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Ecclesiastical Tidescapes: Exploring the early medieval tidal world

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Abstr<Abstract
This paper explores the way in which tides contribute to the construction of complex cognitive landscapes. Drawing on the notion of assembly and process it emphasises how tidescapes are in a constant state of becoming. The early medieval monastery of Lindisfarne (Holy Island, Northumberland, UK) is used as a case study to explore the manifold ways in which tides might inculcate themselves within the lived experiences of those who lived on the island during the Anglo-Saxon period.

Keywords: Tides, seascapes, early medieval, coastal, archaeology

> '…I don't see the good of the tides. What's the good of a sea if it's going to be mud in a few hours?' 'It's like breathing' said Titty. 'Up and down. Up and down. It makes everything alive.'
> Arthur Ransome *Secret Water* (1939)

INTRODUCTION

From the beginnings of Christian monasticism, islands have been utilised as ecclesiastical sites. St Martin, whilst on his way west towards Gaul spent time as a hermit on the island of Gallinara, whilst Lérins, off coast of southern France was a veritable nursery of early saints and bishops. The wider significance of such insular places, where land meets sea, as liminal zones freighted with symbolic and socio-cultural significance is well-attested in the early medieval world (Wickham-Crowley 2006, Flatman 2010, Clarke 2011,Widdell 2017). Other important sites in the Mediterranean and Black Sea include Gemiler Adasi (Turkey), Cabrera (Spain), Capraria (Italy) and St Ivan Island (Bulgaria), whilst the complex coastscapes of the Adriatic and Aegean were well supplied with ecclesiastical sites on islands. Ecclesiastical use of islands could be found even further afield, in the Persian Gulf, with a Christian presence on islands such as Sir Baniyas (UAE), Ramath (Abu Ali, Saudi Arabia) and the monk Jonah's 'Black Island'. However, the Mediterranean had a very limited tidal range, whereas along the Atlantic coasts the presence of churches or monasteries on specifically tidal islands was common, examples including Locoal, Mont St Michel, Noirmoutier (France), Omey Island, Inishkeel (Ireland), Brough of Birsay, Eilean Chaluim Chille (Scotland) Caldey Island and Llangwyfan (Wales).

Lindisfarne (also known as Holy Island), lying off the north-east coast of England is perhaps the best known of these tidal ecclesiastical islands (Figs. 1–2). Despite its seemingly remote situation, in the 7th and 8th centuries AD it was embedded in a complex network of religious and social connections crossing Europe from Ireland to Rome. Its location on the northern edge of the kingdom of Northumberland gave it a strategic role mediating between the northern Irish and Scottish church with its power centre in Iona (Argyll, Scotland) and the Roman-influenced traditions of Anglo-Saxon England and the Frankish world.

Bede's *Ecclesiastical History* (HE) regularly alludes to the sea-girt nature of early monastic sites; sites such as Selsey, *Cnobheresburg* and Boshsam were described in terms of their physical proximity to the sea (HE, p. 4.13, 4.19), whilst others are known to have stood in very close to the coast. In Northumbria alone, in addition to Lindisfarne, we might think of Whitby (N. Yorkshire) and Tynemouth (Tyne & Wear) standing on clifftop locations above the North Sea or sites such as Aberlady (East Lothian) or Alnmouth (Northumberland) situated in lower lying coastal locations but still commanding impressive sea views (Petts 2009). In his writings, Bede paints a picture of a network of coastal monastic sites along the east and south coasts of Britain connected through the movement of individuals and ideas and relationships of patronage and mission that crossed political boundaries and lapped the shores of a series of Anglo-Saxon kingdoms, including Northumbria, Lindsey and East Anglia, reaching north into Pictland and south to Kent and Sussex. This distinctive ecclesiastical coastal landscape was more extensive than other coastal networks, such as the North Sea trading zone which in Britain only extended as far north as the Humber.

This paper will use the island of Lindisfarne as a literal and metaphorical point of departure for an exploration of how tidescapes became constituted in the context of early medieval monastic sites, exploring how they were both physical assemblages of spaces, actors and temporalities, but also drew on literary and religious discourses about real and imagined images of the sea and tides. Whilst this particular exploration is anchored in the North Sea world of early medieval Christianity, the ideas and perspectives developed here have a clear wider application to attempts to reimagine and reframe the distinctive and ever shifting tidal world in other periods.

LANDSCAPES, SEASCAPES AND TIDESCAPES

It has been over a generation since archaeologists and landscape historians first confronted the limitations of a Cartesian understanding of landscape (e.g. Moreland 1990, Bender 1992, Barrett 1994, Tilley 1994). Building on the critiques that had been developed by human geographers, there was a rejection of undifferentiated space as the backdrop against which human activity took place, and a new emphasis on the socially constructed nature of place. Moving beyond an understanding of human landscapes as simply an economic resource to be exploited, the emphasis on the recursive nature of the relationship between space and society served to engage with the socio-cultural nature of human landscapes whilst retaining an appreciation of the importance of the materiality of landscapes and their affordances. The rise of phenomenological approaches to landscape attempted to show how landscapes were subjectively experienced, rejecting traditional cartographic epistemologies. Clearly, this humanistic recasting of landscape can be effortlessly embraced by those looking at seascapes. The social dimension of wider seascapes has long been recognised. Christer Westerdahl has explored extensively the 'othering' of the sea in pre-industrial societies and explored the taboos and superstitions that have developed around venturing into it (Westerdahl 2005, p. 2–3, see also Van der Noort 2011, p. 23–27; Flatman 2011). Yet moves to embrace this approach has been inconsistent within scholarship on the early medieval world. One common approach to the archaeology of the sea has been to conceptualise the sea as an undifferentiated surface across which trade links were stretched – for example, the many works on early medieval trade in the North Sea and the emergence of *wics* and *emporia* effectively map the emergences of nodes and linkages, with the sea reduced to a field against which connections could be mapped (Hodges 1982, Sindbæk 2007). The only way in which the material dimensions of oceans (as opposed to the goods that are moved across them) are

articulated in this tradition is in a study of shipping technology and the way in which different ways of harnessing power (sail, oars) might impact on the friction of distance (Hodges 1982, p. 87–103, Carver 1990, Ferguson 2011). This focus on the economy of the sea is shared by early medieval archaeologist exploring the role of the sea as an economic resource; in particular, the importance of the sudden massive expansion of deep-sea fishing towards the end of the first millennium AD known as the 'fish event horizon' which saw a step change in the scale of fishing and fish consumption (Barrett *et al.* 2011 Barrett 2016). Yet, whilst an understanding of the changes in the early medieval exchange and subsistence economy is important, these approaches fail to approach the complexity of the sea itself as an assemblage constructed through natural processes, social transactions, movement and place-making, instead focusing on procurement and shipping technology and the emerging archaeology of nodal places within the oceanic word. In this, they reflect Philip Steinberg's wider critique of scholarship on the social dimensions of oceans as partly being under-theorised 'reducing the sea to a … space of connections [which] merely unifies the societies on its borders' (Steinberg 2013, p. 157).

Nonetheless, at the same time, scholars of literature have been engaging extensively with the sea as a subject of literary, poetic and devotional literature (e.g. Sobecki 2008, Klein *et al.* 2014). In these cases, whilst the idea of the sea or the ocean is foregrounded, often engaging with its biblical and theological resonances, the actual materiality of the ocean is curiously absent except as metaphor. As Steinberg (2013, p. 158) notes such approaches to the sea also never really address its materiality, reducing the sea to a metaphor.

The wider cosmological dimensions of coastal spaces (terrestrial and marine) has also become a feature of study by archaeologists, for practical reasons often primarily addressing the terrestrial side of the equation (Cooney 2004). There are though many ways in which the materiality of the sea itself might be engaged with from an archaeological perspective, and outside early medieval studies, some archaeologists, often supported by ethnographic material have begun to address this. For example, Ian McNiven's exploration of the seascapes of the Torres Strait people of North Australia has shown how currents, flows, islands and intertidal features recursively coupled with their cosmological and mytho-poetic discourses, such as their 'Dreamings' (McNiven 2003, p. 332–334; McNiven 2008; McNiven and Feldman 2003). Indeed, it has been argued that the engagement by the Torres Strait peoples with their seascapes is as much an ontological alignment as technical or connective issue (Sharp 2002, McNiven 2003 see also McKinnon *et al.* 2014).

Increasingly, human geographers have been trying to re-centre the study of oceans and the relationship with the human by calling for an increased focus on its materiality, calling for an engagement with the sea and its material affordances. There have been calls for the study of the 'fluid' or 'wet' ontologies that moved beyond 'landlocked' perspectives on the ocean and instead to identify the constellation of human-material relationships that constitute the 'more-than-human' sea (Peters 2010; Anderson and Peters 2014, p. 12, Steinberg and Peters 2015, cf. McKinnon *et al.* 2014). Steinberg (2013, p. 157) has advocated for an approach that views the ocean as 'reconstituted by a variety of elements: the non-human and the human the biological and the geophysical…'. This echoes Peter's desire, building on Sarah Whatmore's 'more than human' geographies that the sea be studied as a 'hydroworld' replete in its motion, depth and dynamism (Whatmore 2002, Peters 2012).

LINDISFARNE AND THE NORTH NORTHUMBRIAN COAST: A TIDAL ARCHAEOLOGY

The Holy Island of Lindisfarne is a small tidal island about a mile off the mainland close to the modern Anglo-Scottish border. It was founded as a monastery in AD 635 by King Oswald, the new Northumbrian king, who had returned from exile in Western Scotland where he had converted to Christianity under the influence of the Christian rulers of *Dal Riada*. He brought with him monks from the great Hiberno-Scottish monastery of Iona, which stood on a small island off the larger island of Mull off the west coast of Scotland. It is hard to resist the notion that by founding his new ecclesiastical site on an island Oswald was citing the island-location of Iona, although Lindisfarne with its tidal nature claimed different affordances than Iona, where access was only by boat. There was also likely a wider familiarity with the notion of island monasticism drawn from the works of early church writers such as John Cassian, who was particularly familiar with Lérins, and whose work was clearly known in Iona (Charles-Edwards 2004, p. 285–287).

Today, you are never far from the influence of the tides on Holy Island (also known by its Anglo-Saxon name Lindisfarne). Pulses of day-trippers and tourists come in as the ebbing tide exposes the causeway, the only practical way of accessing the island by car; others, often modern-day pilgrims take the muddier route on foot across the sandflats. As the tide comes in again, most hurry back to their cars to avoid being stranded mid-way across the causeway (a regular occurrence!). But the tide does not only influence human visitors. When the tide is out, the large sandflats in the sound between the island and the mainland are used as haul-outs by the seal colonies that are so common in this part of the Northumbrian coast (Fig. 3). These large groups of seals cry and moan and this noise is easily heard on the island. As the tide rises again, the seals disperse, the soundscape changes and the lap and gurgle of the incoming tide can be heard. With this new flow shoals of fish are brought in to the sound, and the local bird population, particularly the summer-visiting Arctic Terns take advantage of this to dive into the water after food, their entry into the water marked by a distinct splash. The smells change too, as the receding tide exposes mats of kelp and other seaweed These ever-changing patterns of human and animal behaviour and the associated soundscape serve to map out the constant ebb and flow of the tide. Even at night, it is possible to wake and know the tide is out without looking at the sea, because of the low moaning of the seals.

Around Lindisfarne the coast is generally low-lying with areas of salt-marsh and sand flats, particularly between the island and the mainland. There is also a small group of fifteen to twenty rocky islands (numbers depending on the tide) several miles to the south-east known as the Farne Islands of which only a small number are big enough for any kind of inhabitation. The modern tidal range is around 4m; at low tide the island of Lindisfarne and its smaller dependency St Cuthbert's Island are both accessible to the main land with large areas of exposed mudflats – in the past it is clear that the island was accessible on foot from a number of departure points on the mainland (Petts 2017, p. 5). A little further south, large areas of mudflats were also exposed at Budle Bay; together the flats of Budle Bay and Holy Island form a band of tidally exposed sandbanks and saltmarsh over a distance of nearly 10 miles stretching from Lindisfarne to the great Anglo-Saxon royal site at Bamburgh, clearly intervisible from the site of the early monastery (Fig.1).

Recent archaeological work has confirmed that the core of the early monastery was in the south-east corner of the island (Petts 2013, 2017). It was spread out along a rocky crag known as the Heugh and on the flat area to the north. Although now the island's harbour lies around ½ km to the east, changes in the coastal landscape here mean that in the Anglo-Saxon period, it would have skirted monastery itself. As a result, the early ecclesiastical site would have been once bounded by the shore on three sides. In particular, it would have overlooked, in the

near and middle distance, substantial areas of intertidal flats that would have been inundated by the high tide twice a day. Analysis of historic maps and recent geophysical survey has also shown that the original access route to the island from the mainland would not have been along the modern causeway which joins the island at its far end well away from the site of the monastery (Petts 2017). Instead, the best crossing point seems to have run from the monastery itself straight across to the small village of Fenham on the mainland. This route would have been visible along its entire length from many parts of the monastery, particularly the Heugh, and anyone crossing the causeway to the island would have seen the monasteries buildings outlined against the skyline.

However, as well as the main island, there is also a smaller island, St Cuthbert's Island, which stands just off Lindisfarne and is itself also only accessible tidally. It is located in an angle between the monastery and the routeway to the mainland (Figs. 4–5). This was used as a retreat or hermitage in the early medieval period, and its tidal nature was also remarked upon by Bede (VSC, p. XLII). It was visited by Cuthbert and his successor Eadberht as a Lenten retreat and a place to 'fight for the Lord in solitude (O'Sullivan 2001, p. 36–7, Wells 2013). The presence of a distinctive small grave-marker of eighth century date also testifies to the use of the island for burial.

The intertidal zone was also clearly exploited for economic resources at Lindisfarne and elsewhere in North Northumberland. Early medieval faunal remains from the monastery itself include seal bones (Petts and DigVentures 2018). Seals still regularly use the nearby tidal sandbanks as haul-outs, as well as using the Farne Islands as a haul-out and a breeding area. Seal consumption has also been identified at the early medieval coastal site of North Berwick (Addyman *et al*. 2013, p. 148–50). There is clear evidence for regular exploitation of maritime resources from the intertidal zone. Fish-traps are known from nearby Budle Bay, as well as a possible example immediately adjacent to St Cuthbert's Island – although undated, there is a notable absence of any medieval or post-medieval documentary references to them in either the later Priory accounts or estate and manorial papers, which may suggest they are earlier, perhaps early medieval, in date. Environmental remains from on-going excavations on the Anglo-Saxon monastery by the author include evidence for exploitation of seal. Shellfish with intertidal habitats including periwinkle (*Littorina littorea*), whelk (*Buccinum undatum*), oysters (*Ostrea edulis*), dogwhelk (*Nucella lapillus*), limpets (*Patelle vulgate*), common mussel (*Mytilus edulis*) and cockles (*Cerastoderma edule*) have also been found at a range of early medieval coastal sites, including Hartlepool, North Berwick, Wearmouth and Jarrow, as well as Lindisfarne itself (Cramp 2006, p. 552–579, Daniels 2007, p. 120–21 Addyman *et al.* 2013, p. 30, 35). The shellfish have a variety of different habitats ranging from higher and middle intertidal species, such as the periwinkle to lower intertidal and sublittoral species, such as oysters. This demonstrates clear exploitation of a range of ecological subniches across the intertidal zone. Another regularly exploited resource was seaweed. Fragments of charred seaweed have been recovered through environmental sampling from a number of Northumbrian sites, including Hart, Hartlepool, North Seaton and Shotton (ASDU 2006, 2015). Initial analysis of these remains suggests that they derive from seaweeds from the genus *Fucaceae* which mainly occupy the intertidal zone, rather than the primarily sub-littoral *Phaeophyceae* such as kelp, which exist mainly below the low tide line. Many of these sites where seaweed has been recovered are inland, so the function of the seaweed is uncertain, although its presence could have been as a result of being incorporated into blocks of salt or it may have arrived alongside deliveries of fish or shellfish for consumption.

Archaeological excavation has shown other resources also clearly derived from the intertidal zone at Lindisfarne. Many stones on the shoreline of Lindisfarne have been affected by distinctive patterns of erosion caused by clam-like bivalves called Piddocks (*Pholas dactylus*). Yet, stones with this patterning have been found re-used in the simple stone footings of a recently excavated timber structure close to the heart of the monastery (Petts and DigVentures 2018). These stones had clearly been taken from the shoreline and moved inland. This may have been a pragmatic use of the stone, but it may also have been more symbolically freighted. Use of similar sea-scarred stone has been previously identified at prehistoric sites elsewhere in the UK indicating a clear sense of the value attributed to such material (Fowler and Cummins 2003, p. 5). Nearby large quantities of white quartz pebbles have been found associated with a series of 8th–10th century graves excavated close to the timber structure. These small smooth beach-rolled pebbles are not derived from the immediate vicinity of the cemetery and must have come from elsewhere (Petts and DigVentures 2017, 2018). Such use of white sea pebbles is known from other early medieval contexts in Northern Britain and Ireland, where they are often found associated with burials as well as a range of other early Christian ritual contexts. Their integration into early devotional practices are clear. Ryan Lash has emphasised that the importance in their use may not just be derived from the undoubted affect of their materiality (crystalline and often partially translucent they can glitter and sparkle when wet), but also from the physical engagement with the process of their collection from the strand, resulting in an attentive interaction with the liminal tidal zone (Lash 2018a, 2018b)

LIVING AND THINKING TIDALLY
Tides are predominantly lunar phenomena; the ebb and flow of the tide up and down the shoreline is predictable and governed primarily by physical relationship between the sea, the earth and the moon, and to a lesser extent the sun (Pugh and Woodworth 2014, p. 35–40). Yet, it is not simply a process that sees the sea rise and fall to the same extent each day. As a mainly lunar cycle, tidal patterns do not map simply onto the daily temporal cycle; the time of high and low tides changes each day by around 50 minutes. Tidal regimes also change over a two-week cycle with the interrelationship between the lunar and solar cycle changing tidal ranges with resulting spring (maximum) and neap (minimum) tides. Added to this, variations in the lunar altitude also relate to changes in tidal range with it increasing when the moon is at its closest (*perigee*) and decreasing when at its most distant (*apogee*). Together, these influences come together resulting in a complex calendar of shifting seas that would have constantly altered and reworked the littoral landscape, particularly in areas replete with mudflats and saltmarsh. Despite the fact that tides work in lockstep with lunar and solar cycles, the impact of external variables, such as air pressure, local bathymetry and wind direction would add an element of contingency to even the most regulated system of tidal prediction and modelling. The tidal cycle does not mesh with the daily solar cycle or circadian rhythms, instead we find 'marine time acting as a rolling counterpoint to land time' (Pollard 1996, p. 203).

This complex, shifting coastal landscapes, swinging from dry land to sea with stages in between, constantly rewriting the filigree pattern of sandbanks, channels and shoals create a liminal landscape par excellence. This has a profound phenomenological dimension, with the visual affordance of such coastal landscapes ever shifting, changing the experience of the natural environment including the behaviour of animals, fish and birds. Fish following tidal currents and flows will attract predators, including seabirds and seals, whilst colonies of seals may beach on exposed sandflats. Even the soundscape is forever in flux as the sea comes in and withdraws again (cf. Helskog 1999, p. 78–79). The tide also creates a complex mosaic of

ecological subsystems and niches that can be exploited for resources, both directly harvesting the wildlife, through foraging or tidal fishtraps and also capable of being utilised for seasonal salt-marsh grazing supporting pastoral economic strategies (O'Sullivan 2003, Langouët and Daire 2009). The tidal influence on fish behaviour and its complex inter-relationship with their natural feeding habits, such as rising to the surface to feed during hours of darkness, would mean that fishermen would have complex cognitive geographies of fishing grounds with temporal as well as spatial dimensions (O'Sullivan 2003, Sturt 2006). This constant tension between the dry and the wet resists simple binary oppositions between land and sea, creating inter-tidal areas as zones of constant 'becoming' permanently in a process of renegotiation (cf. Steinberg 2013, p. 163–4).

A network approach ultimately problematises the notion of liminality. For a space to become liminal it has to be constructed as such by human engagement, physical or conceptual, with it (Ingold 2010, p. 156). A key affordance of the tidal zone with its constantly shifting nature is its phenomenological capacity for affect, as humans engage and confront with overt manifestations of the agency of fluid matter on the shoreline (Jones 2010). This allows us to go part of the way to deconstructing what we mean by marking such spaces out as liminal and to begin to drill down into how such co-fabricated spaces inherently confront the dissolution of conceptual boundaries between the material and the social.

The symbolic dimension of the pre-Christian tidal zone in the North Sea and Atlantic world is not easy to delineate. Over the *longue durée* it has been argued that the Iron Age peoples of these territories deliberately avoided eating fish or maritime resources, and that this may have been for ritual reasons with economic resources from coastal contexts possibly being seen as taboo (Dobney and Ervynk 2007, Willis 2007, although see Roberts and Rainsford 2013). There are also hints from hagiographical work recording missionary activity in the Continental North Sea region of pagan beliefs relating to tides. In the *Life of Saint Wulfram* (*VCW*, c.8) two children were destined to be sacrificed by being drowned by the incoming tide by the local pagan king, before being saved by the intervention of Wulfram. A close association between the shoreline and death might also be apparent in the unusual deposits of human remains from the so-called 'Sculptors Cave', Covesea (NE Scotland). This cave within coastal cliffs contained deposits of Late Bronze Age and Late Iron Age human remains. Analysis of the skeletal material suggests that in the Late Iron Age individuals may have been killed and decapitated within the cave (Armit *et al.* 2011). The evidence suggests that the activity was carefully structured, with potentially ritual dimensions; noticeably the site would have been very difficult to access at high tide emphasising its liminal position on the shoreline with its materiality in terms of physical access being cyclically reformed by the agency of the tidal process. It has also been argued that some islands later used as the site of Christian ecclesiastical sites in Ireland may have had pre-Christian symbolic resonances, which can be seen through a glass darkly via the archaeology and early hagiography (Carver 2009, Ó Carragáin 2013). Certainly, early Classical ethnographers referred to several island sanctuaries on the Atlantic coast of Gaul inhabited by only priestesses (Daire 2009, p. 55–56).

For those who live and work in the Atlantic and North Sea worlds, the presence of tidal regimes along their shorelines is axiomatic. However, in the Mediterranean heartland of early Christianity, where it evolved over the 1st to 4th centuries AD, tides are minimal, with an amplitude of only a few centimetres, this contrasts with the tidal range measured in metres found in the North Atlantic. This is of importance, as early Christianity sought to remap itself on shorelines outside the Mediterranean. Mediterranean metaphors had to reframe themselves

as they confronted the tidal materialities of the North Atlantic. Early medieval and Late Antique mapping practices were refracted through cosmologies based on biblical exegesis and there were clear strategies for the metaphorical mapping of the Atlantic-North Sea in relationship to the Mediterranean core of the early Christian world. In particular so-called T-O map placed these Northern and Western seaways on the literal and conceptual frontiers of the world, acting as metaphors for the desert, where holy men might confront their demons (O'Loughlin 1997, O'Sullivan 2001). In biblical writing there was a distinction between the sea (Mediterranean, Red Sea) and the Ocean (*Oceanus*) which encompassed the human world (Genesis 1.9) and was associated with the abyss (Genesis 1.2) being populated by demons and monsters and associated with wickedness (Luke 8.1, Apocalypse 11:7, 17:8) (O'Loughlin 1997). Some early Christian writers did mention that the Ocean was tidal, but for the likes of Augustine (*DGL*, v.10 25) and Ambrose (*Exameron*, iv.7.30) such processes were abstract, poorly understood and explained only through abstract conjecture.

However, despite these symbolic inscriptions of the Northern seas in terms of their spatial relationship with the Mediterranean, these ideal maps failed to grapple with the way in which the distinct materiality of the Atlantic-North Sea seascape was made manifest in the presence of tides which distinguish them qualitatively from the metaphorical mytho-poetic biblical ocean based on the Mediterranean. In this tradition, the Ocean was framed in abstract and metaphorical terms with little or no engagement with information divined from direct or indirect observation; in Steinberg's (2013, 158) terms, it was 'over theorised'.

WRITING THE NORTHERN TIDESCAPES
Given the importance of the sea and tides in the littoral landscapes of Lindisfarne and other Northumbrian monasteries it is no surprise that they both loom large in the writings of contemporary ecclesiastical writers. It is possible to identify two related discourses about tides – attempts to understand and cognitively map tides running alongside complimentary strategies that see tides as a channel for manifesting the divine.

It is only as Christianity became increasingly consolidated on the Atlantic islands, particularly Britain and Ireland that a more coherent attempt was made to frame the tidal process in intellectual terms. A key bridging figure between the Mediterranean tradition and the Insular writers was Isidore of Seville, whose work was clearly known to both Anglo-Saxon and Irish scholars by the late 7th century (Smyth 2016). His work was clearly known by the authors of the late 7th century Irish text *Liber de ordine creaturarum* (attributed to the Pseudo-Isidore) which addressed tidal processes (Smyth 1996, p. 241–62, Wallis 2004, p. 308). The underpinning of the working of tides was also a concern of the author of the *Liber de mirabilibus sacrae scripturae* (attributed to the pseudo-Augustine), probably writing in the mid-7th century (Smyth 1996). In turn, the *Liber de ordine creaturarium* was clearly known to Bede (Stancliffe 2017, p. 32–33, n. 103). It appears that although underpinned by the work of earlier Christian writers, much of discussion of tidal activity by these Irish writers was also based on practical experience of tides. Smyth has posited that this was particularly due to the importance of understanding tidal regimes in order to effectively produce salt by evaporation (Smyth 1996, p. 253–4, 263–5). The physical experience of tides was also vividly portrayed in the 7th century Irish *Hisperica Famina*:

> It directs its customary double motion to a double purpose:
> The foamy *malina* [rising tide] covers the muddy land,
> crosses the shore's boundaries at its burgeoning
> and floods vast channels with its swelling flow.

It bends the white ash tree toward the earthen fields,
Heaps up mounds of algae on the shore of the bay,
uproots open limpets from the rocks,
tears away purple-coloured conchs,
spins the bodies of beasts toward the sandy harbour
in great profusion;
the billowing waters undulate towards the canyons of rock,
and the foaming storm roars as it swells.
Hisperica Famina, A399–41 (Herren 1974, p. I.94–97)

This interest and engagement with understanding the sea was also clearly present at Iona, the great centre for Hiberno-Scottish monasticism in Western Scotland. A seventh century Gaelic praise poem, the *Amra Choluimb Chille* (*ACC*), written about Columba, the monastery's founder, at Iona records that:

He read mysteries and distributed the Scriptures among the schools,
and he put together the harmony concerning the course of the moon
the course which it ran with the rayed sun
and the course of the sea'
(*ACC*, V.11–14)

The tidal nature of Lindisfarne was described by Bede, who was explicit about its ambiguous insular nature 'owing to the flow of the ocean tide, called in Greek *rheuma*, twice a day [Lindisfarne] becomes an island, and twice a day, when the tide ebbs from the uncovered shores become again contiguous with land (*VSC* XVII; see also *HE*, III, 3). More poetically, the 9th century Anglo-Saxon monks Aethelwulf described it as a locus where '…the waves are eager to curl over the shore with grey water, but rush to lay them bare as they go on their backward course and the blue (depths) encircle a sacred land, and afford a ready journey when they lay the shores bare' (*DA*, p. v).

Earlier attempts to understand the theories *behind* the process of tides (such as those by Ambrose) were developed without the opportunity to take direct observation. For Bede however, the tides lapped up against the boundary of his monastery in Jarrow directly influencing his personal lived space (Eckenrode 1974). Bede was interested not just in understanding the underlying mechanics of tidal movement but in applying this understanding to calculate and predict their movement. As a scholar, he was also engaged in a wider understanding of lunar cycles as they were used to calculate key dates, such as Easter. He addressed tidal movement in two books *De natura rerum* (Bede, c.39) and *De temporibus.* The former was more interested in the underlying mechanics of tidal movement and drew on early scholarship, particularly that of Isidore.

Despite the detailed engagement with astronomical science however, Bede's work was fundamentally a religious vision 'Bede re-envisions time in a theological light, encompassing both liturgy and providential history' (Wallis 2004, p. lxvii). Crucially, Bede was able to use personal knowledge and observation to critique earlier more conjectural models of tidal movement; for example he is able to counter Philippus Presbyter's argument that sea levels rise and fall at the same time everywhere in the ocean because 'we who live at various places along the coastline of the British Sea know that as it is advancing in one location it is receding elsewhere' (Bede, p.370). It is clear that the ability to understand tides was a key element of learning expected of a learned church figure and there was clearly a wider

international appetite for such scholarship. Lul of Mainz in the 8th century wrote to a Northumbrian contact, Ælbert, Archbishop of York to ask for a copy of a tract about tides (Gameson 2017, p. 52).

Despite Bede's fascination with the tide as a physical phenomenon, he was also engaged with them from a mytho-poetic perspective. In his *Life of Saint Cuthbert*, the key figure culted on Lindisfarne, tides and the shore continually re-assert themselves. He describes one of Cuthbert's earliest miracles in which he made the wind change directions and save a group of monks on rafts who were being swept out of the mouth of the Tyne into the North Sea (*VSC*, III). It was also at the interface of shore and land that Cuthbert had his celebrated encounter with sea creatures (in some versions otters) who dry him following a night immersed in the waves 'singing praises to the sound of the waves' (*VSC*, X). The tide itself was explicitly seen having a channel through which divine agency could be made manifest. When in need of a length of wood to complete construction of hut, the night tide delivers timber of the necessary dimensions at the site where the building was planned (*VSC*, XXI). Many of these miracles were also recounted in an anonymously authored Life of Cuthbert of similar date (e.g. *VSC A*, II.4, III.4). Even after the monastic community left Lindisfarne in the late 9th century, the role of tides continued to be significant in its histories; later sources including the Norman *Libellus de Exordio* (*LO*) and recount how whilst in Cumbria a group of monks are caught in rough seas and a decorated gospel book was washed away. However, one monk received a vision telling them where to look 'So they came to the sea and saw that it had receded much farther than normal. When they had walked three miles or more they found that same holy book of the gospels, which retained its enrichment of gems and gold on the outside, as on the inside it showed the former beauty of its letters and pages, as if it had not been touched by the water at all.' (*LO*, p. ii.12). Another story described how when the community had to leave their new home in Durham to seek refuge from the Normans, they returned to Lindisfarne but were unable to reach the island due to a high tide. On praying however, the tide suddenly drew back and allowed them passage to the island, closing behind again behind them (*LO*, p. iii.15). The parallels between this tidal movement of the sea and the miraculous parting and closing of the Red Sea allowing the Israelites to flee Pharoah's army are clear here.

More widely the ascription of the tide as an agent of the miraculous appears to have been a particularly Northumbrian, or at least Northern British, phenomenon. Given the Lindisfarne's Columban collections, the passage from the *Amra Choluimb Chille* quoted earlier is a reminder that the monks arriving at Lindisfarne were coming from a context where an understanding of the tides was seen as an important *religious* as well as practical knowledge. Not surprisingly, given the island nature of Iona itself, tides also figured in relation to miraculous interventions associated with Columba. The *Life of St Columba* recounts the case of a skin for carrying milk being drawn away by the sea but then being miraculously returned by the floodtide (*VSCo,* p. II.38). An interest in the tide can be found elsewhere outside the work of Bede. Although taking place in Sussex, the narrative of Wilfrid being saved from a pagan army by an early tide was written in a Northumbrian context about a Northumbrian saint (*VW*, p. 13). Even as later as the 12th century, the role of the low tide looms large in the Life of the Northumbrian saint, Godric of Finchale. The hagiographical account of his life by Reginald of Durham (Durham being the ultimate destination of the monastic community originally based on Lindisfarne) tells how Godric was able to feed himself when he found three dolphins stranded by the low tide. Although the story was located in Lincolnshire, the Lindisfarne/Durham connections to the production of his Life are clear (Rochelois 2018). Another 12th century literary text, the *Liber Eliensis* (*LE*), contains the Life of St Aethelfryth

founder of the monastery at Ely. Although the monastery was located in Ely, and Aethelfryth had been born in Suffolk in the 7th century, she had spent time as the Queen of the Northumbrian king Ecgfrith. She became a nun shortly after her marriage and despite attempts by her husband to force her out of her nunnery she escaped back to East Anglia. In the narrative of her life in the *LE* it recounts that her escape from the Northumbrian coastal monastery at Coldingham (20 miles north of Lindisfarne) was facilitated by miraculously high tide preventing the king from reaching her (*LE*, p. 1.11).

DISCUSSION

Notions such as Timothy Ingold's *taskscapes* wrestled with the relationships between place and meaning, whilst introducing the importance of the dimension of time into landscape analysis, offering a vision of landscapes created through the sedimentation of the results of social activity and action across space and time (Ingold 1993; Ingold 2019). More recently, the rise of *relational archaeologies* and an increased interest in notions such as Actor-Network Theory has served to rewrite human-landscape relationships as assemblages, networks or meshworks of human and non-human actors (O'Donnell 2015, p. 138–40, Chadwick 2016a, 2016b). These perspectives argue that landscape features do more than present affordances that might be exploited by societies, but through the interaction and relations of their components construct agency. They also see geographical and historical processes being created by constellations of human and non-human actors resulting in 'more-than-human' networks. However, this process of recasting historical and archaeological landscapes as socially-constructed, subjectively experienced and 'symmetric' has remained resolutely terrestrial. Yet, the role of the sea is surely central to the understanding of past societies, and there has been a reluctance to engage with sea using the same perspectives.

Drawing on these approaches, this paper has tried to frame tidescapes under investigations as *assemblages*, drawing on the notion initially inspired by the work of Gilles Deleuze and Felix Guattari but which has been increasingly embraced by those working in human geography and finds resonances in Latour's Actor-Network Theory (Deleuze and Guattari 1998, Latour 2005, Müller 2015, see also Phillips 2006, Anderson and McFarlane 2011) and archaeology (e.g. Conneller 2016, Harris 2016, 2018, Jervis 2016, Harris and Cipolla 2017, p. 129–151). This perspective understands terrestrial (and marine) places as being constructed from relationships between their constituent elements (Anderson and Peters 2015) with their complexity and uniqueness being an emergent quality of the combination and interconnections of its components. It is an approach that emphasises the materiality of a landscape whilst allowing it to intersect and be informed by other discourses. The constituent elements need not simply be human actors or things but also processes, such as the tide itself, the movement of people, acts of dwelling or inhabiting a territory. The space is not formed by any individual element or process, but is emergent from the network or web of relationships; spaces are more than the sum of their parts.

Deleuze and Guattari have argued that the sea can be understood as a 'smooth space', amorphous and freeform, a 'space of events and intensities' that becomes increasingly 'striated' through the process of mapping, gridding and the imposition of homogenous points of reference as part of the globalising and modernising project emerging in the mid-2nd millennium AD (Deleuze and Guattari 1988, p. 479, Lysen and Pisters 2012, Jones 2016). Yet, it is important to resist conceiving 'smooth' and 'striated' spaces, including the sea, in terms of a binary opposition. The extent to which a surface is amenable to, and resists, striation and gridding is contingent on scale, context and temporality, and a space might be simultaneously smooth and striated depending on the perspective of the individual or domain

engaging with it. Steinberg sees the notion of a 'smooth' sea as reducing the sea to a metaphor, 'overtheorising it' and ignoring its materiality (Steinberg 2013), indeed anthropological exploration of maritime worlds has shown how those who engage with the sea are able to carve out 'places' within the ocean, often in relation to marine topography (rocks, shallows, currents), the nature of wildlife (areas of weed; parts of the seabed rich in fish) and to human association (legal tenure, moral rights and personal narrative) (Osler and Porteous 2010, p. 19–20, Cobb and Ransley 2019, Howard 2019). Indeed these places often emerge out of the particular articulation of geomorphology, living environment and humans, and may only be identified indirectly via further indexes and signals emerging out of other relationships (the slick of oil on the surface above a shoal of herring; the colour of the sea changing according to depth of the seabed, the noise of fish at the surface or the phosphorescence of phytoplankton caused by rapid movement of fish) (Howard 2013).

Tidal landscapes offer an opportunity to interrogate the tensions between 'smoothness' and 'striation' – the cyclical process of ebb and flow serves to create a particularly complex space where built features, such as fishtraps, and natural features such as areas or rock or sand-banks might go through periods of visibility and invisibility, periodically writing and effacing new 'places' in the land-seascape.

Significantly, when considering tidescapes, to this complex assemblage of human and non-human agents that generate space we might also integrate differing time characteristics – such as rhythm and tempo – that serve to make space distinct (Edensor 2010, Jones 2010, p. 194, 2011, p. 2289, Huebner 2018). The distinct rhythms of the tides on their own and in relationship to other tempos (seasonal; diurnal) and the way in which they govern practices and ways of dwelling serve to make tidescapes particularly distinct. Time needs to be conceived as complex and multi-layered and operates at a range of different scales and tempos – understanding temporalities is thus central in defining a phenomenon (Lucas 2005, p. 43). This notion of rhythm and pulse being one amongst a range of different temporalities (linear, cyclical etc) was addressed by Lefebvre in explorations of the creation of space, and he not surprisingly seized on the tide as a prime example of this (Lefebvre 2004, see also Sturt 2006, Jones 2010, p. 194, Pugh 2018). Indeed, in his discussion of cyclical rhythms he singled out the role of the tide as a key facet in structural differences between Mediterranean and Atlantic coastal urbanism (Lefebvre 2004, p. 91). Whilst taking an assemblage perspective on the creation of social spaces has recognised the strength that this approach has in emphasising the significance of sites in term of their histories, this has tended to engage with larger temporal slices (years, decades, centuries) (McFarlane 2011, p. 654, Jervis 2016, p. 387, cf. Massey 2006). The temporalities of tides work on a more immediate human scale. One of the key arguments of this paper is thus that intertidal zones might be framed as distinctive *timescapes* with their own 'rhythmic practices of place' (Jones 2011, p. 2292), a notion that chimes with Ingold's taskcapes, materialising different forms and scale of temporality. The attempts by Bede to understand the tidal cycle might, in this context, be understood as the first steps in the process of *striating* the temporality of the tidescape, by projecting into the future forthcoming tidal regimes. This casting of tidal processes into the future acted to enfold two distinct temporalities, cyclical and linear, into the assemblage of properties and flows that constituted the tidescape of Lindisfarne. These temporalities were manifested materially; the observations made by Bede to develop his understanding of tides were made on real, not metaphorical, tidal flows. Whilst techniques for calculating tides or writing hagiography might seem to be dematerialised concepts, the rueful reply of Ælbert to Lul, who asked for a work on calculating tide times that he could not help as he himself had

not enough scribes to copy them is a reminder that even literary production was rooted in its own material networks of production and dissemination.

The shifting temporalities of the tide also means that patterns of movement were cyclically constrained. When the tide was out, access to the mainland and St Cuthbert's Island was possible on foot, but movement by boat was more constrained – the beached boats would have remained stranded on the shoreline until the tide rose again. The tidal cycle acted as a de facto switch or valve offering differing affordances and inhibitions to varying modes of movement.

A final key facet of the assemblage is that it is non-hierarchical. Primacy is not given to human actors, nor are things attributed with determinacy (Cresswell 2013, p. 253–253). Instead as *symmetrical* constructions, they do not prioritise the human over the material, instead they have a flat ontology (Conneller 2016, 183, Harris 2016, p. 127). This means that human agency is not given priority over the natural or constructed framework of inhabitation; natural forces, structures and objects all contribute towards the meshing of the territorial networks, and there is no sense of overarching, abstract structure dominating the construction of space. A final key aspect of this 'assemblage' approach is the notion of unboundedness; whilst some aspects of a space may have fixed dimensions, the processes that construct it can act from a distance and the threads of connections that inform them spill over to other places, other objects and even other times.

There is, though, an undeniable methodological challenge for archaeologists and historians working beyond the horizon of oral history. Myths, stories, narratives predicated on and constructed around material aspects of the deep ocean are literally 'writ on water' leaving little material trace even despite close articulation with the materiality of the sea. This paper, however, argues that it is at the shoreline that there is some hope of recovering an understanding of early 'hydroworlds' *(sensu* Peters 2012). It is here that the relationship between land, sea and people is often at its most powerfully material, particularly through the action of tides, constantly reworking the land, churning mud, gouging and tearing down old shore lines and casting up new ones. It is through this ebb and flow, progression and regression that the volume of the sea and its constant alteration is made particularly manifest. Significantly the tidal cycle and its counterpoint with the daily solar rhythms creating ever shifting tidescapes is a process that takes place on a temporal scale that can be encompassed within *everyday* human time (Jones 2010, p. 197). However, the remorselessness of tidal flow, is often linked to *longue durée* sea-level changes which foreground Peter's suggestion 'hydromaterial' relationships can reconstruct and rework traditional patterns of terrestrial human relationality in which the human and the natural cofabricate the creation of space. Unlike on land, she instead suggests that the as human societies are less able to 'shape and mould the sea to its own desires' maritime landscapes articulate different forms of relationalities and co-compositions (Peters 2012, p. 1242–1243, cf. Edgeworth 2011, p. 134–135). The remorseless nature of sea-level rise and coastal movement are refracted through the lens of the tide; whilst they may be longer-term processes, they are articulated through the tidal process, as high tides become more destructive or low tides rise higher up the beach than in the past. Geological processes are manifested within human-scale processes.

The tide thus offers a powerful lens through which to explore these processes of co-fabrication and renegotiated relationships between society and the ocean; the tides themselves are a direct result of the relationships between the sea and complex astronomical and oceanographic factors. They are also implicated in the wider networks of human and material

interaction with them. They are themselves relational compositions (Peters 2012, p. 1243). Tides, as well as other oceanic and estuarine flows are not separate processes that occur *in* the sea, instead they partially *comprise* the sea (Steinberg 2014, p. xv), whilst also partially comprising the land. The tidal process and the intertidal zone that emerges as a result are a text-book example of a space being assembled through the complex interplay of the human and natural. Natural processes interact with a manifold array of human engagements, ranging from people engaging with them in a sensory way (sound; site; smell), as well as crossing them, gathering shellfish, harvesting seaweed, tending fishtraps, hunting fish and wildfowl and engaging in private or publicly performative devotional practices. The relationship between deep water, dry land and intertidal zones can also be implicated in patterns of tenure and rights to exploit territories and resources. These engagements can be both informed by the habitual, instinctive knowledge acquired through dwelling within such a territory, and also more formal discourse, both through oral storytelling, literary construction and scientific observation and record (Morphy and Morphy 2006). Tidescapes are ultimately creations of both the metaphorical and the material.

CONCLUSIONS: LIVING WITH THE TIDE
Tidescapes can be seen as assemblages of different agents and actors; some human and some natural. As argued by Lefebvre places and landscapes only exist as a 'set of relations between things' (Lefebvre 1991, p. 81–82). A key aspect of the relationship between Lindisfarne and tides is the articulation and meshing of these different modes of understanding of the tide: the scientific, the metaphorical and experienced. Scholars, particularly Bede took two approaches to writing about tides, firstly seeing them as physical processes, albeit divinely ordained, capable of understanding, timetabling and prediction. Simultaneously, they constructed another discourse of the tides as a locus of the miraculous and an agent capable of being ritually orchestrated by the intervention of a holy man or direct manifestation by God. Crucially thought, these dual discourses were not antithetical or in tension, rather they were mutually sustaining. The miraculous is only miraculous if it can be shown to be going against the natural order of things; without a sense of how tidal processes should unfold normally, the contingencies of divine intervention would go unframed.

But the tidescapes were not simply something that were observed and theorised about, they were also physically engaged with. Each actor or agent brings with it its own particular mode of engagement, physical and intellectual, which accumulate through different networks of action, thought and temporal rhythm and sequence. Tidescapes reside as much in seal bones and quartz pebbles as in the tide tables and methods of calculation developed by Bede and the recounting of divine intervention through the medium of tides. The presence of material items derived from the tidal zone (sea weed; maritime food resources; distinctive stones and rocks) within the monastery illustrate how the physical engagement within the tidal zone by the monks and their tenants resulted in material indexes marking these actions. The material networks of tidal landscapes reached well beyond the high-tide line.

A unique aspect of the tidescape is its constant shifting which leads to continual re-assembly and re-writing. These tidescapes are more than simple *spatial* assemblages (cf. Jervis 2016, p. 284), they are also *temporal* assemblages, with temporalities as distinct as their spacialities. This presencing of tidescapes in books and narrative also engages with the issue of scale. These early medieval tidescapes do not just exist in situ but are distributed phenomena; they flow through the writings of Bede and other Northumbrian scholars and they are presenced as books and manuscripts as much as in their immediate coastal location. This simultaneous local and dispersed aspect of tidescapes collapses the distinction between small and large-

scale, instead they are articulated via a flat ontology, only made manifest in particular nodes within networks. There is no recourse to higher-level explanation or mechanisms they only exist contextually through aggregation of specific physical links and metaphorical connections.

It is tempting to ask 'what is it that tidal landscapes do?', but framing the question in this way perhaps ultimately fails to address the fundamental point about the relational construction of tidescape. Tidescapes afford economic potential, but only by being engaged with by coastal populations, they afford a cosmological resource that can be used for reflection and as microcosmic frame for a macrocosmic world view, yet only through their articulation with written traditions derived from external contexts. Any notion of agency is dispersed beyond the tide and the tidescape it creates into a wider network of relationships, networks and understandings. The peculiar physical temporal rhythms of the movement of the seawater itself is only an emergent property of wider topographic, oceanographic and astronomic relationships; their particular capacity for affect (sensory and temporal) are only presenced through the combination of physical, temporal, cosmological and personal agents, which themselves are the result of other combinations. A tidescape is perhaps best seen not as a phenomenon in its own right, but a way of looking or a way of framing a wider complex of relationships.

The assemblage model for tidescapes offers a powerful lens through which to view land/seascapes. They allow us to conceptualise them not simply as material contexts created through physical processes with a symbolic or mythopoetic dimension overlain on top of them. Instead, it emphasises how they are cofabricated by human, natural and geological processes interacting with each other. The Northumbrian monasteries are from the only early medieval ecclesiastical sites to lie in such locations – churches and monasteries from Northern Scotland to the south-west of France are situated in similar ways. Taking such a perspective permits us to move towards a more textured approach to such coastscapes that allows the integration of physical engagement and symbolic perspectives to create a clearer appreciation of how such sites benefit from a consideration of ebbing and flowing cultural and natural connections.

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