7. The Late Medieval 'Antediluvian' Landscape of Walland Marsh

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Flooding in the late 13th century led to the inundation of a large area of the south-west of Walland Marsh. Two major inlets were formed along the Wainway Channel and the line of the River Rother, and much of the flooded land became saltmarsh. Saltmarsh creeks seem to have formed along the lines of earlier drainage ditches preserving evidence of the pre-inundation or 'antediluvian' landscape. Part of the flooded land was reclaimed between the late 14th and late 15th centuries. Kent Ditch had been dug as a drainage channel by the early 15th century and formed the county boundary between Kent and Sussex. It probably ran along a similar line to its antediluvian predecessor. The reclaimed landscape of Walland Marsh reflects, therefore, not only the work of the 14th and 15th century; but also of the original enclosure a century or two earlier. Marsh landscapes elsewhere in England may also be the product, not of a single phase of enclosure, but include elements which survive from Roman and early medieval episodes of inning.

Medieval marshland should be an ideal environment for the application of landscape archaeology. The reclaimed landscape appears to have been a tabula rasa on which Roman and medieval communities laid out fields and ditches. These field patterns were long-lasting, because boundaries, usually marked by drainage ditches, could not readily be changed. It is possible, therefore, to dissect the field patterns and determine the sequence of reclamation, as Silvester has shown in the Norfolk Fens and Rippon has demonstrated in the Severn Estuary and Somerset Levels. However, not all marshlands are the result of a single episode of reclamation. The Fens themselves display evidence for Roman as well as medieval settlement, raising the question whether the landscape of the earlier period may have influenced the later. On the Wentlooge Levels in Gwent, for example, the Roman drainage channels survived as features and continued to be used in the medieval and modern periods.

Questions of persistence and the remaking of the marshland landscape are particularly important for Walland Marsh where there were two distinct episodes of reclamation, both medieval. There is negligible evidence for Roman reclamation and limited evidence for settlement. The first took place during the 12th and early 13th centuries as settlement extended outwards in two directions, from the uplands in Sussex and from the already settled areas of Romney Marsh proper in Kent. A considerable part of the reclaimed land was subsequently lost in the flooding of the late 13th century. Some of the inundated areas were not again reclaimed until a second phase of inning a century or more later. It has been commonly assumed that the earlier landscape of Walland Marsh was largely erased by the late-13th-century flooding and deposition of sediment. That view, for example, is implicit in Cook’s description of the drainage system of Guldeford Marsh. But contemporary examples of set-back or managed retreat, considered further below, show that the reintroduction of tidal water into marshland does not result in sudden extreme change to the drainage pattern, but in the progressive development of a new hydraulic regime over a timescale of decades or even centuries. That raises the possibility that the pattern of fields and watercourses on
Walland Marsh is not only the product of 14th- and 15th-century activity, but may be based on an earlier, 'antediluvian' or pre-flood landscape dating to the 12th or early 13th century.

The present paper examines the evidence for an antediluvian landscape on the south and west sides of Walland Marsh. The documentary background to the early 13th-century enclosure, the flooding of 1287 and after, and the subsequent reclamation of the marshland are examined in the first part. The geomorphological evidence for the development of saltmarsh and the response to subsequent flooding is considered in the second section. The subsequent section examines in detail the archaeological evidence for the antediluvian landscape on Walland Marsh and its implications for the 14th- and 15th-century reclamations (Fig. 7.1). The issue of the persistence of marshland landscapes more generally forms the subject of the conclusion.

**Historical Evidence for Reclamation, Flooding and Recovery**

The early history of the reclamation of Walland Marsh is largely undocumented. The work of constructing many kilometres of embankment and digging even greater lengths of drainage ditch within the enclosures must have been costly, but sources which might have recorded such activities rarely survive from the 12th and early 13th centuries when much of the work must have taken place. The exceptional records for the Broomhill area have been discussed elsewhere and these include a series of agreements made by the abbeys of Battle and Robertsbridge by which they contracted to enclose substantial areas and divide the land in the proportion 7/12ths and 5/12ths.

The enclosure of Walland Marsh was made possible by the shingle barrier which protected the south-west side from the sea. The evidence suggests that there was a continuous route along the shingle even as late as 1200. Administratively, the south-western part of Walland Marsh belonged to Sussex rather than Kent. Originally, the parish of Icklesham seems to have included the area of the later parish of St Thomas of Winchelsea and extended eastwards from the upland as far as the boundary with Kent. The parishes of Playden and Iden likewise stretched onto the marsh. The obvious line for the boundary between Kent and Sussex was the River Rother which formed the limit of the counties further west. The fact that this was not adopted across the marsh suggests, firstly, that it was not a major watercourse and, secondly, that estates in Sussex are likely to have established rights on the wetland at an early date. The Rother may not have had a single river course, but could have consisted of a series of minor channels. One channel was known as the ‘water of Rye’ and was sufficiently narrow to be bridged at one point and possibly elsewhere. In the early 13th century the manor of Leigh in Iden held lands on both sides of the ‘water of Rye’ and access to the marshlands was obtained over Morbridge. The ‘water of Rye’ was exposed to marine influence and in c. 1200 salt water was penetrating as far inland as Playden. Salt was being made there, perhaps near to Saltcot Street (Saltke: 1345), and the land at Eures, which may be identified with the place later called River (Playden), was described as salt marshland.

There was apparently a gap in the shingle barrier by the early 13th century when West Winchelsea was evidently distinguished from a similar area on the east. A watermill mentioned there in 1220 is likely to have been a tide mill, since the flow of river water so near the sea would hardly have been sufficient to drive it. The evidence for the progressive decay of the barrier beach has been traced elsewhere. It is notable that clauses in deeds contingent upon the submergence of lands by the sea occur in the 1220s in the area of Old Winchelsea while enclosure continued confidently in the more distant marshland until the 1240s. The flooding caused by the storms of 1250, 1252 and particularly of 1287 and 1288 is well known. In the last of those years, the floods of 4th February not only affected the coastal areas, but also the Brede Valley and up the Rother Valley to Iden and Ebony near Appledore. Eddison and Draper have suggested that the flooded area extended east and north as far as a line of walls which they have named the ‘great cordon’, and which was called in some contemporary documents ‘the Great Wall of Appledore’ (Fig. 7.2).

The impact of the flooding and the process of the recovery after the storms is difficult to trace. It is unlikely that it was simply a matter of restoring the embankments and clearing the drains. The storms wrought fundamental changes to the coastal topography, and the shingle barrier which had protected the south-west coast of Walland Marsh was still in retreat late in the 1330s. A commission de wallis et fossatis was empanelled in 1331 to examine the marshes between Rye and New Winchelsea, and another, which commenced work in 1333 and reported in 1336, was concerned with land further west near to Winchelsea, which was exposed as the breach in the shingle continued to increase. Between 1337 and 1341 extensive works were undertaken to protect from the sea 128 acres at Spadoland, an area to the east of New Winchelsea. These were ultimately unsuccessful as the marsh was finally ‘destroyed by the storms of the sea’ in 1351.

The breach in the shingle barrier created two large inlets which stretched inland up the west side of Walland Marsh and along the Wainway Channel on the south side (Fig. 7.1). Eddison has suggested that the breach extended as far eastwards as Broomhill Farm and is marked by the high-level shingle bank which can be traced running beneath the farm and Beach Banks Cottage. Unpublished excavation undertaken in 1989 confirmed that the shingle at the point sectioned was about 0.95 m thick and lay on fine-grain sediments. That work confirmed that the shingle bank was unrelated to the low-level shingle mass which underlies the south-eastern part of Walland Marsh. It is
Fig. 7.1. The south-west side of Walland Marsh.
hard to reconcile such an enormous breach with the documentary evidence. In 1341 there was a protected anchorage at Winchelsea suitable for the mustering of a fleet of 200 or 250 ships intended for the invasion of Brittany. It had become established as an important anchorage for English and foreign ships and since at least 1330 the area had been called the Camber, a name which implies a partially enclosed roadstead.

Some of the shingle from the breach in the barrier south of Rye was driven northwards into the estuary and on to the point between the estuarine channels of the Rother and the Wainway where it formed a bank which may be traced beneath Black House Farm, Moneypenny and Salts Farm. On the west side of the estuary shingle rolling northwards caused problems with access to Winchelsea. In 1336 the merchants of Winchelsea obtained permission to levy a charge on ships and goods coming into the harbour to pay for a breakwater to protect it from the sand and shingle which were choking the entrance. Measures were also made to encourage tidal flow up the Brede in the hope that it would help clear the obstruction.

The impact of the removal of the shingle barrier on Walland Marsh west and south of the Great Wall can only be speculated. It seems likely that any sea embankments in the area may have been breached but, unless they were near to the coast and exposed to the impact of waves, it is unlikely that very long lengths would have been removed. However, the reclamation of the marsh was evidently not a simple task and little work appears to have taken place for a century after the flooding. The work of reclaiming Appledore Marsh, the Becard and Keté Marsh on the north-west side of Walland Marsh was not begun until late in the 14th century. An area of 107 marsh acres (about 133 statute acres) was enclosed in 1390 at the cost of £220 13s. 8d., equivalent to 41s. 2d. for every marsh acre, and funded by the archbishop of Canterbury, the prior of Christ Church Canterbury and abbot of Robertsbridge.

Walland Marsh had been substantially reclaimed by 1500, even as far as East Guldeford where a church was then under construction on land recently enclosed by Richard Guldeforde (Fig. 7.2: 6). The only lands subsequently recovered were those in the Wainway Channel which are the subject of a separate investigation (Fig. 7.2: 4–5 and 7). Some areas had been salt marsh for 200 years between the flooding of the late 13th century and their final recovery, but much of the marsh immediately south and west of the Great Wall seems to have been brought into use, perhaps only as saltmarsh grazing, within a century or less of the flooding.

Geomorphic Approaches to Creek Patterns on Coastal Saltmarshes

Although considerable work has been undertaken on the development of saltmarshes, there has been relatively little study of the development of the plan of their creeks. This is a little surprising given the range of variation in creek pattern. Pethick, who has undertaken preliminary work on the problem, has emphasized the importance of two factors – wave energy and tidal energy – in the development of...
Fig. 7.2. The saltmarsh creek system of south-west Walland Marsh after the late 13th-century inundation. The main creeks are labelled with upper-case letters; the enclosures are numbered. The area of ground between the creek systems is hatched and labelled 'a'.

creek form. Where the marshes are exposed to the open sea, wave action may be more important, but in sheltered situations tidal energy will be the dominant factor. Saltmarsh creeks, in conjunction with the mudflats, are morphologically adapted to absorb the wave and tidal energy. The long parallel creeks found, for example, on the Dengie Peninsula (Essex) have not developed to respond to tidal energy which is relatively slight, but to low-frequency, wind-wave energy which forces water up into the marshes. The resulting creek pattern may be classified as linear (Fig. 7.3: 1). By contrast, at Scolt Head Island (Norfolk) and around the Tollesbury marshes (Essex), where the dominant force is tidal, the creeks form a dendritic pattern. In the former place, the breadth of the saltmarsh is considerable and the tidal energy is dissipated in a network of branching channels which do not stretch
to the back of the marsh (Fig. 7.3: 4). At Tollesbury, where the marsh is much narrower, the saltmarsh creeks have a meandering form to allow the energy to be dissipated in a more confined space (Fig. 7.3: 5). Variations on the linear and dendritic plans may be found on other marshlands. The creeks at the mouth of the River Nene east of Gedney Drove End (Lincs), for example, have a linear dendritic form (Fig. 7.3: 2), while those at Kincardine on the Firth of Forth show a parallel dendritic pattern (Fig. 7.3: 3). Reticulate creek patterns are rare and Allen has commented that they could 'reflect antecedent forms' (Fig. 7.3: 6). It is suggested below that reticulate and superimposed forms (Fig. 7.3: 8) are the results of the inundation of reclaimed marshland. The final type, the complex creek pattern is limited to places where the saltmarshes are being eroded. An example has been recorded at Tollesbury (Fig. 7.3: 7).

The differences in tidal and wave energy do not provide a complete explanation for variation in the form of creek systems. The nature of the underlying sediment or soil and the character of vegetation, which itself is related to the nature of the soil, are also important factors. Saltmarsh vegetation generally has a wide range of tolerance of local conditions, but the abundance of species is affected by the physical conditions which determine waterlogging and soil aeration. Chapman distinguishes between three groups of creek systems. The first occurs on sandy marshes where there are relatively few creeks and consequently their plan is simple. The second is found in muddy marshes which tend to have dendritic creek systems. The third is associated with marshes dominated by Spartina (Cord grass) found typically in southern England. These generally have a more complex system of branched, winding creeks, partly because the vegetation grows in isolated clumps, but also because such saltmarshes lack a distinct slope. A further influence on creek plan is the age of the system. As the saltmarsh develops, the pattern of drainage evolves from a simple system with low sinuosity to a more complex one with an elaborate network of channels formed by headward erosion, although in the final stages of maturation, lengths of channel may silt up and become abandoned. The final factor in the development of marshland creek systems, and one which may be as important or more so than those already discussed in the form of reactivated marshlands, is the micromorphology of the surface. The headward development of tidal creeks on the Mary River in northern Australia, for example, was influenced by the presence of palaeochannels which were reactivated as the saltmarsh channels extended headward.

The results of geomorphological studies of coastal saltmarsh elsewhere cannot be applied uncritically to the specific case of Walland Marsh. There are a number of significant differences between the saltmarshes of East Anglia, where many of the models have been developed, and the flooded area of Walland Marsh. The most basic of distinctions relates to the size and form. The saltmarshes at Walland after their inundation were contained within a restricted-entrance embayment and formed a triangle with a total area of about 35 km² with extensions to the eastern end of the Wainway Channel and in the Rother Valley. This is very much larger than most coastal- or estuarine-fringing marshes, and the drainage pattern was correspondingly different. The marshlands on coastal and estuary edges have an aligned pattern of drainage; on Walland Marsh it was radial in form. The second major difference between most of the East Anglian saltmarshes...
and the inundated area of Walland Marsh is that the former had developed through progressive accretion of deposits. Such marshlands might be termed ‘primary’. Walland Marsh in the 14th century was the product of inundation or reactivation of a former saltmarsh as a consequence of the breakdown of embankments and might be referred to as ‘secondary marshland’. Work on similar, but more recently reactivated marshlands in Essex and north Kent has shown that they have experienced a prolonged period of adaption as ground levels and creek systems have changed to accommodate tidal water flows. Even a century after the marshes have been reactivated, considerable areas remain as mudflats and have not been colonized by vegetation and developed as saltmarsh. This raises the further issue of the time-scales over which the development of marshland has been examined. Many studies have looked at relatively short-term changes, over a period years or decades. This may be appropriate for the development of natural marshes, although even these seem to have a longer period of change, but a greater time-frame is certainly necessary for reactivated marshland.

Secondary marshes present, therefore, particular features only some of which will be common with developing or primary saltmarsh. The initial channels in secondary marshland tend to form on the lines of existing drainage ditches and may also develop in the low areas of former creek channels. The tendency for creeks to develop in palaeocreeks will be accentuated by the funneling of tidal water through breaches in the embankment. Embankments are unlikely to be removed completely when marshes are inundated, but localized breaches will develop in the weakest parts which will tend to lie at the sites of former incised creeks. These can often be recognized, even where a breach has not occurred, in the profile of embankments. The embankments tend to dip above creek beds where greater compaction has occurred and, because of the lower altitude, these form areas of weakness at times of high water level. The initial pattern of saltmarsh creeks, where these have followed drainage ditches, is likely to be superseded by a more sinuous pattern representing an adaption to the changed hydraulic regime. The process occurs more rapidly where the inundated marsh has a relatively low altitude. It has already been noted that, due to sea-level rise and compaction, earlier reclaimed marshes have a lower altitude than those reclaimed later, and both are lower than active saltmarsh. Secondary marshes thus tend to have a low altitude relative to the tidal range.

The incorporation of earlier drainage features in secondary or reactivated marshes and their adaption to the new conditions has been shown in Kent and Essex. Aerial photographs of Northey Island, Essex show that the saltmarsh, formed in 1897 when the sea wall was breached, has retained traces of the earlier grips (shallow open field drains), particularly on the higher land where less sediment has been deposited. Similarly, at Groom’s Farm, North Fambridge (Essex) which was reactivated at the same date, aerial photographs show a large part of the grips of the pre-inundation landscape still survive. The persistence of earlier drainage systems in reactivated marshland will depend partly on their altitude and partly upon the soils through which they were cut. Many creeks in a secondary marsh will inherit just some of the features of the drained landscape, whether in the form of palaeocreeks or field ditches, and these will be progressively modified as the saltmarsh develops.

This can be most clearly illustrated by comparing the antediluvian landscape at North Fambridge depicted on the first-edition six-inch map of 1880 with an aerial photograph of the same area taken in 1988. The aerial photograph, which has been transcribed here, shows two main areas. The flooded area is evident on the west and a reclaimed area to the south-east of Groom’s Farm where a pattern of drainage ditches of grips is evident. The sea bank was breached during the flooding in two areas: to the south of Groom’s Farm and to the south-west (Fig. 7.4: a, b). The flooding was constrained by a railway embankment on the north side. An attempt had been made to build a new embankment (c) across the former breach, not on the original alignment, but set back to avoid the scour pit. Work on the embankment proceeded from east to west, but was not completed and stopped short of the second breach which remains open. The completed piece of embankment did, however, prevent a major creek from developing behind the first breach (b), possibly on the line of an earlier palaeocreek. The major creek (d) at the second breach is also evidently based on a palaeocreek which, like the first, had been straightened and used as a major field ditch. Lesser creeks (e, f) developed, in the case of the former along the delph or quarry ditch behind the embankment, and along a modified palaeocreek in case of the latter. It seems that the breach effectively rejuvenated the natural drainage system, which was much modified when the area had been embanked. Not all field ditches had developed into creeks, notably ditch (g) which appears to be progressively silt ing up, because it has been blocked by the partially completed embankment. The marsh at Groom’s Farm should therefore be viewed as being in the midst of a transformation. Almost a hundred years after the marsh was reactivated, the pattern of grips survive as minor creeks (Fig. 7.4: i) and the natural pattern of drainage is reasserting itself, though in modified form.

The development at North Fambridge over a period of about 90 years provides a useful analogue for the processes which may have taken place on Walland Marsh. The lower parts of the rejuvenated creeks have become much wider and more sinuous than the field ditches which preceded them. The greater tidal flow has allowed the sides of the creeks to be cut away and new meanders to be incised. The low-order or more minor creeks, the grips and field ditches, have survived in only a slightly altered form, even close to the site of the breaches. In one case, what appears to have been a former ditch (Fig. 7.4: j), although one which was dry at the time of the 1880 map, has been reinvested with water as a result of the inundation. On the other hand, not
all the palaeocreeks have been reactivated. The location of breaches within the earlier embankment and the partially reconstructed new embankment has had a profound effect on the way in which the saltmarsh creeks have developed. The creek to the north of (b) has not been reopened. All this suggests that the resulting inundated landscape is a product of the original unenclosed saltmarsh, the history of ditching and embankment, the location of breaches, and the subsequent modification of the drowned landscape.

Geomorphological Approaches applied to Walland Marsh

It is questionable whether any of the major marshlands in England was reclaimed from an entirely natural state. Rippon has suggested that reclamation is the final state of human intervention in wetlands and is often preceded by simple exploitation of the natural resources—for example grazing, fishing, fowling and reed-cutting—and then by modification in which summer embankments are constructed to prevent flooding during the growing season or ditches improved to speed the flow of water. Reclamation itself is usually a step-by-step task and each inning not only allows the land within it to be utilized more completely, but also influences the creeks and drainage pattern beyond the embankment. The system of creeks in the saltmarsh outside the embankment changes to accommodate the altered drainage regime by a narrowing of channels to reflect reduced tidal flow and the infilling of the creeks at the head of the system. At the same time the presence of the embankment wall leads to the increased deposition of sediment at its foot which in turn helps to prepare the way for subsequent enclosures.

Reclamation does not erase the pattern of the former saltmarsh, though cultivation and changes in the drainage system will act over a period of time to obliterate most surface remains. Distinctive traces may survive in the sinuous pattern of drainage ditches reflecting the earlier line of saltmarsh creeks and also in the remaining water- and rush-filled creeks cut off by the construction of an embankment. These deeper creeks are truncated fragments of the former system and cannot be readily drained through the embankment because the marsh on the seaward side rapidly develops through sedimentation to a greater height than that on the landward (Fig. 7.5). The greatest sedi-
mentation in a saltmarsh occurs towards the distal end of creeks during the period of slack highwater and at the edge of creek sides forming low levées. A mature saltmarsh, though broadly level, rises at the landward margin and falls on the seaward edge. Rising sea-level and auto-compaction of sediments also contribute to the problem of drainage of creek relics, and indeed of inned marshland generally. The consequence of progressive sea-level rise is that later innings have a higher level than the earlier, producing a stepped profile rising in the direction of the sea.

The application of these principles to Walland Marsh allows a partial reconstruction of the form of the saltmarsh before its reclamation. There were two large inlets leading from the estuary mouth south of Rye which ran northwards along the line of the Rother and eastwards along the line of a major palaeochannel - the Water of Chene - forming the Wainway. The impact of wave action within the flooded area of Walland Marsh was limited by the shingle on the south-west edge of Guldeford Level which by the late 16th century was held in place by groynes; there were further groynes on the opposite side of the Rother to protect the causeway which linked Rye to Playden. Waves were able to penetrate to the upper part of the Rother estuary and by the middle of the 15th century there were further groynes near Kete Marsh. The plan based on Green's soil map suggests that the drainage of the inundated saltmarsh had a radial pattern with five major creeks conveying water into the Wainway and Rother channels. The form of those creeks differs considerably, reflecting their different exposure to wind and wave energy. Creek B (Fig. 7.2), for example, has a linear form suggesting that it has adapted to dissipate wind-wave energy in the Rother inlet. It contrasts with the branched and meandering form of Creek E which empties into the Wainway Channel and consequently was well protected from wave action from the open sea. The south-east corner of the marsh was not drained by a single creek, but by means of percolation through the shingle barrier.

The reconstructed pattern of creeks also allows the landscape of the 14th and 15th centuries to be examined. The creeks drained outwards from the centre of the reactivated marshland leaving a central 'watershed' which has no creek depressions (Fig. 7.2: a). The band is followed by a well-marked road shown on the 1592 map of Walland Marsh, the present A259 road from Whitehouse Farm to Guldeford Corner. It can hardly be coincidental that the south-east side of the 'ridge', as picked out on Green's soil map, is followed by the boundary between Brookland and Iychurch parishes which otherwise assumes a seemingly arbitrary line through the fields. It is likely that this area was among the first utilized after the late 13th-century flooding and the fields adjoining the road are notably regular. Immediately to the north are the groups of fields known as Le Doolez discussed by Eddison and Draper and dated by them to the late 14th century, which likewise have long parallel-sided ditches on the north-west and south-east.

The discussion raises the issue of whether the use of Walland Marsh outside the Great Wall from the late 14th century was preceded by the construction of an embankment. Embankments had been built on the east side of the Rother inlet late in the 14th or early 15th centuries. The greatest danger of flooding came from that direction, since waves might be driven up into the inlet. Other areas of the marsh, however, may have been drained but not embanked. Kent Ditch, which was certainly in place by 1416, may have been not only a boundary mark, but also an important drainage channel which emptied into the northwest into Creek B and in the south-east to the lower part of Creek D. Unenclosed saltmarsh was commonly used for grazing in the medieval period and in some places the practice still persists. Part of the Fens on the north-west side of the Wash was held in common and the commoners had the duty of maintaining the drainage ditches, but it was not embanked. Other areas of that marsh were used in a similar manner, including land outside the sea embankments. The central part of the south-west of Walland Marsh (Fig. 7.2: 1) seems to have been used in this way, because there is no evidence for embankments across the area.

Archaeological Evidence for an Antediluvian Landscape

Three stages of the later development of this southern area of Walland Marsh have been outlined based upon the historical evidence and landscape evidence. These are the inundation of the late 13th century and the reactivation of the marshland, the modification of the saltmarsh through the construction of drainage ditches, including Kent Ditch, and finally the recovery of the marsh through the construction of embankments to exclude the salt water (Fig. 7.6: 4–6). The evidence for the stages of development of the marsh which preceded these is more complex and
1. Unmodified marsh
2. Modified marsh
3. Reclaimed marsh and developing saltmarsh
4. Inundation: rejuvenated marsh
5. Modification of inundated marsh
6. Recovery of marsh

Fig. 7.6. Schematic model of marshland modification, reclamation and inundation.
depends on the view that the creek system on the inundated marsh is likely to have inherited, at least in part, the antediluvian drainage system. However, the antediluvian system of drainage ditches was itself an adaptation of the natural creek system. It is thus possible to identify three earlier stages in the development of the marsh (Fig. 7.6: 1–3). The first is when the marsh was exploited by humans but was largely unaltered. The second stage is marked by the modification of the saltmarsh by means of grazing, ditch-digging and possibly the construction of summer dykes. These two phases of usage are hypothetical and no evidence is offered for them here, although excavations at Lydd Quarry have provided reasons for assuming a phase of modification which preceded a thorough transformation of the marsh.64 It is the third stage, the inning of the marshland, which is considered in greater detail.

Using recently reactivated saltmarshes, it has been possible to show that a pre-flood landscape might have survived the inundation of Walland Marsh in the late thirteenth century. It needs to be shown that there are definite indications that it did do so. The analysis is based on three elements. Green’s soil map provides an essential tool in the understanding of the evolution of the landscape. The map identifies soils of the Romney-Agney Complex which tend to occur on the edges of the main creek ridges and are found in the former Wainway Channel which remained open until the 17th century. The soils, therefore, are generally associated with areas of major and minor creeks, and often have distinct sedimentary laminations.65 Green also records the creek relics, the rush-filled remnants of the former creeks, and creek depressions, lower areas in pasture which mark the line of the minor saltmarsh creeks. Aerial photographs provide a useful supplement to Green’s map and allow some of the smallest creek depressions to be traced and creeks which have been ploughed out to be recorded. A variety of collections have been consulted, particularly the sets held by the County Councils in Kent and East Sussex. Aerial photographs taken by the Potato Marketing Board in 1979 and now in private hands have also been used. The third source for the study are historical maps which allow the identification of field boundaries, ditches, embankments and other landscape features. The key maps used are the Ordnance Survey first-edition six-inch maps published in the 1870s which may be supplemented by earlier estate and tithe maps.

It seems likely that the drainage system of the 12th or early 13th century in Walland Marsh was formed, at least in part, through the modification of natural saltmarsh creeks, as it clearly was elsewhere on Romney Marsh. In some cases the creeks will have been thoroughly straightened to speed the discharge of water and create more regularly shaped fields. Otherwise, the creeks may have been adapted to serve as drains and will retain substantially their original plan. These will be difficult or impossible to distinguish from creeks newly formed after

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Fig. 7.7. The Hoppets: (A) soils (after Green (1968)), (B) late 19th-century landscape (Ordnance Survey first-edition six-inch map, Sussex sheet 45) and (C) landscapes features (from aerial photographs). For key to soils, see Fig. 7.8.
the late 13th-century flooding. Traces of an antediluvian landscape should be apparent not in the straight ditches of the final reclamation, nor in the sinuous channels reflecting modified lines of natural channels, but from a pattern which has an underlying regularity which has been naturally modified. Antediluvian embankments may not be present, either because they have been removed in the inundation, or because they were incorporated into later sea defences, or because they were never built. Antediluvian sea defences on Walland Marsh may not have been necessary when the land was originally reclaimed since it was protected from the sea by the coastal shingle barrier. It is possible, however, that some defensive walls were constructed from the middle of the 13th century as the marsh was increasingly threatened by marine incursion.

Three areas have been chosen for detailed study, each one intended to illustrate a different approach to the identification of the antediluvian landscape.

The Hoppets

The Hoppets is the name given on the first-edition six-inch map to a sheepfold to the north-east of a large creek mapped by Green, an area now drained southwards by the Guldeford Sewer (Fig. 7.7). The evolution of the area is undoubtedly complex and is only partly understood. A large creek shown on the west edge of the map divides into two main arms (Fig. 7.7A: a and b). A series of parallel creek depressions extend outwards at right angles from the arms, running for up to 500 m. The whole pattern is notably rectilinear and its artificial character is emphasized by the way alignments run across the arms of the main creek. However, the depressions in their present form have been influenced by natural factors and the way in which they become wider and deeper as they approach the main creek, suggests that they have functioned as creeks within the saltmarsh.

The system is interpreted as a reworked network of long narrow drainage ditches. When the area was submerged, the main ditches became more substantial creeks, while the tidal flow in the minor creeks modified their shape, but did not alter their fundamental pattern.

Offen's Farm

Offen's Farm, formerly called Guldeford Farm, lies just within East Sussex and close to the county boundary (Fig. 7.8). For a considerable part of its length the boundary follows a clearly artificial line marked by Kent Ditch (Fig. 7.2). The boundary had been established by 1416 since in that year witnesses reported that there was a ditch marking the boundary between the counties of Kent and Sussex called Kent Mark or Kent Burr which ran straight from a sea wall to Broomhill. It is not clear which sea wall was intended, since the straight length of the county boundary marked by Kent Ditch in the 19th century, and very
probably in the 15th century, terminated at an arm of a large creek called More Fleet to the north-west. The south-east boundary turns at another major fleet, unsurprisingly called Kent Creek. The 'straight' alignment of the county boundary is in reality made up of three distinct parts. That from the former More Fleet to Guldeford Lane Corner is slightly irregular and is shown by Green as lying at the foot of a possible embankment (Fig. 7.2: b-c). From Guldeford Lane Corner it runs south-eastwards until it crosses a sea wall about 400 m from Barn Farm, and changes alignment (Fig. 7.2: c-d). The third length runs straight to Kent Creek (Fig. 7.2: d-e).

Two features suggest that the boundary existing by the early 15th century may in fact have been re-established on the line of an earlier division. A small creek is mapped by Green at the foot of the possible embankment near to Lamb Farm (Fig. 7.8A: a). It is also shown on the six-inch map as a drainage ditch. The creek is slightly sinuous and appears to be of natural rather than artificial origin. If it is natural then it evidently developed at the foot of an existing embankment during the period of inundation. That would suggest that the embankment itself is of antediluvian origin. North-west of More Fleet is a small area of rectilinear creek depressions. One of the depressions is about 250 m long and is aligned with the straight length of the county boundary (Fig. 7.8A: b). The alignment of both these creeks tends to imply that there were earlier features on the line of Kent Ditch. It seems that when Kent Ditch was dug, perhaps in the late 14th century, it was established on the line of an existing drainage or boundary feature. However, in its later form its function was to drain the marshes and it was not extended north-west beyond More Fleet where the earlier feature ran.

**East Guldeford**

The area to the north-east of East Guldeford church has a remarkable pattern of sub-parallel creek depressions (Fig. 7.9). These drained both north-eastwards to a creek and south-westwards into the River Rother and the Wainway Channel. The post-medieval fields are orientated similarly, but not identically. However, it seems that the creek system is the earlier feature since some creek depressions continue across field-boundaries. Green maps a substantial number of creek depressions, but others are visible on aerial photographs. This area of the marsh was not recovered until the second half of the 15th century, but the system of channels does not date from that period as their irregularities suggest that they have a semi-natural origin. It seems improbable that they are wholly natural, because the two systems, draining south-westwards and north-eastwards, are aligned. The most likely interpretation is that the creek systems which developed behind the protection barrier of shingle derive from an antediluvian pattern of drainage ditches or grips.
Table 7.1. The morphological regions of the antediluvian landscape of Walland Marsh.

<table>
<thead>
<tr>
<th>Area</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Area Ia</td>
<td>The area includes The Hoppets which was discussed above. Traces of a possible antediluvian sea wall have been identified in the north part of the area. The land was drained by two arms of Creek C (Fig. 7.2) and the creek depressions reflect an orderly landscape.</td>
</tr>
<tr>
<td>Area Ib</td>
<td>The pattern is orthogonal rather than parallel, although it is aligned to, or at right angles to, the creek depression system in Area Ia. There is a definite regularity to the creek pattern on the south-west side of the area and it is notable that the creeks are parallel to the major creek to the north-west, More Fleet. The north and north-eastern limits of the area are debatable, since traces of an orthogonal plan are also found in Area V.</td>
</tr>
<tr>
<td>Area II</td>
<td>The pattern of creek depressions in Area II is remarkable for the subparallel alignment. However, the creek pattern, if it is artificial in form, must pre-date the construction of Kent Ditch which cuts across the south-west corner of the area. If, as has been suggested, Kent Ditch is of antediluvian origin, then there are some problems in explaining the dating of the creek pattern. However, the creek pattern may be an example of a parallel dendritic form (Fig. 7.3: 3) and could be entirely natural.</td>
</tr>
<tr>
<td>Area III</td>
<td>The area includes The Hoppets which was discussed above. Traces of a possible antediluvian sea wall have been identified in the north part of the area. The land was drained by two arms of Creek C (Fig. 7.2) and the creek depressions reflect an orderly landscape.</td>
</tr>
<tr>
<td>Area IV</td>
<td>A small number of creek depressions are plotted by Green (1968) in this area, but they are notable for two pairs which form two parallel alignments running east-northeast and are clearly based on an antediluvian ditch system.</td>
</tr>
<tr>
<td>Area V</td>
<td>The complex pattern of creeks have a general east-northeast to west-southwesterly orientation which is reflected in one arm of the the major creek on the north side of the area. The creek pattern at the head of Moor Fleet is less clear and seems to be less artificial.</td>
</tr>
<tr>
<td>Area VI</td>
<td>Analysis of aerial photographs have suggested that not only the drainage ditches, but also other antediluvian landscape features can be identified. A ditch can be traced for some distance as a soil mark, but it survives as a slight depression at the northern end. Two intersecting roads marked by field ditches are also identifiable as soil marks. The present ditch system and former creeks suggest a regular field pattern (Fig. 7.12).</td>
</tr>
</tbody>
</table>

A wider perspective

The three examples have used morphological analysis of the pattern of creeks and creek depressions to suggest that there is substantial evidence for an antediluvian landscape on Walland Marsh. Although not all creeks or depressions followed the line of earlier field ditches or sewers, the general arrangement was commonly determined by the antediluvian features. It should therefore be possible to recover evidence of the general landscape, not merely small areas of it, by analyzing the general morphology. Green’s soil map provides a general view of the creek system as it developed during the course of reclamation. Although it does not show all the creek depressions visible on aerial photographs, it does indicate the general pattern.

Analysis of the pattern suggests the presence of a number of areas with distinctive features, which are listed in Table 7.1 (Fig. 7.10). Areas of parallel creeks, rectilinear patterns and dendritic systems can all be identified. In some places the underlying creek patterns are reflected in the later arrangement of field boundaries, but elsewhere the field ditches cut across the natural system. The map of creeks can be augmented by a small number of soilmarks shown on aerial photographs which are clearly artificial in origin. These are features which were buried by later sediments and were not reworked as saltmarsh creeks. It may be possible, therefore, with further detailed analysis of aerial photographs to reconstruct many further features of the antediluvian landscape.

Conclusion

The identification and study of the late 12th- and 13th-century landscape on Walland Marsh has implications for work on marshland elsewhere in Britain. Firstly, it raises a number of questions about areas of supposedly natural saltmarsh. A number of coastal areas of Britain have been inundated at some time in the past and some have not been recovered, remaining instead as saltmarsh. These may be mistakenly identified as marshland unaffected by human activity. One example is found in the north Norfolk marshes where the creek pattern east of Ship Lane at Thornham clearly picks out the line of a former embankment which continued that of the existing sea wall on the west of the lane. Likewise, an aerial photograph of typical
creek systems' on the Dengie Peninsula in Essex clearly shows evidence that the channels have been straightened and altered by human action. Other marshes may have been modified rather than transformed by local communities for the purposes of hunting, grazing or fishing. Indeed, it is questionable whether any marsh in England is pristine, in the sense of entirely unaltered by human intervention. Studies of marsh development should not ignore the impact of human activity, but embrace it as one of the factors in the interaction between populations and their environment.

The second implication of the observations of the

Walland Marsh landscape is that many medieval enclosures will not have started with a tabula rasa of natural saltmarsh creeks. The medieval landscapes were influenced either by earlier enclosures of the Middle Ages, or indeed by Roman activity. The impact of Roman works on the medieval and later marshlands has not been widely recognized, although Rippon raised the possibility that the artificial line of the reens or streams in the Caldicot Level might date back to the early first millennium. He has also noted that some of the field-drains in Wentlooge Level were rehabilitated after post-Roman flooding. The persistence of the pattern of Roman drainage at Wentlooge
Fig. 7.11. Diagrammatic sketch of the relationship between Roman and later ditches, and saltmarsh creeks at Wentlooge Level (based on information in Allen and Fulford (1986)).

Fig. 7.12. Antediluvian features in Area VI (based on an initial plot by Air Photographic Services).
inside the later medieval sea-bank is notable, but another aspect of the survival of landscape at that site appears to have gone unremarked. The evidence for the line of Roman ditches has been traced in the silt-filled channels cut into the peat on the foreshore and in the section of the mud cliff on its inland side.\(^2\) Between the sea-wall and the foreshore the ditches are buried beneath estuarine silt known as the Rumney Formation. Those silts were evidently deposited after the sea wall was constructed as they are found only on the seaward side (Fig. 7.11). The authors of the study do not comment that the saltmarsh creeks incised into the Rumney Formation bear in some places a definite relationship to the Roman ditches. Not every ditch is marked by a corresponding creek, and the creek system is more extensive than the Roman ditch system.\(^2\) Nevertheless, it is notable that there is any relationship between the saltmarsh creeks cut into the Rumney Formation and the Roman pattern of drainage buried between 1 and 3 m beneath. The reason for this coincidence can only be speculated without further fieldwork. It is possible that the creek system first developed when the Roman ditches were still open and continued in more or less the same location as the estuarine silts were deposited. Alternatively, it may be that after the deposition of the Rumney Formation silts, the compaction of the ditch-fills was greater than in the surrounding Wentlooge Formation deposits, producing a slight depression on the surface of the saltmarsh in which the creeks subsequently developed.

The relationship between Roman and later marsh landscapes clearly deserves further investigation, both in the context of the Severn estuary and also on Romney Marsh. The study here has suggested that marshland should certainly not be treated as a tabula rasa upon which medieval reclaimers laid out a pattern of embankments and ditches. Not only did they utilize the natural creek system, but they were working in a landscape which may already have been modified by previous generations, and influenced by reclamation works of earlier date. Marshlands, no less than other English landscapes, have a "time-depth", to use a term borrowed from ecology, a complexity of form resulting from a prolonged period of interaction between humans and nature.\(^2\) Failure to acknowledge either the period of their development, or the role of the interaction, will mean that our understanding of the development of saltmarshes will continue to be incomplete.

Acknowledgements
I am grateful to Jill Eddison for discussing with me the dates of the innings by Sir Richard and Sir Edward Guleford and for her comments on a draft of the text.

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Notes

Abbreviations used:

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>BL</td>
<td>British Library</td>
</tr>
<tr>
<td>CCA</td>
<td>Canterbury Cathedral Archives</td>
</tr>
<tr>
<td>DCC</td>
<td>Canterbury Cathedral Archives, Dean and Chapter</td>
</tr>
<tr>
<td>ESRO</td>
<td>East Sussex Record Office</td>
</tr>
<tr>
<td>LPL</td>
<td>Lambeth Palace Library</td>
</tr>
<tr>
<td>PRO</td>
<td>Public Record Office</td>
</tr>
</tbody>
</table>

1. Lane and Hayes, 'Moving boundaries', 69; Hall and Coles, *Fenland*, 122.
2. Rippon, 'Medieval wetland reclamation in Somerset', 241–3; Rippon, *The Gwent Levels; Silvester, The Fenland Project, Number 3*.
8. LPL CM III/14, f. 3v.
9. *Idem*.
10. A number of tracks run eastwards from the upland in Playden and Iden towards the marsh, including those from Boonshill, Houghton Green and Saltcote Street. Manu-

scripts *Preserved Penshurst Place*, 57, 89–90. Although the site of the bridge has disappeared, its position can be inferred. Among the small number of tenants at Morbrigg in the early 14th century were Adam and Simon Bone, suggesting that the bridge was to the east of Boonshill (ESRO AMS 4884).
11. On salt-making, see *Manuscripts Preserved Penshurst Place*, 55–6. For mention of Saltcot Street in 1345, ESRO ACC 6153. For Eures, see *Manuscripts Preserved Penshurst Place*, 57. Luke at Eure, a tenant of Playden manor, was otherwise called Luke at Revere (ESRO AMS 4883, 4884).
14. For Winchelsea, see Royal College of Arms, Misc. Deeds 131; Archives Seine Maritime 7157 (deed of resignation by Brother Hugh de Alneto of all tenements granted by Brother Manasses). For continuing enclosure until the 1240s, see *Manuscripts Preserved Penshurst Place*, 90, and Gardiner, 'Medieval settlement and society', 115.
16. Eddison and Draper, 'Landscape of medieval reclamation', 78.
17. *Calendar of Patent Rolls 1330–34*, 202, 391; PRO E101/547/20, mm. 1, 2. For the location of the marshes, see Gardiner, 'Medieval farming and flooding', 131.
18. PRO E101/547/20, m. 3; *Calendar of Patent Rolls 1350–54*, 29, 82. For the suggested location of Spadlond, see Homan, 'The founding of New Winchelsea', map between 26 and 27.
19. Eddison, 'Catastrophic changes', 70.
gives a generalized figure of one hundred years for a
marshland to reach maturity, ignoring the period of time
for the formation of tidal flats.
49. Crooks and Pye, ‘Sedimentological controls’, 221; Cahoon
et al. ‘Vertical accretion’, 235.
51. Comments based on Crooks and Pye, ‘Sedimentological
controls’, Fig. 7.4.
52. Note the presence in Fig. 7.4 of a creek in the embanked
area to the north at (h).
53. Rippon, Transformation of Coastal Wetlands, 46–53.
3.
55. Pethick, Introduction to Coastal Geomorphology, 161–2;
Kestner, ‘Loose boundary hydraulics and land reclamation’,
31–40.
56. Allen, ‘The sequence of early land-claims’, 276–7; Allen,
57. For the Water of Chene, see Gardiner, ‘Medieval society
and settlement’, 112–3.
58. All Souls College KeS/15; Mayhew, Tudor Rye, 14; LPL
ED 204.
59. Green, Soils of Romney Marsh, 118 notes the presence of
creek ridges on Romney and Agney soils in that area; All
Souls College KeS/15.
60. Eddison and Draper, ‘Landscape of medieval reclamation’,
81–2, 84.
61. LPL CM III/14, f. 5r.; CCA Register C, f. 270r.
62. LPL CM III/14, f. 1v.
63. Hallam, Settlement and Society, 162–9, 179–80; Lambert,
66. LPL CM III/14, mm. 1v., 5r.
67. Dugdale, History of Imbonking and Draining, 101–2;
Ordnance Survey first-edition six-inch map, Sussex sheets
32, 45, 46.
68. All Souls College KeS/17.
69. Thornham: Chapman, Salt Marshes, pl. 18 and see also
the first-edition six-inch Ordnance Survey map, Norfolk
sheet 6; Denia Peninsula: Pethick, Saltmarsh ge-
morphology, Fig. 3.7.
70. Rippon, The Gwent Levels, 68, 87; Rippon, The Severn
Estuary, 168–9.
72. See particularly, Allen and Fulford, ‘The Wentlooge Level’,
fig. 3 and Pl. II.
73. The term ‘time-depth’ is used in the context of historic
landscapes by Fairclough et al., Yesterday’s World,
Tomorrow’s Landscape, 11–12.

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