of Great Yarmouth today has to be approached from the sea *via* a long and narrow channel. In the late Roman period *c*. A.D. 300 the nearby Saxon Shore fort of *Gariannonum* beside the River Waveney could be reached directly from the sea *via* the so-called 'Great Estuary', which provided direct access from the North Sea to the Rivers Waveney, Yare, and Bure (Green 1961, 23).

Further south there have been dramatic changes to the coastline in the environs of Dunwich in Suffolk (Pye and Blott 2006, 460). In the Roman period there may well have been a military coastal station east of the mouth of the Dunwich River, which potentially could have afforded some access into the interior. Just east of this was established the Anglo-Saxon settlement of Dunwich, which has plausibly been identified as the Anglo-Saxon see of *Dommoc* (Haslam 1992). Today, most of Dunwich has disappeared under water and a long stretch of shingle beach and marsh extends southwards from the outlet of the River Blyth, cutting off the original mouth of the Dunwich River. By a process of avulsion the Dunwich now flows northwards into the Blyth.

The changes in the coastline of Kent have been considerable since the early Anglo-Saxon period (Tatton-Brown 1988, 214). To the north of modern-day Faversham and Sittingbourne the Isle of Sheppey in the early Middle Ages was separated from the mainland by the Medway estuary on its western side and the Swale to the south. Elmley Island and the Isle of Harty originally formed distinct islands on the southern side. The Swale, which is tidal both where it flows into the Medway estuary and at its eastern end, has now largely silted up with marshes and tidal flats; today constant dredging is required to keep its channel open. At the north-east tip of Kent is the Isle of Thanet, separated in Roman and early medieval times by a broad strait up to 2 miles wide called the Wantsum Channel. The Wantsum Channel was protected in Roman times at its northern end by the Saxon Shore fort of Reculver (originally *Regulbium*) into which an Anglo-Saxon monastery was subsequently placed. Much of the fort has now been lost because of coastal erosion. At the southern outlet of the Channel another Saxon Shore fort was established in the reign of Carausius at the port of *Rutupiae* (now Richborough, near Sandwich). In the sixth century the River Great Stour flowed northwards past Canterbury to the Wantsum, signified now by the twin villages of West and East Stourmouth. The Wantsum silted up and shortly after West Stourmouth the Stour now flows eastwards and enters the Straits of Dover at Pegwell Bay. The Wantsum has been reduced to a drainage channel flowing from Reculver to the Stour and its originally course is now delineated, if at all, only by marshy areas.

Sussex, west of Kent on the southeastern coast of England, is less well endowed with rivers and furthermore had forests in its interior; it was a region somewhat cut-off from other areas of Anglo-Saxon settlement. Further west still, the Isle of Wight faces onto the Solent, which leads *via* Southampton Water to the estuaries of the Itchen and the Test, which flow down from the interior of Hampshire. Once one goes west of Poole in Dorset, the coastline gets more inhospitable, the seas rougher, the rivers fewer, and the interior such as Dartmoor more rugged and barren.

Early Saxon period

We shall never know for certain the circumstances of the earliest Anglo-Saxon arrivals, but it seems clear that the rivers were crucial to what we could consider the beginning of the Anglo-Saxon economy. John Hines (1984) has identified from archaeological evidence the settlement of people of Scandinavian origin in eastern and north-eastern England in the fifth

and sixth centuries. Did Scandinavian peoples cease to settle in Britain between the sixth and the eighth century—and, if so, why? Or have we simply not looked for them?

Middle Saxon Period

Once one starts to think of rivers rather than roads as the primary transportation routes in the early Anglo-Saxon period, the siting of ecclesiastical foundations beside rivers backing onto an agrarian hinterland becomes perfectly intelligible. These churches were often on a high point above a river. There were practical reasons for doing this: the placing of a building on well-drained gravels above the flood-plain made eminently good sense, but these were sites in which symbolism also played a part. The ecclesiastical foundations must have had a huge impact on economic development, whether by focusing the endeavours of the local peasantry on the production of the wealth necessary to support religious activities or through the development of markets, aided by their location near waterways (cf Blair 2005, Ch 5).

Another economic development—largely unremarked in written sources—began towards the end of the seventh century and the beginning of the eighth at selected localities in England and on the Continent: the growth of so-called emporia, trading sites where merchants from distant parts could bring their wares for sale (Hill and Cowie 2002; Coupland 2002). In England the main ones that have been identified were at *Hamwic* (modern-day Southampton) (Stoodley 2002), possibly Fordwich in Kent (Tatton-Brown 1984), London (or *Lundenwic* as it was then known)(Hobley 1986), Ipswich (Scull in Hardh and Larsson), and York (known in the Anglo-Saxon period as *Eoforwic*) (Spall and Toop 2008). It had been assumed that Sandwich was a similar international trading port. Current thinking is that it was simply a landing place on a sandy beach and that it did not have an international trading function. It is to be hoped that the Sandwich Project currently funded by English Heritage will clarify the precise location of the *wic* and its status. See further Helen Clarke, 'Introducing the Sandwich Project', *Society for Medieval Archaeology Newsletter* 33 (September 2005), [6–8]. These *wic*s had their counterparts in Holland at Wijk-bij-Duurstede (van Es and Wervers 1981) and in France at Quentovic, which Pierre Leman, David Hill and others have recently identified (Hill et al 1992).

One might start with what may appear to be the most improbable of these: York (Briden 1997). Today it seems unlikely as a port—for the simple reason that in the eighteenth century a weir was built across the Ouse. But before this impediment was put in place, twice a month

at the time of spring and neap tides a strong current flowed up as far as York. It required impeccable timing: a captain had about three hours to take his vessel up the final few miles to the city. The tidal setting of such locations allowed boats to proceed easily upstream away from rough coastal weather, reduced the risk of grounding in the case of heavily laden ships, and offered the inestimable advantage of enabling them to be beached on a site secure from the open seas. In the case of *Hamwic* on the Itchen leading into the Solent and Fordwich at the tidal limit of the Great Stour, which flowed into the Wantsum Channel, their location was made potentially more attractive by the existence of double tides.

What all these English emporia have in common is the presence of a clear shoreline on a tidal river. Several of them, notably London and Ipswich, offered the potential for fostering regional trade upstream. *Hamwic* even offered a choice of rivers into the interior, though to what extent these were employed—or even navigable—is an open question: there is a curious absence of archaeological evidence for trade into the interior, which has led Palmer (2003) to question how typical Southampton is as a *wic*. Most of these rivers, however, could have permitted smaller vessels to travel down from inland regions, bringing goods to be exchanged for the wares on offer from foreign traders, which could then be transported back up country. The relationship between an emporium such as Ipswich and its hinterland remains nevertheless far from clear. The pathways of regional trade to and from all such centres require further exploration: they will undoubtedly not only include rivers but also Roman roads and other ancient routes.

One should not imagine that the craft that plied the inland waterways were necessarily were propelled by sails or oars. Wandalbert of Prüm's description in of how on the Continent the boat of a Frisian trader was pulled by rope up the Rhine against the current by a team of slaves is a reminder that hard physical labour must often have been needed with larger craft in England too in order to negotiate tricky rivers (Holder-Egger 1887, 370). There must also have been many smaller boats in use. Logboats have been located on rivers throughout England and Wales; the central dates for six of those from the River Mersey or nearby fall within a date range of 990 to 1090. Propelled by paddle or perhaps by pole, '[i]t is probable the medieval logboats were generally used for ferrying, fishing, fowling and the collection of reeds.' (McGrail and Switsur 1978, 94, 104).

Tamworth was about eleven days' walk away from Ipswich, but in theory a Tamworth trader returning home from Ipswich needed only to hug the coastline until he had reached the mouth of the Humber, after which he could row up the Trent and then on up the Tame to his home town. It is possible that Tamworth was selected as a settlement site only because the Tame and Anker Rivers were suitable for enabling the town to be supplied from its local region, but its potential for wider riverine trade should be kept open as a possibility. The Vikings were able to reach Repton seemingly by boat in the ninth century, where they overwintered *c.* 873–4 (Biddle and Kjølbye-Biddle 2001). One should note, however, that the presence of boats at Repton is an inference; the *Anglo-Saxon Chronicle* mentions only *se here* ('the [Viking] army'): (ASC 'A', s.a. 874, in *Two of the Saxon Chronicles Parallel*, ed. Plummer, i, 72).

Late Saxon Period

The Alfredian strategy of fortified boroughs, most not more than 30 miles apart, was a coherent response to armed attack (Hill 1981, 86). *Hamwic* on the coast was replaced inland further up the River Itchen by Winchester, which had risen considerably in significance by the end of Alfred's reign. Trade was now attracted into these boroughs and the coastal emporia were replaced by regional markets or 'ports', each with its port-reeve empowered to collect tolls on trading transactions on behalf of the king. While defensive considerations were explicitly dominant in the creation of this burghal system, we should note that the presence of a waterway still seems to have been a key factor in the choice of sites. Many of these burhs were located in the middle of a sharp bend in a river and required only one landward barrier. Others such as Cricklade had a water course running beside one of its defences. The West Saxon boroughs should thus perhaps be seen not as fortified citadels but rather as defended markets where a watercourse was essential for the development of trade. We should not restrict our gaze, however, merely to the south of the country. In Shropshire Shrewsbury, located on a peninsula in the middle of the River Severn, has exactly the same kind of setting that successful late-West-Saxon towns in Wiltshire have, such Amesbury, Chippenham, Malmesbury, Warminster, or Wilton.

Riverine infrastructure: bridges and canals

When Edward and Æthelstan started subduing the Danelaw settlements in the course of the early tenth century, they adopted a new approach towards control. In several places a Scandinavian settlement was matched across the river by an Anglo-Saxon one. Key to the strategy was the use of a bridge between the two settlements (Harrison 2004, 102-4).

Nicholas Brooks has done much to enlighten us about medieval bridges (Brooks 2000). Today bridges are links, and they clearly in part played such a role in Anglo-Saxon towns. But they also had another vitally important defensive function, that of acting as a barrier to vessels hoping to travel further upstream. Such bridges could also act as a point where tolls could be collected from cargo-vessels engaged in peaceful trading ventures. David Harrison has questioned the extent to which bridges had a military function and controlled movement of vessels up and down rivers, but does not deny that they performed these functions. The possible defensive stakes and chains mentioned by him as an alternative might have been employed in exceptional circumstances, but it is difficult to see how their regular use could have avoided being a severe impediment to commercial riverine traffic. The best example of a twin borough with a bridge in between is the little town of Stamford because its early medieval topography is still evident today, over a millennium later (Mahany and Roffe 1982). The same strategy was also adopted at Nottingham, which, like Stamford, was one of the Five Boroughs. The dual settlement linked by a bridge was not restricted, however, simply to towns with a Scandinavian population. By the tenth century a market settlement had developed on the south bank of the Thames at Southwark opposite London. The two places were linked by a bridge (Watson et al 20001, 52-60). Nevertheless it probably also had a defensive value, as is implied in the *Anglo-Saxon Chronicle* entry for 1013, which states a great many of the men of the invading force of the Danish king, Swegn, were drowned 'because they did not trouble to find a bridge' (Plummer I, 143).

Chester on the River Dee gained strategic significance in the 10th c because of its location between the Viking kingdoms of York and Dublin. The Dee enabled Chester to become an important port by having strong trading ties with Ireland. It succumbed temporarily in about 980 during the second phase of the Scandinavian assaults, but managed to recover and remain a reasonably substantial provincial town with a mint and a salt market. Domesday Book—rather unusually—specifically discusses its local customs, and these make clear that its tolls were a useful source of royal revenue (DB I, 262v).

As a centre for trade with Ireland, Chester yielded its premier position in the eleventh century to Bristol, a settlement that was destined to retain its importance right into the twentieth century (Ponsford in Milne and Hobley, 103-4). Located on the Avon, which flows into the substantial Severn estuary, Bristol developed later than places like London and Ipswich, in part because it was probably settled from its hinterland rather than from the sea. It especially

began to flourish from the twelfth century onwards, when a new channel cut for the River Frome, which flowed into the Avon, doubled its harbour capacity. The new channel assisted in the drainage of the marshes, where all the town's friaries were to be built.

The Frome channel was not the first of its kind in England. It is possible that the Roman Foss Dyke between Torksey and Lincoln was reopened at various points in the Anglo-Saxon period and the same might have been the case late in the Anglo-Saxon period with the Car Dyke leading to Peterborough. The development of artificial water courses seems to have been a feature of the tenth-century Benedictine revival. The River Brue to Glastonbury must have been enhanced by the cutting of a channel of just over a mile from the monastery to the river, which appears to date from the second half of the tenth century.

Both the Nene and Cam rivers seem to have been artificially channelled, possibly as early as the tenth century. Dating such works and determining whether they were used for navigational purposes is difficult, as Currie's study of a channel in the River Itchen shows in the vicinity of the ancient manor of South Stoneham. The channel might date to sometime between 990x992 and 1045; it could possibly have been used by flat-bottomed boats, but the author thinks it more likely that it represents a by-pass channel cut as a leat to prevent two mills from blocking fish such as salmon from moving upstream along the Itchen to spawn (Currie 1997). The development of artificial watercourses can be asserted with more confidence to be a feature of the post-Conquest period, especially in the Fenlands (Bond in Blair waterways, 175-85).

The riverine economy

By the eleventh century, nucleated settlements had increased considerably and much work would have to be done to discern some clear patterns. There can be no doubt, however, that rivers continued to be important in the economic development of the country, especially in the growth of the wool trade with Flanders. In trying to identify patterns we should consider the factors that had encouraged earlier nucleated settlements, including the navigability of rivers, the location of crossings such as fords and bridges, and the intersection of land and water routes. For example, to judge from the number of *ford*-names to be seen in a county such as Wiltshire, the crossing-points of streams and rivers encouraged the location of even minor settlements (Pelteret 1985, 159). In fact, one's curiosity should be aroused by major settlements where rivers do *not* seem have been a factor in their siting. Why, for instance, did

Coventry develop as a significant town when it only had so minor a river as the Sherbourne? By the time of the Industrial Revolution the absence of a waterway was so keenly felt there that a canal was built ultimately linking it to Birmingham, a developing conurbation that was similarly deprived.

As might be expected, there were further economic developments centred on rivers in the centuries immediately following the Norman Conquest. Two examples in the vicinity of riverside settlements, one at King's Lynn in Norfolk and the other near Brandon in Suffolk, may be taken as illustrations of what a more detailed geographic survey of England might disclose. King's Lynn, located near where the Great Ouse flows into the Wash, first appears in the sources in the late eleventh century, but its development received a fillip in about 1250 when diversions, cut as a result of the silting of the southern fenland rivers through Wisbech, caused more water to flow past the settlement. By this time it had already developed international contacts, notably with the Hanseatic League. Though some ships still used to be beached at King's Lynn in the thirteenth century, developments in naval architecture encouraged the construction of the medieval timber waterfronts built to meet the demands of the growing wool trade between England and the Continent (Clarke in Milne and Hobley). By the thirteenth century the substantial cargo vessel known as the cog, suitable for transporting such bulky material as wool, had come into wider use (see below). As at King's Lynn, wooden wharves were similarly to grow in importance in places such as London and Bristol. King's Lynn has largely retreated now into being a vacation backwater, but as ports Bristol and London displayed a continuity from the medieval period that has finally only been broken in the past few decades by the container revolution.

Rivers as boundary markers

Rivers were a principal means of communication but could also act as boundaries. The Thames, for instance, formed a natural boundary between the early polities of Kent and Essex; the Humber did likewise between Deira and Lindsey (Eagles 1989, 202) After the separate kingdoms of Deira and Bernicia were brought together in the seventh century the peoples of this kingdom became known as the Northumbrians from its then southern boundary (Hunter Blair 1948). In the south-west, the British kingdom of Cornwall was demarcated off from Anglo-Saxon territory by the River Tamar. Waterways are frequently mentioned in the vernacular bounds of Anglo-Saxon charters; the presence of Old English words such as 'broc', 'burna', and 'stream' show that even seemingly insignificant

watercourses could form property boundaries, as a search for these words in the indexes of the volumes of the Anglo-Saxon Charters series will show, with watercourses forming some 20 per cent of recorded boundaries in Midlands charters. Pre-existing estates frequently influenced the boundaries of other administrative units at a regional and local level, so it is not surprising that rivers and streams were employed to designate their limits too. When shires came into being, rivers sometimes formed part of their boundaries, as in the case of the Stour, which came to mark the boundary between Essex and Suffolk (though archaeological and landscape evidence suggests that in earlier centuries the Orwell estuary and the valley of the Gipping and Lark rivers formed a more significant boundary). One must not press the matter too far, however; '[t]he layout of the Midland shires is such that a river forms the spine of each and the shire town lies at a nodal point on the river system.'(Campbell 2000, 53-4). In the case of parishes, streams as well as rivers often separated one parish from another.

The fish trade

One final aspect of rivers, coasts, and the estuaries that joined them demands discussion: their importance as sources of food. Fishing was a sufficiently important occupation for Ælfric to include a fisherman among the various occupations in his *Colloquy*, a manual composed in *c.*998, at least in part to instruct monastic oblates in Latin vocabulary and conversation, drawing on a literary tradition that went back to late antiquity (Garmonsway 1959, 1991). In spite of its literary form, Ælfric must surely have drawn his examples from contemporary life in the interests of intelligibility. His fisherman prefers to catch his fish in the river, using nets and baskets; sea-fishing requires him to sail *via* a river to reach the sea, where whales could be caught, apparently using spears, though the fisherman avoids the latter on the grounds of their being too dangerous. His catch in the river could include not only fish but also eels.

Ælfric's fisherman claimed he could sell all his river catch in the town; the main sea-catch was herring, which must often have had the same destination, being transported up-river by boat when necessary, as a herring processing factory in York dating from the early tenth century at the latest indicates (Cramp 1967, 18-19). The herring must be seen as an important part of the late Anglo-Saxon economy. James Campbell has explored the implications of the evidence in Domesday Book for herring renders, which are recorded for the shires of Kent, Surrey, Sussex, Norfolk, and Suffolk. The quantities are large: Dunwich, which has been mentioned earlier, supplied 60,000 herrings to the king. Professor Campbell provides

plausible evidence that, as with the case of Ælfric's fisherman, the inhabitants of inland settlement of Frostenden in Suffolk used boats to reach the sea to fish along the coast. The total renders for East Anglia in 1086 amounted to 164,900 herrings, which he conjectures could have amounted to a total catch of well over 3,000,000 fish. Such catches would need to be salted; 'on the lowest assumptions, well over five tons of salt would have been needed to conserve the herring catch.' (Campbell 2002; Cooper 1922-4). Since salt was in its final stages produced by boiling heavily salted water, fuel was required; in the case of East Anglia peat-diggings were the probable source of this fuel. Domesday Book has many references to *salinae* or saltpans along the east and southeast coast (Keen 1988).

Pursuit of the herring was not limited only to the eastern and south-eastern coast. The large estate at Tidenham in Gloucester, which belonged to the abbot and monastic community of Bath, extended from the inner estuary of the Severn westwards to the River Wye (which flows into the outer estuary of the Severn near present-day Chepstow in Wales). In addition to fish-weirs on the two rivers, sea fishing was very important to the community. The latter yielded valuable fish such as sturgeon and sea mammals such as porpoises—but also the herring. In return for a lease on the property, made sometime between 1061 and 1065, Stigand, the then archbishop of Canterbury, agreed on an annual render, *inter alia*, of 30,000 herrings (Robertson 1956, 215; Faith 1994).

The herring was thus at the centre of a vast web of economic enterprises. It encouraged boat-building and the making of fishing nets; it demanded the creation of salt, with the lead pans and accumulation of fuel necessary for its production; its nutritional value fostered population growth, which in turn resulted in yet further economic activity. Through the rivers this influence could spread inland: the renders of herring paid by Norwich, one of the premier towns in the country in the eleventh century, is best explained by having access to the sea by way of the River Yare.

Ancillary economic developments such as watermills with their attendant mill ponds and leats draining off of so many of the rivers have also not been examined since this subject has been discussed elsewhere as has the development of artificial watercourses such as canals from the late Anglo-Saxon period on into the High Middle Ages (Blair, waterways). Another subject meriting an examination in its own right is the importance of rivers in providing a balanced agrarian economy of river, marsh, meadow, arable, and woodland, a topic of

particular interest to landscape and agricultural historians (Everitt 1977). There is a need to change our assumptions about the significance of various geographic elements that tend to be overlooked when examining England's medieval past, most notably rivers, which one should think of not as obstructions but as the early medieval equivalent of the modern highway.

2.3 Boats

Martin Carver

In the Irish Sea region seafarers maintained the boat building tradition of leather stretched over a wooden frame, assumed to have originated in the Iron Age or earlier. These boats were light, easy to portage, and keeless making rapid way to windward under sail, but needing to be paddled in any other direction. No early boat of this kind has been archaeologically excavated, but the form survives in the Welsh coracle. Tim Severin's experimental craft, the Brendan, successfully sailed from Ireland to St Kilda and Iceland, although with all the safety gear it was a lot heavier than the originals; hypothetically, these hide boats are light and relatively easy to carry over land – the short routes known as *tairbearht*, that is portage.

The earliest boats in the North Sea region also seem to have been made of stitched and caulked hide stretched on a frame like the Bronze Age Hjortspring boat and as apparently illustrated on rock carvings. But by the 4th c AD boats were made using hull-first construction in timber planks. The planks were stitched together and caulked, and then the timber frame supporting the benches was lashed inside this shell. By the seventh century (at Kvalsund and Sutton Hoo) the hull was fashioned from overlapping planks fastened by iron rivets; but even in the Viking-period ship from Oseberg, the frame was still lashed to the hull. Nydam did not have a step for a mast, but Kvalsund and later Viking ships had a massive seating amidships, in which a mast could be set and the ship rigged for sail. All the boats were steered using a steer-board, essentially an oar bound with roots to a wooden boss on the right hand (starboard) side (see now Crumln-Pedersen 2010, Chapter 2-4).

Nydam, Kvalsund and Oseberg, the principal preserved ship finds, provide an iconic succession, forming the basis of expectation for an evolution of ship technology: boats that are rowed, boats that may have a sail, and boats that did have a sail (Crumlin-Pedersen and Trakadas 2003; Crumlin-Pedersen 1997, 18-20; Marcus 1980, 35). We get very useful ideas

about how these vessels were used by replicating and sailing them - an art in which the staff of the ship museum at Roskilde is pre-eminent (Crumlin-Pedersen 2006, 2010; Carver 1995). From such exercises we learn that that sewn and lashed ships are extraordinarily flexible, they writhe and bend in the water like a serpent – the carved stem-posts being suggestive in more ways than one. They are slow and heavy to row, and a full complement of rowers is required along the gunnel to move forward or to prevent yourself going backwards or sideways in the wind. Provided you are going in the same direction as the wind, then a sail is the answer. The sail was not invented by the Vikings: sails had been seen in the three seas round Britain since the Iron Age and certainly in the Roman period. The 4th century Roman Blackfriars 1 had a sail, and Sean MacGrail has proposed a whole succession of "Romano-Celtic" boats which were flat bottomed cargo carriers with sails plying the Channel in the early first millennium AD (McGrail 1995). In fact *any* boat can be sailed in a following wind, but only in one direction. Katrin Their says that the word for sail (*segh**), and by implication the technology of sailing, existed in Celtic and West German languages before the Anglo-Saxons were at sea in the 4th century (Their 2003; Sayers 2004).

Although the basic idea of erecting a sail is not challenging, the key step is learning to use steering and rigging so that the ship can go in other directions than windward. The *Edda,* a replica Viking ship based on the Oseberg burial-ship, capsized while attempting to tack in 1988 (Carver 1995). Oseberg had a step for a mast but the mast itself was incomplete, inviting rival theories about how long it was – and in consequence how big the sail should be. The Viking rule of thumb was thought to be that the mast should be the same length as the distance round the hull amidships. An alternative guide, used in this case, was that the height of the mast would be given by extrapolating the angles of the stem and stern stays. In its burial pit, Oseberg had a number of timber objects, the use of which was not immediately evident: two pairs of timber sockets fastened to the inner hull forward from the mast, and a long pole. Since the end of this pole fitted into the sockets, it was inferred that this must be a spar for holding the throat of the sail outboard in a following wind so it could increase the pull – like a spinnaker. It was also surmised that the pole could hold a leading edge of the square sail forward in position when the boat was headed close to the wind. The tacking spar did succeed in creating a little envelope which took the prow, but any mistake with the sheet meant that the hull would dip and take on water, and eventually this led to the whol ship turning over.

The ability to tack is a key factor in the social use of the sea. If a ship cannot make to the wind, then it requires a large complement of rowers to move it; the ship is then full of crew. If it can make to the wind, even a little, then a small crew can take a large ship across the sea and come back laden with goods. The ability to tack controls the jump in the social trajectory from a dependency on warrior groups – or slaves, to the liberation of small groups of entrepreneurs. Alec Tilley makes the same point in his discussion of sailing in the Mediterranean: "The purpose of being able to make some way to windward was to enable mariners to go to sea without depending on oars and shipwrights to build large beamy ships capable of carrying a large cargo with a small crew" (A. Tilley 1994). Recent discussion about when this was achieved in the North Sea favours the 9-11th century. We do not have to wait until the invention of the cog in the late 12th and the exertions of the Hanseatic league. Ole Crumlin-Pedersen says that (although we mustn't call them cogs) large Nordic cargo ships carrying bulk cargoes were plying the waters if the north sea and Baltic sea at least from the 11th century and the Romano-Celtic cargo vessels were of course much earlier Crumlin-Pedersen 2000; McGrail 1995). Since we have so few vessels, the jury must remain out. But we can say that while sail was always a possibility from the 4th century, the opening up of the oceans to long distance cargo-carrying by sailing to windward was probably, in the main, a contribution of Viking seamanship.

This emphasis on the large ships has tended to obscure the roles of numerous short journeys in small boats. We have seen some of these in burials of the 6th and 7th centuries, as at Slusegaard and Snape, where they appear as shell structures probably of bark about 3m long and later as faerings – four oared vessels. Some of these were found with a larger ship, the Gokstad ship, implying their role as dingies to make landfalls in shallow water (Seal 2003). It is legitimate to imagine the rivers, lakes and estuaries as thronging with these small personal craft, small enough and light enough to be carried by their crew when the water ran out.

In general the use of water-transport in the waters around early medieval Britain depends too heavily on imagination. We need more boats, of both inland and seagoing type, to learn how they were handled, landed, ported and sailed. And these boats must be well preserved in order to have some chance of recording the rigging. We do not have the blue clay mounds that protected Gokstad and Oseberg, and an aggressive erosion has operated relentlessly along the eastern seaboard of Britain. This puts a premium on the estuarine creeks, and we have to learn how to explore these with remote sensing into order to find wrecks. Meanwhile the

construction of replicas, highly advanced in Scandinavia but virtually unknown in Britain, has proved itself a valuable aid to research.

The state of knowledge suggests that early medieval seafarers could travel from any point to any other on the sea, and at about 15-20 mph did it rather faster and carrying heavier loads than was possible for terrestrial transport. There were perils associated with both forms of travel, and an accident in a ship was more likely to be lethal. But there was no technical barrier to the use of Britain's seas, and if we look for reasons for migration, trade or a lack of it, we must look to other factors (see below).

2.4 The Anglo-Saxon Ports

Chris Loveluck

Much has been written in the last thirty years about the emergence of coastal and estuarine ports (often termed *emporia*, or *wics* in an Anglo-Saxon context) from the seventh century onwards, around the English Channel and the North Sea. These settlements have been classified and characterised using concepts borrowed from human geography and social anthropology: whether 'gateway communities', using the work of Hirth (1978); 'ports-of-trade', borrowing from Polanyi (1963; Polanyi and Polanyi 1978) and Renfrew (1975); or even 'dream cities', in seminal works by Richard Hodges (Hodges 1982, 1989; 2000). All of these terms came with conceptual associations which viewed the settlements they described as outside or something apart from the wider settlement and social hierarchies of their landward hinterlands. Gateway communities were viewed as trading settlements designed to exploit hinterlands, usually from a coastal location. Ports-of trade were defined as liminal settlements founded on social and geographical boundaries by elite groups, with a view to controlling trade and wider socially-embedded exchange, usually in objects classified as 'prestige goods'. And the concept of 'dream cities', as applied to the maritime and riverine central places of the seventh to ninth centuries AD, in northwest Europe, ascribed their existence and location to a conscious decision to locate beyond former Roman centres, perhaps influenced by monastic ideas of location apart from former centres (Hodges 2000, 86-92). Although, such centres also existed in pagan northern Europe, where such an argument could not apply, and certain trading centres had an undoubted association with secular and religious authorities housed in former Roman townscapes immediately adjacent

to them, for example at London and York. (Malcolm, Bowsher, with Cowie 2003, 143; Kemp 1996, 76-83).

The ports-of-trade model espoused by Richard Hodges, with amendments in the late 1980s stressing the importance of specialist commodity production and exchange at these centres, has been particularly influential during the last quarter century for the interpretation of the roles of the trading and artisan settlements around the Channel and North Sea, from the mid seventh to mid ninth centuries AD. The emporia were viewed as foundations by Frankish, Anglo-Saxon and Scandinavian kings in order to consolidate and enhance their ruling authority. In particular, these central places were seen as entry-points for the controlled redistribution of luxury 'prestige' objects, which had social value due to their rarity. This was accompanied by the suggestion of a change in the organisation of production, both in the rural world and in the fabrication of specialist products at emporia (Hodges 1982, 50-56). At the time when these ideas were put forward, however, and generally accepted, comprehensive publication of much of the excavated remains from most emporia had not yet been achieved. Furthermore, detailed studies had not been undertaken of settlement patterns and exploitation of coastal zones adjacent to emporia, nor of relations between emporia and hinterlands in the interior, away from the coasts - apart from the suggested split functions between Hamwic-Southampton and Winchester, by Martin Biddle (1976, 114-115).

John Moreland also highlighted the multiple spheres in which these settlements functioned, with their roles as foci for the redistribution of prestige goods, via gift exchange, probably existing alongside their role in specialist commodity production, exchange and taxation. The likelihood that emporia contributed to profound transformations in the organisation of rural production and provisioning mechanisms, or reflected changes that had already taken place, was also stressed - not least in the provisioning of the dietary needs of emporia (Moreland 2000, 80-81). Significantly, Moreland also questioned the paramount role of Kings and royal families as the sole controllers of the distribution of rare commodities derived from long-distance exchange, apparently channelled by emporia, but he still emphasized the role of elites in controlling surpluses and their transformation into imported goods via exchange (Moreland 2000, 101-103). Subsequent studies of import distributions in rural hinterlands of emporia, in the later 1990s and early in this decade, have further emphasized the likely channelling roles and links between predominantly elite rural centres and emporia, emphasizing connectivity between the ports and their hinterlands, and also the impact of the

ports on the use of specific artefacts, such as coinage, in their surrounding regions (Palmer 2003; Naylor 2004).

The recent trend to stress the connectivity of ports with their landward rural hinterlands, especially via elite hierarchies and networks, has diminished the analysis of the port settlements themselves and of the archaeological signatures provided by their populations, in regard to their liminality or 'otherness', compared to most contemporary rural communities. In much of northern European scholarship, the emphasis on control of surpluses and exchange as a preserve of landed elites has also resulted in the presentation of merchants operating from these ports as highly subordinate clients, acting on behalf of secular and ecclesiastical patrons. In England, the potential for merchant seafarers to trade and make a profit, in addition to working for their patrons, has rarely been considered in the last twenty years, nor has their social background as people from coastal, seafaring regions. Only in recent publications in relation to Hamwic-Southampton and Lundenwic-London have the independence and profit-making abilities of merchants been considered, although to a limited extent (Birbeck 2005, 192; Malcolm, Bowsher and Cowie 2003, 189-190). The studies by Stéphane Lebecq (1983, 1997) and Peter Schmid (1991) for Frisia and the North Sea coast of Germany provide rare and now quite old studies of the social backgrounds of the seafaring and farming communities from whom specialist merchant households are likely to have emerged. Both envisaged potential to profit as a stimulus to the emergence of specialist seafaring traders, from the sixth and seventh centuries onwards. Similarly, the more recent work of Sindbæk has also stressed that a profit motive drove long-distance traders in Scandinavia, which stimulated a hierarchy of trading places as nodal points, not divorced from political support but alongside it (Sindbæk 2007, 128-129). The origin of the long-distance traders and how such specialists developed was not discussed, however. Nor was the social make-up of the nodal points themselves.

Fig 3: Location of coastal and marshland/fenland sites between the Humber Estuary and the Fens discussed in the text, dating from c.AD 600-1000

The pattern of nearly universal access to Continental imports amongst the coastal social hierarchy between the Humber and the Fens, between the seventh and late ninth centuries (at least in terms of pottery and querns) has a number of implications for the understanding of the social dynamics of the North Sea coast. [FIG 3] Firstly, it would appear that the trading

centre at York did not exhibit any significant control over the actions of seafaring traders around the Humber estuary, nor is there evidence of control of their actions as they sailed up the east coast. The very widespread occurrence of imported goods in the coastal margins suggests that if there had been an intention to control access to imported goods using emporia centres, on the part of Anglo-Saxon royal powers, then they failed in that role. Secondly, certain distributions of imported goods also suggest the operation of different maritime connections and trading activities along the North Sea coast from the Humber to the Fens. This is perhaps reflected most clearly in the distribution of Ipswich ware. The excavations at Fishergate, and other deposits from later seventh- to late ninth-century York have yielded comparatively few sherds of Ipswich ware, perhaps as little as 50 sherds, and the ware is hardly represented in areas between York and a concentration around the Humber. The widespread occurrence of Ipswich ware only runs in a band approximately ten kilometres in depth around the shores of Holderness and the Humber estuary, and then extends down the east coast. [FIG 4] There is no apparent distribution linked to sites of specific character or status in this coast and hinterland zone. A rank-related distribution may certainly be reflected in quantities of Ipswich ware, but it is undeniable that a far greater spectrum of the population along the coast had access to Ipswich ware, in comparison to the inhabitants of York, and its immediate hinterland. This suggests the existence of different exchange networks operating via the coast and via the trading centre at York, even though the same seafaring merchants may have been involved in both networks (Loveluck in press a).

Fig 4: Location of sites with Ipswich ware pottery between the Humber Estuary and the Fens, dating from c.AD 700-900.

The existence of different trading networks may also be reflected in the use of coinage. Around the Humber, coinage was deposited at landing places and larger settlements from the end of the seventh century, and the vast majority of the coinage deposited was struck in Frisia

and northern France, until the 730s. Although, significantly, the earliest silver coinage struck in Northumbria, by King Aldfrith (AD 685-705) also has a concentration around the Humber and East Yorkshire coast, with discoveries at Whitby, and the Humber landing place at North Ferriby (Loveluck 1994; 1996, 43-45). Aldfrith also died at the royal estate of Driffield at the headwaters of the River Hull, which leads into the Humber, suggesting an interest in facilitating the trading activities of the Humber zone. Interestingly, silver coinage dating from between the late seventh century until the 730s is currently very rare in York, with only one Frisian issue being found at Fishergate, prior to a predominance of Northumbrian issues (Kemp 1996, 66; Naylor 2004).

This difference between York and the coastal zone indicates, firstly, that the Humber estuary was the major contact and exchange zone prior to the foundation of a trading centre at York (Loveluck 1996, 43-45; Naylor 2004), and that the distinctiveness of the populations of the coast was maintained via direct maritime connections, even after the Fishergate settlement was in existence. There is a greater quantity of Continental pottery at Fishergate, however, when compared to the coastal settlements, and this may reflect a greater concentration of foreign seafarers operating in York from the mid eighth century onwards. In this context it is also interesting to note that the coastal concentration of Ipswich ware is evident on the Humber from the early ninth century, on the basis of current excavated sequences (Loveluck 2007). This could reflect different mariners operating around the Humber, or differential choice on behalf of foreign seafarers in terms of what to trade.

With the socio-political changes of the tenth and eleventh centuries in England the, major port towns became fully integrated with their rural hinterlands, at the same time as the scale of maritime-orientation and freedoms of coastal populations diminished overall. As noted earlier, this seems to be a Pan-North Sea trend. In Jutland, direct exchange contacts with foreigners were re-focussed on royal port towns, and former complex coastal settlements were redefined within a process of rural manorialisation (Loveluck in press a). The tenth-century changes at Flixborough can be attributed to a similar redefinition of urban-rural relations; and likewise, in coastal Flanders, the populations of coastal marshes lost their long-distance contacts at the same time as the onset of major land reclamation and the growth of new port towns, such as Bruges, both directly sponsored by the Count of Flanders (Loveluck and Tys 2006, 162). Hence, diminished long-distance contacts coincided with increases in the

demonstrable power of royal and regional governments over the liminal worlds of their coastal margins.

The current evidence from the coastal regions, especially along the North-Sea coast of England, suggests that emporia ports did not act successfully in controlling access to imported luxuries, if that was ever their intended role (Loveluck, in press a). Whereas, they certainly did play a key role as centres of taxation on the movement of bulk commodities by sea, as the textual sources have always suggested (Verhulst 2002, 130; Loveluck and Tys 2006, 146). However, if we remove the idea of their paramount role on the control of socially-embedded exchange in coastal zones, as the data begins to suggest that we should, then it becomes necessary to significantly re-evaluate the nature of the merchant and artisan communities that lived permanently or periodically at the emporia, between the mid to late seventh and late ninth centuries. The past emphasis on their subordinate role to royal authority and landed aristocracies has resulted in a lack of attention paid to the archaeological characteristics of the people themselves, who lived in the emporia communities. Yet, there are striking traits (see Loveluck, in press a). For example, weapons were relatively abundant amongst the artisan and trading tenements at both Fishergate, York, and at Hamwic-Southampton, as was evidence of riding gear, suggesting the ability to move around certain land routes quickly, in addition to maritime and river routes (Rogers 1993, 1428-1432; Loader et al. 2005, 53-79) Furthermore, in the refuse pits associated with the artisans and traders, imported glass vessel fragments of the finest quality, sometimes with reticella trails, were found (again at Fishergate, York, and over a thousand fragments from Hamwic-Southampton). The vessel fragments do not appear to have been used in bead-making, as has been assumed in the past (Hunter and Jackson 1993; Hunter and Heyworth 1998; Every, Loader and Mepham 2005). It would appear, therefore, that a significant number of merchant and artisan households had access to the material culture of warfare, mobility, and luxury drinking normally associated with the highest secular aristocratic households at their rural estate centres, like Flixborough in the hinterland of the Humber, and Portchester Castle, in the hinterland of Southampton (Loveluck 2007; Cunliffe 1976).

What set rural aristocrats apart from the merchant and artisan populations of the emporia was not their use of different items of portable wealth. Instead, the highest rural elites were marked out by their control of the resources of agricultural territories, and especially rituals of dominance in landscapes and coastal seascapes: namely, activities such as hunting,

wildfowling and targeting of specific feast species, such as cranes and dolphins, in the case of seventh- to eighth-century, and tenth-century Flixborough (Loveluck 2007). In contrast, for artisan and seafaring communities of emporia, their roles were defined by a much greater use of coinage, a broader usage of imported commodities in their everyday lives, and a greater ethnic diversity. This is not to say that the merchant and artisan communities were not the subject of policing and control. The discovery of the St. Mary's cemetery at Hamwic-Southampton, with its rich late seventh-century burials, often with weapons; and the Buttermarket cemetery, at Ipswich, could represent evidence of royal officers with retinues to oversee toll collection and trade (Birbeck 2005; Scull 2009, 302-303). The wider presence of weapons and other luxuries amongst the populations of the emporia, however, makes such an interpretation the subject of some debate. Although the need for a significant armed presence to control and tax armed, and to a certain extent independent, merchants would make sense from the administrative perspective of political authorities.

With the socio-political changes of the tenth and eleventh centuries in England: namely, Scandinavian elite presence in the urban centres of eastern England, the creation of the West Saxon Kingdom of England, and the Danish and Norman Conquests, major port towns became much more integrated with their rural hinterlands, at the same time as the scale of maritime-orientation and freedoms of coastal populations diminished overall. Exactly the same phenomenon can be seen in coastal Flanders and in Jutland, between the tenth and mid eleventh centuries, in the sense that direct exchange contacts with foreigners were re-focussed on royal or comital port towns (Loveluck and Tys 2006, 162; Loveluck in press a).

The towns, especially major sea or river ports, became the principal locations for artisan and trading activity, producing finished goods for their surrounding regions in a way that had not been the case with most of the earlier emporia (with the exception of Ipswich, in relation to Ipswich ware pottery, and potentially its contents). This resulted from a combination of more developed governmental structures, with towns as administered regional central places, markets and taxation collection points, as well as preferred locations for trade, on the part of seafaring merchants. For example, in tenth-century York, while under Scandinavian rule, the concentration of secular political patronage and ecclesiastical patronage (from the Archbishops of York) resulted in very wealthy artisan and resident, or transient, merchant populations. The remains from the Coppergate excavations illustrate this point, with its concentration of ironworkers, and gold and silver workers, amongst other crafts. Also found

within these same tenth- to eleventh-century artisan/merchant tenements were riding gear and weapons (spears, arrowheads and sword furniture) and the reused Coppergate helmet, amongst items denoting integration within Scandinavian trade routes to the orient, in the form of silk and Islamic coins (Hall 1981; Hall et al 2004; Ottaway 1992; Tweddle 1992; Walton Rogers 1997). By AD 1000, London was the object of twice yearly visits by merchants, known as 'Esterlings' – the easterners, who paid their port tolls in large quantities of pepper from Indonesia or the Malabar coast of India (Keay 2006, 108). By the eleventh century, therefore, it was this early medieval 'globalisation' that set the major port towns and their societies apart from those of the countryside.

Research on the wics thus needs to be broadened and deepened in the light of these ideas. It is not a given that these settlements were short-lived royal instruments; we should expect them to have a longer life, a more plural participation and more active networking with inland markets. This requires in the first place a determination to publish the results from Ipswich and in the second an active policy of protection and controlled research for the waterfronts of all known wics. Those that are still unknown (Sandwich, Fordwich) are attractive research targets. Overseas, British archaeologists have much to learn from the early beachmarkets being defined in Scandinavia and the settlement patterns in the Frisian mudflats. These studies probably provide the most immediate analogies to the genesis of maritime trade in Britain.

2.5. Perceptions of Maritime Space: Liminality and Connectivity

Chris Loveluck

Use of the inland and coastal waters is owed to the attitudes as well as the economic and political agendas of our early medieval forebears (see Loveluck in press a). Both sources from eastern (broadly-speaking, Anglo-Saxon writings) and western Britain and Ireland (mostly Welsh and Irish Saints' Lives) display links with the sea, especially in relation to travel on the part of ecclesiastics. Notably, however, the latter seem to have travelled via existing maritime networks and infrastructures, and hence some of the early medieval written evidence can provide at least a 'misty window' through which early medieval maritime-oriented societies can be glimpsed.

The Anglo-Saxon writers were clerics, usually writing from monasteries, and their works express a duality of view in relation to the sea, coastal margins and mariners. For example, works such as the eighth-century *Life of St. Guthlac* present the marshland Fens and east coast of England (and their occupants) as 'liminal', on the 'edge' of the inhabited world, as desolate wastelands, and the beginning of the realm of demons (*Felix* 87, trans Colgrave 1956; Coates 1998, 58). This liminal view of the edge of land and its role in religious polemic, where Saints battled demons, has clear echoes in the heroic poem *Beowulf*. The perception of a desolate waste between land and sea presented in *Beowulf* could reflect a generally-held elite view of the low-lying wet margins of eastern England, from the seventh to eighth century, albeit expressed through the filter of a Christian cleric who committed the poem to writing (Heaney 1999, x-xi). Above all, however, those who described the coastal margins of eastern England as liminal wastes wrote from the perspective of landholding authorities, who judged value on the basis of potential for arable cultivation (Loveluck and Tys 2006, 162).

The second representation of the watery edge of England also comes from clerics but the connectivity provided by the coast, and more particularly coastal ports, is stressed. Again, this connectivity is reflected in passages from *Beowulf* (lines 161-300, trans. Heaney 1999, 8-11), and in Bede's *Ecclesiastical History*. The latter work provides famous descriptions of key port centres, housing transitory or permanent merchant communities of foreigners, often Frisians, notably in London and York (*HE* II, 3, trans Colgrave and Mynors 1969). These ports were gateways to, and meeting points with those from foreign lands, and also peaceful venues for interaction between Christian and pagan worlds – Frisia was largely pagan in Bede's day, despite the activities of the Anglo-Saxon missionary, Willibrord, from the 690s (Parsons 1996, 30-48). Indeed, the extent of maritime connectivity between eastern England and Frisia, probably encouraged the Anglo-Saxon missions, although with Frankish assent. From the end of the eighth century, however, we also see the presentation of the seaways by churchmen, such as Alcuin, as conveyors of death and destruction, primarily as a result of raiding or organised invasion by pagan 'northmen' from Scandinavia (*Alcuin, Ep*. No. 20, trans. Allott 1974). Nevertheless, despite the seaways conveying danger, Susan Rose has recently observed that a very significant proportion of surviving Anglo-Saxon poetry, predominately written down in the tenth and eleventh centuries, demonstrates an intimate link between the sea, seaborne travel and Anglo-Saxon mentality (Rose 2007, 1-3).

The connectivity and freedom of movement provided by the seaways is stressed in sources relating to Scandinavians in England, between the eighth and eleventh centuries, whether in the context of trading, raiding or organised campaigns of seaborne conquest. The poem based on the travels of Ottar/Ohthere, written down at the court of Alfred the Great of Wessex, provides a key illustration of the range of maritime travel and the ports of call for one Norwegian chieftain-come-merchant, whose world ranged from the Arctic regions of northern Norway to the trading centres of *Skiringsaal* (probably Kaupang, Vestfold, Norway) and Hedeby (Haithabu, now in Schleswig-Holstein, Germany), and to the North Sea and Channel coasts of England (Bately and Englert 2007). Whereas, entries in the Anglo-Saxon Chronicle and other sources provide abundant evidence of Scandinavian seaborne warfare, from the attacks at Lindisfarne and Portland, on the North Sea and Channel coasts in the late eighth century, to the more organised raids and campaigns of conquest in the ninth, tenth and eleventh centuries, around the coasts of England, Wales, Ireland and Scotland (*ASC*, trans. Swanton 1996; Redknap 2000 et al.).

The duality of liminality and connectivity on the part of coastal dwellers and seafarers, glimpsed in textual sources, is abundantly reflected in the growing archaeological signatures of early medieval coastal societies in the maritime regions around the English coast discussed here. Exactly what constituted 'coastal' however, depends on perceptions of the 'edge of land'. In the early medieval period, the 'edge of land' included marshland landscapes with their islands and tidal creek systems, between land and sea (Westerdahl 2000, 15-17). The balance between the liminal and linking roles of the coast, its waterways and societies also changed significantly during the course of the early medieval centuries, associated with transformation in roles of ports/towns and new socio-political circumstances, all of which are explored below (Loveluck, in press a).

2.6 How imperatives changed

Martin Carver

With a combination of ships and boats, blue water crossings and manouvres in estuaries and tidal creeks, the Anglo-Saxon water-world is potentially a busy place, full of local and overseas traffic. However the key word here is "potentially". When we examine the terrestrial evidence for the movement of people and goods across the sea we find that it is rather specific and temporary rather than general and continuous. Although the potential

existed for sea travel all round the island, it did not actually happen: there were preferred routes and distinctive attitudes that changed with time. There are therefore other factors at work. History is not directly caused by geography, since the geography is largely static; therefore the imperative for change must lie elsewhere in the realm of ideas and politics and its alignments and alliances.

There are number of imperatives persuading people to cross the sea: migration, invasion, trade, enslavement, religious mission, and archaeologists currently have the greatest difficulty telling the difference between them. The debate about Anglo-Saxon immigration continues: some remain in doubt that large numbers of Germans arrived on the east coast of Britain in the 5th century as implied by Bede's narrative and the similarity of grave goods either side of the North Sea (Cunliffe 2001, 454; 2008, 419). Others prefer to give the Britons agency and allow them to realign for political or ideological reasons with their neighbours, without a need for migration (Lucy 2000; Hills 2003). Others like to see a few powerful Saxons invading first the land and then the gene pool, to create a DNA descendancy related to that of northern Europe, without having to invoke large numbers crossing the sea (Thomas, Stumpf and Härke 2006).

We could try to escape this pendulum swinging between single causes, by looking at the sea rather than the land. If sea travel is feasible and frequent in the first millennium AD, then the natural targets of research are not territories at all, but maritime spaces (Carver 1990; Crumlin-Pedersen 1991; Westerdahl 1991, 2006). The western, eastern and southern seas that border Britain are potentially social arenas themselves and may develop their own agendas and historical trajectories. We can see this, for example, in the finds of imported Mediterranean red-slip ware and amphorae of the 6th century, which illuminate a route up the Irish Sea (Cunliffe 2001, 481) [FIG 5]. It is succeeded in the 7th century by imports from Aquitaine – but still following the same western seaway. Technically there is nothing to stop a sea captain with a load of Mediterranean pottery turning right at the Scilly Isles and appearing in London or York as the Romans did before them. But they did not – this pottery does not appear in Anglo-Saxon England in any quantities that could allow us to believe in a supply (see Vince 1990, 7,11; Watson et el 2001, 55 for sherds of 5th c Mediterranean wine amphorae c400-500 found at Billingsgate). This pottery is therefore showing up a unifying project, and where pots could go, people could go too.

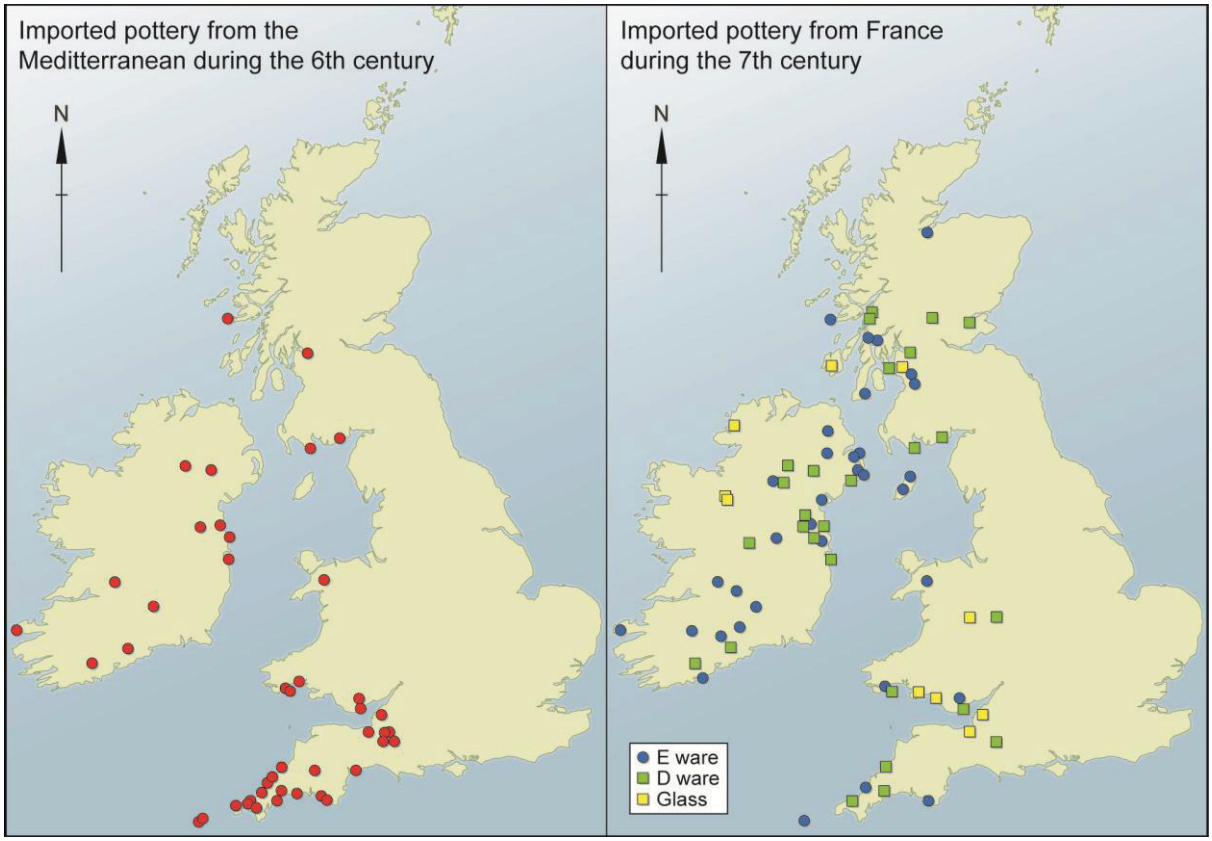

Fig 5: Distribution of imported pottery finds from the fifth and sixth centruy

The significance of this is that the Irish and the Welsh did not need St Patrick or any other missionary to find out about Christianity or the Pope or Byzantium or Greek or Latin or watermills, in which they were proficient. If the old megalithic seaway is operating, then Irishmen and Britons will have visited the Mediterranean, and Mediterranean people will be visitors to the courts of Connaught, Powys or Dal Riada. We can also go along with Euan Campbell (2001) that the west of Scotland was not invaded by a rush of Irish, bringing Irish kingship, Columba and Christianity. The Irish and the western Scots were simply the same maritime people in contact with each other since the Bronze Age or before. The course of history is therefore not determined by a migration, but by the ideas of the indigenous people, stimulated by travel, visitors and imported red plates.

Distributions in the eastern sea, such as glass are traveling across the sea, with a certain emphasis, indicating a certain valency, between the east coast of Britain, western Scandinavia and the Rhineland. There is a maritime system operating in the east, just as it does in the west, and Britain is a land of two halves with their backs to each other. In this part of Europe at least this is not so much an age of migrations, as an age of maritime communities, in which

Scots or Irish on the one hand and Frisians and Angles on the other are building confederations connected by trade, intermarriage and belief. As Catherine Hills has long insisted and Chris Loveluck is showing anew, the 6th century was a period of multiple exchange between multiple centres all along the north sea coast and in the Danish archipelago (above). Only in the 8th century, does the axis of exchange shift to cross-channel, exemplified by the distribution of sceattas. If this is valid, than we need to account for the fact that we ended up with England, Wales and Ireland, rather than a Northern Irish Sea or a southern North Sea kingdom [FIG 5].

According to a recent collection of papers entitled *The Sixth Century*, the changes in territorial allegiance and the upsurge of maritime traffic were attributed largely to the rise of the Merovingian kingdom, although it is less clear what caused the rise itself (Näsman 1998, Wickham 1998). This seems to underestimate the vigour of sea travel in the 5/6th – but it can be accepted that by the year 600, the combination of Frankish ambition, the return of the Roman empire as a model and the Christian mission was provoking the formation of landbased territories. In Britain these were normally Iron Age and Roman territories redefined: Kent, East Anglia for example being successors to civitates (Carver forthcoming). Each was shortly to acquire Christian leaders, taxation and the wic.

As the English retrenched from their membership of the maritime community, there was a brief flowering of ship burial in East Anglia [FIG 6]. We have very few early medieval sites – Sutton Hoo, Snape and Caistor. There are hints of Bronze Age boat-shaped containers in Britain, but no tradition to draw on. The situation is equally discontinuous on the continent: 5-6th century burials on Bornholm, attributed to pagan priests, and a few early examples on the Channel coast, such as the fabulously preserved Falward. A diffusionary model is not really open to us on this evidence, so we are looking for other imperatives and other contexts to help explain why, at this time of all times, an investment in burial ships in East Anglia was thought to be necessary or desirable (Carver 1995b). Among the more convincing explanations is the role of the ship in a wider shared mythology, perhaps going back into the Bronze Age iconography studied by John Coles, Richard Bradley and Flemming Kaul (See Bradley 2006). Recently Christer Westerdahl has shown that ritual and taboo feature in every part of the ship business, from selecting the timber, stepping the mast, launching the vessel and choosing the figure head. He points out that the stone age favoured the elk, the Bronze Age the horse and the Iron Age the dragon for its figure heads – all land-based

animals whose job is celebrating or protecting sailors from the opposition of sea and land (Westerdahl 2005, 2006). Similarly Jon Henderson shows that Atlantic people invested in monuments on seaward promontories from the Neolithic well into the Medieval period (Henderson 2007, 299-300).

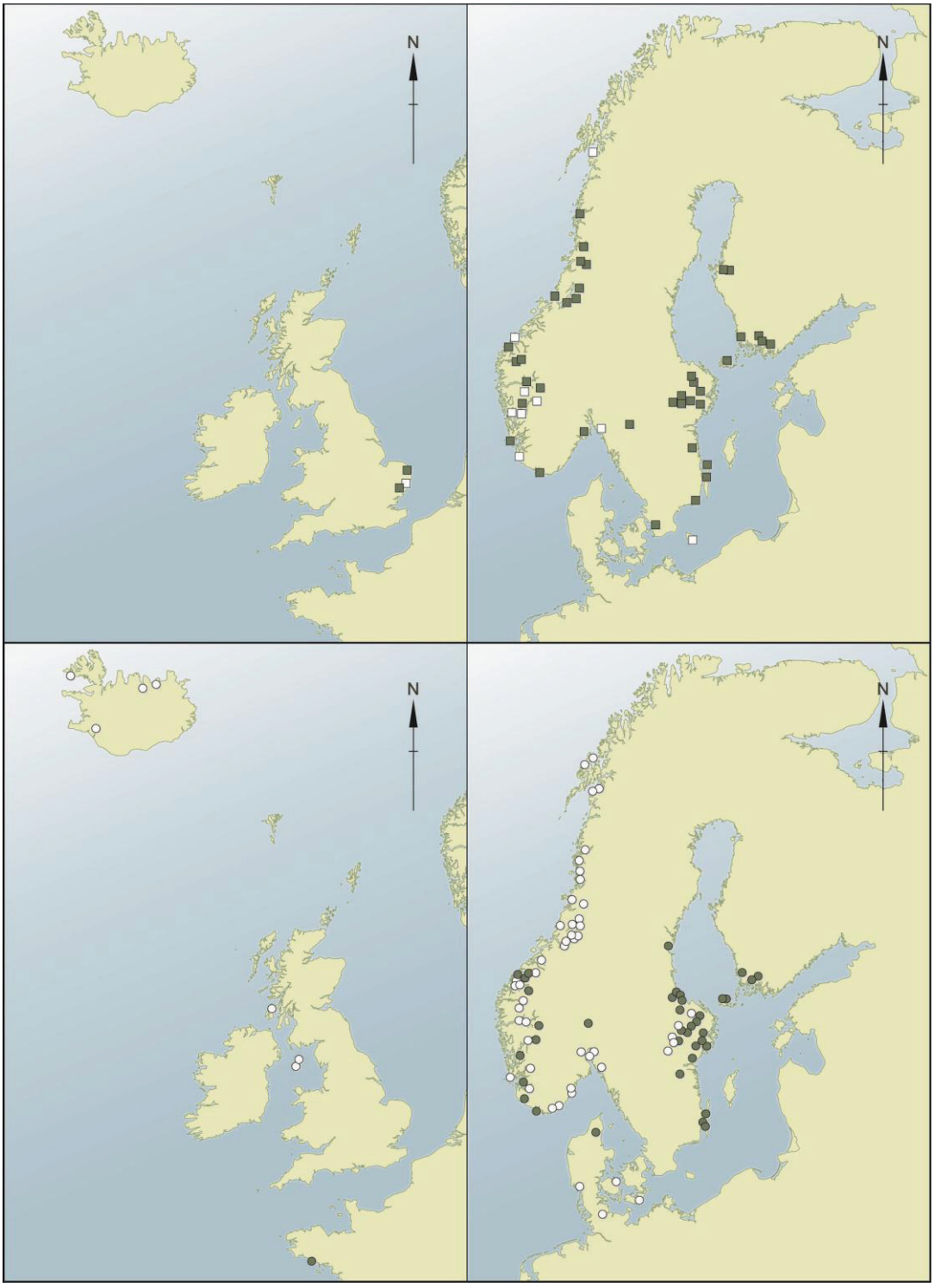

Fig 6: Distribution of Vendel (left) and Viking (right) ship burial sites

The only continuity required here is an intellectual continuity; in other words, the assumption of narratives, that, like folk tales, stay long in use, even where they have no material manifestations. What ship burial indicates is therefore a decision to reify a set of ideas that are already present in the common mind but don't need monumentalizing until the appropriate moment. In the light of what is to come as a facet of the Christian kingdom, namely the tight control of the wic, it is even possible to see in the ship burials of East Anglia as farewell to the freedom of the seas and a long metaphysical relationship with the ocean.

The construction of the wics in the 7/8th century, for example at Lundenwic, Ipswich, Hamwih and Eforwic represents a real sea-change, in which certain places are targeted for travel, with, we must assume, a consequent reduction in casual exchanges off creeks and at beach markets. The method of loading and unloading is still tidal, making use of a river beach, like the Strand at London. That the object is to increase revenue is implied by the ordered street plan as at Hamwih, the provision of storehouses as at London, the possible foreign cantonments as at Ipswich, the provision of meat in cuts – as if to a garrison - at York.

The success of the venture in increasing cargo in the 9th century is conventionally signaled by the transfer by Alfred of the landing point in London from the Strand into the old Roman city of London. There may also be an ideological reason for this – as in the creation of the burhs, which emulated the network of Roman towns: a move back into the Roman capital indicated a move back into the Roman ethos as Alfred's family saw it. But there were practical factors too: use of a refurbished Roman dock meant that cargos could be landed whatever the state of the tide. This new landing strategy implies that heavier vessels were plying the English seas, although few examples have been found this side of the North Sea. Following Crumlin-Pedersen we can see the merchants of Alfred's time advancing towards large deep-water ocean-going vessels, whose masters had begun to face the challenge of sailing near the wind with a square sail, presumably making use of a massive keel and the dead weight of the hull (Crumlin-Pedersen 2000, 2010). At the same time the 10th century in England represents another peculiar archeological hiatus; the apparent lack of international imports at a time of outstanding wealth. The first London waterfront is dated by dendrochronology to the late 10th century, and Alan Vince found that before c1000 the numbers of imported sherds 'could be counted on the fingers of one hand'. He decides that London could not have been active in

international trade between 886 and 1000, although it had been before, and would be again. He sums up: "I would suggest as a hypothesis that the inland towns of southern England mainly came into existence as forts in the 9th century, developed local marketing roles in the 10th and early 11th century and only later became part of the network for distributing goods to the coast in one direction and circulating imports inland in the other" (Vince 1994, 114; see also Astill 2000, 2006). There is therefore an international trade network to find off the coasts of 10th century England which involved English as well as Norse entrepreneurs, and brought exotic goods to land in unexpected places.

These certainly existed, involving long journeys from England to north Germany, Denmark and Scandinavia, as we learn from the voyages of Ohthere and Wulfstan. The journeys recounted by the Norwegian Ohthere to King Alfred showed the viable routeways of the fur trade, and its principal route the North Way, ie the coast of Norway (Bately and Englert 2007). In pursuit of walrus, Ottar traveled from a home somewhere near the Lofoten islands northwards around the North Cape, past the Varanger fjord and into the White Sea as far as the Varzuga river. On a second journey he travelled south along coast, through the Skagerrak and Kattegat to Hedeby. Wulstan reported a journey from Hedeby along the south Baltic coast to the mouth of the Vistula. We get a strong feeling that there was nothing abnormal about these journeys. Ottar made about 50-80 nautical miles a day, but spent much time waiting for a favourable wind. His sailing season was May to October, and in the earlier and later months he would camp each night; sailing in northern waters in July and August he could expect more than 17 hours daylight, so would not have to (ibid, 44, 121). His ship has been judged by modern maritime experts to have resembled that found at Gokstad, with a crew sufficient to row in and out of harbour. But with all the crew and their provisions he should still have been able to carry 6 tons of furs and tusks to Hedeby, and more than recoup his expenses and dangers (ibid. 115).

It is interesting to compare these journeys, with their informed comments on the peoples of the north, the Finnas and the Beormas, to the rather different perception of maritime space revealed by the unique contemporary map that has survived as BL Cotton Tiberius B.V f 56v. Here we have a strange concoction, which even when the names are written clearly, as David Hill has obligingly done for us, does not seem to belong to the world of the well informed navigators that Ohthere and Wulstan knew (Hill 1981, 2-3). The map is thought to derive from a Roman original copied in the 9th century and modified in the 11th century to reflect

Archbishop Sigeric's journey to Rome in 990 via Pavia, Verona and Lucca (Barber 2006, 4-8). It refers to biblical cosmology, showing Noah's Ark, the crossing of the Red Sea and nine of the twelve tribes of Israel. Its geography reflects that of Orosius and may have even shared at a scriptorium with the production of the Old English version of the Orosius within King Alfred's ambit at Winchester (Bately 2007, 21). So we have to accept that each is representative of the changing interests of the English intelligensia.

Drawing on New media Theory and analogies from virtual reality, Martin K Foys suggests that the Anglo-Saxon *mappa mundi* is best understood as a datascape, 'a cartographic product that need not have correspondence with any real place on earth, but rather with imaginary places and circumstances made to seem real enough by an appeal to aspects of visual perception' (Foys 2009, 120; see also *Review of English Studies* 60 (2009): 475-6). There is plainly a correspondence in this case with real places, but we can take the point that this is not a map needed by navigators, but is an expression of the intellectually knowable, the known unknowns.

Perhaps the most interesting aspect in the maritime context is the apparent loss of sympathy with the Scandinavian seascape, now replaced in the affection and in the intellect with a mish mash of tribes and wonders of the east, including the famous "here lions abound." Although, as Martin Foys points out, there is some recognition of Scandinavia, the coasts of the Channel, the North Sea and the Baltic are now mainly hidden in a fog of ignorance. Compare this vaguery with Ottar's and Wulstan's descriptions, not to mention a presumed knowledge of the Anglo-Saxon homelands and nearly 200 years of Viking voyages in the three English seas, and indeed the north Atlantic (Marcus 1980, 41 et seq.). It seems rather that the Scandinavians are being deliberately excluded from the new Anglo-Saxon version of history, and away in the same boat, so to speak, go the seafaring English. Away from the court and the cloisters, no doubt merchants and fishermen still routinely risked their lives. But the political affectation of the upper classes appears to have domesticated the insular sea space and made of it a literary conceit.

Travel on the sea is therefore influenced by population pressure, trade ambition, political necessity, ideological competition. Archaeology's greatest contributions to this debate are probably the development of stable isotope and biomolecular techniques to map where people and artefacts (especially organic artefacts) have actually crossed the sea. The big ERC

projects tracking plants and animals crossing the Indian Ocean and the northern Asian continent have shown the way. These methods should be applied to the three seas of Britain. There is also much to be gained from theoretical studies, anthropological and archaeological, on how to distinguish trade from migration and the half dozen other mechanisms by which ideas are exchanged resulting in similar artefacts and practices appearing on different shores.

Research into the Anglo-Saxon use of the sea and rivers thus has a number of components: geographical, economic, political, behavioural and ideological. Archaeology is qualified to inquire into all these areas but will need a strategy that is multi-tooled and integrated in order to win research dividends from every opportunity. More detailed studies follow that indicate several ways forward.

3. Methods of Investigation

3.1 Coastal assessments

Robin Daniels

Outline reconstructions of the early medieval coastline have been carried out for some of the areas published under the *An Historical Atlas of...* series (e.g. Leslie and Short 1999; Bennett & Bennett 1993; Wade-Martins 1994; Lawson & Killingray 2004; also Hill 1981). Romney and Walland Marshes have been the subject of a long-term research programme identifying a very detailed chronology of geomorphological and environmental change across the peninsular (Eddison 1995; 2000; Eddison & Green 1998; Eddison *et al.* 1998; Long *et al.* 2002). Further attempts to reconstruct regional coastlines during the early medieval period include the south coast (Harrington & Welch forthcoming), Wantsum Channel and eastern Kent coast (Brookes 2007), the Solent (Tubbs 1999:10), and Hampshire coast (Brooks and Glasspole 1928). The remaining stretches of coast east of Hampshire, including the Isle of Wight, had limited impact from sea-level changes, apart from the flooding of estuaries, but were subject to erosion at various points. Further to the north, the area of the levels and the Severn Estuary region appear to have been abandoned in the later Roman period and not fully reclaimed again until the eleventh century (Rippon 2006: 80-1).

More detailed fieldwork has been commissioned by English Heritage on the foreshore and coastal margin, with the aim of identifying coastal archaeological sites falling into three categories:-

- terrestrial sites which through processes of erosion or inundation are now at the water's edge or beneath it.
- individual archaeological assets such as vessels and aircraft which have either been wrecked at the coast, abandoned there or deposited in specific locations for reasons ranging from sea defence to ritual activity.
- Settlements and installations deliberately constructed at the coast to allow the exploitation of the marine/land interface as a source of food or to facilitate the commencement or end of sea journeys carried out for a vast variety of different purposes.

All three can provide important archaeological information that may be enhanced by the possible preservation of organic materials which do not normally survive in a terrestrial archaeological context.

Throughout the 1980's and 90's a number of detailed surveys of stretches of individual coastline, estuaries and major wetlands were commissioned by English Heritage (Coles and Coles 1986; 1990; Coles *et al.* 1992; Coles & Minnett 1995; 1996; Coles and Hall 1996; Crowson *et al.* 2000; Hall 1987; 1992; 1996; Hall and Coles 1994; Hayes & Lane 1992; Healy 1996; Lane 1993; Pryor 2001; Silvester 1988; 1991; Waller 1994; Cowell and Innes 1994; Hall *et al.* 1995; Hodgkinson *et al.* 2001; Leah *et al.* 1997; 1998; Middleton *et al.* 1995; 2001; van de Noort and Ellis 1995; 1998; 1999; 2000; 2001) and many of these areas are the subject of ongoing work. Detailed surveys have also taken place around the coast of the Isle of Wight and the Hampshire and Wight Trust for Maritime Archaeology is actively engaged in underwater research in the Solent.

These surveys have been multi-period and have so far only thrown up limited evidence of early medieval activity. Nevertheless they have demonstrated the great archaeological potential of these environments and it is only a matter of time before more significant early medieval finds are made.

In more recent years English Heritage has been involved in the commissioning of Rapid Coastal Zone Assessments for the whole of the English coastline. These are designed as tools to enhance local Historic Environment Records (HERs) and to inform Shoreline Management Plans, dealing mainly with issues of coastal erosion (Murphy, Thackray and Wilson 2009). A large number of these are now complete as desktop assessments and they are entering a secondary phase involving site visits and verification and more detailed research to augment the record. Reports covering some of the assessed areas can be accessed online at the English Heritage website. These surveys are unlikely to have generated significant information about early medieval sites in particular but will provide useful background information about changing coastlines and will document coastal settlements.

The documentation of fully marine archaeological sites is still in its infancy and is restricted largely to the reporting of accidental finds and the accumulation of information from specific development proposals, such as port enhancements, aggregates extraction and the development of offshore energy sources.

The English Heritage, National Monument Record in Swindon holds the database of all known sites in English waters. The majority of sites reported are individual vessels primarily of eighteenth-century date onwards, although a few earlier sites are known, none, however, of early medieval date, except for one isolated find off the Welsh coast (see *wrecks* below). However, of the tens of thousands of wrecks sited off the UK coast only 63 have statutory protection and probably only 10% of the total are known.

While there are no specific surveys that have addressed early medieval material, there is a vast range of information available that should allow conclusions to be drawn about the location and changing character of the early medieval shoreline and there have been a few finds which point to the potential of the resource. These include structures related to land reclamation (Rippon 2000; 2000b), and estuarine fishing. Evidence for the latter indicates the widespread construction, from c. AD 700 onwards, of fish traps; some of which are of a considerable size (e.g. Sales Point, Bradwell and the Nass, Tollesbury in Essex) demonstrating an upsurge in coastal activity in the Middle Saxon period (Murphy 2007; Cowie and Blackmore 2008; Cohen 2003; Strachan 1995; 1998; Wallis and Waughmann 1998). In addition to these physical archaeological surveys there has been some work done

through documentary sources on the development of fishing settlements, particularly in the south-west (Fox 2007).

3.2 Characterising the Early Medieval Coastline

Stuart Brookes

The coastline of southern England as it exists today was probably in place 3000 years ago (*circa*.1000 BC) with localised variations thereafter caused by erosion and deposition related to sea level change, tidal dynamics, climate change and anthropogenic activities; the affects of which are also temporally variable. Overall, the trend has seen net losses to the sea, with more friable coastal geologies most greatly affected, but in the shallower coastal waters of the Severn Estuary Levels, the Kentish Marshes, and the Fenland embayment, over 5090km^2 have been reclaimed since the Roman period (see above).

The rate of erosion of the coast by stormy seas, and of coastal and inland features by landslips and wind action, is significantly affected by climatic variation. Changes in prevailing winds and wind direction, ocean currents, prevailing sea temperatures, the occurrence of ice on rivers, lakes and seas, and general storminess need all be assessed to calculate the extent and shape of landforms. The impacts on the shape of the coast, the shingle bars, the configuration of tidal estuaries, and the viability of harbours can be profound, but may also be subtle, sporadic and difficult to characterise within a restricted geographical region.

Despite the difficulties, estimates of coastal erosion have been attempted through the retrogressive analysis of published maps of the sixteenth to nineteenth centuries, recording terrestrial reference points, such as the Late Roman 'Saxon Shore' fort of Reculver in Kent, or Warden Church on the Isle of Sheppey (Young 2004; Smith 1850; Page 1932). These suggest that, on the south coast, the erosion rate will have varied between 28m and 108m per hundred years, with a rate as high as 275m recorded between 1852-1952 on the eastern coast (Valentin 1971). Between Selsey Bill and the mouth of the Cuckmere in East Sussex, the coastline in AD 400 may have been over 1700m further out (Goudie and Brunsden 1994, 48, fig.33). The coast of the Isle of Thanet and north Kent has lost land to a similar extent with estimates of up to c.3200-4800m for the same period (Brookes 2007:44). Between Folkestone

and Dungeness in south-east Kent, however, the loss seems to have been far less, estimated at approximately 3-400m (Hole 1957; Young 2004). The same method of retrogressive map analysis has also been used to reconstruct the formation of shingle spits, barrier islands, and other coastal features (e.g. So 1963; de Boer 1996), which, despite being focussed on post-Medieval geomorphology, have considerable repercussions for the reconstruction of early medieval coastlines. Alongside these methods survey of submerged offshore features can be used to extrapolate the shape of reconstructed landforms (So 1963; Dix, Long and Cooke 1998; Brookes 2007).

Further indications of coastal change during and since the early medieval period are hinted at by written sources (see above). For example, Selsey has over time been both separate from and attached to the mainland and is described by Bede as a peninsular joined by a narrow strip to the mainland (*HE* IV.16, Colgrave and Mynors 1969). Similarly, coastal erosion has accounted for the loss of a number of villages recorded in Domesday Book on both the south and east coasts (e.g. Brandon 1974:117; Sheppard 1912:49).

Different approaches are applicable in the case of reclaimed coastlines. Two principal methods have routinely been used. Geology basemaps (generally mapped at 1:50,000 and 1:125,000, and available as map sheets digitally from *Geology Digimap*) provide evidence of superficial drift deposits such as stream channel and floodplain deposits, beach sands, estuarine and marine deposits, and talus gravels; whilst soil maps produced by the National Soil Resources Institute record relevant soils such as alluvium. Grouped soil and drift units have been used to derive physical regions equating the extent of floodplains against which archaeological distributions can be mapped (e.g. Allen and Gardiner 2000; 2006; Brookes 2007; Hill 1981; Roberts and Wrathmell 2000). These maps commonly suffer from the coarse scale of cartography and the lack of datable evidence. In other instances, field survey triangulating the evidence from close-contour survey, engineered structures and artefact scatters can be used to plot the extent of occupation at different times (e.g. Allen 1999; Reeves 1995; etc.). Survey data has also been compared with sedimentary analyses of the back-barrier marshes to reveal the complex evolution of palaeochannels and tidal creek systems underpinning marshland development (e.g. Waller 2002; Waller, Burrin & Marlow 1988; Burrin 1988; Spencer, Plater & Long 1998; etc.). The contribution LiDAR data can make to these analyses is also beginning to be realised in relation to the east coast of England,

particularly in the Fens, and soon the Humber estuary (Challis 2004; Malone 2007; 2008; Evans pers comm.).

Again, topographical reconstruction from early medieval charters has provided important additional insights, recording for example the presence of early watercourses (e.g. Brooks 1988), harbours (e.g. Clarke forthcoming), and offshore islands (e.g. Gough 1992).

3.3 Studying the Reclamation of Land

Stuart Brookes and Chris Loveluck

Coastal reclamation or land-claim, generally focussed on areas of shallow coastal water has been viewed traditionally as driven by two principal objectives: to provide defence against flooding, and as a means of increasing the amount of land available for agricultural exploitation. Such environmentally deterministic and resource-based explanations may not have been the sole objectives, however. Drainage of liminal coastal marshlands and waterways through dike-building also seems to have been linked directly to a greater desire on the part of landward-based political authorities for control over maritime-oriented coastal societies who had been difficult to administer for much of the early medieval period. This seems to have been the case in coastal Flanders and in the Fens and coastal marshes of eastern England (Loveluck and Tys 2006, 161-162; Loveluck in press a, Loveluck forthcoming).

With their high levels of calcium carbonate, and sand, peat and clay structure, the soils of reclaimed salt marshes, and to a lesser degree, reclaimed tidal flats, were particularly desirable during the medieval period (and beyond) as pastoral and agricultural land. Nevertheless, the construction of embankments and dykes, and the draining of land, always represented a significant investment in terms of labour and infrastructural costs. It is likely that the most intensive and extensive coastal reclamation may be correlated with – but are not restricted to - firstly, periods of severe storm surges and sea-level change (i.e. during the Romano-British Transgression, AD 300-600, the Mid-Saxon Warm Period Transgression, AD 750-850, and the Medieval Warm Period Transgression, AD 1200-1500, Cracknell 2005:2), and secondly, the operation of large-scale surplus-producing economies in livestock and grain. Again, however, exceptionally detailed sediment surveys, linked to high-resolution radio-carbon dates, on the Continental shores of the North Sea, especially in Flanders, have

shown that drainage of already inhabited marshland landscapes was not linked to warm periods, but to the desire of the Counts of Flanders to gain greater control over the coastal marshes, from the tenth century onwards (Baeteman 1999; Baeteman, Scott and Van Strydonck 2002; Tys 2003, Loveluck and Tys 2006, 154-157).

Three areas of the British Isles that witnessed the greatest extent of reclamation are the Severn Estuary Levels in south-west Britain, the Romney and Walland Marshes and Wantsum Channel in Kent, and the Fenland embayment on the southern North Sea coast, followed by the wetlands of the Humber estuary and the Mersey and Dee deltas. Evidence for drainage activities in the three former areas is well-attested for both the late Roman and medieval periods (Allen and Fulford 1987; 1990; Eddison and Draper 1997; Rippon 1996; 1997; 2000; 2006; Cantor 1982; Darby 1983), and there are similar suggestions of Roman and medieval drainage in parts of the Humber wetlands (Gaunt 2007).

Significant marshland reclamation also took place during the early medieval period, which moreover may have followed a period where some low-lying coastal areas settled during the Roman period had been temporarily abandoned during part of the early medieval period (Allen 1999:16; Lamb 1995:162; Cracknell 2005). In these areas the earliest sea-banks surveyed appear to date from the Middle to Later Anglo-Saxon period and chart the start of a pattern of reclamation which accelerated during the medieval and post-medieval periods (Allen 1999; Silvester 1988; Lane 1993; Hall & Coles 1994). Written sources may support this claim: an uncertain charter of AD 772 (S108) refers to dykes on the Pevensey Levels. It is a mistake, however, to link a lack of formal drainage activity/dike-building with ideas of an absence of settlement in coastal marshland landscapes, since archaeological evidence is growing for significant and permanent occupation, especially on sand islands (roddons), within the low-lying coastal marshes of the North Sea coast of England, especially from the Humber estuary to the Fens (Crowson et al 2005; Cope-Faulkner forthcoming; Loveluck in press a; see below). The relationship between formal attempts at drainage and the settlement, economic and social character of the populations of coastal marshes is a key topic for future research.

3.4 Finding Landing places

Stuart Brookes and Chris Loveluck

In early medieval research three concerns in particular have focussed attention on the shape and character of the coastline and of maritime spaces: 1) continental contact during the migration period; 2) North Sea traffic and maritime exploitation at the time of the *wics*; and 3) seafaring in the Viking-age. All three themes incorporate questions and assumptions about the likely routes of maritime connectivity and seasonal variation in traffic, the location of nodal points or articulations in the transportation network (e.g. harbourages, trans-shipment points, isthmuses), and cultural phenomena which accompanied these engagements (Westerdahl 1994). Cross-cutting these questions are issues about seafaring capabilities and boat-building technology (Section 2).

It is possible to conceive of the English coasts as presenting a series of navigational challenges that demanded detailed local knowledge of tides and sandbanks. The story of St. Wilfrid's ship blown off course and stranded off the Sussex coast in AD 666, and threatened by pagan wreckers, until rescued by the tide comes to mind (*VW* Ch.13). Suitable landing places and beaches today may well have been inaccessible in the past due to extensive saltmarshes, although former tidal channels would have given alternative access points. Coastal routes should perhaps be seen, therefore, as discontinuous and patched into a web of different transportation possibilities, some of which facilitated exchange and trade with landward interiors and major socio-political entities, and some of which connected the inhabitants of coastal margins (sometimes difficult to access from landward directions) with wider networks, which reinforced both the liminality and connectivity of coastal populations (Loveluck in press a., see below).

Landing places, i.e. specific points of embarkation and disembarkation for sea-going, coastal and estuarine ships and boats have proved highly elusive in the archaeological record due to changes in the nature, perception and use of the edge of land, on behalf of our early medieval forebears. Excavated evidence for landing places, and suggestions of landing places from artefact scatters, has tended to be found in estuarine, inlet, Fen-edge and riverine locations rather than on modern-day coastal and beach locations, although suggestions of early medieval landing places in all the latter locations have been found around the coast of Britain.

Overall, the evidence from which we might reconstruct harbourages, landing-places and foreshore activities for central southern and southeastern Britain in the early medieval period is fragmentary and in many places dependent on Late Roman evidence (various examples of which are cited in Cracknell 2005). Suitable beaching places on river estuaries may well have been further inland from the sea 1500 years ago. A case-study from the River Thames has demonstrated that the tidal head of the river – and thereby the range of easy navigability – has moved slowly upstream, i.e. westwards of the City, since Saxon times, but that there were also brief periods (as in the late tenth to eleventh century) when river levels also swung back again (Thomas *et al.* 2006). Similarly, sea-level changes mean that archaeological horizons containing evidence for maritime activities may be preserved today on dry land, in the intertidal zone, or below sea-level. Around the coasts of southwest Britain, the locations of landing places in sheltered sea coves and on beaches are consistently suggested, whether below sheltered headlands, such as Tintagel, or partially covered under modern dune systems, as at Bantham Ham, Devon (Fox 1955; Silvester 1981; May and Weddell 2002), and Gwithian, Cornwall, amongst others (Nowakowski 2004, and see Tompsett below).

The evolution of individual harbours (including an assessment of the early medieval topography) has been carried out in piecemeal fashion; examples of which include Dunwich (Chant 1986), Langstone (Allen & Gardiner 2006), Brading and Pagham (Wallace 1999), Sandwich Haven (Brookes 2007; Clarke forthcoming), Broad Water (Kerridge & Standing 1987). Unfortunately, excavation of many of the major *wics* (e.g. Saxon Southampton, York and Ipswich) has not included the excavation and survey of related harbour areas; a trend which continues with the sample excavations and surveys of beach/dune- and tidal creek-sites (e.g. *Sandtun*, Bantham Ham) which were possibly only occupied seasonally.

Along the North Sea-coast of eastern England, from the Humber estuary to the Fens, concentrations of late seventh- to mid eighth-century sceattas and pottery at North Ferriby, on the north shore of the Humber; and similar concentrations at Halton Skitter and South Ferriby, on the south bank, suggest beach trading sites in these locations; but a series of Fen edge and river landing places are also becoming apparent (Loveluck in press a). For example, a seventh- to early eighth-century log-boat and reveted wooden trackway from a landing place have been excavated at Welham Bridge, East Yorkshire, on the landward edge of Fenland waterways that would have led into the Humber (Allen and Dean 2005, 91-93; Evans pers comm.). A second wooden revetment for a jetty landing place has also been excavated at

Skerne, on the River Hull, close to Driffield, and it may have been linked to the royal estate centre there (Loveluck 1996, 44-45; Dent, Fletcher and Loveluck 2000). The actual locations of exchanges with mariners were probably the beach sites, and coastal and riverine boats, such as the Welham Bridge log-boat, could have been the principal method of dispersion of goods around the coastal zones. In some instances, however, seafaring merchants may have moored directly at riverine landing places close to deltas. Flixborough certainly had watermills below the settlement on the River Trent in 1066, and these are likely to have been combined with jetties, akin to Skerne (Loveluck 2007, 86). It is less likely, however, that seagoing ships sailed up the River Hull as far as Skerne, although seagoing ships were certainly based in Beverley, in the twelfth century. The locations of the contact between the inhabitants of small marshland hamlets and mariners are less easy to predict, but the situation of the hamlets on tidal channels near river estuaries, as at Fishtoft, Lincolnshire (Rackham pers comm.; Cope-Faulkner forthcoming) and West Walton, Norfolk (Crowson et al 2005) suggests that ships moored for the night, or to re-provision, would have been visible from some distance, and contactable via tidal creeks and riverine and coastal boats.

Several Old-English place-name elements are potentially significant in identifying early medieval landing places, such as *healh*, one meaning of which is 'slightly raised or low-lying land in close association with water' (possibly 'land beside inlet or bay') (Bately 2007:37-8). Of particular significance are the terms *strand*, *hyð*, *stæð* and *hwearf* which – aside from indicating the location of landing-places - may also indicate a chronological development of harbour installations from beach landing to berthing as related also to changing vessel types (Milne pers. comm.). To these terms may be added a whole range of place-name elements relating to coastal headlands and navigation (e.g. *bæc* / *bece* 'stream', *næss* / *ness* 'headland', *flēot* 'stream, creek', *hōh* 'spur of land' *ēg* 'island, occasionally 'peninsula'), as well as *ōra* (a flat-topped hill with a shoulder at one or both ends, possibly 'gravelly landing-place') and *ōfer* ('river-bank, sea-shore') which may on occasion have served as seamarks for early medieval mariners (Gelling and Cole 2000).

3.5 Finding Wrecks

Chris Loveluck

Discovery of the archaeological remains of ships and boats, dating from the period between AD 400 and 1100 has been exceptionally rare. To date, no early medieval ship wrecks from

submerged marine contexts have been retrieved, and only one wreck site of this period is known around the British coast: namely, the Viking ship indicated by the recovery of a sword-guard from the Smalls Reef in 1992, to the west of the island of Grassholm, off the coast of southern Pembrokeshire. The sword-guard was decorated in late eleventh- to early twelfth-century Urnes-style decoration. The wreck-site of the Viking ship had been eroded over time, and had subsequently been overlain by the wreck of the steam ship, named *Rhiwabon*, which sank in 1884 (Redknap 2000, 58-59 and 87).

Remains of ships and boats have been found, however, on land and within sediments of estuaries, rivers and former tidal channels. The nature of the remains fall into two categories: firstly, remains of complete and partial ships and boats that had been deliberately interred within the context of funerary and burial ritual; and secondly, remains of ships and boats that had been abandoned at landing places or in tidal creeks, and sometimes reused in landing place revetments.

The most well-known ship remains from the Early Anglo-Saxon period are the clench nail and degraded wooden outlines of the late sixth- to early seventh-century ships and boats that were interred within the context of ostentatious furnished burial at Sutton Hoo and Snape, in Suffolk (Carver 2005; Filmer-Sankey and Pestell 2001). To these can be added the boat rivets/clench nails reflecting reused fragments of clinker-built vessels from sixth-century graves at Mill Hill, Deal; and Minster Thorne Farm, amongst others in Kent with isolated clench nail/rove finds (Brookes 2007, 14-15). Other certain examples of fragments of timber held together with clench bolts, which could represent parts of broken up boats or ships, have been found in graves along the east coast of England, dating from the seventh to ninth century. For example, at Dover-Buckland, Kent; Caistor-on-Sea, Norfolk; and Castledyke, Barton-upon-Humber, North Lincolnshire (Brookes 2007, 16-18). These burials with fragments of woodwork held together by clench nails have been described as ‘pseudo-boat burials’ (Brookes 2007), although they could also reflect the reuse of timber derived from boats, rather than a similar tradition to the boat-burials of early seventh-century Suffolk, or the boat-burials of the early medieval period, in both pagan and Christian contexts from northern Germany and Scandinavia (Schön 1999; 76-79; Birkedahl and Johansen 1995, 160-164).

Unlike the discoveries based on clench nails and soil marks, the few more complete finds of ships and boats have been recovered in waterlogged deposits, in the same locations as excavated landing places. That is to say, the wrecks have tended to concentrate in harbour silts; and around the margins of river estuaries and their coastal marshes. The excavated wrecks fall into two types: sea-going coastal vessels, represented by the Graveney ship (Fenwick 1978), found in the mud of a former tidal creek, in Kent, and fragments of sea-going ships; and smaller boats seemingly designed for river and estuarine transport, presumably to and from sites of exchange, located in beach and estuarine foreshore locations.

The sea-going ship, probably equating to a 'coaster' encountered within the Graveney Marshes, Kent, in 1970, was dated by radio-carbon and dendro-chronological means to the mid tenth century (Jenkins 1978, 2-3; Burleigh 1978, 109; Fletcher, Tapper and Walker 1978, 123). It had been abandoned on the edge of a tidal creek, which was almost certainly a landing place, suggested by the recovery of large mooring posts (Fenwick 1978, 181-183) and sedimentation had subsequently buried the ship. It was suggested that the landing place may have been used for ship and boat repair as much as exchange, and ship and boat repair would certainly accord with the complex woodworking tool sets associated with the excavated jetty on the River Hull, at Skerne, East Yorkshire (Loveluck 2000, 227-237), and the settlement at Flixborough, Lincolnshire, known to have been linked with a landing place and two mills on the River Trent (Darrah 2007, 60-61; Loveluck 2007, 82; Ottaway 2009, 256-266). The Graveney ship also contained querns from the Rhineland and Roman tiles as ballast. The relationship between the location of wrecks and riverine and estuarine landing places and waterfronts is also reinforced by other discoveries of ship fragments. For example, the recovery of an early eleventh-century side rudder from a waterfront in London (Goodburn 1993, 57-59); and a fragment of ship planking, radiocarbon-dated between AD 920 and 1080, from a revetment on the bank of the River Usk, at Newport, Gwent – not to be confused with the fifteenth-century Newport ship (Redknap 2000, 60).

Examples of smaller boats have been recovered from Welham Bridge, East Yorkshire, and the harbours at Poole and Langstone on the south coast. All of these small vessels were logboats. The Welham Bridge logboat, excavated in 2004, had been broken up and built into the revetment of a landing place, not far from the known Anglo-Saxon settlement focus at Holme-on-Spalding Moor, on the edge of the marshland and tidal inlet called Walling Fen that ran into the Humber,. A radio-carbon date from the boat suggests that it dates from the

sixth century (AD 350 to 560 at 98%), but the sample was not taken from the outermost tree rings of the boat (Allen and Dean 2005, 91-92). The wattle trackway of the landing place, for which the boat had formed part of the revetment, had a radiocarbon date range of AD 530 to 690 (ibid. 92-93). The early medieval logboat from Welham Bridge represents continuity in the use of this form of estuarine vessel around the Humber from the Iron Age – the Hasholme boat was discovered in a very similar Fenland edge/tidal channel location nearby (Millett and McGrail 1987, 69-125). Accurate information on the logboats from Poole and Langstone is not available but it is thought that they date from the tenth or eleventh centuries (see Hinton below).

3.6 Artefact Distributions as indicators of Landing places

Helen Geake and Stuart Brookes

The distribution of imported objects as chance finds and excavated items provide some indication of the range and spread of overseas contact, as well as – potentially - the routes that this traffic took. Numerous studies exist which apply this principle at the regional scale (e.g. Huggett 1988; Welch 1991; Harrington & Welch forthcoming; Hines 1984), but the same technique has also been used to pinpoint the location of individual maritime entrepots, in eastern, southern and western England, in southern Lincolnshire, East Anglia, Hampshire and the Isle of Wight and Meols, in the Wirral (e.g. Pestell and Ulmschneider 2003; Griffiths *et al.* 2007).

In this vein, an important contribution is being made by the Portable Antiquities Scheme. Finds from the PAS's database (www.finds.org.uk) can now be added to data from excavation and survey to give an extra dimension of quantity and complexity to coastal research. Over 13,000 early medieval objects were on the database at the end of 2009, and these form a resource subtly different to that from more conventional archaeological recovery methods, notably containing more casual losses and fewer deliberately discarded or deposited items.

At present most of the possible early medieval landing and/or trading places recorded by the PAS appear to be riverine rather than coastal, although this depends on the definition of coastal in relation to the edge of land during the early medieval period. Twenty sites have been recorded across the country with four or more sceattas and ten or more pieces of other

early medieval metalwork; the number of early medieval coins could be improved by adding those recorded on the Fitzwilliam Museum's Early Medieval Corpus of coin-finds (www-cm.fitzmuseum.cam.ac.uk/emc). None of these sites is within 2 km of the coast and several are as much as 50 km distant, although most are close to rivers and estuaries. A few sites are well known, such as Coddenham (Suffolk) and Heckington (the 'South Lincs productive site'), but most have received little study (but see Davies forthcoming).

Isolated foreshore finds on the PAS database seem predominantly of high value, such as precious-metal scabbard fittings from the Isle of Wight and south-east Wales, and two Byzantine gold coins from Tenby (Bland and Loriot forthcoming: no. 851). They have little context, and may be from shipwrecks rather than landing or trading places. In contrast, there are now at least 16 fifth- to seventh-century Byzantine copper coins recorded on the PAS database which appear to be ancient losses, and their distribution is largely coastal (Moorhead 2009: 265). This material complements the better-known Mediterranean pottery found on many excavated fifth-to seventh-century coastal sites in western Britain.

A variety of sources including PAS data was used by Naylor to identify a more monetised coastal zone in middle Anglo-Saxon England, which extended up to 15 km inland (Naylor 2004: 123). Since this work, however, the PAS has seen a vast increase in the number of finds recorded, and is now moving into a mature phase where it must foster research as well as gather data. The comparison of coastal PAS assemblages with those from further inland at different moments within the early-medieval period would now be a worthwhile exercise.

Data from the PAS should also help in improving the underlying theoretical framework. The expectation that early Anglo-Saxon landing places, middle Anglo-Saxon beach-markets or trading ports (Pestell and Ulmschneider 2003), and late Anglo-Saxon shipyards or fishing ports (Barrett *et al.* 2008) should all have different archaeological signatures has not yet been addressed (Ilves 2009) and, although this makes the interpretation of PAS data in isolation difficult, it suggests that a multi-disciplinary approach may have significant and immediate benefits.

The PAS's database also contains finds reported under the Treasure Act 1996, but it does not formally cover 'wreck' as defined in section 255 of the Merchant Shipping Act 1995 (flotsam, jetsam, derelict or lagan found in tidal waters). This must be reported to the

Receiver of Wreck, whose two staff deal with conventional wreck and salvage across the UK as well as (in theory) the finds made by up to 55,000 amateur divers. The under-resourcing of the Receiver of Wreck recording means that coastal archaeological finds made by amateur divers are almost certainly significantly and seriously under-reported.

4. Case Studies

4.1 Settlement patterns on the low-lying coast of eastern England from the Humber estuary to the Fens

Chris Loveluck

By the mid to late seventh century, the settlement pattern around the Humber estuary appears to have comprised landing places, hamlets and some larger agglomerations, for example, Riby (Steedman 1994) in the vicinity of the coast or marshland edges, with major estate centres both in their immediate hinterland and further inland along major rivers. The likely estate centre (of changing secular and ecclesiastical affiliation) at Flixborough, north Lincolnshire, overlooked the delta zone of the River Trent (Loveluck 2007); the possible estate centre at Holton-le-Clay, northeast Lincolnshire, overlooked the Lincolnshire Sea marshes (Sills 1982; Stocker and Everson 2006, 192-193); and the estate centre at Driffield, East Yorkshire, was sited at the headwaters of the River Hull. Only the Northumbrian royal estate at Driffield, however, has a textual reference denoting its tenurial character, from the *Anglo-Saxon Chronicle* (E for AD 705 -see Swanton 1996, 41). The status of the north Lincolnshire settlements rests on aspects of their material wealth and consumption practices alone.

Within the marshland landscape along the east coast from the Humber to the Fens, the results of the *Fenland Survey* and subsequent excavations indicate a landscape of farmsteads or small hamlets sited on sand islands (also known as roddons) within less well-drained marshland, sometimes located in proximity to tidal creek waterways. Others seem to have lined the landward edge of the marshland. Furthermore, the excavated evidence does not suggest that the settlements on the sand islands were necessarily occupied only seasonally. The landscape of small hamlets and farmsteads, dating from the seventh to tenth centuries

(and later) excavated at Gosberton, in the Lincolnshire Fens, and the settlement on a sand spur adjacent to a tidal channel at Fishtoft, near Boston, Lincolnshire, provide the best examples of such settlements to date. All comprise a small number of rectangular buildings, with varieties of post-hole and post-in-trench foundations, and enclosures (See Crowson et al 2005 and Cope-Faulkner forthcoming).

The relationship between the marshland inhabitants of the Lincolnshire Sea marshes and the Fens, and estate centres is a matter of speculation alone, for the period between the seventh and tenth centuries. Many may have been nominally subordinate to estate centres, perhaps paying renders in the form of livestock. Others, however, may have been small kindred groups of free proprietors independent of large estates, depending on the vagaries of the way territories and social groups became defined by charters. In the past, occupation of the Fenland landscape has been viewed as a consequence of an impetus to colonization within estate structures, predominantly from the mid seventh century and later. Evidence is accumulating, however, of permanent settlement remains, dating from the fifth and sixth centuries, located on sand ridges, islands/roddons or tidal inlets in coastal marshland situations in East Yorkshire and in the Fens. For example, at Hornsea, Aldbrough, Great Hatfield and Easington, in Holderness, East Yorkshire (Hull Museum Records, Head 1997; Loveluck, Tibbles and Wastling 2001; Steedman forthcoming), and at Terrington and Burnham Market on the Norfolk Fen edge (Crowson et al 2005; see Davies below). Although, far more settlements have been identified, dating from the later seventh and eighth centuries AD onwards [FIG 3 p.30].

Between the seventh and the late ninth centuries, the key feature of all elements of the settlement hierarchy of the seafront and coastal marshland zones between the Humber and the Fens was access to and use of imports from regions of Continental Europe facing on to the North Sea and Channel, as well as access to particular types of object manufactured at certain major trading emporia. There are certainly differences in quantities of imports consumed, and sometimes differences in the types of imported goods, between farmsteads and small hamlets, and larger settlements, such as Flixborough. Differentiation of the status of sites and the social spectrum of their inhabitants, however, on the basis of access to imported goods alone is a complex task, as certain people on all settlements had access to them in this coastal region. Normative assumptions of value often applied to imported goods in the past have to be balanced with the specific dynamics of coastal situation, ease of waterborne access, and

specialist activities in coastal settings. For example, the occupants of the hamlets at 'Chopdike Drove' and 'Mornington House, around the modern settlement at Gosberton, in the Lincolnshire Fens, possessed small quantities of imported black or grey-burnished pottery wares, from northern France or the Low Countries, as well as lava quern stones from the Niedermendig area of the middle Rhineland, near Cologne. Both hamlets also had access to larger quantities of Ipswich ware, made at the emporium of Ipswich, Suffolk (Blinkhorn and Fryer contributions in Crowson et al., 2005, 84-89 and 114-119). And the pattern is repeated at the hamlet of Ingleborough (Norfolk), also located on a sand island to the north of West Walton, where Ipswich ware and a sherd of northern French black/grey-burnished ware, and one sherd of Tating ware from the Rhineland, were recovered.

All the hamlets located on sand islands above seem to have had direct access to maritime communication routes, via tidal creeks. Indeed, the site at Fishtoft was situated immediately adjacent to a feature interpreted as a tidal channel, and Ingleborough was situated in very close proximity to the estuary and saltmarshes of the River Nene (Rackham pers comm.; Crowson et al 2005, 171-172). None of the settlements, however, had large metalwork assemblages, and coinage is largely absent, although early to mid eighth-century sceattas, minted in Frisia (Series E) and Ribe in Denmark (Series X) have been found at West Walton. All the hamlets above appear to have been permanently occupied, with mixed farming economies suited to salt-marsh environments. A bias towards the raising of cattle, sheep and horses is reflected by the preponderance of young and sub-adult animals at the Gosberton sites, although barley – a salt-tolerant cereal was also grown. Cultivation of barley also occurred at Ingleborough. A recurrent pattern of iron smithing was also found, probably exploiting a bog-iron ore source; and possible hints of salt production were also identified (Crowson et al 2005). At Fishtoft definitive evidence of salt production dating from the eighth and ninth centuries was recovered, in the form of large quantities of securely stratified briquetage (Morris pers comm. and Cope-Faulkner forthcoming).

All the hamlets in the coastal marshes seem to have been involved in specialist activities for exchange, perhaps to pay estate renders in some cases, and all had access to imported querns and pottery, suggestive of direct exchange with mariners. The generally limited discard of coinage and metalwork suggests, however, that exchange with mariners was conducted by direct barter, whether for their re-provisioning or for commodities. The absence of metalwork on the fenland sites has been remarked upon by Katharina Ulmschneider in her analysis of

sites represented by metalwork scatters (so-called 'productive sites') in Lincolnshire. Sites yielding significant quantities of dress accessories and coinage were located on the landward side of the Fen edge, and they did not tend to possess Ipswich ware and Continental pottery. Hence the sites with imported pottery represented a particularly coastal distribution (Ulmschneider 2000a, 70). Direct exchange transactions with mariners could have been beyond all control of possible tenurial masters, and were probably related to locational opportunity and a tendency towards specialist production and exchange (Loveluck and Tys 2006, 152-153).

From the late ninth century, however, there was a very significant change in the archaeological reflections of the 'otherness' of what can be termed the maritime cultural landscape from the Humber to the Fens. Imported goods either from Europe or from southern England are all but absent amongst the entire coastal settlement hierarchy. For example, the tenth-century lifestyle at the estate centre at Flixborough (then probably known as *Conesby* – 'King's settlement in Old Danish) was based on the conspicuous use and display of the resources of its estate and immediate landscape alone (Loveluck 2007). This picture of secular aristocratic consumption was not supported by imported luxuries. Indeed, the evidence for the importance of maritime links was much diminished. Some exchange around the Humber estuary and its feeder rivers is indicated, in the form of small quantities of tenth- and eleventh-century pottery, and the presence of the black rat, which has only been found elsewhere at York, at this time, and was possibly a passenger carried on Scandinavian ships and trade routes. No coinage reached Flixborough between the 880s and the 970s, although lead weights and a silver ingot indicate that contemporary Scandinavian-style bullion exchange was used for transactions.

This period at the end of the ninth and early tenth century, however, was the key era when Scandinavian leaders and their followers transformed former Anglo-Saxon central places, like York and Lincoln, into dynamic towns. These towns became the principal locations for patronage of artisans, who produced for their surrounding regions in a way that had not been the case with most of the earlier emporia. Within all elements of the coastal rural settlement hierarchy of the tenth and eleventh centuries, links with the new Anglo-Scandinavian centres are reflected in small quantities of pottery made at Lincoln, Torksey, York and Thetford. As in earlier centuries, the absence of coinage is again a feature on the marshland hamlets. Critically, however, these patterns of pottery and coinage supply no longer had any coastal

distinctiveness. They were the patterns of supply across much of East Yorkshire, Lincolnshire and East Anglia. No further direct contacts with southern English or foreign mariners are detectable archaeologically after the late ninth century, between the Humber and the Fens. The specialist activities of inhabitants of the coastal margins certainly continued, however: for example, salt production at Marsh Chapel, in the Lincolnshire sea marshes, as well as the focus on animal husbandry (Fenwick 2001; Baker in Crowson et al 2005). The trade in these products, however, must be assumed to have been regional. In the case of the Humber, coastal exchange had become focussed on key regional central place-towns, principally York, where mariners/merchants, artisans and 'buyers' combined. Hence, the scale of the networks and world-view of the coastal population had been transformed from the international to regional level, integrated with new regional central places; and increasingly their liminality was also diminished, during the course of the tenth and eleventh centuries, by dike building and land drainage.

4.2 The impact of coastal, estuarine or riverside location on the stimulation of trade

Edward Oakley

The physical location and characterisation of sites are important in their role of stimulating trade. Sites located in coastal or riverine locations offer better opportunities for direct access to exchange networks over inland sites. The *emporia* provide our greatest evidence for overseas trade between the seventh and ninth centuries AD. The most extensively excavated examples, namely Saxon Southampton (Hodges 1981; Brisbane 1988; Andrews 1997), London (Cowie and Whitehead 1989; Malcolm and Bowsher 2003) and Ipswich (Wade 1988, 2001) were all located in estuarine locations or on navigable rivers inland from the coast. *Emporia* are generally seen as royal foundations for the control and exploitation of trade (e.g. includes Hodges 1982, 1989, 2000, 2006; Wade 2001; Newman 1999; Palmer 2003; Ulmschneider 2000; Blinkhorn 1999; Newman 1999).

Given the predisposition for beach landing for much of the early medieval period, archaeological evidence for harbourworks at these sites are rare; the evidence for the seventh-century foreshore at *Lundenwic* (at Charing Cross, 12 Buckingham Street, and York Buildings), and the mid-tenth-century embankment at *Lundenburh* (at the Thames Exchange site) being notable exceptions (Milne 2003). It is clear from examples around the North Sea and the Adriatic that such structures did exist at some sites, e.g. jetties at Hedeby and

Dorestad, and revetments at Mainz and Venice, and similar constructions may yet be identified in English contexts. Scandinavian boat-building traditions suggest changes occurred in ship design between AD 900 and 1050 which saw the emergence of vessels able to transport bulk cargo (Crumlin-Pedersen 1999). These developments are likely to have had a spill-on effect on harbour installations with greater investments made in cargo-handling facilities, which can leave an archaeological trace.

Scholarly attention has focussed primarily on the role of *wics* as maritime enclaves acting both as entrepots and transhipment points in the early medieval trading landscape. The case for sites, other than *emporia,* having direct access to long-distance trade networks has been explored by John Naylor (2004) and Loveluck and Tys (2006). A number of excavated sites in coastal, estuarine and riverine locations have produced direct evidence for long-distance exchange, including Flixborough (Loveluck 2007), Caister on Sea (Darling 1993), Sandtun (Gardiner *et al.* 2001), Bishopstone (Thomas *forthcoming*), Dover (Philp 2003) and Portchester Castle (Cunliffe 1976). The maritime or riverine location of certain settlements can be seen as key in the stimulation of their growth. For example, the location of Fordwich, Sandwich and Sarre as transhipment points for Canterbury and inland estates (Brookes 2003, 89). The articulation of water transport far inland up river valleys which can also yield sites with potential direct trade contacts, as in the Yare valley in Norfolk (Oakley *in prep.*). The case for exchange being stimulated at maritime sites, by actors other than elites, is now increasing due to the increasing evidence for exchange in coastal, riverine, estuarine and tidal creek locations.

The development of overseas trade between the ninth and eleventh centuries can be demonstrated through the discovery of imported artefacts at urban ports, such as London (Milne 2003), Norwich (Ayers 2009), Lincoln (Mann 1982) and York (Hall *et al.* 2004). It is also likely that coastal or estuarine *burhs,* such as Exeter, Wareham and Christchurch were active in long-distance exchange but there is surprisingly little archaeological evidence for this. The greatest evidence for intensification of trading activity comes from the urban areas in the Danelaw, many of which were situated on navigable waterways leading to the coast as at York, Nottingham, Lincoln and Norwich. Long-distance exchange is most apparent from Scandinavian raw materials and artefacts from York, although how much of this is directly attributed to Scandinavian presence has been questioned (Hall 2000) and trade stimulation may have had as much to do with Frisian influence, suggested from documentary and

archaeological sources e.g. textiles (Walton 1989, 324-5, 341). Other agents from across North-West Europe were also involved in trade stimulation: merchants from Normandy, Flanders and the Rhineland are reflected in documentary sources at London, during the tenth century (Robertson 1925, 73); while in Norwich, a church dedication to SS. Vaast and Amand also hints at Flemish connections (Ayers 2003, 27).

The role of smaller sites in long-distance exchange between the ninth and eleventh centuries is little understood. Excavated examples of riverine and estuarine sites remain few but excavations at Flixborough demonstrate a change in the role of imported artefacts, with a decrease during the tenth century, and a shift to networks operating on a regional scale only, around the Humber and with urban centres, such as York and Lincoln (Loveluck 2007, 154-157; Loveluck, in press a). A similar change can be observed at the coastal 'productive-sites' in Norfolk, where regional scales of networks are more apparent from the eighth to tenth centuries (Davies forthcoming). This change can be seen as a reorganisation of economic functions into urban areas and ports, as can be demonstrated in the area around Norwich in this period (Oakley in prep). It is apparent that the location of sites involved in long-distance exchange shifted during the tenth and eleventh centuries. A decline in the exchange function of a number of smaller landing places is apparent with a subsequent shift towards centres with port and harbour infrastructures. Such sites may have already had a role in exchange from the Middle Saxon period, as at London, York, Ipswich, Norwich and Dover, while other sites may have benefited due to their favourable maritime location. The further development of small ports in southern and eastern England occurred at sites located at the coast or on tidal locations, for example, at Steyning, Sussex, which developed around an earlier royal estate and monastic centre, and is referred to as a port in the eleventh century (Gardiner 1993, 22; Gardiner and Greatorex 1997); and Great Yarmouth, Norfolk (Rogerson 1976), which benefited from being located at the mouth of the Broadland river system.

4.3 Coastal Defence in the Viking Age

Stuart Brookes

For more than a century from the 790s the Vikings used the waterways in and around Britain to pose a considerable threat to Anglo-Saxon communities. Approaching from the sea, Vikings were able to mount surprise attacks on vulnerable coastal and estuarine sites, causing devastation and striking fear into the hearts of contemporaries, not least the chroniclers who

recorded these actions. By the later ninth century, sea and riverine route-ways were used, sometimes in conjunction with overland routes, to stage sustained attacks on the various Anglo-Saxon kingdoms, with the ultimate aim of conquest. At various times during these campaigns offshore islands and peninsulars (e.g. Mersea, Shoebury, Benfleet and Sheppey) were used as Viking bases. The intensity of these attacks forced those who were eventually to prevail against the Vikings, such as the West Saxon kings, to implement new military arrangements to counter the threat, which included providing for a series of fortified sites across southern England. In order to understand the strategic importance of these defences, it is necessary to appreciate not only their context relative to the land and sea, but also the nature of the menace posed by waterborne Vikings.

Archaeological and toponymic evidence suggests that a range of sites linked to coastal defence and intelligence existed, at least by the tenth century (Baker and Brookes forthcoming). At this time the Roman *pharos* of Dover was refurbished, perhaps in order to provide early warning of a threat crossing the Channel. Further lookouts are evidenced by place-names containing the elements *weard* and **tōt*. Perhaps supporting this system were a number of further structures which could serve as convenient observation points, notably free-standing stone or timber towers, ringworks, as well as turriform (tower-like) churches of the tenth and eleventh centuries. Several examples of these private defences are known from the south and east coasts: excavations at Bishopstone (Sussex), overlooking the mouth of the River Ouse, have revealed the cellar of what was probably a substantial timber tower in the tenth/eleventh century (Thomas 2005); at Jevington, overlooking the mouth of the Cuckmere, is the still extant eleventh-century turriform church of St Andrew's (Taylor and Taylor 1965); and on the River Adur is the enigmatic ringwork of Old Erringham, dated through coin evidence to the late tenth century (Holden 1980).

4.4 Coastal settlement in eastern England: Burnham Market, Norfolk

Gareth Davies

The substantial modern village of Burnham Market is situated on the Norfolk Chalk Scarp, adjacent to the River Burn, three kilometres south of the present North Sea coast. In 1983, the main Anglo-Saxon activity focus was re-discovered as a surface-scatter of Middle and Late Anglo Saxon pottery in arable land either side of a small stream, known as the Goose Beck, immediately to the east of the modern settlement. The Goose Beck flows into the River Burn,

forming an inlet in the early medieval period that would have provided a direct communication corridor with the North Sea. The retained ceramic assemblage comprised mainly Ipswich Ware and Thetford-type Wares, but also included several imported sherds of Rhineland and northern French/Low Countries origin.

Subsequently, numerous metal detector surface finds, including coins and other material of Continental origin, were been recovered from the site. The earliest metalwork, dating from the fifth to seventh centuries AD, probably relates mostly to a cemetery context, whilst artefact loss is most abundant and varied in the eighth and ninth centuries, and includes both personal dress related items, functional objects (such as weights), and fifteen coins, ranging from East Anglian sceattas (Series R) to a Carolingian Denier of Louis the Pious (Rogerson 2003). Metalwork loss continued into the Late Anglo-Saxon period, and includes a silver ingot. Coin loss was restricted to four coins dating from the tenth and eleventh centuries (two were Anglo-Saxon issues and two were Islamic dirhems).

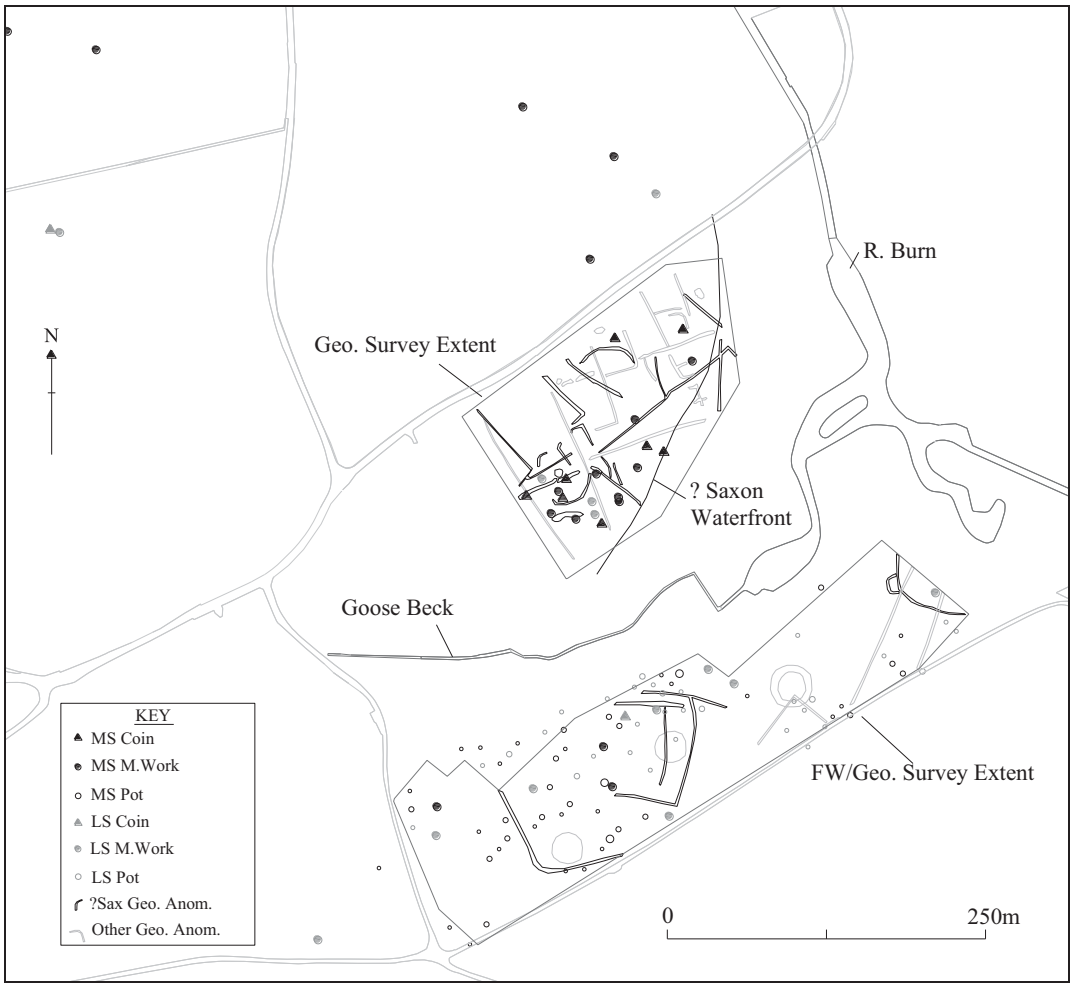

Fig 7: Integrated field survey around the Goose Beck

As a result of these finds, the site has been labelled previously as a 'productive' site (where a market or fair focus is implied) and an early emporium (Rogerson 2003; Whyman 2002). However, although Burnham was clearly a fine candidate for a Middle Anglo-Saxon landing place and beach trading site (a 'Type A Emporia', as classified by Hodges (1982), little was known about the morphology or functional profile of the site, which created a barrier to further interpretation. Recently, however, a programme of integrated field survey (consisting of fieldwalking, geophysics and the detailed plotting of all located metal artefacts), undertaken on both the north and south sides of the Goose Beck, has allowed the nature of the settlement and related activity site to be characterised comprehensively (see FIG 7).

North of the Beck, a concentrated zone of Middle Anglo-Saxon coins and metalwork loss was observed abutting a possible Anglo-Saxon waterfront (suggested by auger survey – see Godwin, unpublished). When the loss profiles of metal artefacts were plotted (FIG 8) it was noticeable that the abundant Middle Anglo-Saxon metal finds, with a heavy coinage presence but almost no functional objects, diminished in number to only a few Late Saxon metal finds, but with multiple functions represented.

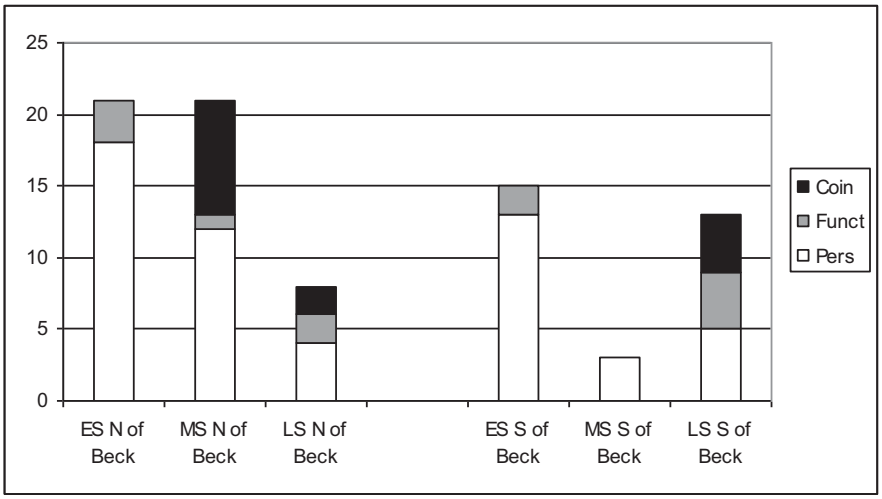

Fig 8: Loss profiles of metal artefacts

The surface assemblages were shown to overlie a complex rectilinear arrangement of geophysical anomalies comprising at least two distinct phases of boundary features. The earlier phase of geophysical anomalies suggests a field system adhering to a co-axial arrangement (potentially, but not certainly, of Roman date). The later phase of observed features is likely to be of Anglo-Saxon date. They referenced existing lines in the landscape

(including a major east-west anomaly that aligns with the main road through present-day Burnham Market).

Under the present cultivation regime field-walking was not possible, but finds of Ipswich Ware have been recorded in the past. A permanent settlement dating from the seventh century onwards is implied, perhaps with at least one major re-planning at some point during its history.

South of the Beck, however, something very different can be seen. Geophysical anomalies were again identified, but potential Anglo-Saxon features were restricted to one major enclosure and a contemporaneous drove-way; offering little evidence of re-planning.

Middle Anglo-Saxon metal finds are extremely infrequent, consisting of two pins and an *Ansate* brooch. Field-walking, however, revealed a dense scatter of Ipswich ware and hand-built Early to Middle Anglo-Saxon pottery, corresponding with an area of dark soil and shell around the area of the enclosure, identified by the geophysical survey, but also extending further to the west.

In contrast, Late Anglo-Saxon metal finds were abundant, multifunctional and almost exclusively diagnostic to the tenth century (including two openwork strap ends, two Scandinavian disc brooches (one Jellinge style), a trefoil brooch, a Scandinavian Borre-style brooch, a Borre-style derived brooch probably made in East Anglia, and an Arab Dirhem, that may have arrived via Scandinavian trade networks spanning the North Sea. Late Saxon pottery, however, was less abundant than Middle Anglo-Saxon pottery (although it did include regionally imported Lincolnshire Shelly Wares) with a distinct waterfront concentration. In this case, it was transformation in the artefactual signatures which demonstrated change rather more than the observed geophysical anomalies. Medieval finds were virtually absent both north and south of the Beck, implying settlement had shifted westward to the location of present-day Burnham Market by the twelfth century.

Site Interpretation

On the present evidence it might be argued that the later geophysical anomalies identified north of Goose Beck represent a planned settlement similar to those excavated at Wicken Bonhunt, Essex (Wade 1980), or Cottenham, Cambridgeshire (Mortimer 2000). Wicken

Bonhunt was considered a high-status secular site and, in this context, the ninth-century royal vill of *Bruna,* referred to in the twelfth-century *Bury St. Edmonds Chronicle*, might be a candidate for the settlement to the north of the Beck (Pestell 2003). A key question that remains, however, is how the strong Middle Anglo-Saxon metalwork signature, indicative of a focus of trade/exchange, relates to these features. Is the trade/exchange within the context of elite control from the outset, or does it instead reflect an unregulated site of exchange that quickly acquired a controlling focus?

Secondly, whatever the explanatory sequence north of the Beck, by the Late Anglo-Saxon period, and, more specifically in the tenth century, it can be quite strongly argued that an unexceptional area of Anglo-Saxon settlement south of the Beck had been transformed into a focus of trade/exchange with an overtly Scandinavian influence. Whether this activity focus superseded the site north of the Beck is uncertain, however. Whatever, the case, this endeavour appears relatively short-lived and probably ended by the twelfth century, perhaps due to environmental factors (such as the silting-up of the Goose Beck inlet) or when trade networks started to be dominated by urban foci.

Without excavation, interpretation of the complex settlement sequence at Burnham Market is not easy. Furthermore, although the site straddling the Goose Beck must certainly be central to our understanding of Anglo-Saxon activity in the area and integration within maritime networks, a synthesis of various evidence from a wider study area is now required. This research would need to include analysis of commercial excavations, which have taken place in advance of development, on the periphery of the modern settlement; analysis of the parochial history of the seven conjoining parishes that share the name Burnham (see Pestell 2003), and the plotting of the numerous surface finds from these parishes.

While accepting the biases of the newly acquired datasets, however, it is still evident that applying integrated surveys to sites previously labelled as ‘productive sites’ or ‘early emporia’ can allow important observations to be made quickly concerning issues of settlement complexity and transformations within rural sites (and elites) engaged in trade and exchange. If detailed surveys were now undertaken at a number of similar sites in different regions of Anglo-Saxon England, it might be possible to comprehensively review our understanding of coastal and marshland-inlet settlements, involved in maritime trade and exchange, and how these sites might have operated within a wider hinterland.

4.5 Monastic sites in Northumbria and their maritime context on the North Sea coast, from Northumberland to Flamborough Head, Yorkshire

Christopher Ferguson

The importance of the early medieval great monastic houses in Northern England has been rightly examined in some depth (Blair 2005). However, the relationship of these houses to the maritime world is still in need of work, despite recent exploration of this subject (Ferguson 2010a; Ferguson *forthcoming*; Makepeace 1995; Petts 2009). North of the Humber, there are several, mainly monastic, sites that occupy coastal, riverine, or estuarine locations. Whitby, Hartlepool, Bamburgh, Lindisfarne and the twin monastery of Monkwearmouth and Jarrow are notable amongst these, although Coldingham, St. Abbs, Dunbar, The Inner Farne Islands, Coquet Island, Tynemouth and Seaham require further investigation. The location of these sites reflects similar situation of settlement around the North Sea (Haywood 1991; Kramer 2000; Loveluck and Tys 2006). However, how far the location of these sites highlights the importance of sea power for military and economic purposes requires much further attention.

Many of these sites are ecclesiastical in structure, but they may not have fulfilled purely monastic functions. There is evidence for the importation of ceramic wares from East Anglia and the continent at many of the monastic and secular complexes, demonstrating links with the wider North Sea world to the south that is absent from sites to the north in Scotland beyond the Firth of Forth (Peers & Radford 1943; Daniels 1988; 1999; Cramp 2006; Ferguson 2010; cf. Petts 2009). Imported goods are present in far smaller quantities north of the Humber than further to the south, although this could benefit from wider work with the PAS and metal-detectorists in Northumberland and Durham.

To date, the only evidence for the exploitation of marine resources in the early medieval period from coastal sites in Northumbria comes from the monastery at Hartlepool (Rackham 2007). Yet, there is some evidence for maritime movement, again indicated by Whitby-type ware pottery and possible ballast weights from Hartlepool (Daniels 2007; Loveluck 2007a; Ferguson 2010).

Further archaeological work is required with regards to how the coastal and maritime environment affected the social structure of monasteries. Within the documentary record

there are references to monks utilising river and sea-going vessels, such as the description of Ceolfrith's voyage to Gaul in the *Anonymous History of Abbot Ceolfrith* (AHAC 30 f.), or how Cuthbert travelled by sea, with two monks, to the land of the Niduari in Pictland (VSC 9).

The coastal monastic sites of Northern England appear to vary from those along the Southern coasts, particularly the Channel. Yet, there also appears to be variety within the monasteries of the North. In particular, differences in the form of construction appear among those situated north of the river Tyne (Ferguson forthcoming).

Northumbrian coastal settlements may have served as conduits to link the maritime world with their respective hinterlands. Further work is required to understand the wider setting of many sites in Northumberland and the Borders, particularly with reference to exploitation of landward and maritime resources. Work by Brian Roberts on later medieval wasteland in County Durham has provided some insight into the relationship between the early medieval monastic settlements of this region and their hinterlands.

4.6 Comments on the Channel

David Hinton

The south coast has few stretches between Dover and Poole Harbour where an early medieval vessel could not be pulled up on to a shelving beach to unload, as William the Conqueror proved by landing at Pevensey in 1066. Long before that, early Anglo-Saxon cemeteries imply coastal connections, particularly in the links between Kent and the Isle of Wight; on the island, river inlets on the north coast were presumably used, as the south has steep cliffs and is very exposed. That no similar cultural connection between Wight and Purbeck has been found, despite the short sea-crossing involved, suggests a British enclave at Wareham until late in the seventh century rather than landing problems. Further west, the Dorset coast offers easy access in the Weymouth area, used by the raiding party that slew the king’s reeve at the end of the eighth century.

The middle Anglo-Saxon *wic* at Southampton was a major step towards the control of trade, though exactly what landing and storage facilities were provided is not clear yet from the archaeological record. Sussex has no known equivalent to Southampton, but erosion may

have removed evidence, and the few excavations at sites such as Pagham do not make a distinction between fishing and trading activity clear. Recent work on the Isle of Wight has shown that it had flourishing trade contacts. Against the Vikings, late ninth-/early tenth-century coastal burhs at Hastings, Portchester and Christchurch (Twynham) contrast with the more inland riverine sites such as Lewes and Chichester.

After the Norman Conquest, the south coast became politically important as kings crossed to and from Normandy. Castles within Portchester and Wareham, or at Pevensey, were sited to control access routes as well as the English. Pictorial evidence such as the Bayeux Tapestry shows what the boats would have looked like by the end of the eleventh century, but the probably late Anglo-Saxon logboats in Poole and Langstone Harbours are the only direct evidence of craft on the south coast.

Other coastal activities included fishing, though the Southampton evidence suggests that it was practised from the foreshore or small boats; trawling came later. Bones at Portchester show fowling. Salt production was taking place at Lyme as early as the eighth century, and Domesday Book documents it for Poole harbour, and the south coast of Hampshire, with less in the Portsmouth area and west Sussex, but much on the east Sussex marshes.

4.7 Coastal and estuarine settlements of the Atlantic Approaches (the shores of the southwestern Channel and southern Irish Sea)

Imogen Tompsett.

Maritime-oriented settlements in Devon and Cornwall during this period include those located on the coast itself and on tidal estuaries, specifically within 1.5km of the former; and also in some cases, sites located on rivers, wide and deep enough to have allowed access to sea-going vessels. Settlements are found on islands, on coastal promontories and cliffs, and in shore-side locations, amongst sand dunes and on beaches. The sites on the northern coast of Cornwall, with its cliff-tops, coves and beaches, provide a contrast to those on the south coasts of Devon and Cornwall with their deep estuaries and fewer beaches. Both coasts have sand dunes, although the larger are on the north Cornish coast, and the sites on the peninsular of West Penwith tend to be clifftop and small cove sites. In the cases, for example, of Mawgan Porth (Bruce-Mitford 1997) and Gwithian (Nowakowski 2004), the sand dunes appear to have caused a degree of settlement shift and renewal, whilst the coastal

geographical processes have augmented and shifted the dunes rather than erode them, causing periodic inundation of settlements by new layers of sand. At Gwithian, the post-Roman site appears to have shifted as the sands encroached, with a final settlement transfer to the Domesday manor site of Crane Godrevy (*ibid.*).

Maritime-oriented sites are varied in their characteristics and present no evidence for widespread type-sites across the region. They were often small in size and none had an urban nature. They also tended to manifest a significant degree of indigenous insular traits despite occupation and the spread of new ideas by Romans, Anglo-Saxons and Normans alike. Many of the features of maritime sites have Iron Age characteristics and indeed were former Iron Age settlements, discussed in part by Henderson (2007, 6-11). Pearce (2004) has produced a detailed summary of the archaeology that touches on many of the maritime aspects of this society, as has Thomas in his studies of trade with the Mediterranean and the Continent (1981; 1982; 1985; 1988; 1990). A catalogue of past articles as well as a more recent summary of this trade and the resulting imports has been undertaken by Campbell (1995; 1996a; 1996b; 2007), and it is the imported goods and associated sites which have had the highest prominence in the literature.

The majority of the maritime-oriented sites in the southwest have been located through chance finds, or from being eroded out of sand dunes and cliffs, and very little metal detecting has taken place. Of the excavated sites, many exhibit evidence for exchange with the Mediterranean and the Continent in the form of imported goods, between the fifth and seventh centuries, alongside the insular artefacts and cultural traditions. There are also sites which display no imports, yet have the same insular traditions and in many cases show no evidence for maritime exploitation, despite their proximity to the coast. These perhaps reflect the subsistence-based farming and foraging which would have allowed for the continuity of societies both on the coast and inland, and may have formed the basis for the expansion and cultural diversity of the larger sites. An example of the former is Duckpool, where the site has been interpreted as a Romano-British settlement which continued into the early medieval period, with subsistence farming, hunting, gathering and dye-extraction, and with a secondary metalworking function.

The lack of a single controlling political entity between the fifth and ninth centuries resulted in a complex and extremely varied settlement hierarchy during this period. There were no

major emporia as in the central and eastern Channel region and the southern North Sea region (Loveluck and Tys 2006, 141). Nevertheless, a complex network of local and overseas trade and exchange appears to have existed, between the wide range of site types along the coasts, as well as those inland. It is the imported goods which provide the dating evidence for many sites incorporated within maritime networks, alongside the goods and material culture of indigenous character. The introduction of Anglo-Saxon cultural traditions from the ninth century does not appear to have impacted on the occupation of coastal sites, although evidence for long-distance contacts certainly changed over time.

In general, shell middens, which sometimes also contain animal bones, imported and indigenous pottery and fish bones are the main source of evidence for maritime exploitation and are the main indicators of a society which relied on the sea for at least a proportion of its resources. The majority of sites appear to have been used by subsistence farmers and fishermen, combining their ranges of skills in order to survive on a local level, but with regionalised trade perhaps as part of a bartering system, which would have linked in with the overseas trade networks reflected on coastal central places, such as Tintagel and Gwithian, between the fifth and seventh centuries, with their large assemblages of imported ceramics and glass wares (Barrowman 2007; Nowakowski 2004). There is little evidence, between the late fourth and seventh centuries, to suggest that there were organised marketplaces, either on the coast or inland. However, the evidence from the dune sites of Bantham (Silvester 1981; May and Weddell 2002), and Mothecombe (Reed 2002) of potentially seasonal settlements engaged in trade with the Mediterranean and the Continent, and the tin ingots found at other beach (and inland) sites, suggests that they may have been used by communities from settlements further inland as a medium for trade, exchange and contact with a range of Mediterranean and northwest European mariners. So far, there is little evidence to suggest how and in what way these coastal sites interacted with their hinterlands. It is feasible to suggest that the inland settlements exhibiting imported goods may well have been trading with sites on the coast, either independently or as part of a local hierarchy focussed on an elite central place, particularly as there is evidence for the imported goods making their way inland to certain sites which had been of relatively high status in the Iron Age and Roman period, for example at Trethurgy (Quinnell 2004). The form and location of the locally-made pottery, which is largely coastal in its distribution and extends to the Cornwall and Devon borders, suggests that it may have been produced at only a certain number of coastal sites and was traded locally.

It is important to note that sites differed in form and function across the region, throughout the period between AD 400 and 1100. The settlements range from large and apparently very active centres, for example Gwithian, to the small settlements such as Gunwalloe, where a handful of pottery has been found eroded out of the cliff, and hearths, dry stone structures and occupation layers were excavated, dating from the ninth to eleventh centuries (Jope and Threlfall 1956). There are also further settlements which have yielded sherds of imported and insular ceramics, but which have yet to be excavated.

Between the eighth and tenth centuries, the majority of the sites show few aspects of Anglo-Saxon material culture with the exception of the coastal burhs of Exeter (Allan 1984), Totnes (Dyer and Allan 2004) and Barnstaple (Miles 1986). In contrast to the settlements of Gwithian and Tintagel, which were so active between the fifth and early eighth centuries, the burh centres show no evidence for a maritime association. During the tenth and eleventh centuries, the largest coastal centre appears to have switched from Tintagel to Gwithian, and whilst Exeter was an important central place, with its churches and early cathedral, it still showed no evidence for maritime exploitation. It would be expected that the castles of the eleventh and twelfth centuries might have had a high demand for overseas products as well as local resources. As yet, however, there has been little or no evidence for this.

Settlements either developed from pre-existing Iron Age or Romano-British sites, or they were new foundations of the early medieval period, which appear to have maintained the Iron Age traditions of material culture and settlement structure, as well as maritime exploitation. Coastal inhabitants who relied on the sea for their resources were not necessarily also farmers but it is likely that they combined sea- and land-based activities, based on the available evidence. Most probably, the maritime sites exhibiting high levels of seafaring and use of maritime resources also became the local foci for trade with other communities who did not exploit maritime resources to the same degree.

When the evidence from the imported ceramics dating from the fifth to seventh centuries is analysed, it is possible to distinguish contrasting traits between those sites with access to the English Channel, on the one hand; and sites from the Scilly Isles, to the Lizard peninsula and up along the north coast of Cornwall and Devon, on the other, in terms of the ratio of import types. Import quantities do not correspond to the style and size of settlement, but instead they

suggest the operation of either several exchange mechanisms, or different networks running alongside one another. Alternatively, the regional differentiation between the north and south coasts of Devon and Cornwall could reflect different demands for imported products.

Overall, the majority of the settlement evidence suggests a large number of small, self-sufficient communities of farmers and fishermen such, as at Hellesvean (Barton 1960), Tean (Thomas 1985; Pearce 1978) and St Michael's Mount (Herring 2000), interacting on a localised scale and with a degree of contact with overseas traders. The scale of the import assemblages at Tintagel, Gwithian and High Peak (Pollard 1966), however, suggests that they may have functioned as elite centres. Nevertheless, this assumption needs to be tempered, as the latter sites could also have acted as principal ports of call for Mediterranean and Continental traders, thus concentrating gatherings of the surrounding population at these points for exchange. Whether the inhabitants of Tintagel and Gwithian were members of the social elite or not, there can be no doubt that those who controlled the seaways and the objects and commodities of trade, thought to include tin (Campbell 2007, 130; Pearce 2004, 237), would have been in positions of considerable power.

4.8 Maritime-oriented Settlements and networks of the The Irish Sea

David Griffiths

Sometimes referred to as the 'British Mediterranean' (Mackinder 1907), the Irish Sea is a semi-enclosed sea strongly influenced by the Atlantic Ocean in weather, tides and marine resources (Cunliffe 2001). The Irish Sea forms a roughly square basin entered from the north by the North Channel and from the south by Saint George's Channel. Ireland, Wales, the Isle of Man, south-west Scotland and north-west England form a pattern of inter-visibility from high altitudes (e.g. from mountain summits, most famously from Snaefell on Man where the full circuit is visible); at sea-level in sailing craft, little more than 24 hours is normally necessary to traverse any stretch of the Irish Sea. This proximity has meant that the lands around the Irish Sea have experienced unusual and consistent levels of trans-maritime cultural interaction and interdependency. Megalithic expression and monumentality, and later prehistoric and sub-Roman political and economic interaction, form the background to early medieval activity.

Approaches to land are generally shallow with a high tidal range. The terrestrial geography of the Irish Sea region is characterised by steep topography with hostile rocky coasts, separated by lower-lying land surrounding open tidal inlets and estuaries such as those along the north shores of the Bristol Channel, Cardigan Bay, the Menai Straits, the Dee/Mersey estuaries, Morecambe Bay and the Solway Firth. There are few natural deep-water harbours. The Romans used the Irish Sea as a means of supplying and reinforcing coastal fortifications in northern Wales and along Hadrian's Wall. Increased pressure from seaborne raiders is marked by the construction of western forts and coastal communications in the third century (White 2007, 61-8). The post-Roman period saw the contraction, separation and localisation of polities in western Britain, amidst which was a spread of Irish influence, into the western fringes of Wales and from Irish Dál Riata in Co. Antrim to Scottish Dál Riata in Argyll. The mechanisms of cultural influence and potential population movements behind these developments are still imperfectly understood, with the pure migration hypothesis having now been discredited (Redknap 2009, Campbell 2009).

Late Roman patterns of Atlantic-Mediterranean trade were reinvigorated with the growth of Christian communities in Ireland, Wales and south-west Scotland, which may be traced in ceramic, numismatic and historical evidence (Bowen 1972; Thomas 1990; Wooding 1996; Griffiths 2003). Connections between Britain and Ireland in the seventh to ninth centuries were mediated by strategic and influential monasteries, particularly in the north of the region, such as Kells, Armagh, Bangor, Iona and Whithorn, assisting the spread of art styles, metalwork technologies and imports between Irish, Dál Riatan, Pictish and Northumbrian ecclesiastical networks. Many small islands, such as Lambay, the Calf of Man, Caldey, Ardwall Isle, Hilbre, Bardsey/Ynys Enlli and Priestholm/Ynys Sieriol have evidence of monastic cells or chapels. Larger islands such as Anglesey and the Isle of Man played a role in the geopolitics of the region, at times falling under Welsh, Irish and English influence (the earliest claim to Anglo-Saxon overlordship of Man occurs in Bede's account of Edwin of Northumbria, who reigned in the early seventh century).

Localised trade in coastal margins is detectible through the presence of stray finds of pins, penannular brooches and imported glass in estuarial and beach hinterland locales, particularly in a group of sites in Co. Donegal, Galloway and western Wales characterised by extensive sand dune formation in later times (Griffiths 2009). Extensive artefact scatters exhibiting long chronologies at Luce Sands (Galloway). Meols (Wirral), Longbury Bank and Castlemartin

(Pembrokeshire) indicate specialised beach market sites. Some, but not all of these, were reinvigorated in the Viking period (Griffiths 2010). Meols, which produced two primary sceattas and five stycas, saw an increase in activity marked by over thirty coins of the tenth and eleventh centuries (Griffiths, Philpott and Egan 2007). Other specialised manufacturing and trading settlements arose at this time, most notably the ninth to tenth century defended settlement at Llanberdrgoch, above Red Wharf Bay, Anglesey (Redknap 2000). Sites which have produced Viking material, such as St Patrick's Isle/ Peel Castle (Isle of Man), Carlisle (Cumbria), Whithorn (Galloway) and Heysham (Lancashire) must surely have had access to harbours and maritime networks, in north-west England and Wales especially via the termini of surviving networks of Roman roads. The pattern of deposition of hoards, notably the huge Cuerdale Hoard (Lancashire) found in 1840 (deposited 905-10), further stresses rivers, roads and maritime access as essential contextual factors. Further research on the estuarine and coastal margins of e.g. the Solway coast, Morecambe Bay and the Lancashire estuaries of the Lune, Wyre and Ribble is badly needed to elucidate their roles as transhipment points.

Urbanisation had far-reaching effects on the Irish Sea region, which is particularly marked at Chester and Dublin. The development of Chester as an Anglo-Saxon *burh* from 907 onwards brought first Mercian, and then West Saxon/English strategic interests into the heart of the Irish Sea region. The highpoint of pre-Conquest English influence was the ceremonial rowing of Edgar on the Dee at Chester in June 973 by six (or eight) *subreguli* from the western and northern kingdoms of Britain. Dublin began as a Viking *longphort* (ship fortress) historically in 840, but newly-excavated burial evidence is now suggesting that it may have been occupied as early as 800 (Simpson 2005). It was sacked by the Irish in 902 but from its re-establishment in 917 it grew into a significant trading town with far-reaching connections into the Irish interior and across the Viking World (Wallace 2008). Smaller trading towns of hybrid Hiberno-Norse character grew up in Waterford, Wexford, Cork and Limerick in the eleventh and twelfth centuries. The Norman Conquest was preceded by English seaborne attacks on Gwynedd, and succeeded by extensive militarisation of the English-Welsh border and attacks into Wales. Norway attempted to press claims on the region in 1098, briefly enjoying some success. The Anglo-Norman takeover of Ireland, which was mounted initially from south-west Wales, confirms the strategic significance of these seaways, which were once again to become vital corridors of English power during the conquest of Wales by Edward I.

5. Curatorship, Archives and Public Outreach

Robin Daniels

Terrestrial archaeology in England has developed a set of overlapping jurisdictions to ensure as far as possible that archaeological sites and finds are identified, investigated, conserved, protected where necessary, information provided to the public and any archives curated by appropriate bodies. This system is based on the collaboration of commercial contractors, local authorities, the Portable Antiquity Scheme, museums, universities and English Heritage with the assistance of the Dept for Culture Media and Sport (DCMS). On the whole it works well within the constraint of the resources available.

In contrast the maritime system is still evolving, the role of English Heritage is now well defined as both the curator of the resource and the sponsor of designations. The Receiver of Wreck is assiduous in attempting to find the appropriate depository for any material reported and the Marine Aggregates Industry has developed best practice in reporting material through the BMAPA Protocol implemented with the help of Wessex Archaeology.

There is however little local authority involvement on or beyond the immediate coastline, due to limitations on their powers. Commercial archaeological activity in the marine area is limited due to the high costs of any work and only a very few university departments take forward specific marine archaeology courses.

Most importantly there are no systematic programmes of site identification other than those related to specific developments and there is virtually no museum involvement in the sector leading to a significant problem in relation to archive and finds deposition. There is however considerable public interest in maritime research as expressed through the success of organisations such as the Nautical Archaeology Society and the concept of shipwreck remains an emotive subject. This public interest is largely untapped due to the absence of local outlets for interest and the reporting of information, that is equivalents of the terrestrial Historic Environment Record and Portable Antiquities Scheme

It is not proposed to rehearse the various statutory and legal situations and arguments. It should however be noted that recent developments with the passing of the Marine and

Coastal Access Act and the establishment of the Marine Management Organisation and Inshore Fisheries and Conservation Authorities may provide a framework within which archaeological curation of the marine resource can develop. A key to this will be the establishment of systematic programmes of site identification which have yet to be developed.

The Early Medieval Period in the Public Mind

The association of this period with seafaring is very strong and the concept of 'Viking ships' in particular, is well developed in the public mind. There is therefore no doubt that the finding of any vessel or part of a vessel of this period would be regarded as being of national importance. In an underwater context this would almost certainly lead to its designation as a historic wreck under the 'Protection of Wrecks Act 1973' following recommendation from the Advisory Committee on Historic Wreck Sites which advises all UK government organisations on wrecks in national waters.

In English waters this legislation is the province of DCMS, advised by English Heritage. Such a designation should result in appropriate archaeological action (DCMS 2008). The majority of designated wreck sites are of substantial size and of 17th century date or later and this means that the resources required for investigation and recovery would be immense and unlikely to be available. There has therefore been no major investigation of a wreck in UK waters since the work on the Mary Rose commenced in the 1960s, culminating in its lifting in 1982 and the many years of work since.

In the case of an Early Medieval Vessel its size and potential importance would make the possibility of investigation and possible recovery a serious proposition and there may well be significant public support for such action. The same would almost certainly be the case if such a vessel was found in the coastal zone, where it would lie under the jurisdiction of terrestrial planning legislation.

It is therefore a matter of concern that should such a find be made, it is not clear what approach should be taken. There is little capacity or appetite in the museum sector for dealing with substantive finds of maritime material. This highlights very clearly the absence of regional or national museums that have developed an interest in Maritime Archaeology

(HWTMA 2009a &b). This creates not only a potential problem but also a real current problem in the deposition of any Maritime Archaeological Archives and Objects.

It is therefore a matter of some urgency that a potential curatorial (in every sense of the word) response to a significant maritime find of Early Medieval date is developed with the support of all heritage sectors.

The closest recent parallel to the possible find of an Early Medieval Vessel is that of the 35m long Newport Ship of medieval date, found during normal development activity in Newport, Wales (http://www.newport.gov.uk/_dc/index.cfm?fuseaction=mediaevalship.homepage). The resources required for the recovery, recording and conservation of this are considerable and required a public outcry to generate the political and financial resources. While the Newport Ship is slightly larger than one might expect with an Early Medieval vessel, it is suggested that a case study of the processes, costs and implications of this find would provide useful pointers should a substantial Early Medieval vessel be recovered.

Recommended Actions:
*Promote the development of systematic programmes of site identification.
*Develop a format for the local reporting of marine archaeological information.
*Commission a case study of the Newport Ship to examine the processes and costs of recovery and those of its long term conservation and study, in the event of another discovery of an early medieval ship around the English coast.

6. Research Agenda and Priorities

Martin Carver and Chris Loveluck

6.1 Britain is an island and the understanding of the role of its maritime margins and international traffic is crucial for our history and its modern appreciation. The period under review saw the change from terrestrial and regional to maritime and international and is therefore pivotal for what went before and came after. The story so far is that the peoples in the west, south and east of Britain made use of their seas and rivers throughout the first millennium. There is a suspicion that water-travel was not incidental, but determinant, for the settlement and economy of the period. There is no doubt that the current situation of

Britain as a terrestrial as opposed to a maritime nation has led to the depreciation of maritime research in the early medieval period.

6.2 The *aquatic geography*, of rivers, coasts and blue water crossings remains a priority item on the agenda. Although worthwhile, the wetlands projects focussed rather on the management of land that is now wet, rather than how ancient peoples used wetplaces (section 2.1, 2.2).

6.3 The *archaeology of harbours and landing places*, inland and coastal, is top priority given their role in social and economic change, and given their developmental pressure from rising sea levels (section 2.1, 2.2).

6.4 As a whole the early medieval period is poorly provided with *well-preserved and well-studied boats*, both inland and sea-going, and we are heavily dependent on analogies with the more developed research programmes in Scandinavia. One solution is an aggressive campaign of survey in the mud creeks where boats are likely to have been both abandoned and preserved (section 2.4).

6.5 *New methods, approaches and prospection devices* will need to be invented to confront the challenges of 6.1-4: this environment attenuates radar and most geophysical methods. Sonar and sub-bottom profiling need waterborne platforms but these could operate tidally. These methods can also map old river channels (see *INJA* and *Maritime Archaeolgy Newsletter from Roskilde, Denmark*, passim). (section 3).

6.6 The *construction of replicas* closely following the lead and the method of Roskilde is a valuable aid to interpretation and the design of new research. There has been little interest or will in the archaeological community to pursue this type of research professionally. As a result Britain is in danger of losing what little traditional shipcraft it retains. The construction of replicas also has a useful spin-off in terms of outreach. Among suitable candidates for replication and sea trials are Sutton Hoo 1, Graveney and Newport.

6.7 The indirect evidence for *the crossing of the seas* is provided by the provenance of people and objects. Scientific analysis of human and animal bone using O/Sr isotopes, and of artefacts using trace elements is likely to be very rewarding. The litoral cultures of the Irish

Sea suggest frequent interaction over a long period, although the actual movement of people has not yet been the subject of stable isotope analysis.

6.8 At the same time the academic community needs to undertake those *theoretical studies* which will show how material culture can be used to help distinguish mobility, migration, slavery, gift exchange and trade.

6.9 *Study of the* wics*,* remains of paramount importance and the publication of Ipswich must be ruthlessly accelerated and rapidly completed. Wics that are still undefined (Sandwich, Fordwich) offer attractive new research targets. Overseas British archaeologists have much to learn from the early beachmarkets being defined in Scandinavia and the settlement patterns in the Frisian mudflats. Equally, *The transition from wic to port* (of which Ipswich could provide an example) is a current puzzle affecting the understanding of the English economy, state and church. There is an international trade network to find off the coasts of 10th century England which involved English as well as Norse entrepreneurs and brought exotic goods to land in unexpected places.

6.10 *Detailed studies of coastal settlement zones* using geography, placenames, casual finds, and especially the PAS are already beginning to lay firm foundations for early medieval interactions between sea and land. The first exemplary case study (section 4.1) shows what can be done with high intensity integrated projects using geomorphology, historic mapping, documentary reference, settlement surtvey and artefact study. As the other contributors show, a successful way of addressing this research is through Doctoral theses. EH should give considertion to adopting this now tightly disciplined and professional method of delivery. Priority targets can be listed from the Tweed to the Thames, across the Channel coast, and from the Lizard peninsula to the Wirral.

6.11 The study of maritime space is most fruitfully pursued by those nations currently occupying its shores. Thus *International Collaboration* has to be a feature of future research projects, and it may be that close co-operation in conservation initiatives will also bring rewards. Nearly every project, whether primarily aimed at research or conservation, has much to be gained by seeking support on the European scale. The present study can only be advanced in harness with similar interests in Ireland, Scotland, Wales, France, Holland, Belgium and Scandinavia.

6.12 *Administrative measures* to protect the resource and raise its public profile are essential. Because of their central importance to the whole maritime inquiry, consideration should be given to an active policy of protection and controlled research for the waterfronts of all known wics. These ports and their estuarine zones should be surveyed and subjected to tighter planning controls, and improved archaeological access. EH should issue guidance on the procedures and resources required in the event of the discovery of wreck or other preserved timber structures.

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Abbreviations:

AHAC **-** 'Anonymous Life of St Cuthbert' in Colgrave, B. 1940. (ed. and trans.). *Two Lives of Saint Cuthbert*. Cambridge University Press, Cambridge.
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DCMS - Department of Culture Media and Sport
HE – Bede's *Historia Ecclesiastica.* Colgrave, B. and Mynors, R.A.B., trans. 1969, *Bede's Ecclesiastical History of the English People*, Oxford: Clarendon/OUP.
HWTMA - Hampshire and Wight Trust for Maritime Archaeology
VSC – Bede, 'Life of St Cuthbert'. in Colgrave, B. 1940. (ed. and trans.). *Two Lives of Saint Cuthbert*, Cambridge: CUP.
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