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Legal geography, estuarine landscapes and the Anthropocene

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Purpose- This paper examines how law, shaped by historical and cultural contexts, impacts particular landscapes and explores the use of landscape concepts within the discipline of legal geography .

Design/methodology/approach- This paper proposes a 'sequent legal occupance' approach as a framework to historically analyse how legal interventions have influenced the formation of contemporary landscapes. The analysis of the legal, cultural, and environmental dimensions of landscapes are explored in relation to three UK estuaries.

Findings- By examining the 'impress' left by law over time on tidal estuaries, sequent legal occupance highlights some of the ways in which law shapes past, present and future landscapes. A legal geography of landscapes can provide a more holistic understanding of the relationship between law and the environment and can uncover the layering of legal practices and the dynamic interplay between legal and spatial processes to challenge the anthropocentric bias inherent in traditional legal frameworks.

Originality- This paper provides a framework for understanding the historical and ongoing influence of law on estuarine landscapes. A key issue is the tension between private property rights and the need to manage and protect estuarine ecosystems. The originality of this paper lies in the examination of cross disciplinary concepts of landscape to offer new perspectives for legal geographical scholarship to address the Anthropocene using both spatial and temporal analysis.

Research limitations/implications – This research offers an opportunity to explore the disciplinary concepts of landscape within legal geography scholarship and as such is a working method for further investigations.

Introduction

This article aims to explore the current conceptions of place and landscape in legal geography scholarship and to review some of the more recent material that addresses the Anthropocene. It will then propose that by using a modified form of the early geographical method of investigating landscapes, that of sequent occupance, a better understanding can be gained not only the imbrication of law and space, but of laws manipulation of landscape over time. The focus will be on English estuarine landscapes to examine the ways in which landscapes, law and geography interact.

Estuaries are, in basic terms, a semi-enclosed coastal body of water where fresh water sources connect to the open sea (Pritchard, 1967). Yet they are also unique landscapes. Due to their tidal nature, estuaries are continually shifting 'places of constant change on a variety of timescales' (Davidson *et al*, 1991, p.10). As well as being a physical feature on the land, they have given rise to a number of legal issues, from their use for navigation, drainage, and pollution, to flooding, property, ownership and rights. Estuaries are a historic, persistent, and powerful feature of the local landscape, constantly changing,

changeable and unpredictable. Being tidal, they can be seen as a 'key form of watery agency which drives intersecting rhythmpatterns within the (material) ecosocial in many ways. These relationships are shapers of local topographies, ecologies, cultures, and economies' (Jones, 2011, p. 2286).

Being an island nation, the UK has over 160 estuaries 'unrivalled in Europe for their number, size, diversity and form' (Davidson *et al.*, 1991, p. x). Estuaries are useful examples of 'temporal landscapes', products of ongoing human interactions and perceptions rather than as fixed, external realities. Ingold (1993) explores the concept of landscape from interdisciplinary perspectives, as dynamic, ever-changing entities that are deeply intertwined with human activity and experience. As a topic of geographic study, estuaries are places of geomorphological process in 'complex patterns of erosion and accretion' where habitats above and below the tide line are interdependent (Davidson *et al.*, 1991,p.7). They can become a metaphor for the phenomena of law; a presence which is continually flowing, influencing and shaping lives, symbolising the ebb and flow of legal application over time.

Recent academic work has highlighted the need for a holistic view for environmental concerns to be addressed by taking a more pluralistic perspective on the 'relational spaces, places and scales of law that consider all human–non-human standpoints' (Bartel & Carter, 2021, p.393). Within the environmental justice field, there are demands for spatial representation to address the boundaries between the human and the non-human, with suggestions that a 'plural emplaced' account would include all entities occupying the same geographic space' (Philippopoulos-Mihalopoulos, 2011, p. 200). That human activities are exerting an increasing and overwhelming impact on the environment is recognised on all scales as the initiation of the geological epoch of the Anthropocene, the period in which human activity has profoundly transformed, and continues to impact the Earth (Crutzen & Stoermer, 2000). Estuaries therefore provide useful sites in which to explore such transformations using multidisciplinary approaches. These landscapes experience a wide range of environmental and anthropogenic changes historically, not only due to environmental fluctuations such as sea level rise, but also due to man's manipulation. In the Severn and Thames for example, embanking began as early as Roman times (Pye & Blott, 2014), and it is estimated that the full extent of the progressive and piecemeal land-claim throughout history has resulted in as much as 85% of estuaries in the UK being impacted (Davidson, 2016). Substantial intertidal habitat loss is a current concern across UK estuaries and both historic and continued anthropogenic disturbance affects a variety of flora, fauna and fish species. Removal or adaptation of intertidal habitats and the introduction of harmful human pollutants has reduced the capacity of estuarine ecosystems to support fish populations relative to historic levels (Stamp *et al.,* 2022). The Anthropocene is a 'wakeup call urging us to reinvent observational, analytical attention to intertwined human-and-nonhuman histories' (Tsing *et al.*, 2019, p. 188) and legal geographies can

inform a more dynamic picture of these tidal landscapes. To explore the ways in which legal geography can reveal the reciprocal relationship between law and landscape, it is first necessary to review the ways in which the concepts have developed, before discussing specific UK estuaries to suggest ways in which a more refined analyses might enrich current perspectives.

Legal geography and landscapes

A spatial turn within the social sciences during the 1980s promoted interdisciplinary explorations and legal geography emerged as an endeavour to understand the 'imbrication' of law and geography in social and political life (Blomley & Clark, 1990, p.436) and a way in which to understand the 'reciprocal or mutual constitutively of the legal and the spatial' (Delaney, 2015, p.98), In this way, law and space are seen not as separate entities, but as co constituted. Legal rules and practices can construct spaces, whilst the characteristics of a place can influence how laws are applied and interpreted. Within early works, law was recognised as a discourse, legitimised by enforcement, but negotiated in social interaction. These discourses can be seen as flows which crystallise into things (or laws) which can then become 'permanence's' in the material landscape' (Harvey, 1996, p.81).

Since the publication of 'The Legal Geographies Reader' (Blomley *et al.*, 2001) academic work published under the 'legal geography' heading has been applied to a diverse range of subjects. Within such work, notions of 'space' and 'place' have long been contested subjects with the conceptions of place previously tending towards an extended concept of space, underplaying the 'multivalent connectivity's at work in place making' (Pierce *et al.,* 2011 p.56). Yet the perspective now seems to be shifting. Law can be explored as a set of practices that can either situate us in or sever our connections to places, and as a 'form of knowledge, constituted in particular places, in distinctive ways' (Ojeda & Blomley, 2024, p.326). This new direction has elevated the power of place making by recognising the imbrication not only of law and geography, but of law and people (Gillespie *et al.,* 2024) and, it can be argued, of the non-human elements that inhabit our communities. For legal geographers, there is now an opportunity to appreciate the role of place, and to widen the scope of the discipline to allow for further research into the legal implications of both place making and landscapes (Kymäläinen, 2024).

Landscape geographies can bridge the gap between the animate and inanimate, the human and non-human, and investigate those patterns that occur between. As a concept, landscape was traditionally situated within cultural geographies, and during the 1980s academics began to critically evaluate landscapes within other disciplines. Critical human geographers investigate the materiality of everyday social practice, whilst contested property rights, land use and the cultural production of nature under capitalism have been examined by both critical landscape and political ecology theorists (Neumann, 2011). But it has been noted by Cresswell (2003) that the word 'landscape'

has become a loosely used term, often utilised beyond the realms of geography. As such, it has become a well-worn metaphor, sometimes 'fancifully changed to shortened forms such as 'mindscape' or 'pleasurescape' (Cresswell, 2003, p.270). Legal geography has also used such vocabulary. 'Lawscapes' have been used in urban contexts to explain the 'simultaneous divergence and confluence between the law and the city' (Philippopoulos-Mihalopoulos & FitzGerald 2008 p.440). Another definition has been applied to the exploration of the 'meaning of property in legal cultural discourse and practice' (Graham, 2011 p.2). Although landscape (and lawscape) as a denomination has been used in an array of applications , it has been suggested that it is the 'practice' of landscape that needs attention. Cresswell (2003) looked to theories of 'materials culture', where landscape is practised, becomes embedded in the world, and leaves traces of varying degrees. This approach is taken by Ingold (1993), who views landscape as a dynamic process, where temporality is characterised by rhythmic patterning and the complex interweaving of many concurrent cycles, rather than a linear progression. This creates a 'layered landscape, layered in terms of archaeological and historical temporalities, layered in terms of places' (Tilley & Cameron-Daum, 2017, p.294). Landscape in this context does not refer to natural spaces or features, but as a 'place where we establish our own human organization of space and time' (Jackson, 1984, p.156). The conceptual tool of 'patchy Anthropocene' has also offered a multifaceted approach to understanding landscape structure by integrating both spatial and temporal analysis with a focus on more-than-human social relations and historical specificities (Tsing *et al*, 2019). To be able to 'grasp legal phenomena in both their temporal and spatial dimensions' (Pecile, 2023, p.394) is to create a better understanding of the effect of the legal on specific places. Such concepts of landscape would be useful for examining property and its materiality 'as both an ideologically reified surface and a social site for embodied practices' (Blomley, 1998, p.576). Although landscapes have no single theoretical interpretation, this should be embraced as it allows for landscape geographies to be used more collaboratively to explore 'alternative ways of knowing and being in landscapes across broader spatial, temporal, and ontological scales' (Burlingame,2024, p.2). Whilst Burlingame acknowledges that interdisciplinary landscape geographies is a growing field, it could be argued that such models of landscape analysis that trace the use and interaction over time by humans and others, accounting for the historical practices of power and control, is not a new approach.

'Sequent Occupance' as method

The now controversial work of Ellen Semple (1863 – 1932) sought to explain how environmental features exert an influence over human and cultural behaviour. Although Sauer rejected Semple's simple environmental determinism model, in 'The Morphology of Landscape' (1925) he proposed that cultural landscapes are shaped by human actions over time; that to understand the cultural landscape, we need to know its historical process. Sauer's use of landscape studies may have led directly to the work of

Whittlesey (1890–1956) who claimed that within geography at the time, spatial concepts remained purely descriptive. In his view, landscapes should be treated dynamically; as geography was a succession of stages of human occupance; a researcher must account for 'changes in any of the complex elements of natural environment, and in the equally complex cultural form' (Whittlesey, 1929, p.164). By examining the process by which a landscape is transformed and modified by a succession of populations he coined the term 'sequent occupance' using a deeper chorology to discern interruptions in the cultural order. Such impressions can be left by human action; population shifts, new technology, changes to political boundaries and the enactment of laws were all seen as occurrences 'capable of breaking or knotting the thread of sequent occupance' (Whittlesey,1929,p.165). Therefore, law can be seen as a part of the 'cultural impress', a succession of events by which the landscape is 'stamped by the functions of effective central authority' (Whittlesey, 1935, p.85). This study of sequential historical events in regional settings can create a dynamic map of the influences that form place, where the features of 'cultural impress' could be multiplied indefinitely.

Despite geography's subsequent shift away from these early approaches, further engagement with such impact analyses might now be productive for legal geography. A regional analysis can remind us 'of the ways in which law, despite appearances of homogeneity, can in fact be different and diverse' (Blomley, 2001, p.8462). It may be time to pursue a more substantive understanding of landscape, one which recognises the 'historical and contemporary importance of community, culture, law and custom in shaping human geographical existence-in both idea and practice' (Olwig, 1996, p.645). Within such an approach, elements of sequent occupance are echoed. Bartel reminds us that this is familiar terrain to geographers, who have always conceptualized places and people as 'imbricated and co-constituted' (Bartel, 2017, p. 164). When viewed as 'locale', landscapes are both physical places embedded with traces of human and non-human interaction, as well as relational spaces 'in which a wide range of forces, including power and justice, shape and reproduce them overtime'. (Burlingame, 2024, p.6). Landscapes are the geographical spaces and places where law happens, is enacted, lived and takes effect. As such, in humanly created discourses 'in all their manifestations-textual, material, ideological- our myriad individual acts of inhabiting the landscape are part of the ongoing reformulation of those discourses' (Schein, 1997, p. 664). An increasing interest in law within the discipline of landscape geographies has seen a shift in the definition of landscape from one of mere scenery 'to a notion of landscape as polity and place' (Olwig, 2005, p.293) where political and cultural entities are manifested.

For scholars, 'if landscape crosses over boundaries, there is nevertheless a value in attending to the particular perspectives which proceed from differently situated academic knowledges' (Matless, 2003 p.227).By bringing together the various conceptual aspects of place and space, culture, and politics, the embedding of law

'within its geographic reality' can be examined whilst simultaneously emphasising 'the absence of landscapes, through the alienation of peoples and environments that contribute to and define the land in all its complexity' (Byer, 2023, p. 67). To view law as separate from landscape geography in terms of space, place and time is to underestimate the powerful interrelationship between them (Buffery, 2018, p.273).

It is suggested here that a modern variation of sequent occupance, that of 'sequent legal occupance' (SLO) can be used to bring together different academic perspectives to identify ways law has historically played a role in the formation of the contemporary landscape. This will place 'legal' at the forefront of investigations to identify how 'contested legal geographies are configured against, within and beyond particular state formations by narratives and practices of the law, legality and legitimacy in space' (Ojeda & Blomley, 2024 p.329). In Whittlesey's later work, he expanded on the notions of an impress of central authority, acknowledging that the 'means by which a society regulates its relationship with the natural environment is the law' (Ashworth, 2021 p. 7).His concerns regarding man's continuing interference with 'natural balance' raised early warnings about the damage that human society inflicted on its habitats (Whittlesey, 1945, p.28). Law and governance in the Anthropocene need to address the 'lack of recognition for non-human animal agency in our lawscapes by rethinking categories of legal personality and property' (Offor & Cardesa-Salzmann, 2024 p.16). A reinterpretation of sequent occupance can help us to reevaluate our understanding of landscapes by accounting for human relations with the nonhuman world (Blomley, 2001; Ashworth, 2021; Bartel & Carter, 2021). Utilising wider scholarship can assist with a move away from the predominantly anthropocentric focus within legal geographic approaches, to reveal landscapes as a different form of hybrid, multidimensional lawscape, influenced in a multiplicity of ways. Modes of thought do not break off at the entrance of a successor; new values take time to progress, and 'may be discerned only vaguely until long after it has begun to alter the structure and the pattern of society' (Whittlesey, 1945,p.22). SLO can add a historical dimension to investigations, examining how previous and potential legal interventions are part of the 'doing' and the 'becoming' of landscapes.

To demonstrate the ways in which the SLO approach can address the concerns of legal geography in the Anthropocene, estuaries are used as examples of the ways in which the temporality of law affects specific landscapes. To recognise diverse temporalities in legal thought is crucial for moving beyond the conventional anthropocentric view that centres the individual subject in law (Pecile, 2023). Such an approach can reveal the otherwise hidden social constructions of place, nature, and society through the implementation of legal rules over time. The focus on legal aspects can inform a more dynamic picture of these tidal landscapes.

Estuaries and law

Legally, rivers, estuaries and foreshores are places where the discourse between 'public' and 'private' is a continually shifting narrative. Neither water nor wild animals (whilst alive) can be 'owned' in English law, and thus the treatment of both relies on the entitlement to the land over which they pass (Gray & Gray, 2005, p.60). They are also spaces of legal pluralism. Rights in property and over navigation, although they may be exercised in the same place and over the same water 'are wholly distinct and have no relation to one another' (Moore & Moore, 1903, p.88). This complicated explanation relies on the classification of 'land' as property, further elucidated by examining historic case law.

In English law, there can be no property in 'water'. With its origins in Roman law, water retained its status as ' *res publica'* (public property) and was viewed as part of 'natural law', where 'common to all were 'running water, air, the sea, and the shores of the sea' (Bracton, Vol 2 p.39). This was still evident by the eighteenth century. Water was a 'moveable wandering thing...common by the law of nature', whereas land was 'permanent, fixed, and immoveable : and therefore in this I may have a certain, substantial property, of which the law will take notice, and not of the other' (Blackstone, 1723-1780). Legal actions concentrated on the distinction therefore between the boundaries of 'land' and water' in terms of 'property.' There is a *prima facie* presumption of the Crown's ownership of the foreshore, based on the fundamental principle of the law of property that all the land in the realm belonged originally to the monarch (Moore, 1888). This included all land covered by the seas, and the foreshore between the high and low water mark. Where writs were routinely issued for trespass and nuisance on riparian land (Getzler, 2023) legal arguments on the Crowns boundaries were heard. Where originally the boundary between the land and the foreshore was considered to be at the low-water mark of spring tides, in *Blundell v Catterall* [1821] [1] this definition was challenged, and the common law defined the shore as the land covered by the flux and reflux of the sea at *ordinary* tides. This boundary was later revised in *Attorney General v Chambers* (1859)[2] to be the 'line of the medium high tide between the springs and the neaps'.

The Crown can, and frequently has, granted away ownership of the foreshore to public bodies and private individuals. Where Manors were granted such rights the Lord of the Manor owned the half of the riverbed and had authority over mills and weirs (Jessel, 1998). By the late eleventh Century, private landowners were in possession and control of a majority of the English fisheries, which became a 'twig in the bundle of remunerative

[1] Blundell v. Catterall [1821] 11 WLUK 18
[2] Attorney General v. Chambers (1859) 45 E.R. 22

rights being assembled into lordship over land and men' (Hoffman, 1996, p.65). These rights came into conflict with navigation as trade began to flourish. As the great rivers of the realm were at the time the avenues of transport and commerce, in 1215 Magna Carta imposed an obligation that 'All fish-weirs shall be removed from the Thames, the Medway, and throughout the whole of England, except on the sea coast'(c.33) to remove any obstacles to navigation and trade (McKechnie, 1914, p.343) . These medieval fish weirs were commonly used in estuarine waters. Where fish moved up the shore with the tide and drifted back down with the ebbing tide, they worked on the basic principle of trapping using converging vertical fences to form a large V-shaped structure that channelled the fish into nets or baskets at the apex or 'eye' . (O'Sullivan, 2004). A revision to the Charter in 1217 added that 'No embankments shall from henceforth be defended, but such as were in defence in the time of King Henry (Charter of Liberties, 1217, c.1). Although the 'putting in defence' was done by subjects as well as the King, this was probably not so much the exercise of any prerogative right 'but rather an act of dominion exercised by the owner of the soil over which the water flowed' (Moore & Moore 1903, p.6). This act of dominion, sanctioned by law further strengthened the sovereign control of land beneath the waters. This illustrates that laws are do not just have a 'simple cause-and-effect relationship to the landscape' but are more broadly constitutive of social life through the 'empowerment and disempowerment of different social groups' (Jones, 2006 p.4). Using the SLO analysis, these interruptions in the cultural order can be further investigated to examine how law shapes particular landscapes as both territory and territoriality, derived from the activity that humans carry out in the space that is given or provided to them ' within the limits of the conception that they have of it' (Raffestin, 2012,p. 124). These limits are tightly bound by law, legal process, and legal discourse over the extent of 'property'. When Moore (1888) examined the history of the law dating back to 765 AD, he stated that before the time of Queen Elizabeth, no *prima facie* theory of the ownership of the foreshore 'existed in the mind of any man' (Moore,1888, p. xxxi) and that the Crown held the foreshore was a 'mere theory of abstract law' based upon an 'untrue assumption of a state of facts which might possibly have existed'. Historical legal academic argument aside, the basis remains that the foreshore is 'a zone that is neither wholly public nor wholly private, but in which some accommodation must be made between public and private entitlements' (Sax, 2010,p.356.) Legal discourse on the minutiae between 'water' and 'land' underpin the notions of property that can be seen as acted out in particular landscapes. Where it had long been held that evidence of a private fishery was *prima facie* evidence of ownership of the soil (*A-G v Emerson* [1891] [3]) , these legal definitions of boundaries continue to be discussed, most recently in Lynn Shellfish Ltd v Loose [2015][4] where on the question of the extent of 'ownership' by a private

[3] A-G v Emerson [1891] AC 649
[4] Lynn Shellfish Ltd v Loose [2015] UKSC 72

fishery of the foreshore the Court here preferred the lowest astronomical tide which could be expected to occur over a 19 years.

Three further examples of an application of SLO in specific estuarine landscapes are examined here.

Example 1: The Severn Estuary

The Severn Estuary has the second largest tidal range in the world and is estimated to carry 10 million tons of suspended sediments on the spring tides (Buck, 1993). Earlier research into this area used a historical analysis of the social dynamics that existed between law, geography, and landscape to emphasise the impress of 'legal' occupance (Buffery, 2018). Climate change has created an anthropocentric concern over flooding, and sea level rise is one of the greatest challenges threatening the sustainable management of estuaries worldwide. Whilst flooding in the Severn estuary is not a new phenomenon (it is well documented that the catastrophic flood of 1607 caused loss of up to 2,000 lives), sea levels around the Severn Estuary are projected to increase by 30-40cm by 2080 (Phillips & Crisp, 2010). Such concerns were not readily conceived of by early laws, and here specific legal arguments concerned conflict between navigation and fisheries.

Despite Magna Cartas edict, the Calendar Rolls recorded a complaint in 1247 that a monk from Gloucester Abbey had placed a fishing weir in the river, stopping boats from reaching the town (Herbert, 1988). Although men were appointed to supervise the removal of such weirs to maintain a width of twenty-six feet , by 1887, the chairman of the Severn Board of conservators stated that the erection of navigation weirs above Gloucester had 'turned the river into a modified canal' and almost extinguished shad, twaite and flounder from upper waters; in the lower Severn, the salmon and lamprey were 'almost extinct' (Day, 1887,p.51). Migratory patterns had been blocked by the creation of artificial waterways built to accommodate trading vessels. In these instances, the legal 'occupance' had turned in favour of navigation, adversely affecting the fish population, with the headlong march towards commercial progress. The placing of economics over the natural resources can be seen as an example of devaluation of place to a mere location, where values are assessed in terms of capital exchange (Agnew, 2011).

These issues have rearisen in a modern context. The feasibility of a Severn tidal barrage was explored in the 1980s, but the project was abandoned in 2010 as it was considered prohibitively expensive. Despite suggestions at the time of both environmental and flood defence benefits, initial studies indicated that the impact on inter-tidal habitats would reduce bird populations by up to 30 species, and that fish movement would be severely impacted 'with local extinctions and population collapses predicted' (Pethick *et al*,2009; DECC, 2010). Yet recently, a new Severn Estuary Commission has been launched to

reevaluate a tidal energy project. Proponents of such a scheme believe that the estuary has the potential to create up to 7% of the UK's electricity needs and it is promoted as an option to mitigate the effects of climate change (SEC, 2024). Should the project be sanctioned, the effects could be significant, highlighting the discord that lies 'firstly, between natural and social rhythms; and, secondly, between conflicting uses of tidal ecosystem services which share the same landscape' (Jones, 2011 p.2296).

Example 2: The Thames Estuary

The upper Thames Estuary becomes tidal at Teddington Lock in West London, and historically this estuary supplied large quantities of fish to the London markets. A survey of Weirs, Kiddle's and Trinks in 1421 to enquire 'into the 'destruction of fish' and obstructions to the passage of vessels, and other related transgressions' indicated that over 200 fish weirs operated in the Thames (Galloway, 2021,p. 262). By the time that the British Empire was at its height, the Port of London was one of the largest and busiest ports in the world. London's population increased dramatically, resulting in more household and industrial waste being flushed into the Thames. The highly toxic waste from Gas Works began to kill large numbers of fish, and in 1820, a group of Thames fishermen petitioned the Lord Mayor to take action. During an 1827 commission, the fishermen testified that the Thames fishery had been shrinking since the gas industry first emerged. The number of fishing boats had halved as they had become unprofitable and 'salmon catches that used to be ten thousand a year had disappeared completely' (Tomory, 2012, p.44). Even Charles Dickens wrote of the Thames that 'A few years, a little more over-population, a few more tons of factories poison, a few fresh poaching devices and newly invented contrivances to circumvent victims, and the salmon will be gone' (Dickens, 1861, p.405).

London's sewage system, largely built in the 1800s, was unable to deal with the excessive output. The Metropolis Act 1855 created a Metropolitan Board of Works, and one of its principal responsibilities was to prevent sewerage discharge into the Thames. Yet jut three years later, it was argued that Parliament had committed a great mistake in handing over a matter of such importance to a municipal body. It was said in debate that despite London being the most populous and the wealthiest city in the world, 'it appeared that its inhabitants were unable to relieve themselves from the pollution of their own filth' (HC Deb 18 June 1858). In 1884, Royal Commissioners reported that when they embarked on a boat at Woolwich, 'the river for its whole width was black putrid sewage, looking as if unmixed and unalloyed; the stench was intolerable' (Jones 1886, p.79).

Changes in the dominant nature of the function of the Thames for human use, for fishing, as a port, and as a dumping ground for effluent, have all historically shaped its governance, and in turn, affected its environmental condition. By 1957, a study found 'no evidence of fish since 1920 over the forty miles between Richmond and Tilbury'

(Taylor, 2015, p.249). As environmental and ecological issues slowly began to be recognised, moves towards protecting the Thames appeared on policy agendas. However, challenges persist in the decision-making processes, and ongoing tensions remain between development and conservation of the estuary. Although globalisation has increased protections for 'nature' there are 'increasing social divides, contests and inequities in the outcomes of such harmonisation' (Bartel and Carter, 2021, p.28). These arguments can arise particularly where there are discrepancies between protecting the environment or the human population in the face of rising sea levels.

Flooding along the Thames Estuary has been documented since 1099. Built on flood plains and relying on embankments, in 1236 the river was reported as overflowing 'wherein the great Palace of Westminster men did row with wherries.' (Lavery & Donovan, 2005 p.1456). Early solutions to flooding encouraged the building of higher and stronger river walls and embankments, placed on a legal footing by the Thames River Prevention of Floods Act 1879. However, when the Thames flooded central London in 1928, and again after another catastrophic North Sea storm surge in 1953, discussions began about constructing more robust flood defences. The Waverley Report (1954) was the official response and interestingly identified the flood not as a unique weather event, but as 'an episode in a series whose ultimate origins were geological and climatic, against which human beings could only mount a defence' *(*Kelly, 2018,p.206). Nearly 20 years later, the Thames Barrier and Flood Prevention Act 1972[5] provided that 'by reason of the sinking of the land in Southeast England in relation to mean sea levels and tidal surges' a barrier was to be built. These statutes can be seen as forms of political and 'cultural impress' of central authority upon the landscape (Whittlesey, 1935). The 1972 Act enabled the provision of compulsory purchase orders, and there was a large-scale reclamation of marshes and mudflats for major tidal defence works, leading to occupation for industrial and agricultural purposes and the expansion of towns into the Thames Estuary. The Thames Barrier was completed in 1984, with the current structure expected to protect London until 2070. However, more recent analysis of accelerating sea-level rise raised the real possibility of it being overwhelmed sooner. Securing more land for flood defences is one of the objectives of the Thames Estuary 2100 plan (DEFRA, 2023). Yet flood protection and mitigation are by no means uniform. One study of the lower estuary highlights three separate areas in where the risk of flooding is significantly different. Although this is can be due to both 'natural injustices' (as flood mitigation schemes are highly place specific) here the difference 'at this spatial scale, is directly a result of the actions of the agencies of the state' (Johnson *et al*., 2007, p.381). Whilst geographical scholarship recognises that 'societal adaptation to environmental changes requires public participation and close attention to the specificities of individual places' (Kopsel *et al.,* 2017,p.175), in these landscapes, the 'impress' of central authority in

[5] Thames Barrier and Flood Prevention Act 1972 Chapter xlv (2)

terms of policy, is often discernible by its absence, leading to a system of inherent inequalities.

Example 3: The Humber Estuary

Located on the east coast of the United Kingdon, the Humber estuary was also affected by the 1953 North Sea floods. Extending over some 62km, it is one of the largest coastal plain estuaries in the EU. As approximately one-third of the estuary is exposed at low tide, this landscape has also been heavily modified by human activities. Over the last 1000 years land reclamation by drainage and sediment entrapment by 'warping' (encouraging natural silting using wooden stakes at the riverbank) has gradually increased the area of land. Sunk Island, about 30 miles downstream from Hull, was once separated from the northern shore of the Humber by an estuarine channel. Records show that it arose from the Humber in the late 16th century, and by the mid-17th century it was a sand bank of about 7 acres (Chamberlayne, 1717). Claimed as Crown land in 1668, Anthony Gilby took an initial 31-year lease on 3,500 acres of the drowned land on the understanding that he would reclaim at least another 100 acres within the first ten years of the lease by 'warping'. Thirteen acres in the centre of Sunk Sands were reclaimed 1695, and in 1744, the first major embankment was constructed adding a further 2,000 acres (Sheppard, 1966, p.9). By 1850 some 5,000 acres had been reclaimed from the sea for farming. Today, the whole north bank, and most of the south bank is protected by the Humber Bank flood defences.

This example raises the legal question of accretion and diluvion, a doctrine that has its origins in Roman Law. In English common law the doctrine applies to all land bounded by rivers, lakes and the sea [6] . Accretion (or alluvion) is a natural process when flowing water deposits sediment, creating land, and diluvion (also avulsion or dereliction) occurs when flowing water erodes the land. The doctrine of accretion arises from the nature of land ownership as 'the long-term ownership of property inherently subject to gradual process of change'[7]. The long and complex history of the doctrine rests on the previously discussed Crown entitlement to the foreshore, and in the earliest known cases (circa the 14th century) the question was one of obtaining title (Sax, 2010). The operation of the doctrine is circumscribed by the requirement set out in R. v. Yarborough (1840)'[8] ; it only applies where changes occur 'slowly, gradually, and by imperceptible increase'. Where the change of boundary between the land and the water is sudden, or because of deliberate artificial reclamation, the accumulation causes no change in the ownership of the land. In Attorney-General v. Chambers (1854)[9], where it was alleged that the alluvial land had not been added to the mainland gradually, but rapidly, Lord Chelmsford

[6] Southern Centre of Theosophy Inc v State of South Australia [1982] AC 706, [1982] 1 All ER 283
[7] Ibid at 287 as per Lord Wiberforce
[8] R. v. Yarborough (1840)3 B. & C. 91, 105.
[9] Attorney-General v. Chambers (1854)4 De G. & J. 55 at para 69

stated that 'if by the word 'rapidly' the witnesses mean 'perceptibly,' then the Crown, and not the defendant, would be entitled to these accretions'. It is interesting in the case of Sunk Island therefore that the deliberate reclamation of some 5000 acres was seen as acceptable, even though the doctrine applies to both the Crown and the public. The only logical reason being that when the lease was provided by the Crown the foreshore and bed was included, as a 'subject' can only establish a title to any part of that foreshore, 'either by proving an express grant thereof from the Crown, or by giving evidence from which such a grant...will be presumed'[10] In fact, the whole of Sunk Island remains part of the Crown Estate portfolio. The academic and legal wranglings over the application of the doctrine of accretion and diluvion are far too nuanced to expand on here, although in a detailed examination of the historical and theoretical legal arguments, Sax notes that the issue should not be dismissed as it has 'serious contemporary relevance, for it determines ownership and use of our shorelines' (Sax , 2010 , p.306).

Anthropogenic change and coastal diluvion results in the low water mark migrating landwards (Pontee, 2013). In law, as with alluvion, the diluvion rate must be a gradual and imperceptible encroachment of water onto land[11]. The ownership of land which was formerly part of the foreshore passes to the owner of the bed of the tidal water. As Lord Wilberforce stated, 'If part of an owner's land is taken from him by erosion...the landowner is treated as losing a portion of his land'[12]. At present, there seems to be no legal remedy as this issue is yet to be tested in the courts. How the accelerating impacts of climate change and sea level rise will affect these long-established common law rules is yet to be seen (Halsbury's ,2024 at 246).

CONCLUSIONS

The task for landscape theory 'is to find the language with which to understand just how such a process of appropriation must be at once local and global: for *any* landscape is *always* both' (Mitchell, 2001, p. 279). Estuaries are a prime example being the confluence of global ocean currents and local rivers. Global climate change and sea level rises have a direct impact on all estuarine environments worldwide. Yet whereas the spatial turn within legal geography encouraged a move away from the regional, the unpredictable nature of climate change urges a rethink of the impact of law on the local in the face of potentially catastrophic scenarios.

It has been suggested here that a sequent legal occupance approach could be used to uncover the layering of legal practices and the dynamic interplay between legal and spatial processes, whilst adding a historical dimension to investigations. These rather brief examples have illustrated that the relationship between man and landscapes can be seen as 'evolution whose construction does not cease' (Raffestin, 2012, p.129). It has

[10] A-G v Emerson [1891] AC 649
[11] R v Lord Yarborough (1824) 3 B & C 91
[12] Southern Centre of Theosophy Inc v State of South Australia [1982] AC 706, [1982] 1 All ER 283

also been noted that the Anthropocene deserves spatial as well as temporal analysis (Tsing *et al*,2019) as 'perhaps more than at any other time in the history of modern legal thought, a variety of temporalities are knocking at the law's door and demanding recognition' (Pecile, 2023, p.389). By using a historical approach, SLO can recognise the agency of both human and non-human actors to offer a richer and more nuanced understanding of how legal frameworks shape, and are shaped, by the landscapes we inhabit.

Matless (2017) has used the term 'Anthroposcenic', to draw on cultural and historical geography to explore how landscapes and the understanding of time shape our comprehension of human-induced environmental transformations in English coastal regions. By highlighting the ways past landscape narratives can be reinterpreted using cultural and historical geographical sensibility, such interpretations may 'both unsettle and enrich epochal diagnosis' (Matless, 2017, p.373) .It is proposed here that if law is used in part as a source for such narratives, it can be used to re-examine historical and geographical landscapes and add to the 'patchy Anthropocene' discourse (Tsing et al, 2019) which argues for a spatial, historical, and multispecies approach that moves beyond homogenising narratives.

In the short examples above, land reclamation, use, and modification of estuarine landscapes has been in terms of natural changes and human impact. The commercial 'occupance' of waterways for trade resulted in severe ecological consequences for fisheries and ecology; on the Thames, pollution was the predominant driver for the loss of Salmon. Both examples highlight the ways in which both law and geography have historically played reciprocal roles in shaping the contemporary environment through processes of 'occupance' and 'impress'. Where multiple layers of law conflict, this can reveal unequal outcomes as they 'constrain uses of legal space... displacing some knowledge in favour of other knowledge – with some severe ecological consequences' (Wiber, 2009, p. 89).

The Humber was used to illustrate the doctrine of accretion and diluvion in terms of 'property' and ownership. As a legal entity, an estuary challenges notions of property by its very existence as an uncontrollable natural phenomenon within the landscape. Property law assigns objects, defines boundaries, and places people into supposedly stable categories, this can result in multiple layers of regulatory framework that provide the 'appearance of resolution, order, certainty, and security' (Blomley, 2008, p.1840). As seen in the case examples, these definitions can change over time. Whilst ancient doctrines such as those of accretion and diluvion are currently settled in law, this will likely be challenged in the face of rising tides. Property boundaries when seen as the 'sharp line that the court marks out between nature and property law....is far from secure or static' (Blomley,2008, p.1838). This has been brought to the forefront by and the unknowns associated with a changing climate and rising sea levels. Whilst much current

literature on lawscapes focuses on property law (Graham, 2011; Philippopoulos-Mihalopoulos & FitzGerald, 2008) such analyses can reveal only a partial account, as within such discourse laws capacity for alienation 'accompanies the abstraction of land or the complete extinguishment of the landscape' (Byer, 2023, p.55). There is therefore a further need in legal geography scholarship to cross the disciplinary divides, where the future impact of climate change will be at the forefront of concerns over how to manage landscapes and to recognise and appreciate the role of place in law more fully to address current issues in the Anthropocene (Bartel, 2018).

New approaches are now needed to address 'the most important concepts of human geography—especially place and landscape—that are enmeshed in the everyday and whose importance in legal geographical scholarship might seem obvious but perhaps is not' (Kymalanian, 2024, p.358). It is suggested that the conceptual approach of SLO can create a framework to provide an alternative method for the understanding of the relational nature between law and landscape, repositioning the focus of legal geography by moving away from the more transcendent notions of space to elaborate on notions of place and time. As Whittlesey predicted, 'proper conservation of natural resources may be defeated by failure to attach due importance to the time element in the destruction and conservation of the earth's endowment' (Whittlesey, 1945, p. 29).

NB: Legal references as per OSCOLA footnotes

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