67th International Sachsensymposion

Arbeitsgemeinschaft zur Archäologie der Sachsen und ihrer Nachbarvölker in Nordwesteuropa – IvoE

Antwerp, 17th-21st of September 2016

Early medieval waterscapes. Risks and opportunities for (im)material cultural exchange

IMPRESSUM - IMPRESSUM

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CONFERENCE BINDER/TAGUNGSMAPPE

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Flemish Heritage Agency/ Agentur für das Kulturerbe Flanderns
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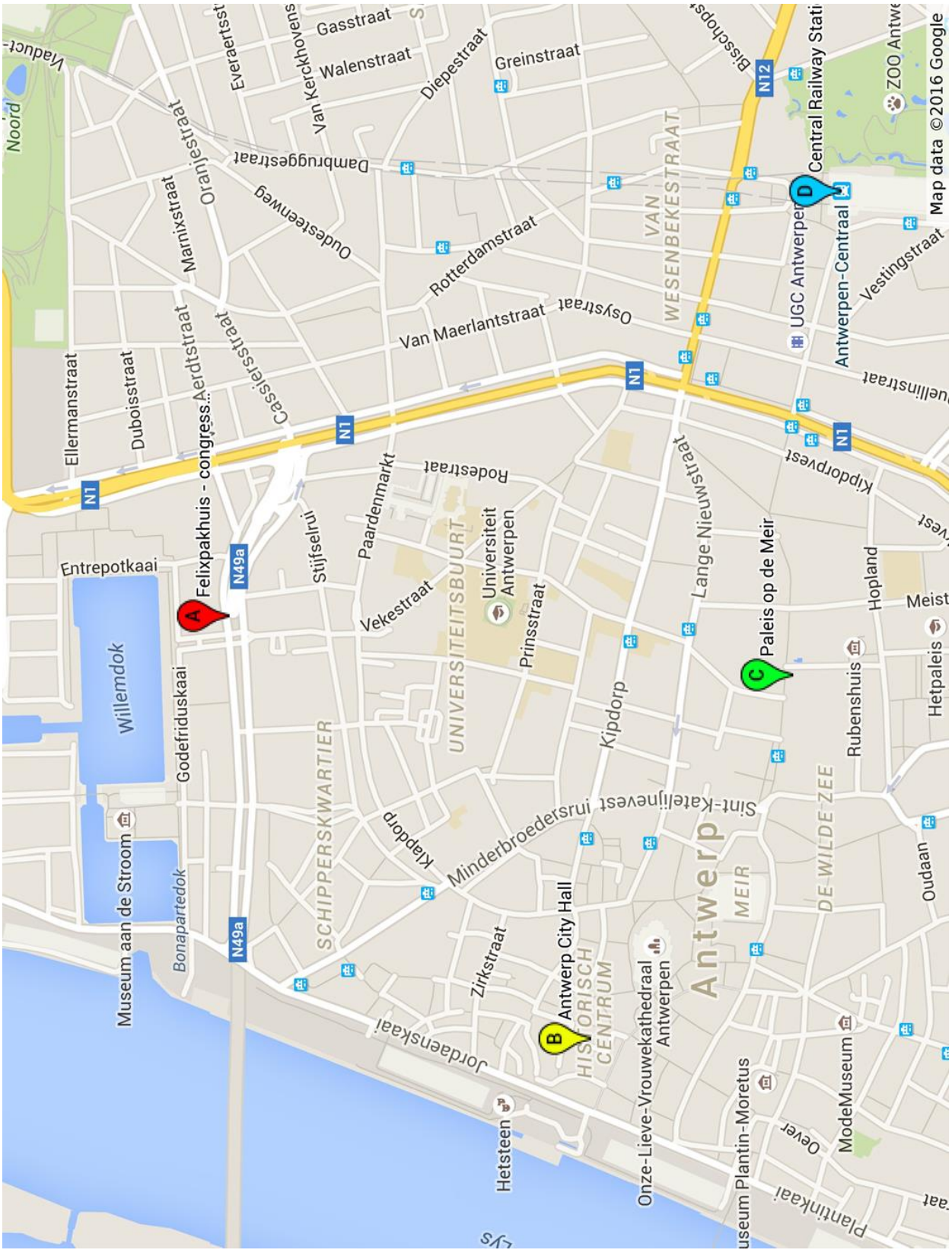
CONFERENCE LOGO

Figurehead of an early medieval ship (late 4th-5th century AD) found in the Scheldt near Appels (prov. of East-Flanders) – ©OE – drawing M. Van Meenen.



A. Felix pakhuis, Oude Leeuwenrui 29: congress venue & conference bureau/ Vortragssaal &Tagungsbüro
B. Antwerp City Hall/Rathaus Antwerpen
C. Royal Palace on the Meir/Königspalastes auf der Meir.
D. Central Railway Station/Hauptbahnhof (*Antwerpen Centraal*)

PROGRAMME - PROGRAMM

All lectures will take place in the auditorium of the Felix Pakhuis, Oudeleeuwenrui 29 (main entrance), 2000 Antwerp. Here you will also find the conference office.
Alle Vorträge werden in das Felix Pakhuis, Oudeleeuwenrui 29 (Haupteingang), 2000 Antwerpen, stattfinden. Hier finden Sie auch das Tagungsbüro.

Saturday 17th September 2016

14:00 – 18:00	Arrival and registration at the conference office. *Ankunft und Anmeldung im Tagungsbüro.*
14:30 – 17:30	Natural sciences workshop Natural Sciences and the Research of Early-Medieval Dark Earths: Methods, Aims and Questions. Yannick Devos, Brussels - Barbora Wouters, Brussels & Aberdeen Site formation processes and land uses: microarchaeological approach of urban dark earth deposits (France) Mélanie Fondrillon, Bourges Chairs : Dries Tys & Laurent Verslype Discussion and conclusions
16:00 – 17:30	Guided city tour (English) – Meeting point: Felix Pakhuis, Godefriduskaai 30 (Back Entrance) *Stadtführung (Deutsch) – Treffpunkt: Felix Pakhuis, Godefriduskaai 30 (Hintereingang)*
18:30	Welcoming speech by Johan Veeckman (Director Heritage Department, City of Antwerp) *Grußwort von Johan Veeckman (Direktor Amt für Denkmalpflege, Stadt Antwerpen)* Welcoming speech by Dries Van Den Broucke (Head of the Department Research and Heritage Protection of the Flemish Heritage Agency) *Grußwort von Dries Van Den Broucke (Haupt Direktor Abteilung Forschung und Denkmalschutz der Agentur für das Kulturerbe Flanderns)* Welcome by Claus von Carnap-Bornheim, chair of the Sachsensymposion

Begrüßung durch Claus von Carnap-Bornheim, Vorsitzender des Sachsensymposions

19:00 Keynote lecture by Christer Westerdahl:
Einführungsvortrag durch Christer Westerdahl:
Beowulf´s ship type and the pivot of Denmark.

20:00 Reception in the Felix Pakhuis.
Empfang in das Felix Pakhuis.

Sunday 18th September 2016

8:30h Opening of the conference office
Öffnung des Tagungsbüros

8:45 Welcome and introduction
Rica Annaert

In memoriam
Egge Knol

Waterscape and hinterland connections I
Chair: Luc Van Impe

9:00 From Wissant to Westenschouwen: the nature and development of early medieval coastal landing places between Channel and Scheldt.
Pieterjan Deckers, Brussels

9:30 Sail ho, on the horizon! – Reconstructing a Viking Age maritime defence system based on visual communication.
Thorsten Lemm, Schleswig

10:00 Zur Bedeutung von Gewässern und Wassermühlen für die mittelalterliche ländliche Ökonomie am Beispiel des nördlichen Rheinlandes.
Torsten Rünger, Bonn

10:30 – 11:00 Coffee break

Waterscape and hinterland connections II
Chair: Charlotte Behr

11:00 Travel and Communication in Anglo-Saxon England: An Overview.
Andrew Reynolds, London

11:30 Creating Kingdoms: Burials, Waterways and Inland Communications in North East England AD 300-800.
Brian Buchanan, Sue Harrington and Sarah Semple, Durham

12:00 Sand and Sea: waterscapes and centres of the early East Anglian kingdom in south-east Suffolk.
Christopher Scull, London.

12:30 – 13:30 Lunch

Waterscape societies: landscape and environment I
Chair: Torun Zachrisson

13:30 Viking Age rune monuments located close to water routes.
Anne-Sofie Gräslund, Uppsala

14:00 Scania, Jordanes and societies between land and water.
Bertil Helgesson, Kristianstad

14:30 From waterscape to landscape around late 1st Millennium Uppsala.
John Ljungkvist & Andreas Hennius, Uppsala

15:00 Ritual places of the Iron Age.
Maria Petersson, Linköping

15:30 – 16:00 Coffee break

Waterscape societies: landscape and environment II
Chair: Adam Cieśliński

16:00 Before Jelling - A king's manor in the waterway of the Little Belt
Mads Ravn, Vejle

16:30 Die Weichsel als eine Trennungslinie in der antiken und frühmittelalterlichen Geographie und der archäologischen Realität.
Wojciech Nowakowski, Warschau

17:00 Waterscape of the Canche Valley. Environnement archéologique autour de Quentovic (France).
Inès Leroy & Laurent Verslype, Louvain-la-Neuve

Monday 19th September 2016

8:45 – ca. 19:15 Excursion to the province of Zeeland (The Netherlands) by coach. Visits to the Oost-Souburg and Burgh ringforts and the beach location of the Walichrum wic. Hands-on session of early medieval finds in the Zeeland Archaeological Depot of the Zeeland Foundation for Cultural Heritage in Middelburg. Free lunch in Middelburg. Touring along some of the famous modern Dutch delta sea barriers.

Meeting point: Felix Pakhuis, Oude Leeuwenrui 29 (8:45!)
Treffpunkt: Felix Pakhuis, Godefriduskaai 30 (8:45!)

Tuesday 20th September 2016

8:30 Opening of the conference office
Öffnung des Tagungsbüros

Trade and transport in the northwestern European estuaries I
Chair: Chris Scull

8:45 The settings of trade and exchange in the waterscapes of the early medieval southern Low Countries: discussion and research problems.
Dries Tys, Brussels

9:15 Traffic, trade and the tidal Thames – changing social and commercial contacts in the Thames estuary during the 5th to 10th centuries AD.
Lyn Blackmore, London

9:45 Place-names and Travel in the Early Medieval Humber Region.
Eleanor Rye, Nottingham

10:15 – 10:45 Coffee Break

Trade and transport in the northwestern European estuaries II
Chair: Andreas Rau

10:45 Amber as passage money on the journey to the afterlife.
Marzena J. Przybyła, Ewa Rydzewska, Kraków

11:15 Between Ems and Ribe – trade and transport along the southern North Sea coast.

Martin Segschneider, Wilhelmshaven

11:45 Das Schwerpunktprogramm „Häfen von der Römischen Kaiserzeit bis zum Mittelalter“ – Aufgaben, Potentiale und Herausforderungen.
Claus von Carnap-Bornheim, Schleswig

12:15 – 13:15 Lunch

Waterscape societies: material culture I
Chair: Xenia Pauli Jensen

13:15 The river Fyris route in Svithiod - a stop at Tuna in Alsike
Torun Zachrisson, Stockholm

13:45 Static dynamics of (im)material identities in an emerging coastal culture.
Katrine Balsgaard Juul, Højbjerg-Aarhus

14:15 Frisia’s Viking Age Waterscape: the Frisian coast and the Viking world.
Nelleke IJssennagger, Leeuwarden-Groningen

14:45 – 15:15 Coffee Break

Waterscape societies: material culture II
Chair: Egge Knol

15:15 Revetments and refuse. The booming economy and material culture of Carolingian Leiderdorp in the Rhine delta.
Menno Dijkstra, Amsterdam

15:45 Etude des peignes de Quentovic (La Calotterie, Pas-de-Calais, France) : de la typochronologie à l’analyse microwear et usewear.
Nathalie Pil, Brussels, Jean Soulat, Paris, Delphine Cense-Bacquet, Linselles

16:15 – 16:30 Mit Blick auf den Fluss? GIS-gestützte Untersuchungen zur räumlichen Lage der Grabhügelgräberfelder der Wielbark-Kultur in Nord- und Ostpolen
Adam Cieśliński, Warschau, Karin Göbel, Schleswig, Jörg Nowotny, Schleswig

18:00 Reception at the historic Town Hall Antwerp
Empfang im historischen Rathaus Antwerpen

Welcoming speech by Rob Van de Velde, Vice Mayor for Architecture, Urban development, Greenery and Heritage
Grußwort von Rob Van de Velde, Vizebürgermeister für Architektur, Stadtentwicklung, Grün und Denkmalpflege

20:00 Conference Dinner in the Mirror Hall of the Royal Palace on the Meir.
Festliches Abendessen im Spiegelsaal des Königspalastes auf der Meir.

Wednesday 21th September 2016

8:30 Opening of the conference office
Öffnung des Tagungsbüros

New research results I
Chair: Siv Kristoffersen

8:45 Burials on the beach – the Iron Age burial ground at the Old Vicarage, Hå, Rogaland in SW Norway. A preliminary presentation.
Åsa Dahlin Hauken, Stavanger

9:15 The Vallerbæk find – a late Migration Period weapon deposit from Jutland?
Xenia Pauli Jensen

9:45 Far-reaching connections - interdisciplinary studies into the gold and garnet chain from Isenbüttel, Germany and its Anglo-Saxon parallels
Alexandra Hilgner, Mainz

10:15 Les occupations archéologiques du IX au XIe siècle sur les rives françaises de la Mer du Nord.
Mathieu Lançon & Samuel Desoutter, Lille

10:45 – 11:15 Coffee break

New research results II
Chair: Babette Ludowici

11:15 Die Stufen C 3 und D 1 in der Wielbark-Kultur – ein Trennungsversuch.
Magdalena Mączyńska, Łódź

11:45 Focusing on Roman Boundaries in Early Anglo-Saxon Settlements
Clifford Sofield, Oxford

12:15	Investigating the Dead in Early Medieval Domburg (the Netherlands). Letty ten Harkel, Oxford
12:45	Less is more: Early medieval cemeteries in the East of the Netherlands Henk van der Velde, Amersfoort
13:15	Summary *Zusammenfassung* Chris Scull Conclusion and goodbye. *Abschluss und Verabschiedung.*
14:00	Meeting of the Coordinating Committee, Crypt of the St. Paulus Church, Sint-Paulusstraat *Sitzung des koordinierenden Ausschusses, Krypta Sankt-Pauluskirche, Sint-Paulusstraat*

Posters

Bracteate and Brooch from Høvlsbakke, North Zealand.
Morten Axboe, Copenhagen

Caractères de l'occupation du sol au haut Moyen Âge en moyenne vallée de la Seine : l'exemple du Nogentais (Aube, France).
Vincent Marchaisseau & Antoine Guicheteau, INRAP Grand Est Nord

Hydrology and the mortuary topography of early medieval southern England.
Kate Mees, Bristol

Emporia crafts and urban origins in early medieval Europe.
Michael Neiß, Uppsala

Sandby Borg.
Helena Victor, Kalmar

Antwerp, from early medieval trading centre to Ottonian burg through Viking domination
Tim Bellens, Anne Schryvers, Dries Tys, Antwerp/Brussels

Nijmegen, Lentseveld.
Joep Hendriks, Nijmegen

Metalldetektorfunden des 1. Jahrtausends n. Chr. geborgen auf verschiedenen potentiellen Landeplätzen im Gebiet der Flüsse Weser und Aller
Iris Aufderhaar, Wilhelmshaven

ABSTRACTS – ZUSAMMENFASSUNGEN

KEYNOTE LECTURE

Beowulf´s ship type and the pivot of Denmark.

Christer Westerdahl

PAPERS

From Wissant to Westenschouwen: the nature and development of early medieval coastal landing places between Channel and Scheldt.

Pieterjan Deckers

While early medieval landing places in Scandinavia and the Baltic Sea region are a well-studied archaeological site category, this is much less the case for similar sites in the southern North Sea region. In this paper, a number of landing places are discussed, dating from the Merovingian and Carolingian period and situated in the coastal region from Wissant in northern France to Westenschouwen in Zeeland (Netherlands).
Two strands of argument are developed. Firstly, these sites are considered from an epistemological angle: how does archaeological, historical, topographical and place-name evidence contribute to the identification of a landing place function at these locations?
Secondly, based on a critical evaluation of the evidence, a comparative perspective is developed regarding the life trajectories of these sites. Of course, many contextual factors result in biographies that are to a large extent individual. The clearest example of this regards to the great range of scale and intensity of usage of landing place within the area under consideration, with the wic of Domburg-Oostkapelle at one end of the spectrum. Nonetheless, it is argued that a diachronic development can be identified in the nature of activity at these locations. Specifically, from the 6th to the 7th/8th century the role as landing places seem to have been (partly) driven by the social and even ritual functions performed at these locations. From the 8th century onwards, a shift to more commercial roles can be observed. The establishment or continued existence of landing places at this juncture depended on their close link with estate centres. As a phenomenon, the appearance of such landing places connects the contemporaneous emergence of long-distance trade networks and growing control of secular and ecclesiastical elites over production.

Sail ho, on the horizon! – Reconstructing a Viking Age maritime defence system based on visual communication.

Thorsten Lemm

The famous Viking Age trading site of Hedeby is situated at the inner end of the Schlei, a 40km long inlet of the Baltic Sea, which is characterised by a few wide sections, a number of bends and several narrow passages. A couple of prominent heights especially on the northern shore provide good overviews of different parts of the inlet, while the many and in some cases hidden coves create the impression of natural harbours. In other words, the

Schlei seems to have been a perfect scenario for the implementation of a maritime defence system in order to protect Hedeby.
Nevertheless, so far the archaeological evidence in the form of sea barrages and warrior graves allows only selective insights into defensive structures and military organisation. However, by taking into account the toponymical evidence, i.e. Viking Age/Early Medieval place names referring to warriors, war-ships, look-outs and signal fires, the spectrum of military defence components becomes much wider and a more reliable basis is created for conclusions to be drawn on. In addition to that, a crucial part for the interpretation is taken by GIS viewshed and visibility analyses, which help in linking the different military components with each other.
The paper will discuss the possibilities of reconstructing a maritime defence system at the Schlei inlet and intends to give an impression of such a system in action.

Zur Bedeutung von Gewässern und Wassermühlen für die mittelalterliche ländliche Ökonomie am Beispiel des nördlichen Rheinlandes.

Torsten Rünger

Der Zusammenhang zwischen Wasserkraftnutzung durch Mühlen und sozio-ökonomischer Entwicklung des ländlichen Raumes bietet hohes Erkenntnispotential. Der archäologisch-historische Vergleich von Schriftquellenbestand und Mühlenfundplätzen erlaubt inzwischen eine erste Analyse von Umfang der Wasserkraftnutzung, gesellschaftlicher und räumlicher Organisation. Ein diachroner Vergleich der Siedlungs- und Mühlenentwicklung zeigt, dass auch im Rheinland spätestens im Frühmittelalter mit der Gewässernutzung durch Mühlen zu rechnen ist. Begünstigt durch gesellschaftliche und agrarwirtschaftliche Prozesse wird diese ab dem Hochmittelalter intensiviert.
Ausgangspunkt meiner Betrachtung bildet ein landschaftsarchäologisches Forschungsprojekt der Universität Bonn. Dieses untersuchte im Zuge des Braunkohlenabbaus zwischen Köln und Aachen einen seit römischer Zeit kontinuierlich genutzten Siedlungsraum mitsamt der angrenzenden Wasserlandschaft Rur. Gerade die naturräumliche Analyse verdeutlichte, dass die Grenzlage dieser Siedlung zwischen fruchtbarer Bördelandschaft und Flussniederung bewusst gewählt wurde, um das wirtschaftliche Potential beider Räume auszuschöpfen. Die flussbegleitenden Wasserbauten dienten dem Mühlenbetrieb; sind jedoch weitgehend unerforschte Landschaftsrelikte. Durch eine quellenübergreifende Auswertung wird ihre Entstehung erforscht.
Weiterführend wird die Rolle der Wassermühle im ländlichen Herrschaftssystem hinterfragt. Unsere Kenntnisse sind weitgehend schriftquellenbasiert; der archäologische Mühlenbefund mit zugehörigem Siedlungskontext ist zufallsbedingt selten. Das Gros der Archivalien setzt im 9. Jahrhundert ein und suggeriert einseitig königlich-kirchlichen Besitz auf grundherrschaftlichem Territorium. Die Mühlenrechte sind unzureichend geklärt; Anlagen in freier Bewirtschaftung sind auch in Schriftquellen unterrepräsentiert. Im überregionalen Vergleich der Siedlungsräume von Höbing (Bayern), Lauchheim (Baden-Württemberg) und Morken (Nordrhein-Westfalen) werden durch Statusindikatoren Wohlstandsunterschiede sowie eine Elitenbildung erkennbar. Dies korreliert offenbar regelhaft mit der lukrativen Mühlenwirtschaft in frühen Grundherrschaften. Die Ergebnisse des Beitrags werden in die Perspektive des wirtschaftlich- und gesellschaftlichen Strukturwandels im Hochmittelalter

gestellt und gefragt, welche Rolle der ländliche Adel, dessen Burgenbau die rheinische Gewässerlandschaft prägte, hinsichtlich Mühlenbesitz und Gewässerausbau einnimmt.
Diese multidisziplinäre Betrachtung zeigt, dass Wassermühlen zentrale Wirtschaftsfaktoren sind und eine bedeutende Stellung in sozialen Netzwerken beanspruchen; ein deutlicher Zusammenhang zwischen „Adelssitzen“ und Mühlen deutet auf eine herrschaftliche Kontrolle des Gewässerraums hin.

Travel and Communication in Anglo-Saxon England: An Overview.

Andrew Reynolds

This paper will present a series of themes and questions relating to the nature of overland and waterborne travel in England between the end of the Roman period and the 12th century. It remains a commonplace that mapping of overland communications in Anglo-Saxon England commonly comprises a mapping of Roman routes, yet the picture is much more complicated. Our project examines changes in the structure and density of communication networks as a proxy for understanding wider social, economic and political changes. The evidence base is broad and draws upon archaeology, toponyms and written sources, all considered in a landscape context. Using case-studies, hierarchies of routes of communication are examined, with a focus on landscapes of dispersed administrative functions and then the impacts of urban development. Methodological aspects of reconstructing communications are also explored.

Creating Kingdoms: Burials, Waterways and Inland Communications in North East England AD 300-800

Brian Buchanan, Sue Harrington and Sarah Semple

Waterways, rivers and estuaries have long been recognised as influential in shaping patterns of cemetery and settlement activity in early medieval Britain. Studies have focussed particularly on the south and south-eastern kingdoms of Anglo-Saxon England, demonstrating strong relationships between cemetery locations and major waterways providing inland access. Along the north-east coast, the coastal highway was a major route of communication, while large rivers such as the Tees and Tyne facilitated swift inland travel. People and Place is a major Leverhulme-funded project that is using burial evidence to examine the emergence and development of the kingdom of Northumbria. The project is building on previous advances in early medieval cemetery studies by applying an aggregate of social and scientific approaches which includes a detailed temporal exploration of the landscape location of funerary events, burials and cemeteries using a GIS. The withdrawal of Roman authority along the Northern Frontier in Britain, along with changing climatic conditions and an influx of migrants along the southern and eastern coastal board, contributed to the remodelling of social and political structures in the 5th and 6th centuries. By the 8th century large kingdoms formed from a coalescence of smaller groups and were in place, ruled by dynastic lineages of kings. Northumbria was one of the largest and earliest kingdoms to emerge.
The burial record for this region provides a rich dataset relevant to understanding the emerging post-Roman identities and political structures of society during this period and our

early results show that landscape and especially land and river communications were instrumental to the emerging burial pattern of the 6th and 7th centuries. This paper draws on cemetery evidence from the north-east coast of Britain and contends that rivers and land routes were instrumental in the development of post-Roman heartlands and early polities.

Sand and Sea: waterscapes and centres of the early East Anglian kingdom in south-east Suffolk.
Christopher Scull

South-east Suffolk, with princely burials at Snape and Sutton Hoo, a major central place at Rendlesham, and the emporium at Ipswich, has been identified as an important territorial focus of East Anglian royal power in the 7th century AD. Particular prominence has been given to the pays known as The Sandlings, a coastal region of subdued topography and light sandy soils with estuarine rivers flowing into the North Sea, and a "Sandlings Province" has been proposed as representing the core area of the early kingdom. The regional geography, however, is more complex and diverse than this characterisation would suggest. The river valleys offer inland access to and from the coast, a range of soils and resource zones, and topographies which lent themselves to the inscription of rulership on the landscape. This paper examines the settings of key places, and the settlement patterns of which they were a part, against the determinants of physical geography to explore how the interplay of river, estuary and coast helped frame geographies of community, identity, lordship and polity.

Viking Age rune monuments located close to water routes.
Anne-Sofie Gräslund

The location of the rune stones in the landscape is a frequently debated question, if they are located close to roads or close to cemeteries or both. I am convinced that both alternatives are true. In this presentation I will concentrate on inscriptions located immediately in contact with water ways: their ornamentation, chronology and the content of the runic texts. Are there any specific elements compared to other contemporary rune stones? The gender aspect will also be taken into account. Are women involved in raising them to a higher or lesser degree than other rune stones? I will use the rune stones of the provinces around Lake Mälaren in an attempt to answer these questions.

Scania, Jordanes and societies between land and water.
Bertil Helgesson

Jordanes´ Getica is an important, but also debated, source to people and regions in Southern Scandinavia in the middle of the first millennium AD. It is obvious that many of these people settled areas close to the coasts. Jordanes mentions four or five names on people that most certainly are associated with northwestern Scania in Sweden. Despite Jordanes has northwestern Scania never been the subject of any more comprehensive archaeological analysis.

In this paper I wish to highlight on northwestern Scania and give a picture of landscape and society in the middle of the first millennium AD. The analysis takes its starting point in archaeological finds, archaeological features, ancient monuments, written sources and place names, and geographic and topographic features. It also takes its starting point in the various conceptions of what areas Jordanes meant by Theustes, Vagoth, Bergio, Hallin and Liothida.
The landscape in Northwestern Scania is a landscape of contrasts, characterized by forests, river valleys, plains, ridges and imaginative rock formations. It is situated close to the the Danish islands, Øresund and Kattegat, which is the border zone between the North Sea and the Baltic. Communication routes were always close. Much of the find material comes from areas close to the coast, but there are also small concentrations in the river valleys and elsewhere. Ancient monuments, with graves and ancient field remains as the most common, can be find all over the area, but are quite common on the ridges and in the forested areas in the inland.
It is clear that northwestern Scania constitutes a densely settled area in the middle of the first millennium AD. It is also possible to separate several settlement areas by geographic and topographic features, and, in a way, also by the archaeological material. Were these societies developed as a result of the contrast between sea, rivers and inland? Were these different areas inhabited by the people mentioned by Jordanes? Can we can equate the archaeological material with written sources in this way?

From waterscape to landscape around late 1st Millennia Uppsala

John Ljungkvist & Andreas Hennius

The purpose of this paper is to discuss how the agrarian landscape around the Uppsala plain during a 500 year period evolved and transformed from a riverine landscape with maritime connections around Gamla Uppsala.
This area is well known for the many large burial mounds and boat graves from the Vendel period scattered in the landscape with the mounds of Gamla Uppsala as the most famous features. Finds such as glass beakers, pottery, gold and garnets in these graves bear witness of extensive European contacts. But there is also evidence inter-Scandinavian trade with whale bones probably originating from Norway and birds of prey, probably originating from northern regions.
A few years ago the largest mound in 70 years was excavated at the site Gnista. This grave is one among many located in what today is a highly urbanized, extensively cultivated and the most characteristic plain area of middle Sweden. But the landscape has undergone fundamental changes since prehistoric times due to transgression processes. In the 7th century the Gnista mound was located close to one of several waterways flowing into the nutritious and shallow lake Föret. Over the centuries every meter of land raise resulted in significant topographic changes and also contributed to changing ecosystems and living conditions for the inhabitants in the region.
Increasing evidence, stretching from isotope analyses of skeletons, maritime related goods, place names and foreign imports, together strengthen the impression of an area with strong maritime character adding on the power and symbolic role of Gamla Uppsala and later Uppsala. The maritime character changed markedly after the 11th century. Gradually is the lake Föret getting smaller, all the riverine traffic become blocked by numerous water mill

dams and Stockholm is the completely dominating economic hub. The maritime aspects disappear and the area become completely agrarian.

Ritual places of the Iron Age.

Maria Petersson

Both still and running waters were a focus of ritual activities during the Iron Ages and earlier.

Often the information about such ritual places stem from stay finds that were unearthed during earlier centuries. In western Östergötland, Sweden, a number of ritual places have been excavated during recent years as a result of large infrastructural projects.

These places show many similarities. The landscape setting is one; they are set by small streams or at the edge of wet areas, cup-mark locals may be included, the area within which different rituals have taken place is considerable. Ritual meals have been consumed at all these places and the refuse from these meals has been deposited within the ritual site, demonstrating that it was connected to certain ideas or taboos. Pots, presumably with food, have been deposited close to the running water. Other objects of certain categories have also been deposited at these places. The find material is sparse but it's composition is typical. It may allude to fertility and a feminine aspect in a broad sense but there are other themes represented.

The intensity of the different ritual expressions differ over time. The ritual meals however, are the most persistent ritual expressions and are represented through time at the sites.

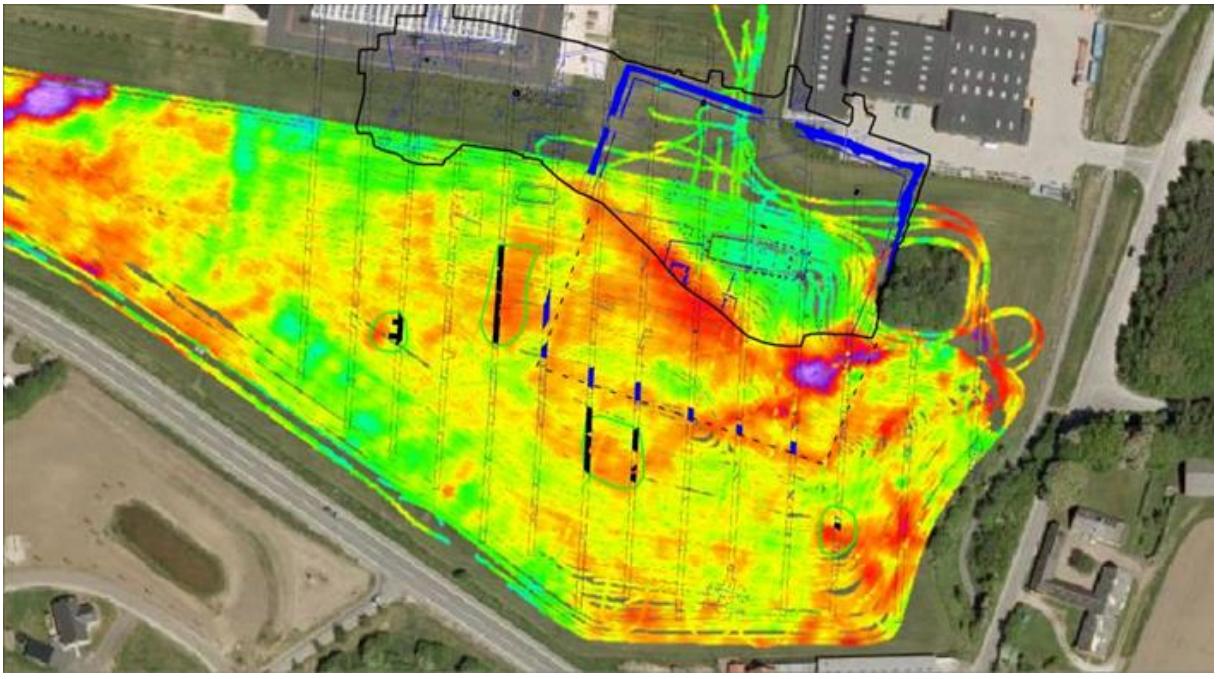
These small ritual places have most likely been important on a very local scale - four such places have been discovered within a 5 kilometer radius. On a regional level the ritual places at least from the Late Iron Age appear to have been more elaborate.

Before Jelling – A king's manor in the waterway of the Little Belt.

Mads Ravn

The Little Belt in central Denmark is the smallest of three waterways that divide present Denmark into the three main lands of Jutland, Funen and Sealand. In 2006, a few hundred metres from the present bridge (fig 1 and 2), connecting mainland Jutland with the island of Funen, an extraordinary aristocratic-looking Viking Age manor house appeared in a rescue excavation. It dates to around AD 650-900. There were traces of several buildings, and as something special, a square moat with traces of a palisade. The manor house is situated at one of the highest points in the parish of Erritsø with a good view to the 'funnel' - a narrowing of the waterway in the Northern end of the Little Belt. The discovery of a highly unusual settlement type at this point begs the question as to which role - culturally, strategically, politically and administratively - the Little Belt played in the period between AD 600 to 1200, a dynamic period, where the organization of power was challenged and cohesion of society was changed several times. Was the Little Belt a barrier or bridge between the lands? According to recent research Eastern and Western (present) Denmark

were organized highly differently before the Kingdom was united by King Harold Bluetooth in Jelling just 30 km to the North in AD 965; but exactly how are these local and cultural differences in the entire source material are reflected in this area remains to be understood.



The area after geophysical surveys

Permic silver hoard dating to c. 800- or 900 AD

Die Weichsel al seine Trennungslinie in der antiken und frühmittelalterlichen Geographie und der archäologischen Realität.

Wojciech Nowakowski

Die Weichsel ist der größte Fluss (1047 km), der in die Ostsee mündet. Ihr Zu-flussgebiet teilt sich in einigen geographischen Regionen aus, die in der Vor- und Frühgeschichte in der Regel ziemlich deutlich abgesonderte Siedlungs- und Kultur-zonen darstellten. In der römischen Kaiserzeit bildet das Oberweichselgebiet ein Kern des Territoriums der Przeworsk-Kultur. In der Völkerwanderungszeit befand sich das Oberweichselgebiet zuerst unter den kulturellen und wohl auch politischen Einflüssen des hunnisch-germanischen Staates im Teissgebiet

(„Attila-Reich“), dann stellt am Ende des 5. Jh.s einen Raum der frühesten Einwanderung der Slawen.
Der mittlere Abschnitt des Weichselstromes läuft SSE-NNW, ab der Mündung ihres großen rechten Zuflusses, der San, bis zu Kujawien. Römische Geographen erkannten diesen Teil der Weichsel – wohl zusammen mit dem erwähnten Fluss San als ihr Oberlauf – als eine herkömmliche Scheidelinie, die zwei große Teile Barbaricums trennte, diese Rolle spielte er aber ausschließlich nur in der jüngeren römischen Kaiserzeit, als er eine Grenze zwischen der Przeworsk-Kultur am linken Ufer und der Wielbark-Kultur an rechtem Ufer bildete.
Der Unterlauf der Weichsel, von Kujawien und dem Kulmerland stromabwärts, stellte in der Vor- und Frühgeschichte den Endabschnitt der Bernsteinstraße dar, der das archäologische Antlitz dieses Gebietes bestimmt. Diese Rolle der Unterweichsel lässt sich besonders deutlich in der jüngeren vorrömischen Eisenzeit und in der römischen Kaiserzeit bemerken, wenn sich auf ihren beiden Ufern römische Funde konzentrieren. Das Weichselmündungsgebiet galt auch als ein Platz der mythischen Landung der Goten (Gothiskandza), als sie sich dort aus dem Skandinavien übersiedelt sollen hätten. Die kaiserzeitliche Wielbark-Kultur zeigt zwar einige Verbindungen mit Skandinavien, eine eventuelle Immigration soll aber ein langes Prozess darstellen, das wohl von ca. 50 v.Chr. bis 50-70 n.Chr. andauerte. Ab dieser Zeit bildet das Unterweichselgebiet einen Kern der Wielbark-Kultur mit ihren größten, reichsten und am längsten belegten Gräberfeldern. Noch in der Völkerwanderungszeit lässt sich hier eine Siedlungskonzentration beobachten, die sich vom übrigen fast völlig entvölkerten Territorium der Wielbark-Kultur deutliche unterschiede und die erst im 6. Jh. verschwand. Dann wurde das Weichselmündungsgebiet teils von den Slawen, teils von den baltischen Pruzzen besiedelt; als eine herkömmliche Grenzlinie galt damals noch einmal die Unterweichsel, obwohl es sich nicht ausschließen lässt, dass am Anfang des Mittelalters die Slawen auch das rechte Weichselufer besiedelten, von dem sie dann von den Pruzzen verdrängt wurden.

Waterscape of the Canche Valley. Environnement archéologique autour de Quentovic (France).

Inès Leroy & Laurent Verslype

Le portus de Quentovic est un important centre administratif et douanier du haut Moyen-Âge. Son implantation dans la basse-vallée de la Canche, le long des côtes de la Manche, est matérialisée par une occupation continue, des productions artisanales et une gestion tardive des activités fluviales. Ces données attestent l’importance du site particulièrement entre le 6e et le 10e siècle.

Initiée en 2014, la seconde phase du projet collectif de recherche (PCR Quentovic. Un port du haut Moyen Âge entre Ponthieu et Boulonnais) aide à l’intégration des données issues de plusieurs fouilles d’archéologie préventive et d’un programme de recherche en matière environnementale. Des prospections géophysiques ont également été lancées.

Au cours de cette communication, trois point seront abordés : l’organisation du wic ; les moyens d’approvisionnement, en matière de nourriture mais aussi d’artisanat au sein de la basse vallée et de l’estuaire ; la question du statut et de la relation entre des implantations dispersées.

The settings of trade and exchange in the waterscapes of the early medieval southern Low Countries : discussion and research problems.

Dries Tys

The issue of trade and exchange in the early medieval (southern) Low Countries has been debated since long time, first of all of course by Henri Pirenne who was looking for an explanation for the intensive and successful urbanisation of the southern Low Countries from the 11th century onwards. He was followed by eminent scholars such as Ganshof, Van Werveke, Verhulst as historians and Hodges, Verhaeghe and others as archaeologists. The most recent contribution was made by Martin Carver who stressed the importance of early-medieval monasteries as centres of consumption and production in the Frankish world.
One of the problems of the debate was the urge to bring the early medieval developments in a necessary relation with the urbanisation later. Teleological reasoning was never far away and many theories and publications held to an inherent path-dependency between the early medieval dynamics and the rise of the urban phenomenon later onwards.
In this contribution I want to discuss the characteristics and role of the landing places, ports, markets and trade and exchange mechanisms in the early-medieval waterscapes of the Low Countries. Many aspects are involved, but from an archaeological point of view, the debate has to focus on the interpretation of traces of production, (long distance) exchange and the setting or infrastructure of sites of “contact”.

The research by Hodges, Theuws and Carver shows very clearly the importance of the ritual economy up to at least the end of the 7th century for the development of trade, especially in the Meuse Valley, although we also can expect similar tendencies in the Schelde valley. There are several faint data that allow us to discern central, ritual and/or productive places before 700. One of the striking developments is however the increase in volume and intensity in trade and exchange from the period around 700 onwards. Whereas so far nobody has come up with a sufficient explanation for this rise of trade and exchange, it is clear that the 8th century witnessed an important expansion of the sites of “contact” and the the trade of bulk goods in regional and interregional exchange networks.
Special attention will be paid in this context to non-aristocratic sheepfarms on dwelling mounds in the coastal salt marshes, that were owned by free landowners and that possessed remarkable quantities of imported ceramics and even luxuries from the late 7th century onwards (Loveluck & Tys 2006). The coastal sites seemed to have exchanged a specialist production of like fish, salt, livestock, wool and finished textiles to needed finished goods and materials and luxury items.

These sites show us that the range of sites involved in trade of luxury items and bulk goods is more complicated compared to the view that trade and exchange mainly took place in the famous emporia and that import materials had a broader social dispersion than thought before. One of the remarkable other sites that seems to have played its role in the rise of trade was the 9th century smaller port of Antwerp.
The intensity of trade and exchange in the early medieval Low Countries gave rise to a sense of mercantilism and a rise of merchant agencies, which were adapted by the feudal Princes and warlords from the end of the 9th century onwards. These dynamics converged in the

rise of the urban markets from the 10th and 11th century onwards, notwithstanding the divergences in their early medieval origins.

Traffic, trade and the tidal Thames – changing social and commercial contacts in the Thames estuary during the 5th to 10th centuries AD.
Lyn Blackmore

This paper will consider how the Thames and its tributaries have affected the pattern of settlement and trade in the Thames estuary, as far upstream as London, from the Migration period onwards. The main emphasis will be on the 7th century, notably the displays of wealth and evidence for connections with the Continent evidenced by the princely burial at Prittlewell and other broadly contemporary burials, and the commercial connections of the trading settlement Lundenwic. Evidence for boats will be considered as well as the goods they carried.

Place-names and Travel in Early Medieval Humber Region.
Eleanor Rye

Finds such as the Bronze Age boats from North Ferriby and those from the Scandinavian Great Army winter camp at Torksey demonstrate the long-term importance of the Humber and its tributaries in overseas and riverine travel. From the Humber, navigable rivers provide access to southern Northumbria and the East Midlands, and these rivers intersect with major routeways providing overland connections with areas further afield. These routes leading inland from the Humber provided access to a wide range of sites of economic exchange, from major centres like York to productive sites of local or regional significance such as South Newbold and Riby.

Overland travel in Anglo-Saxon England is frequently discussed with reference to prehistoric trackways and Roman roads, overlooking the existence of roads and paths of local and regional significance, and the likelihood than much of the Roman road network fell out of use during the Anglo-Saxon period. However, place-names, most of which came into existence as meaningful labels for the places they referred to, provide a wealth of evidence about the physical features of travel in Anglo-Saxon England (e.g. roads and paths, landing places and river-crossings). For instance, North Ferriby in the East Riding of Yorkshire (recorded as Ferebi in 1086) is a Scandinavian name meaning the 'settlement at/near the ferry', which demonstrates the existence of a river-crossing that acquired a Scandinavian name between the ninth and eleventh centuries.

By providing us with information about the travel infrastructure of early medieval Britain, place-names can contribute to our understanding of how travel networks shaped and responded to shifts in centres of economic, political or ecclesiatical power in the period. This paper will explore what place-names which, like North Ferriby, label features of early medieval travel networks, reveal about the extent and functions of these travel networks around the Humber region.

Amber as passage money on the journey to the afterlife.
Marzena J. Przybyła, Ewa Rydzewska

The paper deals with the spindle-like artifacts made of amber which are known from the Late Roman Period graves form Southern Scandinavia. Similarly like gold plates or fragments of Roman glass vessels they occur here in function of passage money on the journey to the afterlife. The geographical distribution of such burials allows us to trace the connections between the particular regions of Scandinavia as well as to discuss value of amber in local Scandinavian societies of this time.

Between Ems and Ribe – trade and transport along the southern North Sea coast.
Martin Segschneider

The coastline of the German Bight consists of marshes, protruding moraine areas, islands and river estuaries. Situated between Dorestad, Ribe and Haithabu, this area and its inhabitants played a crucial role in the North Sea trade. Recent excavations at coastal trade places and on-going research projects funded by the German Research Foundation on harbour sites and their infrastructure, combined with state-of-the-art geophysical methods have produced many interesting new insights into the character and structure of trade and exchange in this region. The coastal and waterscape societies along this major trade route, which was connected to the hinterland by the rivers Ems, Weser, Elbe and Eider, is visible also in the fortifications along the coast. These are connected to important harbours and trade places. Putting together all the information available, a fresh picture of the coastal trade and the waterscape societies behind it can be drawn.

Das Schwerpunktprogramm „Häfen von der Römischen Kaiserzeit bis zum Mittelalter“ – Aufgaben, Potentiale und Herausforderungen.
Claus von Carnap-Bornheim

Im Rahmen des DFG-Schwer¬punkt¬programms 1630 (SPP) werden sich in zweimal drei Jahren rund 60 Wissen¬s¬chaftler/innen bis 2017/18 in 18 wissen¬schaft¬lichen Einzel¬projekten der inter¬diszi-plinären Erforschung des Phänomens Hafen widmen. Insgesamt stellt die Deutsche Forschungsgemeinschaft für die sechsjährige Laufzeit des SPP ca. 11 Mio. € zur Verfügung.

Fächerübergreifend und in einem weiten chronologischen und chorologischen Rahmen sollen Häfen als hochkomplexe Systeme analysiert werden, in denen sich ökologische, logistische, ökonomische, soziale, juristische, militärische und kultische Subsysteme überlagern und gegenseitig bedingen. Ziel ist daher die Initiierung einer fächerübergreifende, chronologische Hürden und räumliche Grenzen überschreitenden Vergleichsanalyse, um Häfen als systemrelevante Komponenten zu verstehen. So erstreckt sich das Arbeitsgebiet des SPP vom östlichen Mittelmeerraum bis in den Nordatlantik und die Ostsee, wobei Flusshäfen und Kanalsysteme ebenso Berücksichtigung finden wie Häfen an Meeresküsten. Ihnen gemeinsam ist die überwiegend zivile Nutzung. Eine zweite wichtige

Komponente im SPP sind historische Forschungen, die das weite Spektrum schriftlicher Überlieferungen mit in die Diskussion einbringen. Übergreifende Datenbankstrukturen erleichtern die Kommunikation innerhalb des SPP und sind eine Komponente für seine Nachhaltigkeit.

Im SPP werden folgende Schwerpunkte gesetzt:
1. Etablierung einer einheitlichen Terminologie
2. Klärung der Wechselwirkungen zwischen Topographie und Hafenbau
3. Bewertung der umweltgeschichtlichen Implikationen
4. Analyse der Wirtschafts- und Verkehrsräume
5. Erstellung kulturgeschichtlicher Entwicklungsmodelle

Mit dem Vortrag werden der Arbeitsstand im Gesamtprojekt sowie die bisherigen Erfahrungen erläutert. Dabei steht im Mittelpunkt des Vortrages, wie das wissenschaftliche Netzwerk im SPP-Häfen funktioniert und vor welchen Herausforderungen es steht.

The river Fyris route in Svithiod – a stop at Tuna in Alsike.

Torun Zachrisson

The waterscapes of Svithiod where dominated by an east–west oriented inlet of the Baltic. The main entrance to this bay was at Stockholm; a passage that did not seem to be efficiently controlled until AD 1000. By then the bay, uplifted due to shoreline displacement, had turned into Lake Mälaren proper. The remains of a pole blockage dated by denrochronology to AD 970–1020 show that the entrance was instantly controlled. Before Lake Mälaren was formed AD 1000 the fresh water from the rivers Fyris and Örsunda passed through a narrow water way connection between today's Uppsala (Östra Aros) and Stäket. This narrow water way lead north up to the river Fyris and Old Uppsala, the core of Svithiod. The place name Stäket (pole blockage) at the very beginning of this route where the Lake Ekoln fell out into the former Baltic, shows that also this passage was controlled.

In general the ordinary settlements AD 300–1000 were not placed in exposed positions facing the coast, but were situated along the inner water routes and smaller lakes. Elite settlement however such as Viken (the bay) at Lovö, Vårby (the settlement that keeps watch) and Frössvik (the peace bay, Fredsvik) were situated exposed towards the sea. Along the more protected river Fyris route several Tuna–sites cluster. The Tuna sites are famous for their richly furnished burial grounds sometimes with boat burials and gold hoards, and have been interpreted as "royally controlled". The settlement at Tuna in Alsike, is placed in an exposed position facing the narrow water route and a harbour. The founder's grave is a male chamber burial from the Early Merovingian period (Tuna grave XIV, AD c. 550). One of the grave goods i a silver belt buckle with inlays of garnet; it is of a unique type for the region and has been suggested to be Continental (e.g. Arrhenius 1985. In this paper the material culture, in combination with isotope results and aDNA of the individual in grave XIV will be discussed.

Static dynamics of (im)material identities in an emerging coastal culture.

Katrine Balsgaard Juul

The research of people and their identities have always been a core value within archaeology – whether dealing with the so-called core areas of the inland or the so-called periphery of the coastal areas. However, when investigating an emerging (im)material coastal cultures the vicious nature of the sea makes it necessary to investigate the expressed identities through various aspects of material culture. With a large data set containing 3369 burials from the inland and coastal areas of The Netherlands, Germany and Denmark, approximately dated to AD 400-700, significant coastal culture identities have been researched within the frames of a PhD thesis.
Correspondence analyses were conducted to locate several identities related to the biological sex, region and status. The analyses furthermore made it possible to localize identities within a coastal culture in relation to individuals as well as smaller and larger groups in a continuum of dynamic and static identities along the North Sea. The study emphasizes that the coastal area contains strong cultural attractors leading to the formation of significant identities. From a theoretical point of view, identities are dynamic. From a material point of view, identities are often rather static. By combing various theories, methods and data new perspectives on identities have been created leading to a new understanding of the static dynamics of identities in the coastal areas. Varying meaning of similar artefacts across the research area stresses the presence of the static dynamics of identities in an emerging coastal culture.

Frisia's Viking Age Waterscape: the Frisian coast and the Viking world.

Nelleke IJssennagger

The Frisian coastal area between the rivers Zwin (Belgium) and Weser (Germany) was an important area for intercultural contact throughout the medieval period. A particular period in which Frisia is faced with contact is the Viking Age, that starts on the Continent with an attack on Frisia in 810.

Lying on the northern rim of the Continent and facing the North Sea, Frisia was a maritime- and riverine-oriented region. Although officially Christianized and incorporated in the Frankish realm, Frisia remained a region between Christian Frankish and non-Christian Viking spheres throughout the Viking Age. On the one hand, its waterscape presented danger of incoming northern pirates as particularly stressed in the written sources, but on the other it enabled Frisians to partake in the North Sea Viking world as much as in the Frankish world and to keep a degree of autonomy. As such, the intermediary role of Frisians that is postulated in trade, extended far beyond that into the realms of culture at large.

New finds by metal detectorists and new research into both material and immaterial culture increasingly indicate how the Frisian coast was interconnected with the Viking Age North Sea world and how both Vikings played a role in Frisia, and Frisians in the Viking world. This paper will consider Frisia's and Frisians' position in this Viking Age North Sea world, the Viking imprint on Frisian waterscapes and the traces of material and immaterial cultural exchange that represent it.

Revetments and refuse. The booming economy and material culture of Carolingian Leiderdorp in the Rhine delta.

Menno Dijkstra

In 2013 the University of Amsterdam excavated part of an early-medieval settlement in Leiderdorp, situated at the Old Rhine river near the city of Leiden. Unfortunately most of the settlement traces like house plans and allotments had been destroyed by post-medieval clay extraction. What we did find however, was part of a stream with heavy revetments, a side branch of the Old Rhine. The revetments are dating in the late 7th, but especially the 8th and first half of the 9th century. Combined with earlier research, the Carolingian revetments must have continued for about 500 metres before they connected to the Old Rhine river. This certainly tells us something of the cooperation needed to accomplish this major construction.

The excavated part of the stream was used as a refuse dump as well, containing the astonishing amount of more than 200,000 finds. Half of this consists of animal bones, but furthermore it shows a wide variety of objects, from tools, shoe and comb makers waste to non-ferro garments. The botanical research also showed interesting results with indications for beer brewing and even findings of grape pits. In about 840 it was al over however. This outskirt quarter of 'Leithon' was left and later a new inlet started to deposit a new layer of clay over the lower part of the levee.

How are we to comprehend the rich material culture of this outskirt of the settlement? It certainly shows us the advantageous geographical position of Leiderdorp at one of the major European rivers and the opportunities this gave for trade and exchange. But was Leiderdorp unique in this respect in the Rhine estuary? Certainly, we should not forget that it is for the first time an extensive part of a medieval stream in the hinterland of a Carolingian river settlement has been excavated. In this paper the question of how Leiderdorp lifted along with the Carolingian booming trade will be further addressed.

Etude des peignes de Quentovic (La Calotterie, Pas-de-Calais, France): de la typochronologie à l'analyse microwear et usewear.

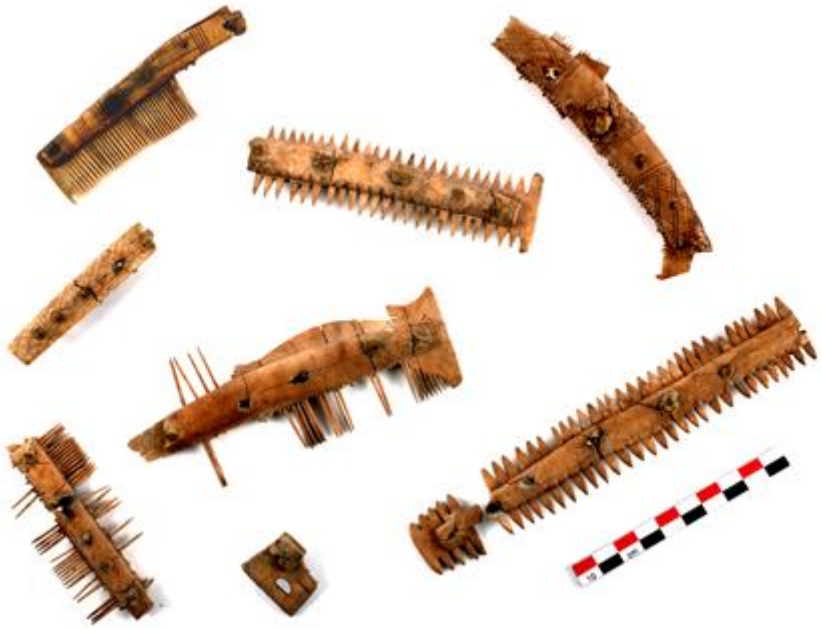
Study of the Quentovic combs (La Calotterie, Pas-de-Calais, France) : a typological study combined with microwear and usewear analyses.

Nathalie Pil, Jean Soulat & Delphine Cense-Bacquet

L'objet de cette communication est l'étude et l'analyse des peignes découverts sur le site de Quentovic, et plus particulièrement sur la commune de La Calotterie, au chemin du Visemarais, parcelles AC3P et AC40 (Pas-de-Calais, France). Provenant d'un contexte daté milieu VIIe-milieu IXe s., 34 peignes en matière osseuse diverse, dont la plupart en bois de cervidés, ont été inventoriés. La découverte de ces peignes, de nombreux objets en os manufacturés et des déchets de taille suggère fortement la présence d'un atelier de débitage. Au niveau typologique, plusieurs catégories de peignes se distinguent reflétant ainsi des influences variées de tradition anglo-saxonne, frisonne et scandinave. L'étude comparative a permis de mettre en évidence des parallèles localisés dans les emporia de l'espace Manche-mer du Nord comme à Hamwic/Southampton.

Suivant l'étude typologique, les peignes sont également soumis à une analyse de production en utilisant la méthode microwear. L'utilisation de techniques et outils spécifiques au début du Moyen Âge ont été largement discuté dans la littérature, mais l'application de ces techniques sur des peignes n'a pas encore été abordée en détails. En outre, en utilisant l'analyse usewear, la biographie de vie des peignes est explorée. En utilisant une collection de référence et par l'analyse microscopique à magnitude basse et haute, les traces sur le matériel archéologique sont de même examinées.

La combinaison de ces méthodes peut révéler des modifications dans le processus de production, ce qui peut indiquer un changement économique, social et idéologique ou donner un aperçu sur la production locale.



The study and analyses of combs excavated in Quentovic are the subject of this communication. In total 34 combs, originating from two tranches, AC3P and AC4° (Pas-de-Calais, France) situated at Visemarais street, were found at 'La Calotterie'. These combs are dated from the VIIth - IXth century, due to the context they were found in. The discovery of these combs, together with finds of other bone objects and waste material, assume the existence of bone craft activity on the site.
Typologically these combs show Anglo-Saxon, Frisian and Scandinavian influences. Through comparative studies parallels are found with emporia from the northern Manche-mer and Hamwic/Southampton.

Next to the typological approach, the combs are also submitted to a production analyse, using microwear research. The possible use of different tools in early medieval ages is well documented through literature. However, much less attention went so far to questions as what tools and techniques were applied on individual combs. Through usewear analyses,

factors about their use and possible life biography are investigated. Using a reference collection and through a microscopic analyse with low and high magnification, traces on the archaeological objects are compared and interpret.
The combination of the typological study and analyse methods can give us more insight in the production process or possible ruptures in used techniques. These insights may be associated to other context-based roles, as social, economic and ideological meaning of the material, furthermore it can give more insights about local production.

Mit Blick auf den Fluss? GIS-gestützte Untersuchungen zur räumlichen Lage der Grabhügelgräberfelder der Wielbark-Kultur in Nord- und Ostpolen.

Adam Cieśliński, Karin Göbel & Jörg Nowotny

Die Grabhügelgräberfelder der Wielbark-Kultur bilden eine verhältnismäßig kleine Gruppe von Nekropolen, die neben den für diese Kultur typischen Flachgräbern auch Tumuli und zum Teil andere oberflächige Konstruktionen wie Steinkreise aufweisen. Die Grabhügelgräberfelder tauchen erstmals in der älteren Kaiserzeit (1.–2. Jahrhundert) in Nordpolen auf. In der jüngeren Kaiserzeit (3. Jahrhundert) verlagerte sich diese Tradition des Grabhügelbaus zusammen mit der wandernden Bevölkerung der Wielbark-Kultur nach Ostpolen. Dort wurde sie bis zur Völkerwanderungszeit (Ende des 4. und erste Hälfte des 5. Jahrhunderts) weitergepflegt.
Das Hauptziel dieser Untersuchung ist die Klärung der Frage, ob bestimmte kulturell geprägte Vorstellungen sowie längere Tradition die Auswahl eines Bestattungsplatzes beeinflussten.
Dazu soll an erster Stelle der räumliche Bezug der Nekropolen zur Naturlandschaft untersucht werden.
Hierbei werden erstmals in der archäologischen Erforschung der Wielbark-Kultur moderne Geoinformationssysteme (GIS) angewendet. Je nach Fragestellung stehen die Daten jetzt unter Einbeziehung unterschiedlichster topologischer und thematischer Karten und Daten für räumliche Analysen zur Verfügung.
Bislang sind für den Belegungszeitraum im Bereich der Grabhügelgräberfelder noch keine umfangreichen Landschaftsrekonstruktionen durchgeführt worden. Deshalb werden Geländemodellierungen eines Areals von rund 20 km² im Umkreis der Nekropolen auf Grundlage des vorhandenen Kartenmaterials unter Berücksichtigung landschaftsverändernder Prozesse erstellt. Besonders die dreidimensionale Visualisierung der Oberflächenmodelle ermöglicht ein besseres Verständnis zur Lage der Grabhügelfelder in der Landschaft.
Dadurch lassen sich genauere Charakteristika zur Lage der Fundstellen erarbeiten, die ohne diese Möglichkeiten nicht so sichtbar wären. Erste Ergebnisse weisen auf auffällige Übereinstimmungen bei der Standortwahl einiger Gräberfelder hin, die vielleicht Rückschlüsse auf die damaligen Auswahlkriterien geben können und damit indirekt Einblicke in die frühere Vorstellungswelt der Menschen ermöglichen.
Diese plantheoretischen Untersuchungen wurden durch Geländebegehungen während einer Exkursion im Herbst 2012 überprüft. Auf diese Weise konnte ein „Gefühl für die Landschaft“ entwickelt werden, die durch die Gletscher der Eiszeiten sehr abwechslungsreich geformt wurde. Außerdem ließen sich dadurch mehrere Fragen klären, die sich bei der Bearbeitung der Dokumentation ergeben haben.

Burials on the beach – the Iron Age burial Ground at the Old Vicarage, Hå, Rogaland in SW Norway. A preliminary presentation.

Åsa Dahlin Hauken

The burial ground at the Old Vicarage in Hå municipality is situated at the stony beach, on the beach ridge 5 m above sea level, between 50 and 150 meters from the sea. It comprises 55 cairns, mostly round or rectangular, but there are also one boat shaped and two triangular stone settings. It is one of approx. 35 burial grounds along the southern coast of Rogaland. They range in size from five to more than 100 cairns or mounds, the one at Kvassheim being the largest; Hå is the second largest.
The burial ground was almost completely excavated in the summer seasons 1954-1958 and the majority of the cairns were subsequently restored. The results of the excavation were never published - indeed the finds from the 1957 and 1958 season were never catalogued but left to languish in open boxes in the museum's storage.
In total 63 graves from 48 cairns were excavated. They range in age from the Roman Period to the Viking Age. With a few exceptions, the cairns have been disturbed and used as garbage dumps in the 19th - 20th centuries. There are 16 female graves, 13 male graves and 34 undeterminable ones. Three graves were empty. 19 graves are cremation graves, 25 graves are inhumation graves and 19 graves are undeterminable. The ratio male/female/undeterminable corresponds with the numbers from Hå municipality as a whole, whereas there are more inhumation graves at the Hå burial ground (43%) than what is common for the municipality (21%). Most of the graves are simply furnished, but there are also graves with more exceptional grave goods. The presentation will give an overview of the finds, as well as a tentative interpretation of the spatial organization of the burial ground.

The Vallerbæk find – a late Migration Period weapon deposit from Jutland?

Xenia Pauli Jensen

In 1935 a school teacher contacted the National Museum reporting of a find of weaponry near the village of Karup in Jutland. A curator surveyed and examined the find area and dated the Vallerbæk find to the late Roman Iron Age – a dating that recently proved to be much too early. The find itself is poorly preserved and consists of numerous spearheads besides arrowheads and both single- and double-edged swords.
The find spot is located on the slopes of a plateau and placed within a group of four barrows. The find is remarkable not only because of its dating in a period with only few contemporary weapon finds, but also because of the setting in an area with no other Iron Age finds.
The aim of this paper is to shed light on this "old" find and to discuss the remarkable site and its location in a heathland area which were widely used for grazing purposes through millennia.

Far-reaching connections - interdisciplinary studies into the gold and garnet chain from Isenbüttel, Germany and its Anglo-Saxon parallels.

Alexandra Hilgner

In der Sammlung des Niedersächsischen Landesmuseums Hannover befindet sich die vor gut einem Jahrhundert im Landkreis Gifhorn zufällig gefundene „Goldkette von Isenbüttel". Lange Zeit waren sich Forscher uneinig über die genaue Datierung, Herkunft und Funktion dieser Fuchsschwanzkette mit granatverzierten Tierkopfenden.
Im Rahmen des interdisziplinären Projektes „Weltweites Zellwerk" wurde sie zusammen mit einer größeren Anzahl granatverzierter Objekte aus verschiedenen Ländern am Römisch-Germanischen Zentralmuseum in Mainz untersucht. Das Projekt mit einer dreijährigen Laufzeit wird vom Bundesministerium für Bildung und Forschung im Rahmen der Förderschiene „Sprache der Objekte" gefördert. Der Forschungsschwerpunkt liegt auf Granatcloisonné des späten 6. und des 7. Jahrhunderts. Bei der Goldkette von Isenbüttel waren neben den Granateinlagen auch technologische und naturwissenschaftliche Analysen zur Material- und Provenienzbestimmung Teil der Untersuchungen, die zu einer neuen archäologischen Einordnung führen sollten. Die Ergebnisse und vor allem der Vergleich mit Fundstücken aus Ausgrabungen der jüngeren Zeit eröffnen neue Interpretationsmöglichkeiten. Bei den Vergleichsstücken handelt es sich um eine kleine Gruppe exquisiter Fundstücke aus dem angelsächsischen England: den Nadelpaaren mit Verbindungskette („pin suites"). Diese datieren in die zweite Hälfte des 7. Jahrhunderts und weisen enge Parallelen zur Isenbütteler Goldkette auf. Aufgrund dieser angelsächsischen Vergleichsfunde ist es nun möglich, die Goldkette von Isenbüttel in direkte Verbindung mit den angelsächsischen „pin suites" zu stellen und weitreichende Beziehungen frühmittelalterlicher Eliten nachzuweisen.

Les occupations archéologiques du IXe au XIe siècle sur les rives françaises de la Mer du Nord.

Mathieu Lançon & Samuel Desoutter

Depuis une dizaine d'années, les équipes de l'Inrap ont réalisé plusieurs opérations d'archéologie préventive au cœur de la plaine maritime qui borde la Mer du Nord. Les résultats de ces opérations ont amélioré notre perception des formes d'occupations de cette zone humide à la fin du haut Moyen-âge (IXe-XIe siècle). Elles témoignent d'une variété des modes d'habitat ainsi que des grandes étapes d'aménagement du paysage. Au travers d'exemples caractéristiques, ayant bénéficiés d'approches pluridisciplinaires, il apparait nécessaire de présenter ici une première synthèse de ces données. Les différents sites étudiés ont en effet permis une meilleure définition des aspects de la culture matérielle (habitat, mobilier, formes du paysage, etc…) qui doivent être confrontés avec les modèles du Nord-Ouest européen. Les nombreuses ressources disponibles et leur exploitation (élevage, agriculture, pêche, saunerie, tourberie, exploitation de l'argile, etc…) ont également été étudiées. Même si de nombreuses inconnues persistent, ces études ont permis d'identifier les spécificités socio-économiques de ces gisements archéologiques, de préciser leur nature, de dégager une éventuelle hiérarchie entre les occupants et de définir leur place éventuelle dans les circuits commerciaux. Une fois replacés dans leur contexte historique, les sites évoqués présentent un éclairage archéologique sur le rapport plus global des sociétés

humaines avec leur environnement. Ils interrogent en profondeur le rapport des habitants de l'espace littoral avec la mer, et les cultures environnantes.

Die Stufen C3 und D1 in der Wielbark-Kultur – ein Trennungsversuch.

Magdalena Mączyńska

Die späte Phase der späten Kaiserzeit (Stufe C 3) und die frühe Phase der Völkerwanderungszeit (Stufe D 1) sind in Mitteleuropa sehr schwierig voneinander zu trennen, auch in Pommern, wo vom 1. Jh. bis zum Anfang des 5. Jh. n. Chr. die Wielbark-Kultur besteht. Ihre späte Phase umfasst die Zeit vom Anfang des 4. bis zum Beginn des 5. Jhs.
Die Leitfunde der beiden Stufen wurden mit den entsprechenden im elbgermanischen Kreis, in Südwestdeutschland, in der Černjachov-Kultur und in Skandinavien verglichen. Es ist gelungen, eine Fundgruppe auszugliedern, die nicht mehr in der Tradition der jungkaiserzeitlichen materiellen Kultur (Stufe C 2) steht und noch nicht den frühvölkerwanderungszeitlichen Charakter hat. Diese Fundgruppe besteht aus Fibeln, Gürtelschnallen, Glasgefässen, einigen Typen von Glas- und Bernsteinperlen sowie Metallanhängern.
Der vorgelegte Trennungsversuch erlaubt, die Chronologie der späten Phase der Wielbark-Kultur zu präzisieren.

Focusing on Roman Bounderies in Early Anglo-Saxon Settlements.

Clifford Sofield

A minority of settlements of the early Anglo-Saxon period in eastern and southern England were located on the sites of late Roman-period settlements. Most of these have been interpreted as instances of re-occupation, rather than continued occupation. Nevertheless, domestic activity at such sites sometimes seems to reference Roman-period features, especially boundary ditches which remained extant into the early Anglo-Saxon period. Is this just inevitable coincidence, or were occupants of some Anglo-Saxon-period settlements deliberately reusing Roman boundaries? This paper will bring together evidence from fifth- to seventh-century settlements across eastern and southern England to investigate two potential patterns of reuse. First, it will consider to what extent Roman-period boundary ditches served to divide Anglo-Saxon domestic space, especially in the fifth to late sixth centuries, when fenced and ditched boundaries were rarely constructed, and settlements generally exhibited little recognizable spatial organization. Second, the paper will explore whether Roman-period boundary ditches may have acted as spatial foci, rather than boundaries, for early Anglo-Saxon-period occupation activity—either for straightforward practical reasons, such as to take advantage of the softer soil of the ditch fill, or for more nuanced reasons, such as revising social memory, or rooting identity in a sense of place.

Investigation the Dead in Early Medieval Domburg (the Netherlands).

Letty ten Harkel, Robert van Dierendonck, Pieterjan Deckers, Esther Jansma, Petra Doeve, Raphaël Panhuysen, Michael Dee & Petrus Le Roux

This paper presents new results of an on-going research project focusing on the early medieval human remains from Domburg-Oostkapelle. Domburg is a small coastal town on the former island of Walcheren (Dutch province of Zeeland). The name Domburg ('the dune fortress') refers to a ringfort that was constructed here in the later 9th century AD. This ringfort was located strategically, in the dune edge near the mouth of the river Scheldt, which connected the North Sea with the prosperous Flanders region. Previously, probably between the later 7th and early 9th centuries, an emporium (commonly known as Walichrum) was situated north-west of the ringfort site towards Oostkapelle; its location will be visited during the Sachsensymposion excursion on 19 September.
Walichrum is now largely destroyed by the sea, but since the 17th century its remains have come to light periodically after heavy storms. Local antiquarians identified several associated cemeteries. The last of these came to light in the 1920s, when two partial skeletons – still inside the remains of their oak coffins – were exposed on the beach and subsequently excavated. During rescue and developer-funded excavations in the present-day town of Domburg – the ringfort site – three additional skeletons have since been discovered. This skeletal assemblage, albeit small, holds invaluable information about the chronology and significance of the emporium and the ringfort. However, it has never been comprehensively studied and/or published.
In 2015, a collaborative research project was therefore set up, combining different analytical techniques to shed light on the surviving skeletal material. Who were these people? How well connected were Walichrum and Domburg within early medieval long-distance networks? What was the relative chronology of the different burial foci? This paper will present new results from a comprehensive programme of radiocarbon dating, stable isotope analysis and dendrochronological research, placed within the wider context of the settlement archaeology of early medieval Walcheren.

Less is more: Early medieval cemeteries in the East of the Netherlands.

Henk van der Velde

Until recently from the Pleistocene sandy landscape of the East of the Netherlands almost no cemeteries were known dating in the Merovingian period. Although the number is still small, some progression have been made due to contract based excavations in the last decade. In this contribution the evidence for burials in the East of the Netherlands will be presented. When we look into more detail some interesting observations can be made. From the scarce evidence we may conclude that the cemeteries are of a small size and have been used for a short time period. Although the number of burials is small, several can be attributed to elites and are probably best described as founder graves. The location may have been well chosen and in combination with the founders graves one may conclude that after the break down of the Late Roman settlement system new (local) groups expressed their identity by means of both burial custom and choice of location in the cultural landscape.

POSTERS

Bracteate and Brooch from Høvlsbakke, North Zealand.

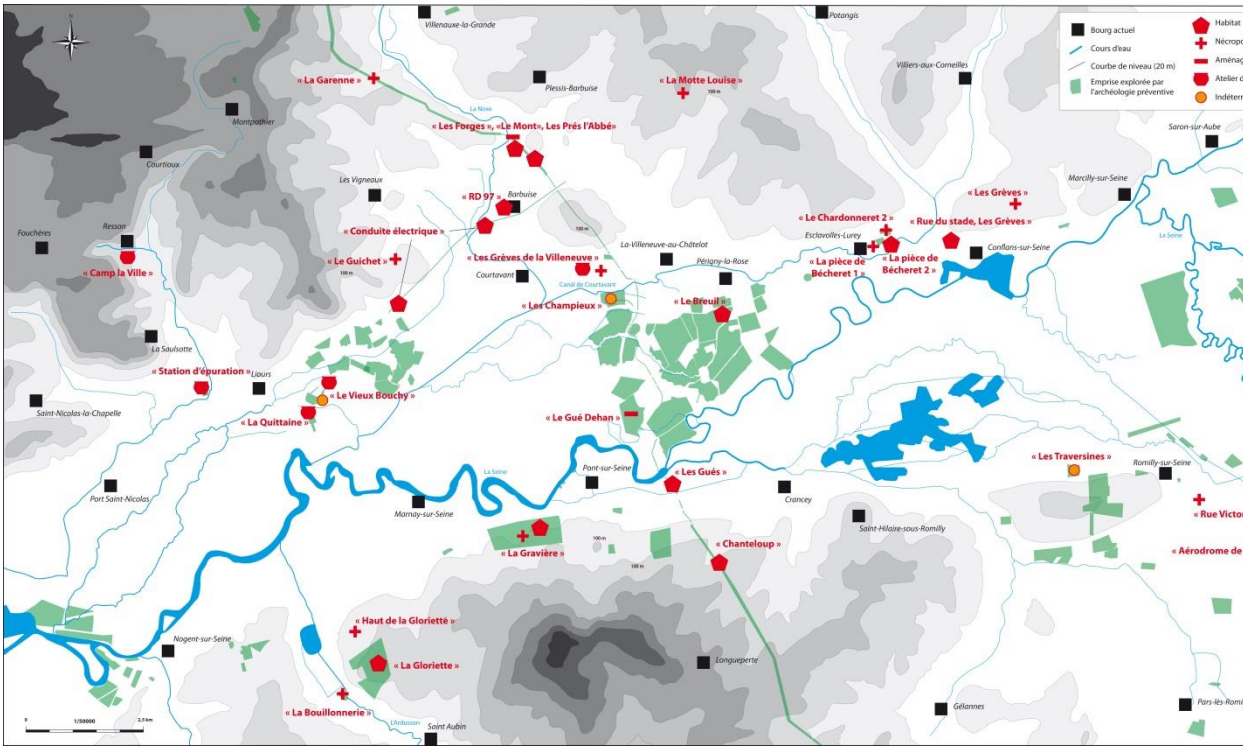
Morten Axboe

Autumn 2014 two metal detectorists found a gold bracteate and fragments of a square-headed relief brooch at Høvlsbakke in North Zealand. 2015 a further brooch fragment was found during an excavation undertaken by Museum Nordsjælland. The silver-gilt brooch has Style I ornament and is closely related to a brooch found 1849 at Hove Mølle / Vedstrup, 28 km from Høvlsbakke. It also has linear ornament on the reverse, partly covered by a repair patch. The gold bracteate is of type C and appears to be die-identical with IK 625 from Uppåkra on the other side of Øresund.

Caractères de l'occupation du sol au Haut Moyen Âge en moyenne vallée de la Seine : l'exemple du Nogentais (Aube, France).

Vincent Marchaisseau & Antoine Guicheteau

Les opérations archéologiques réalisées dans le Nogentais sur une surface de plus de 1500 ha ont mis au jour des dizaines de sites du haut Moyen Âge, tant funéraires que domestiques ou artisanaux, essentiellement localisés aux marges de la plaine alluviale de la Seine. Le projet de poster vise à restituer auprès de la communauté scientifique les principaux résultats de 25 ans de recherche.



Hydrology and the mortuary topography of early medieval southern England.

Kate Mees

Watercourses were of fundamental practical, territorial and conceptual importance to earlier Anglo-Saxon communities. River valleys provided key resource bases and formed natural communication corridors, in which fording places and crossings acted as nodal points in the landscape, facilitating the coalescence of discrete polities. The research presented in this poster uses the Anglo-Saxon kingdom of Wessex to explore how social identities and nascent territories were forged and consolidated through the funerary manipulation of the inherited environment. At the core of the study is a comprehensive re-evaluation of the landscape context of the full corpus of 5th to 9th-century cemeteries and burial sites in this region, combined with detailed micro-studies of funerary locales to explore how a variety of prehistoric and Roman features and natural topographic elements were consciously appropriated. Spatial analysis, alongside scrutiny of archaeological, documentary and place-name evidence, enables the burial sites to be contextualised within the inhabited landscape.
The correlation between funerary activity and waterways is particularly striking in the historic county of Hampshire, where 86 per cent of all known earlier Anglo-Saxon burial sites are located within 1km of a floodplain. Indeed, both cemeteries and settlements demonstrate a strongly riverine pattern of distribution. Closer examination of the spatial dynamics of this activity reveals a number of possible pairings, in which settlements are consistently situated closer to the rivers and at lower altitudes than the burial sites. This patterning is explored and possible explanations are postulated, relating to display and visual impact; travel and lines of movement; and the demarcation and reinforcement of rights to land and resources.

Emporia crafts and urban origins in early medieval Europe.

Michael Neiß

In early medieval Europe, emporia were located in favourable harbour sites along important maritime routes, as convenient locations for merchants and seafarers. Their attraction to craftspeople is less obvious. Why would specialized artisans gather to practice their skills in confined communities in maritime enclaves, sometimes literally settling at the waterfront of small harbour towns? Elsewhere in early medieval Europe elaborate industries were organised as cottage industries through redistributive or commercial networks in non-urban settings such as manorial estates, monasteries or ‘commodity villages’. The emporia could offer privileged access to imported raw materials and to consumers through sea trade. However, craftspeople and their families also required bulk resources such as fuel and provisions. These demands might have been better served by operating from a workshop in a hinterland village, while rare imported materials and finished products could have been exchanged with merchants in emporia.
My poster argues that collaborative crafts had an imperative significance for the emergence of urban environments in early medieval emporia in Northern Europe. This is demonstrated in a re-evaluation of a copper alloy metal workshop from the eighth century excavated in Ribe, Denmark. 3D laser scans were used to classify previously unidentified mould fragments and to reassemble lost casts, which led to new identifications and some unforeseen associations. Our results show that the workshop produced a wide range of items that

demanded a range of specialized materials, and thus presumably the skills and expertise of a group of craftsmen. This need for collaboration between specialized artisans was a vital reason why permanent communities of an urban character emerged in ports with privileged access to imported materials. This offers the basis of a revised model for the emergence of urbanism in the North Sea region.

Late Merovingian Period mould fragments from Ribe, Denmark. Comparison based on 3D laser scannings.

Sandby Borg.
Helena Victor

Antwerp, from early medieval trading centre to Ottonian burg through Viking domination
Tim Bellens, Anne Schryvers, Dries Tys

Interdisciplinary research and archaeological excavations reveal insight into the birth and growth of Antwerp from an early medieval trading centre to an Ottonian fortress. Excavations reveal an early medieval trading centre, constructed on an abandoned Gaul-Roman cemetery and protected by a semi-circular or D-shaped earthen rampart. Having the character of a portus, the resemblance to Birka and Haithabu is striking. During the 10th century Antwerp becomes a marca, like Ename and Valenciennes. By the end of the Ottonian dynasty, the enclosed trading settlement has evolved into a centre of official power with a stone wall, a Saint Walburga church and official functions.

Nijmegen, Lentse Veld
Joep Hendriks

FIELD TRIP – EXCURSION

Monday 19th September 2016 – Montag, den 19. September 216

08:45 Meeting at the Felix Pakhuis, Oude Leeuwenrui 29 (main entrance)
Treffpunkt an das Felix Pakhuis, Oude Leeuwenrui 29 (Haupteingang)

09:00 Departure to Oost-Souburg by Rilland hollestelle and Baarsdorp motte, castle and cemetery

10:00 Oost-Souburg: visit of the ringfort. No toilets afvailable.

11:00 Departure to Middelburg via Krommenhoeke motte, Hoogelande reduced village and church, Koudekerke-Meinersweg motte and Koudekerke-Perduinsweg motte.

11:30 Middelburg: Coffee and hands-on session of early medieval finds in the Zeeland Archaeological Depot of the Zeeland Foundation for Cultural Heritage
Free lunch

- 11:30h Coach 1 (Robert van Dierendonck) coffee/tea break at SCEZ and hands-on session with early medieval finds from Zeeland. Coach 2 (Pieterjan Deckers) free lunch in Middelburg city centre.
- 12:40h Coach 2 (Pieterjan Deckers) coffee/tea at SCEZ and hands-on session with early medieval finds from Zeeland. Coach 1 (Robert van Dierendonck) free lunch in Middelburg city centre.

14:00 Departure to Westhove (coaches available for boarding from 13:50h)

14:30 Oostkapelle-Westhove: visit Oostkapelle-Westhove beach and Terra Maris Zeeland landscape museum. Walk by Westhove castle. Toilets available at Terra Maris museum.

- 14.30h Coach 2 (Pieterjan Deckers) walk to Westhove beach, site of early medieval Walichrum portus. Coach 1 (Robert van Dierendonck) coffee/tea in museum cafe and visit museum and museum garden.
- 15.20h Coach 1 (Robert van Dierendonck) walk to Westhove beach, site of early medieval Walichrum portus.Coach 2 (Pieterjan Deckers) coffee/tea in museum cafe and visit museum and museum garden.

16:20 Coaches available for boarding

16:30 Departure to Burgh by early medieval sites Serooskerke-Gapinges Watergang (windmill) and Serooskerke-Kleine Putweg, Veerse Gatdam sea barrier, Oosterschelde storm surge barrier ans by Brugh-Kraaienstein castle.

17:00 Burgh: visit of the ringfort and Burghse Schoole Museum. 1 toilet available at museum.

- 17h: Coach 1 (Robert van Dierendonck) visit museum. Coach 2 (Pieterjan Deckers) walk on ringfort site.
- 17.20h: Coach 2 (Pieterjan Deckers) visit museum. Coach 1 (Robert van Dierendonck walk on ringfort site.

17:40 Boarding coaches

17:45 Departure to Antwerp by Koudekerke drowned settlement (Squat Tower), Zierikzee-Nobel gate, drive on Zeeland bridge and Zandkreekdam sea barrier, drive by Rilland hollestelle and Oosterweel village.

19:15 Arrival in Antwerp, Felix Pakhuis.

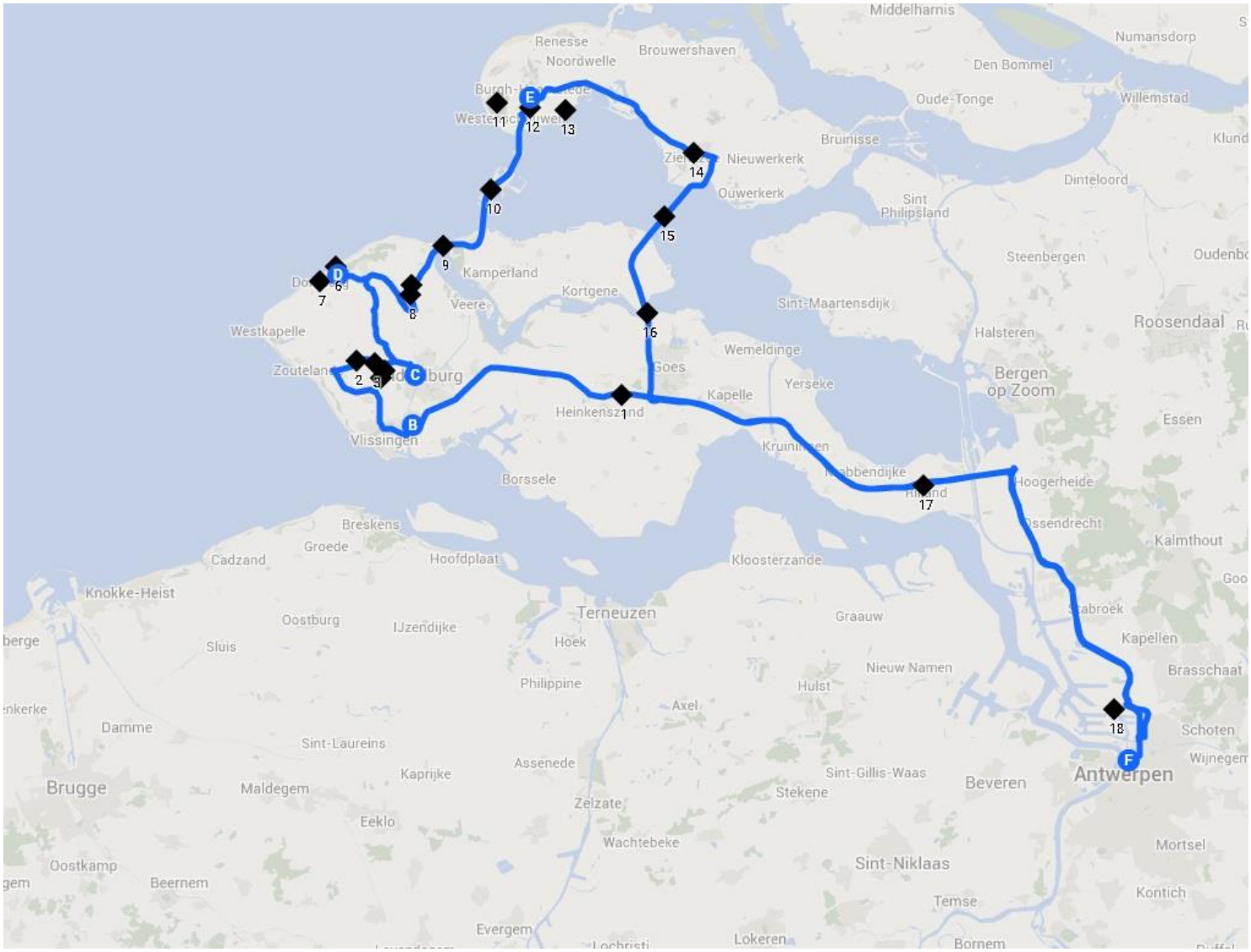


Fig. 1A Excursion route of the Sachsensymposium 2016 Zeeland tour. Overview

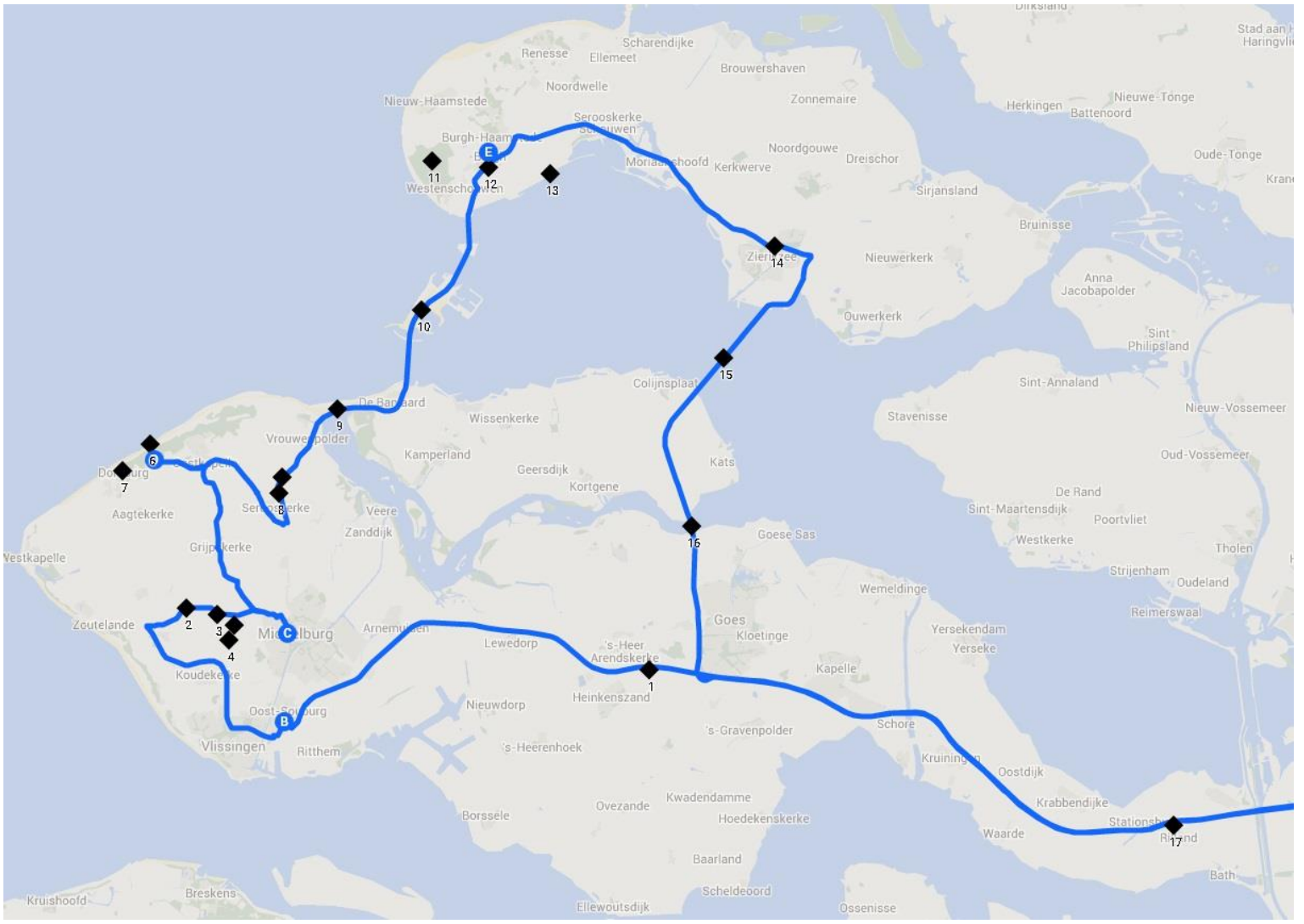


Fig. 1B Excursion route of the Sachsensymposium 2016 Zeeland tour. Detailed map.

<u>Excursion stops:</u> Felix Pakhuis Antwerp (A), Oost-Souburg ringfort (B), SCEZ Middelburg (C), Terra Maris and Westhove Castle (D), Burgh ringfort (E), Felix Pakhuis Antwerp (F)
<u>Other points of interest discussed in the excursion guide:</u> Baarsdorp (1), Krommenhoeke (2), Hoogelande (3), Koudekerke Meinersweg (4) and Perduinsweg (5), Walichrum/Westhove beach (6), Domburg ringfort (7), Serooskerke sites (8), Veerse Gatdam (9), Oosterschelde storm surge barrier (10), Westenschouwen beach and dune area (11), Kasteel Kraaijenstein (12), Koudekerke Squat Tower (13), Zierikzee Nobel gate (14), Zeelandbrug (15), Zandkreekdam (16), Rilland-Veldzicht hollestelle (17), Oosterweel (18)

Large steps through Zeeland landscape and archaeology up to the early medieval period

Water is the most influential element in the dynamic formation of the Zeeland landscape and its occupation. After completely being a seascape in the penultimate interglacial Eemian period, the last ice age saw the first hunter-gatherers in the area that was connected to

England by a dry North Sea. It is on one of the Zeeland Ridges, west of Schouwen-Duiveland, that in 2009 the first and up till now only Dutch middle Paleolithic Neanderthal bone, a skull part of a young male (100,000 – 40,000 BP) was dredged up.
In the Pleistocene the area was covered with aeolian coversands and southwest-northeast oriented coversand ridges were formed. These ridges closed off the Flemish Scheldt system valley forcing it to a northern course at the eastern edge of the Zeeland area. The Zeeland coversand ridges, nowadays cropping out along the Dutch-Belgian border, were used by late Paleolithic and Mesolithic hunter-gatherer societies from circa 11,800 BP, as found at Axel and in the Verdronken Land van Saeftinghe. Due to the rapidly changing climate, by then the landscape was mostly covered by forests, and eventually deciduous forests.
From 6000 BC on sea level rise and the accompanying rise of the groundwater level created the first peat marshes. The subsequent sea level rise caused the development of the Zeeland tidal basin with tidal channels and flats, at its maximum around 4000 BC, rendering the west of Zeeland a marine area and east Zeeland brackish. The south Zeeland coversand ridge area however remained free from marine influence and continued to be exploited by hunter-gatherers until the late Mesolithic. A remarkable find in this respect is the only known Zeeland cremation grave at Hulst dated at 5890-5720 BC.
Circa 5000 BC, the river Scheldt changed its northern course along tidal channels westwards to a course in today's Oosterschelde. By 3700 BC the Zeeland tidal basin started silting up with meters of clay and sand deposits and some 200 years later a series of westwards growing beach barriers with low dunes sealed off all of the western coastline, leaving only the Scheldt river mouth open. Middle and late Neolithic finds from a.o. coversand area Westdorpe (circa 3200, 2700 and 2200 BC) and beach barrier area Haamstede (circa 3000 BC) show that hunter-gatherer strategies still were an important part of the neolithization process in this area. At Haamstede the oldest Zeeland house plans (9 x 3.5 m), belonging to the Vlaardingen culture, were excavated.

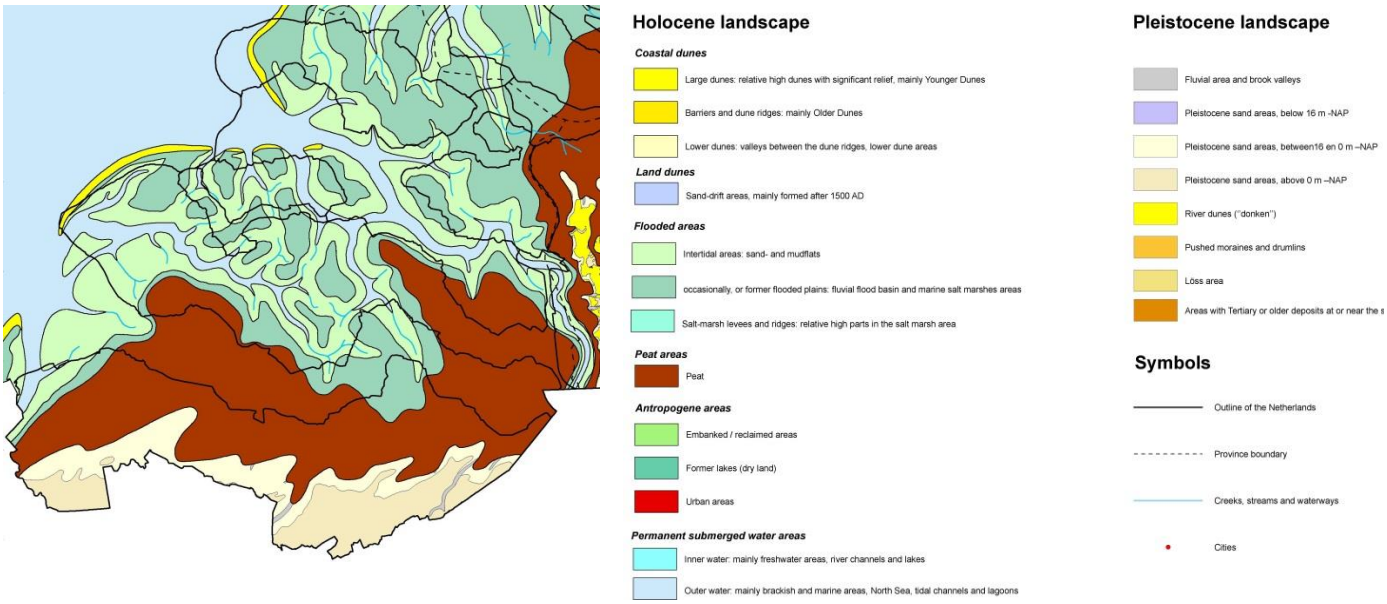


Fig. 2 Palaeogeographical reconstruction map of Zeeland, 2750 BC. After Vos 2015.

Stagnation of freshwater flow induced slow but large scale peat growth in the whole Zeeland area behind the beach barriers from around 3000 BC. At some places this peat kept on growing until after the Roman period. Bronze Age finds (2000-800 BC) are few, as are Early

Iron Age finds (800-500 BC), and are concentrated mainly in the Schouwen-Duiveland beach barrier area.
At least in the Walcheren area breakthroughs occurred in the beach barrier coast line, resulting in both draining peat areas and generating salt marshes, creating favourable occupation conditions. Middle Iron Age (500-200 BC) finds attest further occupation in the Schouwen-Duiveland beach barrier area, but from around 400 BC there seems to be ongoing occupation in the north Walcheren peat and salt marsh area. On the N57 road track near Serooskerke, a late Middle Iron Age farm house (16 x 5.5 m) was excavated and in its vicinity the inhumation burial of a female, possibly the founding mother of the Serooskerke Iron Age occupation, was found. All other north Walcheren Middle and Late Iron Age finds and excavations point at a settlement system consisting of dispersed farms adapting to the ever changing environment. The main subsistence came from cattle and sheep; barley and flax were the only cultivated crops that sparsely could be grown. A large ritual deposition pit found in the area between Grijpskerke and Serooskerke, including circa 275 pots, a male human pelvis and a complete male dog skeleton, evidences social interaction of this north Walcheren local group around BC 185.
Although two Late Iron Age farmsteads (Serooskerke, Haamstede) can be dated to the period of Caesar's Gallic Wars in the middle of the first century BC, the earliest Roman pottery imports were found on two farm sites at Serooskerke and Colijnsplaat (Noord-Beveland), dating to circa 25 AD. Both in the beach barrier area of Schouwen-Duiveland and in the peat area Roman rural occupation is known from various locations until the middle of the 2nd century AD.

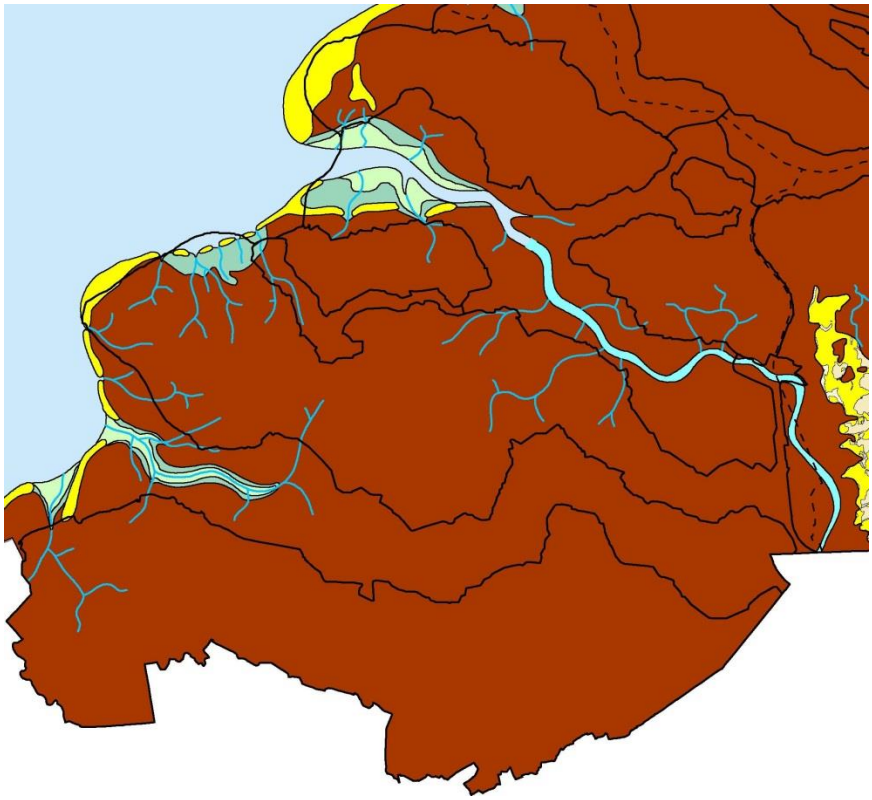


Fig. 3 Palaeogeographical reconstruction map of Zeeland, 100 AD. Legend see Fig. 2. After Vos 2015

After that no rural house plans are known but many finds attest an area of economic importance, producing salt, fish sauce, shellfish products, lime and probably wool. Very likely due to a rising water table the use of the peat area shifted from habitation to (seasonal) extraction, carried out from the inhabited higher grounds of the beach barrier area, river dunes and southern coversand ridges. Around AD 200, two dykes were constructed near Serooskerke (Walcheren) to protect meadowlands from a 22 m wide marine channel; in the last period dyke a small turf mound was built for processing 5500 kg mussels in two seasons. Colijnsplaat and Domburg were Roman ports on the Scheldt gateway, out of which the products were shipped to Gallia and Britain, judging from the temples and votive altars for the indigenous, adopted Roman, goddess Nehalennia. The economic importance is shown too by the coastal defence forts of Aardenburg and Westenschouwen-Roompot and the possible Oostkapelle-Oranjezon naval base, north of Domburg. Aardenburg fort, the only one partly excavated since both others are submerged, was built circa AD 170 and remained in use until around AD 290.
Except for the beach barrier and dune area the Zeeland hinterland slowly submerged and in the late 3rd century AD again became an area of sand and mud flats and tidal channels. A recent site west of Grijpskerke shows that probably scanty extraction still took place in the middle of the 4th century AD.

Literature:
Jongepier 2012a (on landscape)
Jongepier 2012b (prehistory)
Van Dierendonck 2012a (Roman period)
Van Dierendonck &Vos 2013 (Aardenburg Roman fort)
Vos 2015 (on landscape)

Early medieval Zeeland, ca. 400-1100

Like other coastal wetlands in north-western Europe, Zeeland was largely abandoned in the late 3rd century as a result of economic decline and the renewed intrusion of the sea. Gradually, the peatlands were covered by marine clay, deposited by numerous large and small tidal channels that crossed the area and came to form the delta-like mouth of the river Scheldt. The landscape bordering these channels turned into tidal flats and salt marshes that, with time, silted up to supra-tidal levels and harboured a rich diversity of fauna and salt-resistant flora.
The only area to remain inhabited was the coastal barrier, extending much further into the sea than today, and featuring evidence for continuous activity from the Roman to the Merovingian period (see the section on *Walichrum*, below). The 7th-century settlement at Serooskerke marks the onset of the resettlement process. Surface distributions of pottery indicate that the former island of Walcheren was largely occupied by the 9th century, with settlements typically located on the well-draining sandy channel ridges that, with time came to stand out in the landscape due to the subsidence of the surrounding peat and clay sediments. Occupation behind the dunes of Schouwen and on Zuid-Beveland, as well as to the south of the Western Scheldt (then still just a minor branch of the estuary) followed

closely, whereas islands further away from the coastline were settled only from the 11th century onwards.

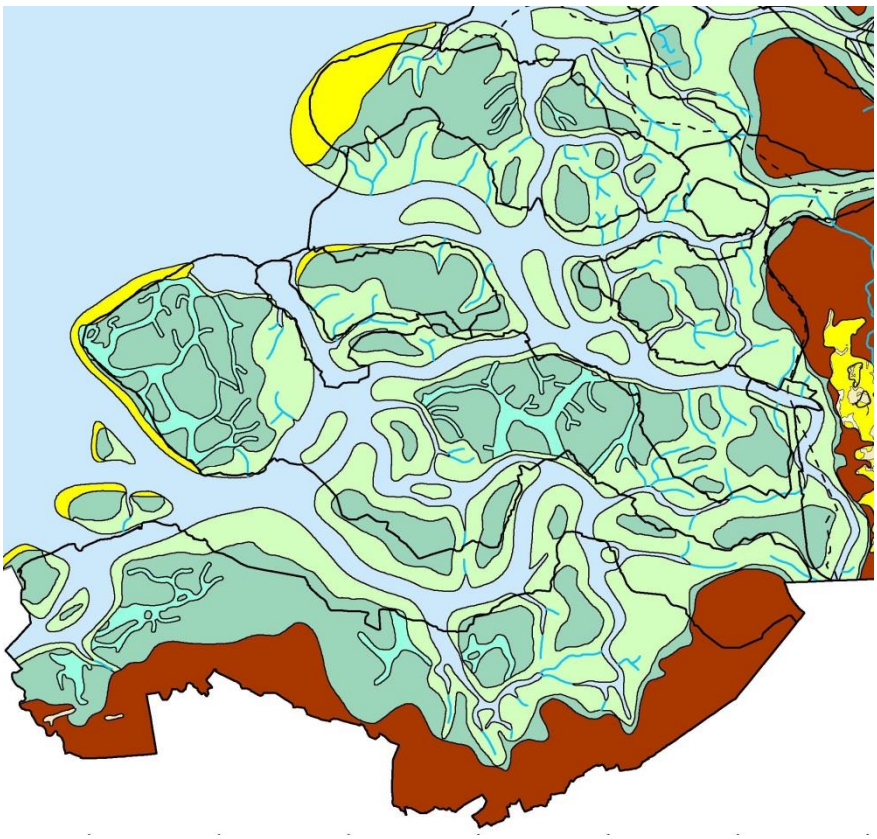


Fig. 4 Palaeogeographical reconstruction map of Zeeland, 800 AD. Legend see Fig. 2. After Vos 2015.

Certainly by the mid- to late 8th century, Zeeland had attracted the attention of the Frankish elite. The salt marshes offered rich grazing for sheep, and this may well have been one of the production regions for the famous woollen 'Frisian coats'. In the 8th and 9th century, several of the major abbeys of the Carolingian empire (mainly St. Bavo of Ghent, but also Lorsch, Nivelles and Echternach) held lands in the area, and in some cases their vassals are recorded as delivering wool. Another product of the area was salt: a local magnate donated seventeen salterns on Schouwen to the abbey of Lorsch in AD 776.

Most likely, much of this ecclesiastical property stemmed from royal donations. Most notably, the royal estate of *Walichrum* controlled not only one of the major Frankish trading centres, but also a considerable expanse of sheep-grazing land on Walcheren. Following a Viking attack in 837, Walcheren was donated as a fief to the Viking warlord Harald in 841. This is the start of a historical hiatus in Zeeland that, with few exceptions, lasts for over a century. It is in this period that the ringforts were built – evidence, at the very least, of a period of social and political instability. In 972, the royal estate and island of Walcheren appear back on the historical radar, as part of the dowry of the German emperor Otto II to his wife, the Byzantine princess Theophanu. By this time, the new town of Middelburg had emerged as the religious, administrative and commercial capital of the province – as it has remained until today.

Also from ca. AD 1000, the landscape reaches a new, formative period in its history with the onset of embankment and drainage that created the present-day polder landscape. This was not an easy or straightforward process: throughout the later Middle Ages and indeed, long after, the threat of flooding was very real, and newly gained land was just as easily lost again to the waves.

Literature:
Coupland 1998
Dekker 1971, 1995
Henderikx 1993, 1995, 2012
Vos 2015

Motte (and bailey) castles

Motte and bailey castles constitute the oldest private defence structures in Zeeland history and were built by regional and local nobility. Originally serving a defensive purpose the mottes, in Zeeland called *werven* or *bergjes*, soon were also constructed as markers of the noble status. Both from historical and archaeological sources over 200 of these structures are known, especially in the Zeeland area north of the Westerschelde. In this quantity the aforementioned Zeeland area stands out compared to the area south of the Westerschelde, which for most of the medieval period was part of the County of Flanders, and the Dutch areas north of Zeeland, under the control of the Count of Holland.
Two causes underlie the absolutely and relatively highest density of mottes in the Low Countries and beyond. First, the ongoing contest for authority of the counts of Flanders and Holland in this isolated and almost inaccessible region gave the numerous local elite the opportunity to gain themselves a high level of autonomy in the 12th and 13th centuries AD. Second, there was the Zeeland nobility law of inheritance, whereby all possessions were divided among all children, male and female, and the noble rights were equally divided up among all sons. This way each son became a nobleman in his own right, domain and shire, the status of which among others was marked by building a motte next to his bailey. As a consequence even smaller villages have two or more motte and bailey castles in their areas, sometimes at spitting distance from each other. Nowadays only 40 mottes have been preserved and are listed monuments.

Motte research in Zeeland started already in 1834: the Luyksberg motte in Serooskerke (Walcheren) actually was Zeeland's first excavation ever to take place. In recent years parts of four mottes, one of which a listed monument, were object of archaeological research, but most of the other 35 excavations were limited to trial trenches. Despite the early interest and the quantity of researched sites serious gaps of knowledge still exist. Although it is assumed e.g. that in general these complexes consisted of a motte and a bailey, only 11 sites yielded traces of a bailey and 5 have no bailey at all. Most baileys however seem to form part of later developments of the complexes. So it is possible that mottes were erected not immediately adjacent to a bailey or even without a bailey existing. Moreover no traces have been found of the supposed (mostly wooden) defensive towers built on top of the mottes. And while mottes commonly are surrounded by a moat, 12 sites, 3 of which definitely, show no such feature.

Fig. 5 Reconstruction of a Zeeland motte castle in Oostkapelle Terra Maris Museum. Beeldbank SCEZ.

Archaeological research did reveal that two types of motte building can be distinguished: motte mounds built on the original topsoil, sometimes on natural levees, and a great majority of mottes built over already existing low dwelling mounds. These dwelling mounds are often of early medieval date, like the second half of the 9th century mound of Nieuwerkerk (municipality of Schouwen-Duiveland) and the at least 10th century mound of Scherpenisse-Westkerke (municipality of Tholen). Whereas the oldest motte and bailey complex in the Netherlands, the Leyden Burcht, dates from around AD 1000, the first phase of Westkerke is the earliest Zeeland motte known up to now, radiocarbon dated at around AD 1025. Most Zeeland mottes however can be placed in the 12th and 13th centuries AD. Excavation results also show that moat widths range from 15 to 50 metres and depths vary from 1.4 to 3 metres.

Some of the motte sites show multiple stages in their earthen development, others develop even to the earliest forms of real elite castles, like the Borssele 'Berg van Troje' motte. The fourth phase of this site contains a brick-walled bailey and a brick-built keep on top of the motte, the base of which was reinforced with a heavy brick wall.

Between 1990 and 2006, visible remains of the still existing mottes were precisely measured for conservation purposes. Their diameter at the base varies from 25 to 46 metres; diameters of the top platforms range from 1 to 20 metres. The Wemeldinge (municipality of Kapelle) motte is the highest preserved at almost 11 m, while some others are ploughed off to just over 1 metre.

Literature:
Besteman 1981
Van Heeringen *et al.* 2007
Van Dierendonck 2009
Van Dierendonck 2012b

Baarsdorp mottes, cemetery and hamlet (municipality of Borsele)

Southwest of the city of Goes, on the southern side of the A58 motorway, the remains of two lower motte sites and the walled cemetery of Baarsdorp hamlet are visible. The whole site is a listed monument; no archaeological research was carried out. The south-eastern elevation (height 2.6 m, Ø base 41 m, Ø platform 11 m) is probably the remainder of the older motte site, while the northwest one (height 3.4 m, Ø base 59 m, Ø platform 15 m) was the platform for the successive castle Huis te Baarsdorp, which is said to have been partly ruined around AD1300. The influential Jacoba Duchess of Bavaria (AD 1401-1436) stayed here may times, while living in her Ostende castle in the city of Goes. The Baarsdorp castle eventually was devastated at the end of the 16th century. Fieldwalking yielded building debris on this northwest platform.

Fig. 6 Aerial view of the Baarsdorp motte, castle and cemetery complex. After Van Heeringen et al. 2007, Aerophote Eelde.

South of this motte complex lies the walled cemetery of Baarsdorp hamlet. The cemetery grounds also contain the remains of Baarsdorp church, originally the castle chapel, founded between AD 1232 and 1234 and demolished in 1880.

Literature:
Van Heeringen *et al.* 2007

Zeeland ringforts

The ringforts are possibly the most striking element of the early medieval archaeology of Zeeland. Five such forts are known from the area, all characterized by a circular wall and ditch and, usually, an internal area organized by two roads, set at right angles and crossing in the middle.

The forts, often still clearly recognizable in present-day town topographies, have attracted the attention of historians and archaeologists from the first half of the 20th century onwards. In several forts, excavations were conducted to verify the exact position of the wall and ditch. From the historical angle, a standard narrative was created that considered the ringforts of Zeeland and three seemingly very similar counterparts from the Belgian and northern French coastal plain as part of a coordinated coastal defence erected against the Vikings. A single reference, dating to AD 891, to *castellae recens factae* (recently constructed fortifications) was invoked as a chronological terminus for this seemingly coherent site category.

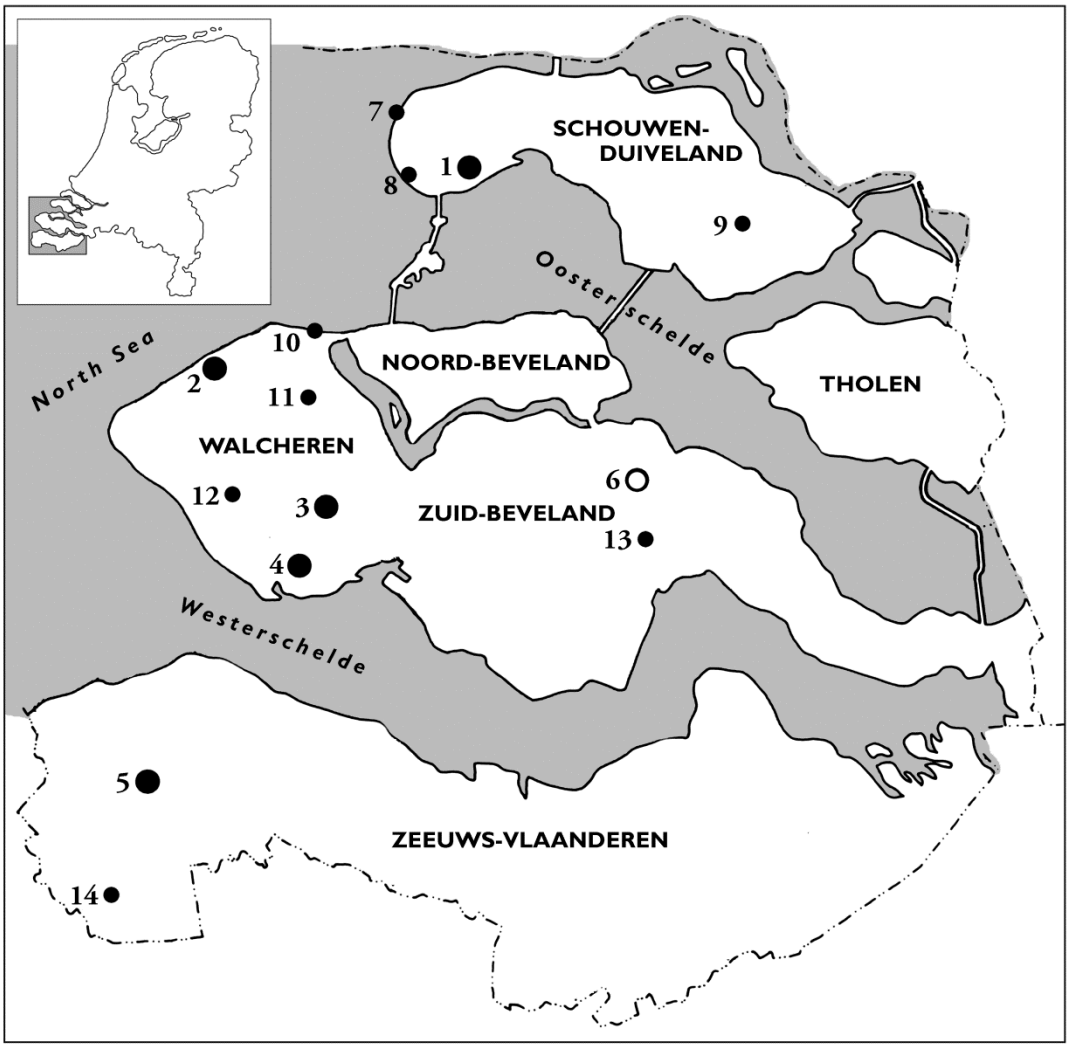


Fig. 7 Topography of Zeeland ringforts. 1 Burgh; 2 Domburg; 3 Middelburg; 4 Oost-Souburg; 5 Oostburg. After Van Dierendonck 2009.

Extensive excavations at one fort, Oost-Souburg, pointed to an occupation history consisting of a 'refuge' phase largely devoid of material evidence in the later 9th century, followed by occupation in the 10th century and, finally, less intensive, agricultural usage and abandonment in the 11th and 12th century (see below). This sequence was conveniently extrapolated to other forts, as a function as temporary refuge only serving in time of (Viking) threats fitted the traditional view of the coastal plain as a marginal landscape with a largely dispersed and seasonal occupation.

Recent fieldwork at Domburg and Middelburg (see below) as well as reappraisals of the existing evidence have raised questions with regards to this unified 'standard narrative', instead drawing attention to the unique biography of each site. Thus, the often ambiguous and imprecise archaeological chronologies of these forts point do not provide support for the historicist interpretation, instead implying construction dates that collectively range from the mid-9th to the mid-10th century. Furthermore, the recent excavation results from Domburg and Middelburg necessitate a shift of focus towards the function of these sites as substantial nucleated settlements. No evidence was found for a refuge phase; on the contrary, the distinctly non-rural settlement within these forts may even have been in existence some time before the construction of the walls.

In addition, the forts vary greatly in size (from 144 m at Oost-Souburg to 265 m at Domburg) and differ in the details of their wall construction and, sometimes, internal layout.

Hence, the traditional view of these forts as concerted defensive effort of a vulnerable coastline in the 880s is no longer tenable. Instead, it is likely that a number of competing actors were responsible for their construction during the troubled period following the decline and fragmentation of the Carolingian empire: the abbeys and their estate administrators, local magnates taking advantage of the power vacuum, and south of the Western Scheldt the most successful example of the latter group: the Count of Flanders.

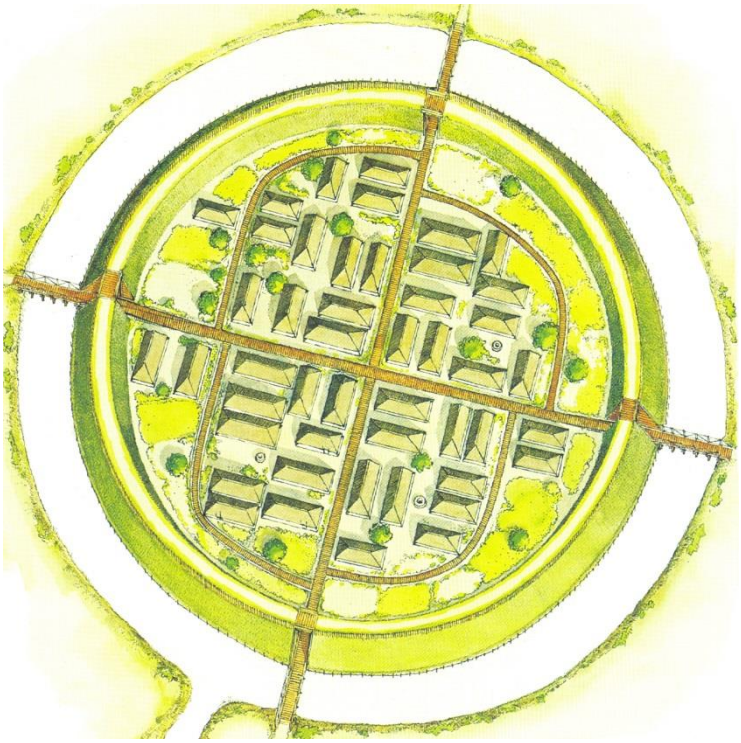


Fig. 8 Reconstruction drawing of the Oost-Souburg ringfort and first period interior occupation. After Bloemers et al*. 1981.*

Literature:
Van Dierendonck 2009
Van Heeringen 1995a
Tys, Deckers & Wouters forthcoming2016
Ten Harkel 2013

Oost-Souburg ringfort

The original name of this fort was Souburg, meaning the South burg. In AD 1250 an eastern part of the original 11th century parish Souburg became the new parish called Oost-Souburg, meaning East Souburg.
After trial trenching in 1939 Oost-Souburg ringfort was subject to a large scale excavation between 1969 and 1971, with some trenches added in 1981 and 1983. Half of the interior including the ramparts have been excavated. Only in 1995 the excavation was published in relation to the reconstruction of the Oost-Souburg ringfort rampart. Based on the excavation results the rampart and west passageway were reconstructed in 1994.

The Oost-Souburg ringfort was constructed on an elevated tidal inversion ridge in a salt marsh area. As a whole Oost-Souburg is the smallest of the Zeeland ringforts with a cross section range of the outer rampart bases of 144 m. The ringfort construction shows two main phases. In the initial phase it is assumed the fort was equipped with at least one passageway in the rampart, on the west side, leading to a bridge across the moat. The width of the first phase rampart, consisting of a core of sandy clay and raised on the ploughed topsoil of the day, is 6 m. Both inner and outer side of the rampart were covered and strengthened by a shell of regularly piled up turfs.
The Oost-Souburg first phase moat is the smallest known of the Zeeland burgs, measuring 15-20 m. The inner moat bank on the northwest side of the fort was consolidated with wooden stakes to prevent erosion. Oost-Souburg yielded remains of two bridges across the moat, at both the western and the southern passageways. The only first phase bridge on the west side was constructed with foundation yokes consisting of two posts and a tie beam giving a width of at least 1.5m. ^{14}C-datings give an *ante quem* dating for the first period of circa AD 890.

It is not known, not even from the recordings of this large scale excavation, whether the second phase implies complete renewal of the ramparts or just local repairs. The latter option seems most probable. The rampart was extended to a width of 10-11 m, while the moat was widened to circa 40 m. The western bridge was extended with a southern row of foundation posts to a width of at least 3m, in accordance with the width of the intersecting perpendicular paths in the interior of the ringfort. The southern bridge was added, probably simultaneously with passageways and bridges on the northern and eastern sides of the fort as well. This bridge, with a width of 1.2 m equal to the passageway through the rampart, is much smaller and only three yokes of each two foundation posts were discovered.
The southern Oost-Souburg entrance, although of later date, shows best the construction. The passage is marked by two rows of postholes, the foundation parts of the construction propping up the rampart body and sod covering. Elongated postholes in the middle of the rows supposedly were part of a locking construction. This passageway is 1.2m wide, while the western entrance measures 3m.

In the last occupation phase of the settlement inside the fort, the bridges have been replaced by dams, of which the features are represented by the remains of horizontally placed timbers extending to the south of the southern bridge.

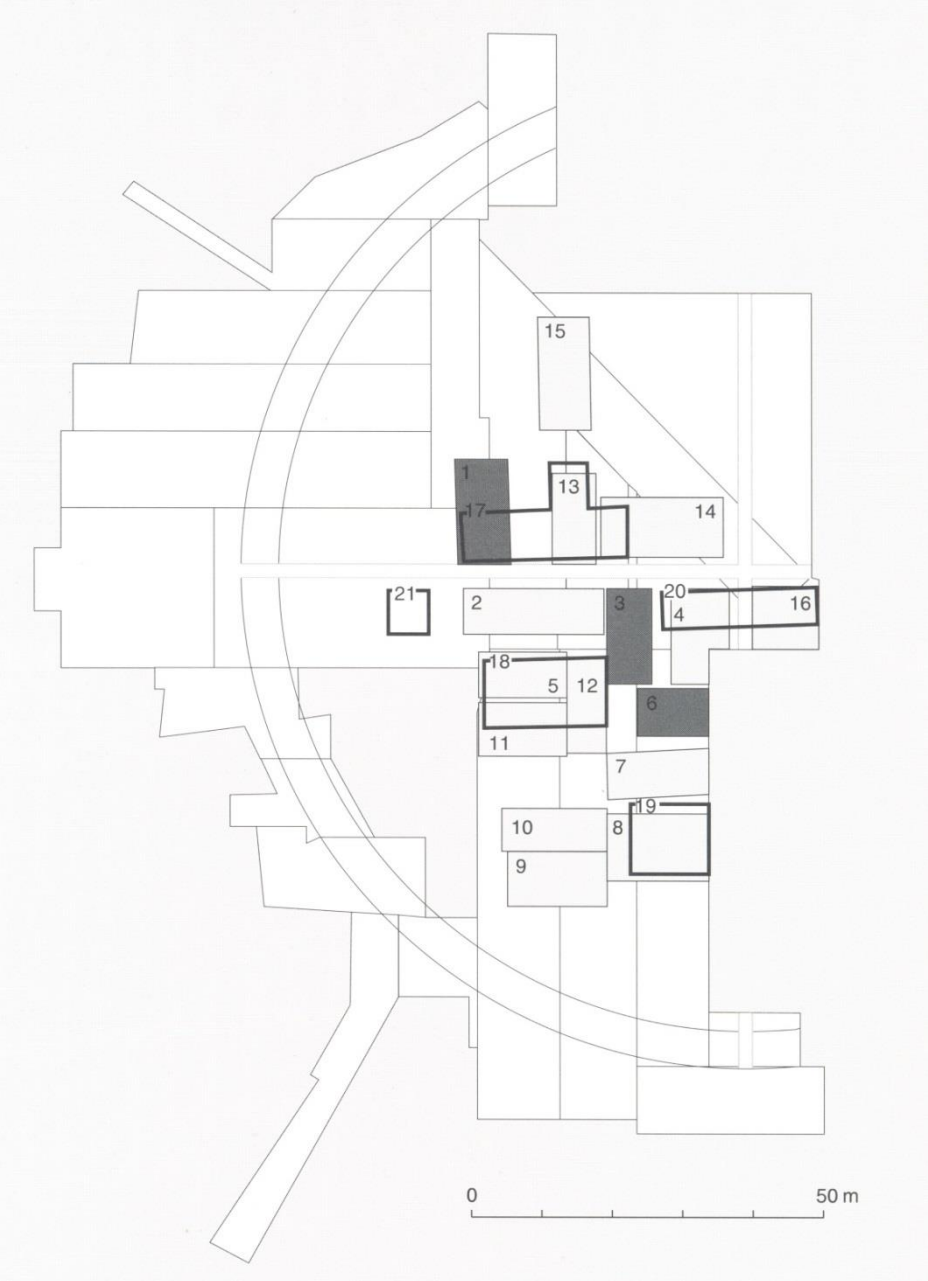


Fig. 9 Simplified schematic plan of Oost-Souburg ringfort with rampart, moat, paths and gates and excavated buildings. 1-16 first period buildings, 17-21 second period buildings. After Van Heeringen 1995b.

Interior occupation

According to post excavation analysis, a time gap between the layout of the defences and interior occupation (starting 900-950 AD) has been argued, but in the light of recent research this may not have been the case. Nonetheless, the internal division of the ringfort by means of two perpendicular paths covered with a pavement of horizontally lain wooden stakes and

connecting opposite passageways seems a younger element in the ringfort interior. To allow occupation inside the fort it proved necessary to raise the ground level above the highest water table. At Oost-Souburg this raising took place house by house, as the buildings were constructed on individual platforms of sandy clay. The house platforms were oriented along the paths. Along the paths ditches and wooden drains carried the rainwater to the moat through the passageways, traces of which were found in the lower level of the southern Oost-Souburg entrance.
In the excavated interior 21 house plans were documented, stemming from two building periods. Analysis of the plans revealed four main house types: types I-III from the first 10th century period, type IV from the overlying second period, assigned to the 11th-12th century. Type I building (circa 14-15 x 7 m) has turf walls supporting the roof little or no internal (roof?)supports, and if so they are no part of the construction scheme. Internal subdivisions, when present, are turf walls as well.

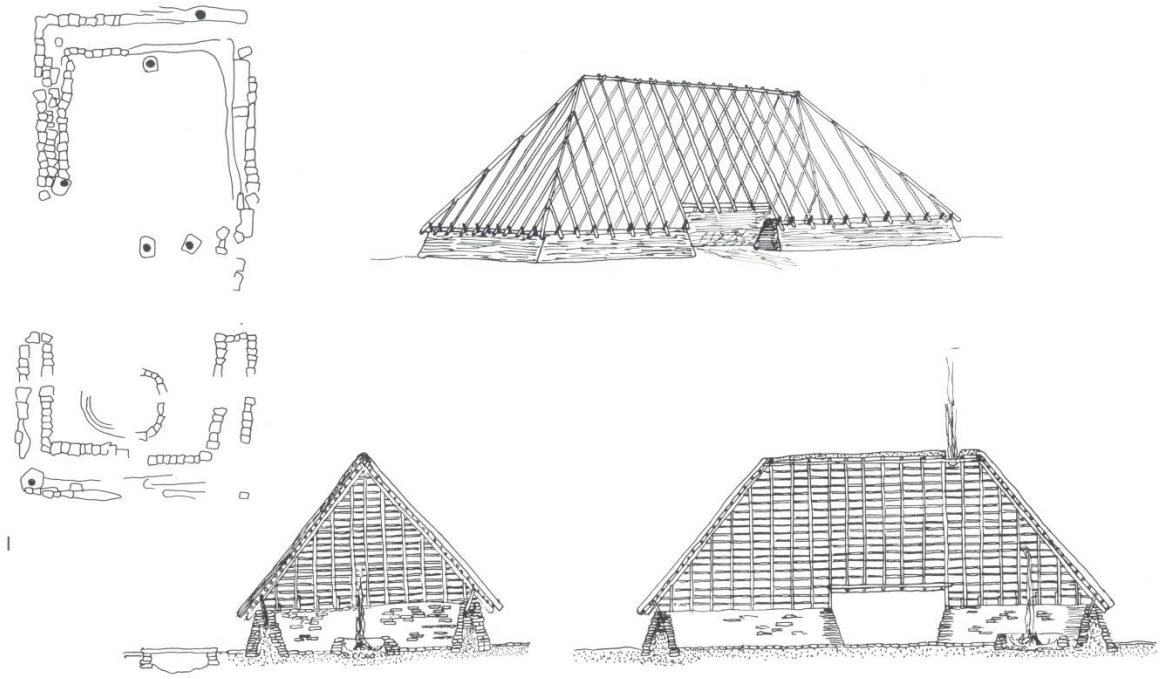


Fig. 10 Oost-Souburg type I building. After Van Heeringen 1995b.

Type II are long (16-20 m x 6.5 m) three-aisled houses with rather small aisles. The roof is thought to be supported by tie-beam trusses, the walls were wattle-and-daub constructed, set in low turf walls. Type IIb also has central posts supporting the ridge-beam.
Type III consists of wider three-aisled houses (circa 15 x 7 m) with larger supports placed in the again wattle-and-daub constructed walls, set in low turf walls. The roof is supposed to be supported by arch braced tie-beam trusses. Type IIIb also has central posts supporting the ridge-beam.

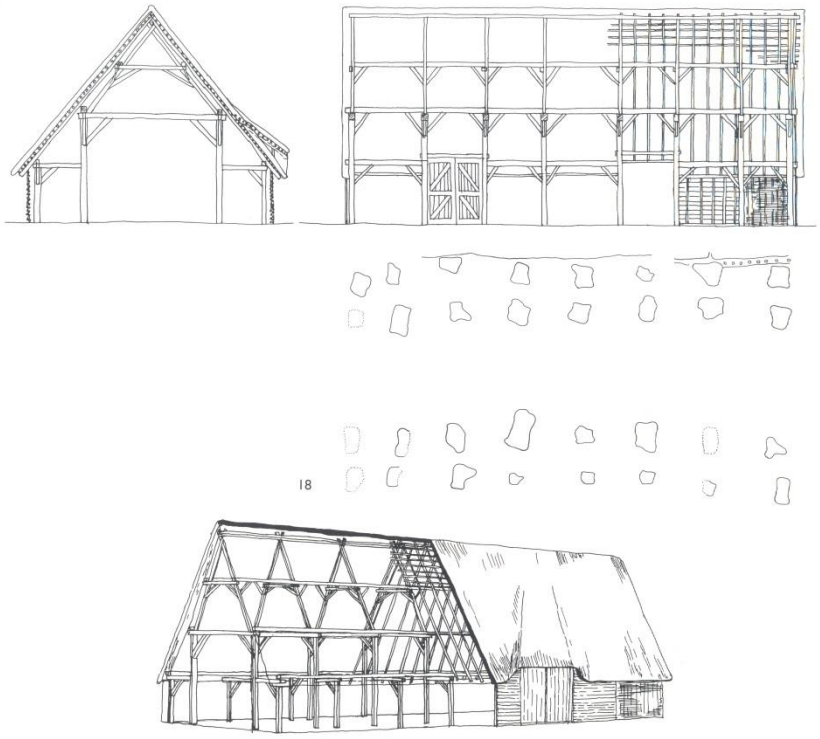


Fig. 11 Oost-Souburg type IV building. After Van Heeringen 1995b.

Type IV consists of single-aisled buildings or three-aisled buildings with a central nave of 6-7 m wide. Again the roof is thought to be tie-beam truss supported. The outer posts of the three-aisled buildings only functioned as supports for supposedly plank walls. Type IVa is the three-aisled version, type IVb the single-aisled one.

Literature:
Van Heeringen 1995a
Van Heeringen 1995b
Van Dierendonck 2009

Krommenhoeke motte

This motte northeast of Biggekerke village, immediately south of the Hoogelandseweg, was raised on top of a dwelling mound (height 5.4 m, Ø base 40 m, Ø platform 7.5 m). Private digging in the immediate vicinity of the motte revealed a shell bottom layered well and finds dating from the first half of the 9th century to the 12th century AD. These are said to be settlement remains, but the motte is thought to be lacking a bailey. Archaeological augering revealed the motte being surrounded by a 2 metres deep moat, the width of which however is not known. The depression on the east side was very likely dug during the Second World War.

The small Krommenhoeke parish is historically first recorded in AD 1318. The church was probably destroyed during the Eighty Years' War (1568-1648). It was never restored and the ruins collapsed in AD 1800. The village, by then a small hamlet, again became part of the mother parish Biggekerke.

Fig. 12 Krommenhoeke motte. Beeldbank SCEZ.

Literature:
Van Heeringen *et al.* 2007

Hoogelande reduced village

Hoogelande villagers got the permission to build a, possibly wooden, parish church in AD 1189 in their already existing settlement. The new parish was a daughter church of the 10th century Middelburg Westmonster (Westminster) church, the oldest Zeeland parish church, and likewise dedicated to St. Martin. In the 15th century the church was replaced by a brick one, which was seriously damaged in the Walcheren fights (AD 1572-1574) during the Eighty Year's War (1568-1648). Since the church was not restored most inhabitants of the village and its immediate surroundings left. The remaining two house hamlet became part of the parish of Grijpskerke.

It is very probable that the church yard and cemetery are situated on an artificial mound, and not, as most Walcheren villages, on a tidal inversion ridge. The Hoogelande circular cemetery mound is surrounded by a ditch, a common feature bordering a village churchyard, just like a brick wall.

During the following centuries, the mound with church ruins was used to herd cattle and harvest afforested wood, while the ruins gradually were pulled down for bricks. The cemetery however kept being used on a small scale and escaped the post-war land consolidation schemes. In 1964 the remaining parts of the 15th century choir were preserved by rebuilding the complete choir, nowadays designated as chapel and mainly used for cultural manifestations.

Koudekerke (Walcheren)-Meinersweg motte

This motte can be seen from a distance along the Meinersweg, south of the Hoogelandseweg (height 7 m, Ø base 46 m, Ø platform 7.8 m). A surrounding moat has been identified from aerial photography. Although there are historical geographical indications for a bailey, recent augering yielded no traces because of massive late medieval peat extraction in the area surrounding the motte. Based on finds the motte can be dated back to the 11th-12th centuries.

Literature:

Van Heeringen *et al.* 2007

Fig. 13 Koudekerke-Perduinsweg (forefront) and Koudekerke-Meinersweg (background) mottes. Beeldbank SCEZ.

Koudekerke (Walcheren)-Perduinsweg motte

East of the Meinersweg motte another motte, along the Perduinsweg, is visible (height 4.6 m, Ø base 38 m, Ø platform 5 m). Augering established a 20 metres wide surrounding moat with a maximum depth of 1.4 metres. Part of the moat was dug in an existing channel feeding water into the moat. No indications for a bailey were found. From the 19th-century description of the finds a date between the 11th and 13th century AD is supposed.

Literature:

Van Heeringen *et al.* 2007

Middelburg ringfort and settlement

The name Middelburg refers to the location of the ringfort, being the middle burg or burg in the middle between the Oost-Souburg ringfort and the Domburg ringfort.

Middelburg ring fort too was constructed on a higher elevated tidal inversion ridge in a salt marsh area. In contrast to the other ring forts, part of the moat was not man-made: its north and northeast section were the course of a former tidal river called Arne.

Several small scale excavations and trial trenches showed that Middelburg is the second largest of the Zeeland ringforts, having a cross section range of the outer rampart bases of 220 m. The Middelburg rampart, showing the clearest cross section of all Zeeland ringforts, is the highest preserved, to 2.75 m above the original topsoil of the day. Like the Oost-Souburg rampart it consists of a core of sandy clay with shells of piled up overturned turfs on the inner and outer sides. On average the first phase width is 4.5 m, but a width of 7.5 m has been established on the northeast side, probably due to the neighbouring northern entrance, encountered in the Balans trial trench. The second phase rampart, provided again with piled up turf shells, was doubled to 9 m, while the northeast side rampart was extended to 10.3 m.

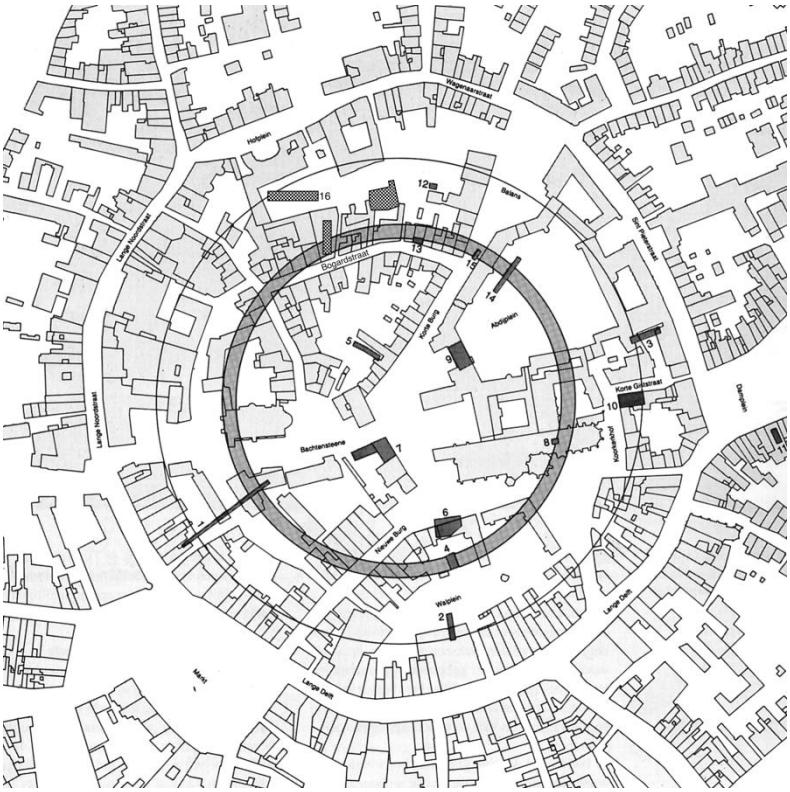


Fig. 14 Position of rampart, moat and excavated areas of Middelburg ringfort. After Van Dierendonck 2009.

Although various trenches were dug through the moat, its exact width has not been established, but it is more than 42 m. In cross section a later phase can be observed in which the moat was re-opened or dredged.

Only one entrance has been discovered, on the north side, the pavement of which consisted of oak planks on a double frame of ash and alder trunks. Underneath the pavement a wooden sewer tube was discovered, composed of a lengthwise split and hollowed out ash trunk. This sewer seems to be contemporary with the Middelburg first phase of the fort. The

entrance itself of which only three ash posts of the west side were encountered, is estimated at 2m width. The discovery of the passageway along the axis of the actual street Korte Burg shows that the old perpendicular street patterns give a good indication as to the location of such passages.
For Middelburg there is a radiocarbon starting date of AD 884-892.

Interior occupation
From various excavations of the fort inside, it is clear that the original soil level was raised to facilitate occupation of the interior, either by using clean sandy clay and sand or by dumping turfs. The 1961 Abdij excavation yielded traces of a building with wattle and daub walls. Directly behind the rampart of the 2004 Abdijplein excavation, a floor level and other traces of occupation dating to the tenth century AD were found, and not excavated but preserved subsequently.

Fig. 15 Planks and truss uprights of early 11th century buildings in the Middelburg-Bachtensteene excavation. Photograph ArcheoMedia, Capelle aan den IJssel.

Recent excavations on the Bachtensteene site in the southwest ringfort section yielded remains of four adjacent truss constructed buildings with walls of either horizontal or vertical oak planks fixed on the inside of the truss uprights. These houses are all dendrochronologically dated to the first half of the 11th century AD. Underneath these houses another 1.7m of occupation levels indicate earlier settlement, possibly already predating the ringfort construction.

Literature:
Van Dierendonck 2009
Van Heeringen 1995a

Domburg/Oostkapelle-Westhove beach: Walichrum

From the mid-17th century, the remains of a Roman temple and of a substantial early medieval settlement were intermittently visible over a distance of more than 2km along the steadily eroding beach between Domburg and Oostkapelle. Already on a map from 1655, both the temple remains and the 'Submerged dwelling of the Old Goths' are clearly marked as a feature on the beach. Our knowledge of this early medieval settlement, soon identified as the historically attested *villa Walichrum,* is almost exclusively based on the finds collected by 18th- and 19th-century antiquarians exploring as well as some contemporary descriptions and visual representations of the remains.

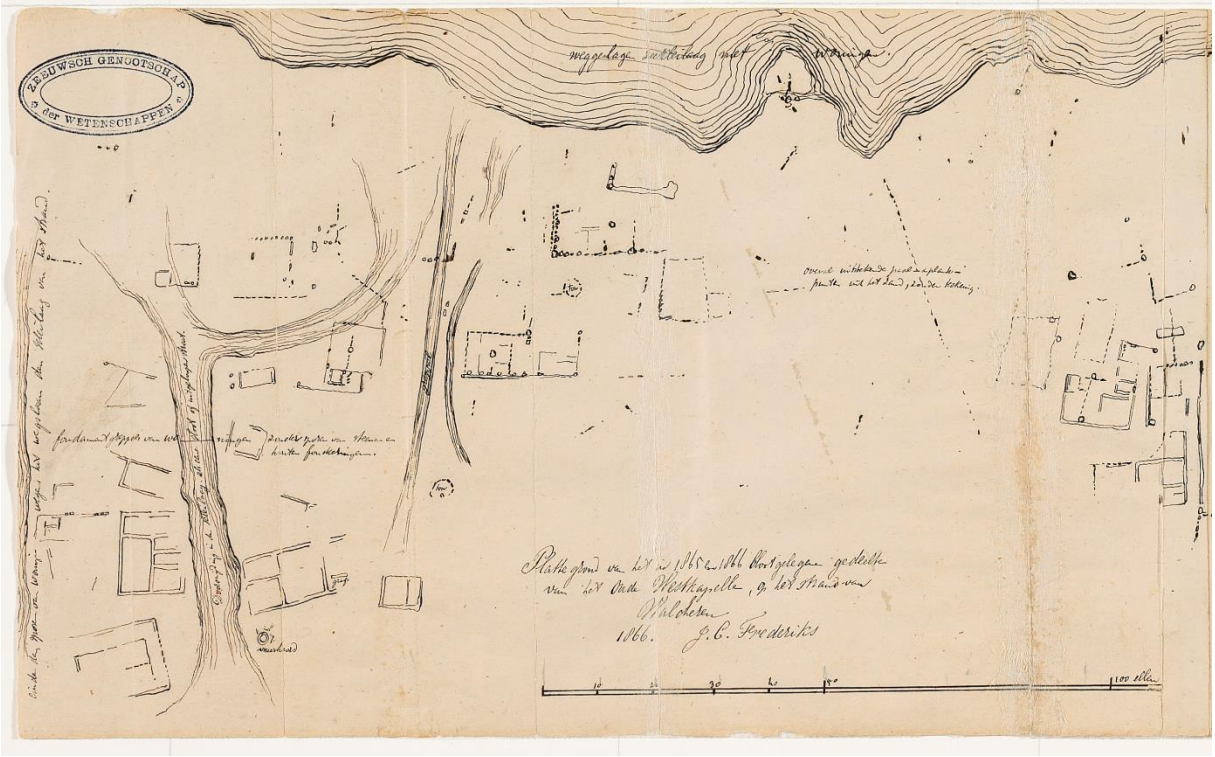


Fig. 16 Part of the 1866 Frederiks drawing of Walichrum features on Westhove beach, including building features. Zeeuws Archief, Zelandia Illustrata-III-0472A-1

The numismatic evidence has hitherto received most of the scholarly attention – not surprisingly, as with over 900 sceattas and numerous Carolingian coins, the site has yielded one of the most important early medieval assemblages of single coin finds in north-western Europe. Based on this evidence, the site has been interpreted as a major trading settlement or *wic* between the late 7th and the 9th century. In 837, the settlement fell victim to a Viking raid, and shortly after the estate was given in fief to Harald. As almost no coins were found post-dating the reign of Charles the Bald, it is traditionally assumed that the site was abandoned around that time, and that the settlement shifted towards the ringfort at Domburg, 1km away.

However, a recent revision of the full range of artefactual and documentary evidence has led to a revision of this biography. There is some artefactual evidence for late Roman-early medieval continuity on the site; in this light, the 8th-century reference to a pagan sanctuary at *Walichrum*, perhaps a successor to the Roman temple, is particularly intriguing. From the late 6th century onwards, the site appears to take on a more important role as a central place and, likely, a trading site.

In addition to the coins, a substantial collection of non-ferrous metalwork was preserved, as well as some pottery, worked bone and other artefacts (which were clearly less attractive to the 18th- and 19th-century beachcombers). Furthermore, a plan from 1866 of the remains then visible is particularly informative. It depicts a palisaded cemetery and dispersed burials, as well as several house plans. Many remains are visible in surprising detail, for instance including buried wooden casks, architectural features of buildings and some drainage or boundary ditches. Unfortunately, artefacts can almost never be linked to a precise context, and consequently it is nearly impossible to precisely date many of these valuable observations.

Fig. 17 Early medieval metal finds from Walichrum, Westhove beach. Left to right: Merovingian fibula AD 550-725; Carolingian Domburg type fibula AD 725-900; piece of hacksilver, 9th-10thcentury. Collection Koninklijk Zeeuws Genootschap der Wetenschappen, Middelburg.

Taken together, this material evidence confirms the existence of a substantial trading settlement surrounded by several cemeteries. No doubt, this *wic* was linked to the royal estate and profited from its strategic location on the Scheldt estuary and on littoral sailing routes. *Walichrum* served as a staging point for the Frisian trade across the North Sea. Sceattas were probably minted here, and other craft activities, such as metallurgy, are hinted at by documentary and artefactual evidence. From historical sources, we get a further glimpse of the importance and functions of the *villa* (royal estate centre) of *Walichrum*: it was visited by the missionary Willibrord around AD 700 and possibly a church was built here by ca. AD 800 – indicating a continuity of its ritual function from the Roman period. Based on numismatic evidence, it appears that the settlement may have lost some of its significance during the reign of Charlemagne, when trade was centralized at Dorestad. By 840, however, it seems to have regained its former economic importance. At the time of the 837 raid, it is described a substantial settlement with a Carolingian garrison apparently jointly led by a local dignitary and a Danish commander.

Contrary to older interpretations that hold that the site was abandoned in the mid-9th century, there are numerous artefacts, mostly metalwork, that indicate continued activity until the 11th century. This necessitates a revision of the relationship with the ringfort, as

both sites now need to be viewed as contemporary. These late and post-Carolingian developments will be discussed in the section on the ringfort, below.

Literature:
Capelle 1978 (on the metalwork assemblage)
Coupland 2010 (on the Carolingian coinage)
Op den Velde & Klaassen 2004 (on the sceatta coinage)

Domburg ringfort

Previously, the 'beach settlement' of Domburg-Oostkapelle and the ringfort at Domburg have been mostly studied in separation, as they appear to belong in different chronological frameworks and site categories. However, it is now clear that both sites have closely intertwined life histories.
This relationship started long before the construction of the fort in the third quarter of the 9th century. The area of the later ringfort, on the inner edge of the Old Dunes, was part of the periphery of the trading settlement by the 8th century, when it was being used for dispersed burials. Furthermore, substantial archaeological depositions underlie part of the fort area, suggesting that the place had already been occupied for some time before the latter was built. The relationship of this fort with the important trading settlement 1km away is also articulated by the similarities in material culture (notably, metalwork) and domestic architecture, with some structures on the beach closely resembling those excavated at the 'Badstraat' site in the centre of the fort.

Fig. 18 Plank fragments of a clinker-built Anglo-Saxon boat from the Domburg-Badstraat 2010 excavation. The undermost plank has a dendrochronological date of AD 786-800 and originates very probably from Hamwic in southern England. After Lange 2012, BIAX Consult, Zaandam.

It is probably no coincidence that this fort, the largest and oldest of its type in Zeeland, was built so close to *Walichrum*. It appears that its construction marks a shift of gravity for the settlement away from the former site (it is unclear what activity remained there, possibly only burial). Recent excavations in the interior of the fort have yielded evidence for an occupation with urban allure, comparable to nearby Middelburg and other fortified trading towns emerging in the 10th-century in the Low Countries (the so-called *portus* settlements).
The evidence for Scandinavian presence or influence at *Walichrum*/Domburg in the late 9th and 10th century is limited, but telling: it includes horse-riding gear of Anglo-Scandinavian type, a small number of metalwork items possibly produced in Scandinavia or by Scandinavian craftsmen, and a few dirhams and fragments of hacksilver.

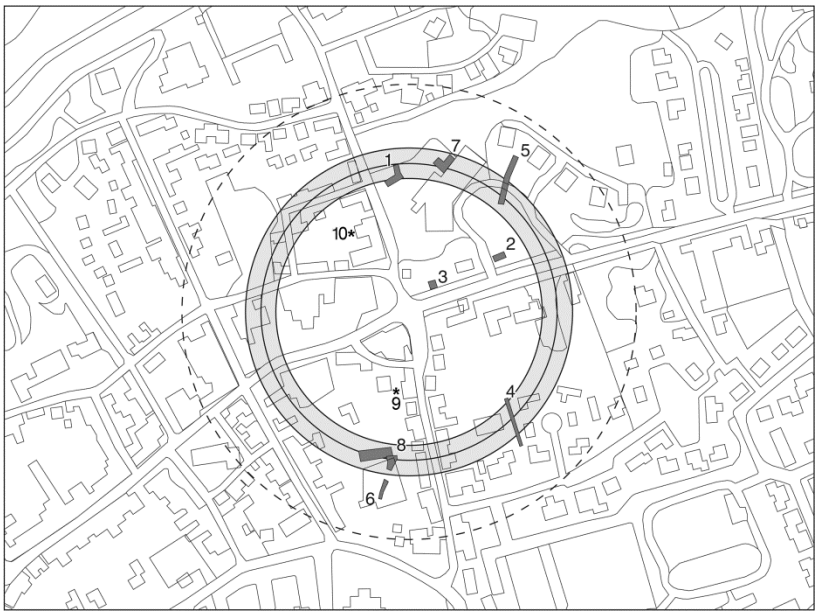


Fig. 19 Position of rampart, moat and excavated areas of Domburg ringfort. The Badstraat 2010 excavation is situated at nr. 10. After Van Dierendonck 2009.

The beach and fort sites were both abandoned in the 11th century. By this time, Middelburg had emerged as the new major trading port of Walcheren, under the patronage of the Ottonian bishop of Utrecht. After the death of Cnut the Great the (Anglo-)Danish kingdom had lost much of its position as a dominant power bloc in the southern North Sea area. Perhaps its integration in and identification with this northern sphere of influence sealed the fate of Domburg as a *portus* doomed to failure?

Fig. 20 Copper alloy Borre-style buckle from the Domburg-Badstraat excavation. Photograph ARC, Groningen/Archeodienst, Zevenaar; collection SCEZ.

Literature:
Lange 2012
Ufkes 2011
Ufkes 2012

Oostkapelle-Westhove castle

Westhove is first mentioned in AD 1277 as a *curia* owned by the Middelburg abbey. The original building very probably dates back to the middle of 13th century, as some archaeological finds indicate. The castle was used as a high status outward residence for the Middelburg abbots. Floris V, count of Holland, lived here for a short while in AD 1290. In AD 1401 the castle was assigned to William of Oostervant, son of Albrecht of Bavaria, and given back to the abbey on permanent loan. In AD 1413 the castle was let for a period of 25 years to Philips of Cortgene, of the regionally important Van Borsele family. After Nicolaas de Castro, abbot of the Middelburg abbey, becoming the first and only bishop of Middelburg in AD 1561,Westhove castle was refurnished into an episcopal luxury resort, but in AD 1572 the castle was seized by rebels in the early period of the Eighty Year's War (1568-1648).
The provincial administration sold the castle in AD 1579 and the castle was owned, altered and renovated largely in the 17th and 18th centuries by prominent members of influential noble families tied to local and regional administrations. In the 20th century it served as a convalescent home and holiday home for children. Nowadays it serves as a hostel.

Fig. 21 Westhove castle

The square type castle originally consists of a keep and an outer bailey. The keep was surrounded by an inner moat, the whole of the castle complex by an outer moat. Due to the many alterations little remains of the original castle have been preserved. The lowest parts of the towers and some parts of walls are of late medieval date. The gate tower on the northern side of the outer bailey was built in the second half of the 15th century. The southern wing of the keep dates back to the 16th century.

Oostkapelle-Terra Maris museum and motte reconstruction

The orangery of the Westhove estate, built 1750-1800, now houses Terra Maris museum, the museum for the Zeeland landscape. At the back a large garden is part of the museum. In the garden's southeast corner a reconstruction of a Zeeland motte was made. As no complete plans of upper wooden structures, i.e. towers, have been excavated in Zeeland or elsewhere in the Netherlands the Haie Joulain tower at Saint-Sylvain d'Anjou (France) served as an example (see Fig. 5). The Terra Maris reconstructed tower is 10 m high, set on a 4 m high motte surrounded by a very shallow moat. The tower is fitted with a simple medieval interior. The tower gives a great view of the surrounding area.

Literature:

Van den Broecke 1978
Van Heeringen *et al.* 2007

Serooskerke-Gapingse Watergang sheep farm and early medieval countryside

Ahead of the construction of a new N57 road track near the village of Serooskerke (Walcheren), three sites were excavated yielding early medieval finds and structures: Gapingse Watergang, Wattelsweg and Kleine Putweg. These sites very probably represent a countryside settlement system of dispersed individual farmsteads.

The earliest and most significant site is Serooskerke-Gapingse Watergang near the Serooskerke windmill, revealing the oldest early medieval Zeeland house plan up till now. The house plan – its northwest-southeast longitudinal orientation adapting to the top of a small tidal inversion ridge – shows two phases.

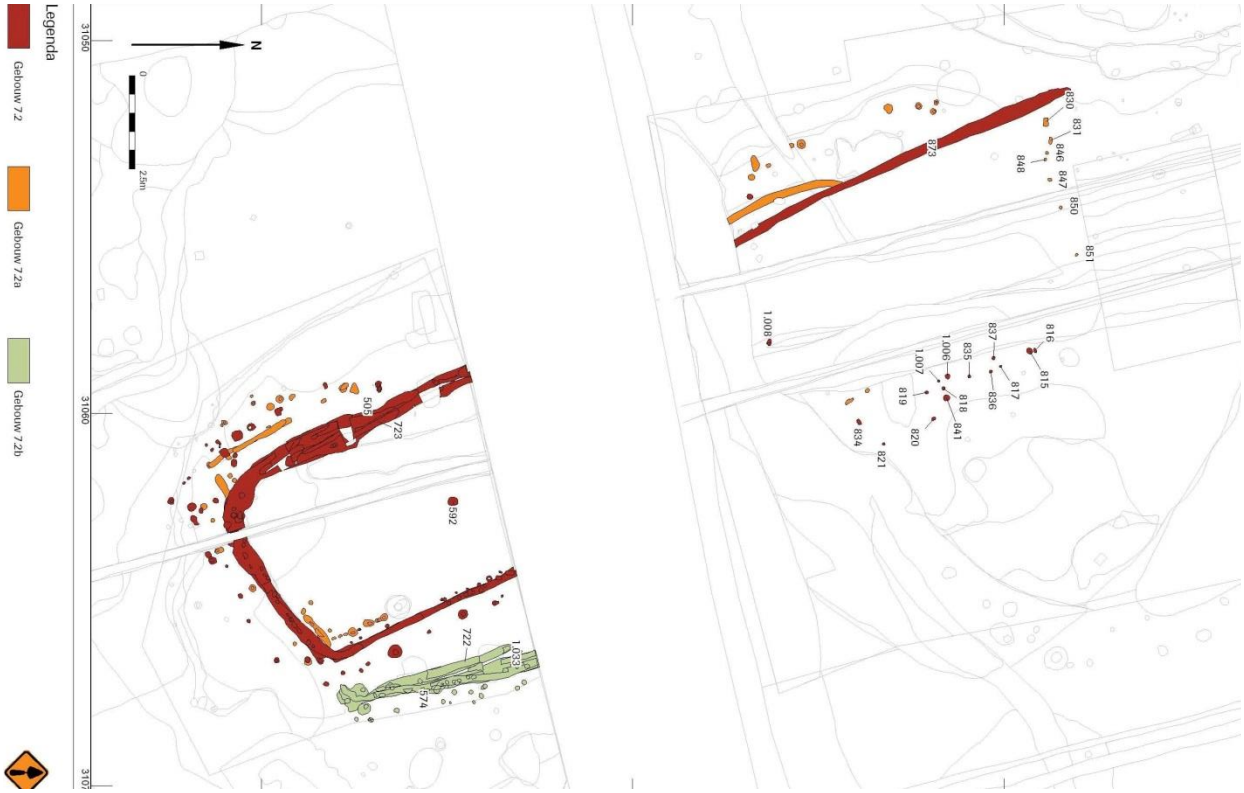


Fig. 22 Excavated features of the Serooskerke-Gapingse Watergang farm building. After Van 't Veer & Dijkstra 2011.

The single-aisled farm building has double outer posts and is supposed to house living quarters and a stable. The first phase building measures 24 x 5.7 m, the younger phase is larger with 27 x 5.6 m and shows an annex on the southeast corner.
Pottery and a radiocarbon date give an occupation period of AD 675-725, the late Merovingian period.
Animal bones found on the site consist almost only of sheep, hence it is thought that the settlers' subsistence relied on herding sheep in the surrounding salt marsh pastures. From the building's dimensions it is estimated that 60-80 sheep could be stabled. Large quantities of mussel shells show that this shellfish played an important role in the inhabitants' diet.
Pottery from all early medieval Serooskerke sites shows that the late Merovingian farm is the starting point of an uninterrupted medieval occupation on channel ridges of the Serooskerke countryside area.
The same Gapingse Watergang site showed waste layers of Carolingian date on the flanks of the stream ridge, on top of which an incomplete plan of a farm building was encountered. The plan compares to the three-aisled Oost-Souburg IVa-building type, but deviates somehow by having only one aisle on the south side. In the farm yard remains of a drinking pool and of circular ditches of at least 5 hay or grain stacks were documented. The building is dated early 11thcentury, although the associated pottery dates back to the 10th- to mid-11thcentury. Pottery from the oldest strata of the drinking pool is from the early 10thcentury.
The animal bones from this period show an increase in cattle, but sheep and now goats too still have the upper hand. Botanical remains show the use of barley, wheat and peas, of which probably only the first one could have been grown locally. Flax was grown as well.

The Serooskerke-Kleine Putweg site, 1.5 km north of the Gapingse Watergang site, was situated on the edge of a small, possibly still active, tidal channel. Some ditches and pits show that the first occupation must have started around AD 900. This date shows that in this part of the landscape, closer to the northern Walcheren shore line, channels were still in the process of silting up in the 9thcentury, while further inland like e.g on the Gapingse Watergang site, channel ridges had already formed.
The second phase of occupation on this location dating back to AD 1050-1150, used the later formed channel ridge. In this period a three-aisled building with curved long walls was constructed, the first one of this type in Zeeland.

Literature:
Dijkstra 2011
Van 't Veer & Dijkstra 2011

The 1953 storm surge flooding and the Dutch delta sea barriers

The night of January 31st - February 1st 1953 saw the last of the large and devastating storm surges in The Netherlands. In the Dutch southwest region of Zeeland and Zuid-Holland numerous dykes gave way, as a consequence of which 160.000 ha of land was flooded, 50.000 animals were killed, 30.000 buildings (houses, farms) ruined and 1836 people lost their lives. Half of the 1100 kilometres of dykes was either lost or severely damaged and the economic loss was estimated at circa 2 billion Dutch guilders, nowadays the equivalent of 7.4 billion Euros.

This disastrous flooding – in the actual area still referred to as 'The Disaster' – was the starting point of a national sea safety program for the Dutch southwestern delta area, called the 'Deltaplan'. This program already started in 1954 and aimed at a considerable shortening of the coast line by closing off most of the delta straits and strengthening all dykes, with widths and heights to a set standard. The planning and progress of the Deltaplan projects was organized as a process of continuous development by trial and learning, starting with the easier projects first i.e. the secondary sea barriers in the hinterland straits. The last Deltaplan projects, two computer controlled movable automatically closing barriers Maeslantkering and Hartelkering in the Rotterdam harbour area, were finished in 1997.
In this Sachsensymposium tour we will encounter 4 of the in total 15 great Deltaplan projects, i.e. three barriers closing sea straits and a bridge: the Veerse Gatdam, the Oosterschelde Stormvloedkering (storm surge barrier), the Zandkreekdam and the Zeeland bridge. Both Veerse Gatdam and Oosterschelde storm surge barrier are primary sea barriers, while the Zandkreekdam is made as a secondary sea barrier enabling the construction of the primary Veerse Gatdam. The secondary sea barriers were constructed to control the currents in the sea straits while building the primary North Sea barriers.

Vrouwenpolder-Veerse Gatdam

This 2.8 km long dam closing the Veerse Gat strait between Walcheren and Noord-Beveland was the first of the Deltaplan primary sea barriers to be constructed from 1958 to 1961. In combination with the 1960 finished secondary Zandkreekdam barrier (see below) the former narrow sea straits Veerse Gat and Zandkreek now turned into a large recreational freshwater lake Veerse Meer. Working from both the Walcheren and Noord-Beveland sides two dams were constructed, the core of which consisted of standard caissons, large concrete boxes, as big as two houses. Such caissons had already been used for the rapidly constructed temporary harbour in Normandy to supply the allied forces and to close the dyke bursts of the 1944 military Walcheren inundation and the 1953 flooding mentioned above. The remaining 320 m opening between the dams was closed with specially developed culvert caissons, larger than the standard caissons and as high as seven storey buildings. These culvert caissons had vertically opening doors in the long sides.

Fig. 23 The last culvert caisson to close the Veerse Gat strait April 1961. After Steenbrink 2016.

Floating with closed doors they were each positioned correctly and then sunk down by opening the doors. At the turning of low tide the doors were closed again and the filling of the caissons with dam material started. The dam surface eventually was completely covered with asphalt. On the outer North Sea side a beach was created, a cycling track on top of the barrier and inside a road connecting both former islands.
Later on the beach was widened and both sides of the barrier covered with sand to form new dunes, giving the dam its nowadays natural landscape look.

Oosterschelde storm surge barrier

The original Deltaplan provided for a primary sea barrier completely closing off the Oosterschelde estuary between Noord-Beveland and Schouwen-Duiveland, thus shortening the coastline of 245 km of dykes to just a 9 kilometres long barrier. This barrier was meant to be the climax in the primary sea barrier constructions and the project started 1967 by building three artificial islands surrounded by dykes on existing sand flats in the Oosterschelde estuary (Noordland, NeeltjeJans and Roggenplaat), thus creating 5km of barrier already.
The three remaining deep channels Roompot, Schaar van Roggenplaat and Hammen were planned to be closed by way of cable-lifts dumping large stone and concrete blocks to form the barrier core, as was previously successfully experimented and performed in both Grevelingendam and the primary Brouwersdam closing the Brouwershavense Gat north of Schouwen-Duiveland.
Due to protesting fishermen, shellfish producers and environmentalists, who wanted the Oosterschelde to be kept marine, the works came to a halt in 1974. In 1976 The Dutch government decided the channels to be fitted with a construction letting in the tide and only to be closed in an emergency. This decision meant a complete drawback and redesigning, in the end resulting in three storm surge barriers consisting of large vertically movable steel doors set in large concrete pillars. From 1977, 66 colossal concrete pillars were prefabricated in an addition to the Neeltje Jans artificial island, taking 1.5 years of construction per pillar and using concrete produced in the island's own factory. Special ships were designed for preparing and equalizing the channel bottoms for the pillar foundations, topping each pillar foundation with a synthetic stone filled mat as large as two soccer pitches. A custom made floating crane transported the pillars one by one to their foundations. One pillar made as reserve nowadays still stands in its original production place and is used as a climbing wall.

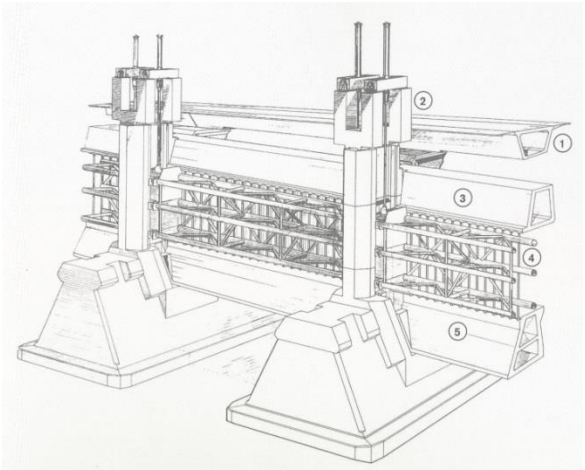


Fig. 24 Construction drawing of the Oosterschelde storm surge barrier: 1 road structure; 2 superstructure with lifting tackle; 3 upper beam; 4 steel door construction; 5 threshold beam. After Steenhuis 2016.

The movable steel doors are positioned on the outer North Sea side of the pillars, the pillar's inside provides a platform for the construction of the road- and cycling tracks. The complete Oosterschelde storm surge barrier was ready for use in 1986.
The steel doors are closed when the storm surge level is estimated to exceed 3 m above Dutch ordnance level, on average occurring once in two years.
Some years later the artificial islands were renovated for the greater parts to natural landscapes and are now part of the Oosterschelde National Park. The Neeltje Jans artificial island also houses an information and amusement park, Deltapark Neeltje Jans.

Literature:
Steenbrink (ed.) 2016

Westenschouwen beach and dune area

Westenschouwen is situated across the Eastern Scheldt from Walcheren, at the western extremity of the former island of Schouwen. In addition to finds from the eroding beach, finds ranging in date from the Neolithic onwards were also collected from eroding valleys in this extensive dune area by a local school teacher in the early part of the 20th century. The dune landscape is currently still being monitored and studied within the framework of an ongoing research project.
The finds assemblage differs from that from *Walichrum* in several respects. The smaller, if still substantial, collection of sceattas from the beach at Westenschouwen indicates that the site functioned as a trading settlement. In contrast to *Walichrum*, however, activity at the site only develops after AD 725. The large area from which finds were recovered as well as the apparent discrepancy between numismatic and other evidence renders interpretation of this site somewhat problematic. The trading settlement has been identified as the *villa Scaltheim* mentioned in AD 828, possibly property of the abbey of St. Bavo in Ghent. That the settlement does not re-appear in the historical record, has been attributed to a historically attested storm surge in AD 838.

Fig. 25 Copper alloy disc brooch of 'griffin' type from Westenschouwen. Collection Koninklijk Zeeuws Genootschap der Wetenschappen, Middelburg.

The metalwork assemblage, which in contrast to the coins was mostly found in the dune area, is largely of Carolingian and later date and appears to indicate continuity into the 12th century. Likely, these finds point to a dispersed occupation throughout the dune landscape, with as central place no longer the coastal *villa*, but the ringfort at Burgh that, like at *Walichrum*, was situated on the inner edge of the dune barrier.

Literature:
Capelle 1978 (on the metalwork assemblage)
Coupland 2010 (on the Carolingian coinage)
Op den Velde & Klaassen 2004 (on the sceatta coinage)
Beekman 2007
Van der Valk & Beekman 2013 (on current research)

Burgh-Kraaienstein castle

South of the Burgh ringfort on the east side of the N57 road, nowadays a manor farm house is situated, surrounded by a rectangular moat. The manor farm house was built in 1890 after the demolishing of the Kraaienstein castle and estate. These buildings were almost completely torn down, leaving only the oriel on the west side of the manor house and parts of the vaulted cellar. Foundations of the estate buildings measuring up to 61 cm wide were recorded in 1964.
Historical and archaeological information on the castle and its development is scarce. Kraaienstein castle is mentioned for the first time as a castle circa 1450, and was probably built along a tidal creek connecting to the Oosterschelde in the south. It was founded by one of the lords of Haamstede, to which the Burgh manor belonged: Floris of Haamstede is the first known living in the castle in 1472. Kraaienstein stayed in the Haamstede family until 1623. The stone castle was transformed to a splendid country house in the early 17th century and housed important persons of the provincial and local administration until the 1880's. From then until today the site evolved to a manor house of an agrarian estate.

Literature:
Van den Broecke 1978

Burgh ringfort

The name of this ringfort consists of the Germanic substantive noun *burg* only, meaning defended place or stronghold. The ringfort is situated on the inside edge of the coastal dune ridge, bordering the salt marsh.

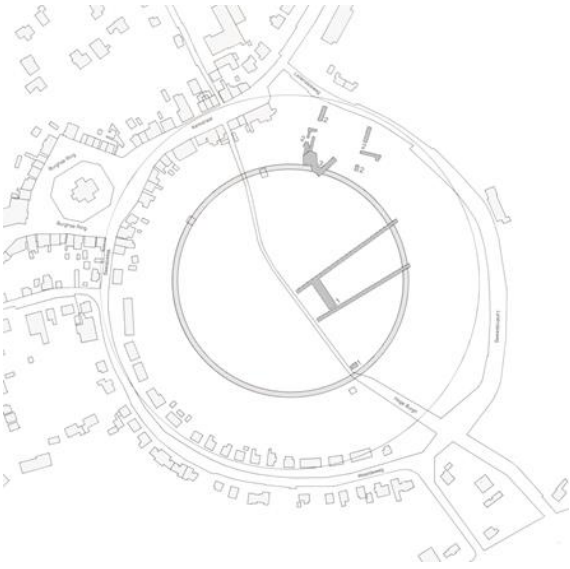


Fig. 26 Position of rampart, moat and excavated areas of Burgh ringfort. After Van Heeringen 1995a.

A few trial trenches and a small excavation provide little information on this best preserved of all Zeeland ringforts, with a cross section range of the outer rampart bases of 200 m. Burghs rampart is 4-5 m wide, consists of a sand core with shells of piled up clay turfs and shows that the inner side was crowned with a palisade consisting of wooden posts of alder and elm. Nowadays part of the rampart is reconstructed. Burgh ringfort has the widest moat of all, measuring 50 m, and is still clearly visible in the terrain.
The Burgh radiocarbon samples show possible datings both to the end of the ninth century AD and the first half of the 10th century, the first of which seems more probable in accordance to pottery finds. No second phase elements were encountered.
The SE-NW old dirt road crossing the ringfort, called Hoge Burgh, actually dates back to the occupation period inside. Although there are no indications for a path or road perpendicular to this road, this perpendicular system was partly reconstructed in the wooden beam path analogous to the Oost-Souburg evidence. In relation to the reconstruction the interior's arable land, still in use, was taken out of production in the course of a land reform scheme and the ground level raised in order to protect the archaeological remains.

Literature:
Van Dierendonck 2009
Van Heeringen 1995a

Drowned settlements: the Koudekerke (Schouwen-Duiveland) Squat Tower

As of around AD 1000 Zeeland man tried to keep safe his inhabited territory from the power of the sea by building dykes. Gradually, mainly due to the need for food production for the growing cities, this defensive dyking changed to offensive dyking, i.e. building dykes to gain arable land. Consequently the water storage capacity of the sea and straits areas became less, tides became higher and the liability to storm surges increased greatly. Combined with an almost permanent bad maintenance of the dykes this resulted in numerous floodings, leading to the abandonment of more than 120 drowned villages and cities in the actual provincial area.
Sometimes the threat of flooding gave rise to the abandonment, as was the case for Koudekerke village on the north bank of the Oosterschelde estuary in AD 1581. Koudekerke was one of the last 10 villages in a 3000 ha area that was lost to the sea on the south side (Zuidland) of the Schouwen island. Around AD 1300 this village was lying inland at 4 km from the sea bank, but in AD 1581 the sea dyke was situated already at a short distance to the south of the village and affected by currents. Therefore an inner backup dyke was built just south of the central village church, so giving up the southern part of the village. In AD 1583 the church itself, built AD 1340-1360, was dismantled and only the southern of the two western façade towers was kept upright, to serve as a beacon for the shipping to the port of Zierikzee. Around 1654 the inner backup dyke became the actual sea dyke and the southern remains of the village disappeared in the Oosterschelde.

Fig. 27 Koudekerke Squat Tower. Beeldbank SCEZ.

The Koudekerke church tower, nowadays called the Plompe Toren (Squat Tower), is partly incorporated in the actual sea dyke and constitutes the only standing monument of a drowned Zeeland settlement.

Literature:
Kuipers (red.) 2004

Zierikzee-Nobel gate

The late medieval town of Zierikzee, already mentioned as *Creka* in AD 976, was the most important Zeeland harbour north of the river Scheldt. Archaeological finds in the city centre date back to the 11th century, including some traces of a timber built church and a 12th century tuff built choir of a Romanesque church.
Around 1250 the city got its first city wall, although parts of the inner city grounds still were in agrarian use. The city wall, completed around 1330, was provided with seven gates, the last one to be built in the 15th century. The Nobelpoort (Nobel gate) is one of three remaining late medieval city gates of the city of Zierikzee and was built before the middle of the 14th century. The gate probably derives its name from a family Nobel and closes off the northern end of the Nobelstraat (Nobel street), leading out to the northern country side.
The gate consists of a rectangular two storey gate building flanked by towers on the field side. The outer walls of the towers and gate building are furnished with decorative patterns of green glazed brick headers, including concentric lozenges. This glaze developed unintentionally as failures during brick firing in the lower parts of the kiln nearest to the kiln fire, as a result of the saline clay matrix used.

Zeelandbrug (Zeeland bridge)

Although no part of the original Deltaplan this bridge is closely connected to the program. The construction of the sea barriers north of Schouwen-Duiveland, Grevelingendam and Haringvlietbrug, provided a short and fast traffic and transport route from Schouwen-Duiveland to the economically very important Rotterdam harbour area and the major Dutch cities. However, the Zeeland heartland to the south of the Eastern Scheldt was left

unconnected by fast land roads. Therefore the Province of Zeeland decided in 1962 to build the Zeeland bridge connecting Schouwen-Duiveland to Noord-Beveland, which was already accessible from Zuid-Beveland through the Zandkreekdam.

Fig. 28 Aerial view of the Zeeland bridge, bridging the Oosterschelde strait between Noord-Beveland and Schouwen-Duiveland. Photograph Photographics for DNA-beeldbank at www.laatzeelandzien.nl.

This Zeeland bridge was constructed in a very short time and was opened for traffic in 1965. For some decades the 5 km-long bridge was Europe's longest and today, it still is the longest bridge in the Netherlands. In 2013 the bridge became a listed monument.
The bridge construction consists of 54 concrete pillars and 52 concrete bridge spans measuring 95 m, all pre-fabricated. The foundations for the pillars were all built in open water, at depths of up to 35 m below sea level. The bridge is 11.85 m wide and contains a two lane road and a cycling track. Near the Schouwen-Duiveland coast line a section of movable road was inserted for passing ships.

Zandkreekdam

Built in 1957-1960 this 830 m long closing dam was the first Deltaplan project in Zeeland. The secondary sea barrier closed off the narrow hinterland sea strait Zandkreek separating Noord-Beveland and Zuid-Beveland, thus connecting both areas and separating the intended freshwater lake Veerse Meer from the marine Oosterschelde estuary. Here the dam's core consists only of concrete standard caissons (see above Veerse Gatdam). The Zandkreekdam contains a lock, which was modified in 2002 with a bridge to enable a continuous flow of traffic, especially during the summer period. This saline inlet in the dam was built in 2004 to improve the quality of the water and lake bottom of the Veerse Meer. After being a completely closed off freshwater lake for more than 40 years, the Veerse Meer was once again connected to controlled tidal fluctuations.

Literature:
Steenbrink (ed.) 2016

Hollestellen and *stelbergen*

From the Middle Iron Age (4th century BC) on the Zeeland salt marshes were exploited for animal husbandry, primarily cattle and sheep/goats. Since the building of dykes started around AD 1000, the landscape of the tidal areas outside the dykes consisted largely of salt marshes. By then the salt marshes were mainly used for tending flocks of sheep. To keep shepherds and flocks safe from high tides and storm surges, refuge mounds were raised in the marshes, so-called *stelbergen*. Such relict *stelbergen* of post-medieval date still exist in the salt marshes of the Verdronken Land van Saeftinghe (Saeftinghe Flooded Land), north of Antwerp.
Most of the *stelbergen* were of the *hollestelle*-type. Such *hollestellen* are mounds provided with a large central fresh rainwater basin, to water sheep and man in the saline area and are still in use in the North German Wadden Sea Halligen area.
Nowadays only four *hollestellen* have visible remains in the Zeeland landscape, one of which is still partly situated in its original habitat incorporated in a dyke (Bruinisser *stelberg*, Anna Jacobapolder, municipality of Tholen). Some other *hollestellen*-sites are known from aerial photography.

Rilland-Veldzicht hollestelle

South of the motorway A58, between the A4/A58 intersection and A58/A256 intersection, along the A58 Rilland exit, the elevation of this *hollestelle* is visible.

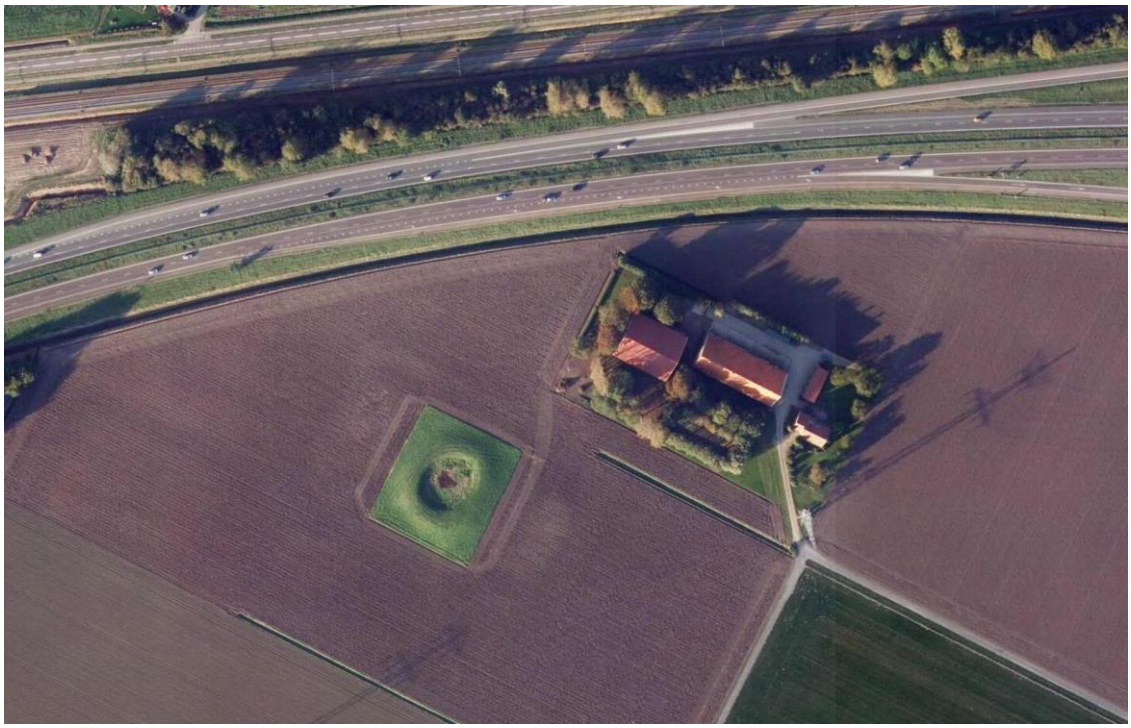


Fig. 29 Aerial view of the Rilland hollestelle, south of motorway A58. Beeldbank SCEZ.

This *hollestelle* has an oval groundplan and dates back to the 16th century. It was constructed after the big storm surges and consequent large floodings in the years 1530 and 1532 turned a large part of the Zuid-Beveland area into flooded land and new forming salt marshes. In 1773 the salt marsh area including the Rilland *hollestelle* was dyked in again.

Oosterweel

When you drive into the port of Antwerp from the side of the town, you immediately come along a remarkable monument in the industrial landscape of the port. The Sint-Jan- de-doper church is the last relic of the lost polder village of Oosterweel. The village was laid waste in 1958 for the expansion of the port of Antwerp (today Europe's second largest after Rotterdam). It was decided to safe the church and churchyard, while the rest of the terrain was raised with 6 meters. The church dates back to the 13th century, but there are no relics of that phase above ground. The tower of the present church dates from the 15th century while the nave dates from 1712. The village originated in the embanked polder area in the Schelde marshes north of Antwerp. The name of the village refers to (repaired) embankments in the outer marshes. Excavations inside the church have yielded burials from the late medieval and early modern period. The osteological analysis of the skeletons by Brussels Free University (VUB) indicated that the deceased were mainly members of the village elite.

Fig. 30 The church of the disappeared village of Oosterweel, then and now.

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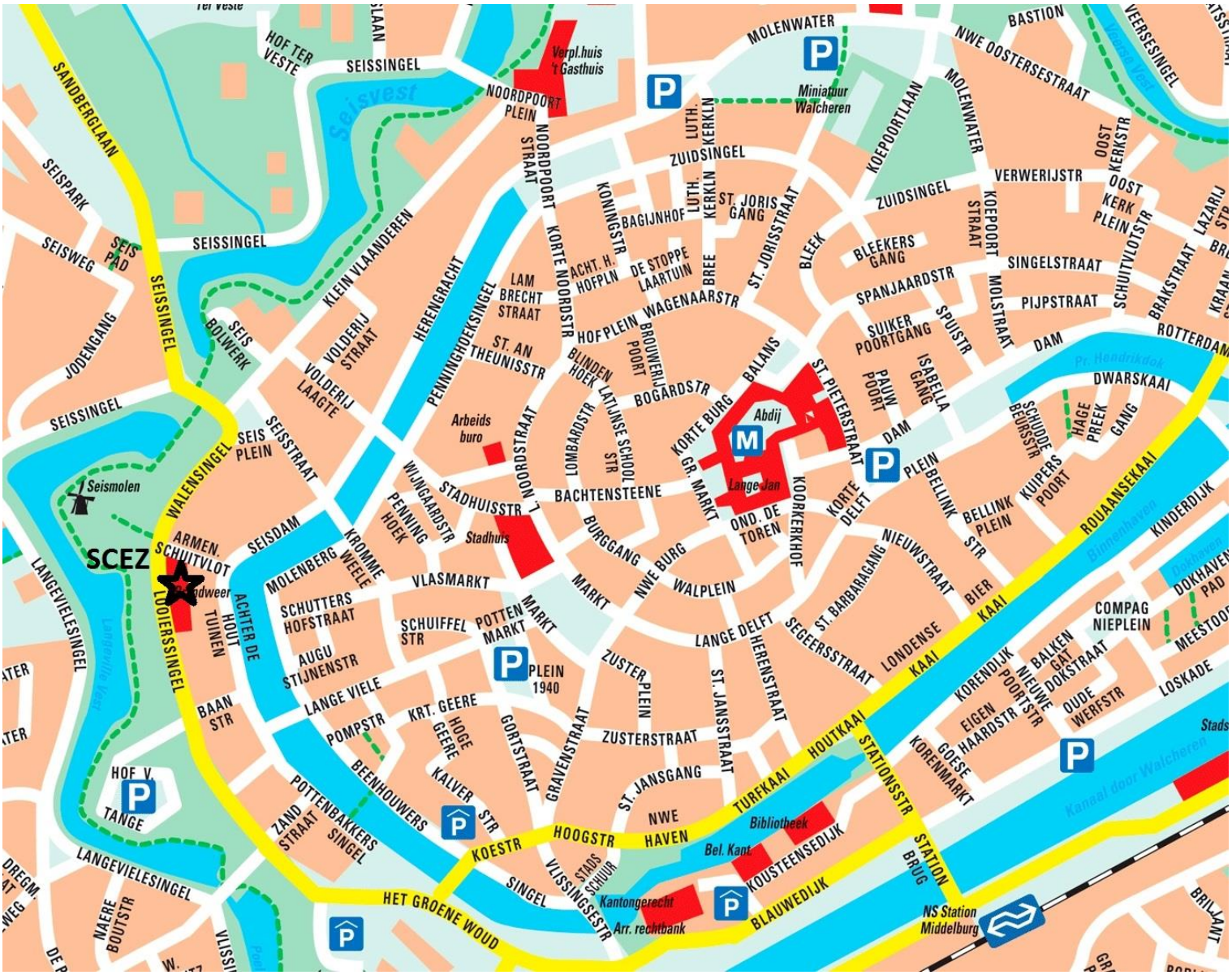

Map of Middelburg showing the location of the SCEZ.

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