

Finding Sliesthorp? The Viking Age settlement at Füsing

Andres Siegfried Dobat¹

¹ Department of Archaeology and Heritage Studies, School of Culture and Society, Aarhus University, Moesgaard Allé 20, 8750 Højbjerg, Denmark (farkado@cas.au.dk).

ABSTRACT

In 2003, a hitherto unknown Viking Age settlement was discovered at Füsing in Northern Germany. Finds and building features suggest that the site was an estate centre and assembly place. As such, the site flourished from around 700 to the end of the 10th century. With Hedeby/Schleswig and the Danevirke in direct eyesight, Füsing is embedded in a special topographical context. What in other circumstances would have been yet another high-status estate centre to be discovered in South Scandinavia thus takes on a different significance. It is suggested that Füsing – among other functions – served as a seasonal garrison and naval base in the defensive system of the Danevirke. As such, the site may be identical with the mythical Sliesthorp, which is mentioned in early written sources as the centre of power of the first Danish kings in this disputed border region of their realm.

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Introduction

At the initiative of continental traders and early Danish royal power, Hedeby, the largest of the Viking Age emporia in Scandinavia, located in modern day Schleswig-Holstein in Northern Germany, started to flourish in the early 9th century. This laid the foundations for a long-term development, leading to the growth of the medieval town of Schleswig, which was later replaced by Lübeck, the centre of the Hanseatic trading network, a function it eventually lost to Hamburg, one of the economic centres of the modern world.

According to the Frankish Annals, a site called Sliesthorp played a key role in the establishment of Hedeby. The annals account of a succession of decisive events in the first decade of the 9th century. At this time, the Danish king Godfred emerged on the scene as a somewhat reckless but nevertheless serious opponent of the Franks. In 808, he is referred to as the main protagonist behind the establishment of the international emporium Hedeby and the instigator of the Danevirke, a linear rampart system that was to function as a

defensive barrier against attacking forces from the south (Dobat 2008) (Figure 1). The same source refers to a visit by the Danish king to Sliesthorp in 804, together with his fleet and warriors, to negotiate with the Frankish emperor Charlemagne. On both occasions, Sliesthorp (referred to in 804 as *locum qui dicitur Sliesthorp* and in 808 as *ad portum, qui Sliesthorp dicitur* [the place/harbour which is called Sliesthorp]) seems to have been the base of operation for the Danish king's endeavours (Frankish Annals, 79, 89). These are the only written references to the enigmatic Sliesthorp, which etymologically can be interpreted as referring to the 'farm or village at the Schlei fjord', and which is not referred to again in any of the later written sources, where Hedeby is referred to as Slesvic or Hedeby/-um (Laur 1955; Radtke 1999, 365).

Traditionally, these written references to Sliesthorp are connected with Hedeby, the well-known settlement at Haddeby Bay, which oldest roots can be traced back to the 8th century, and which flourishes from the early 9th century onwards (Jankuhn 1986, 64; Hillberg and von Carnap-Bornheim 2007, 201; Schietzel 2014, 34).



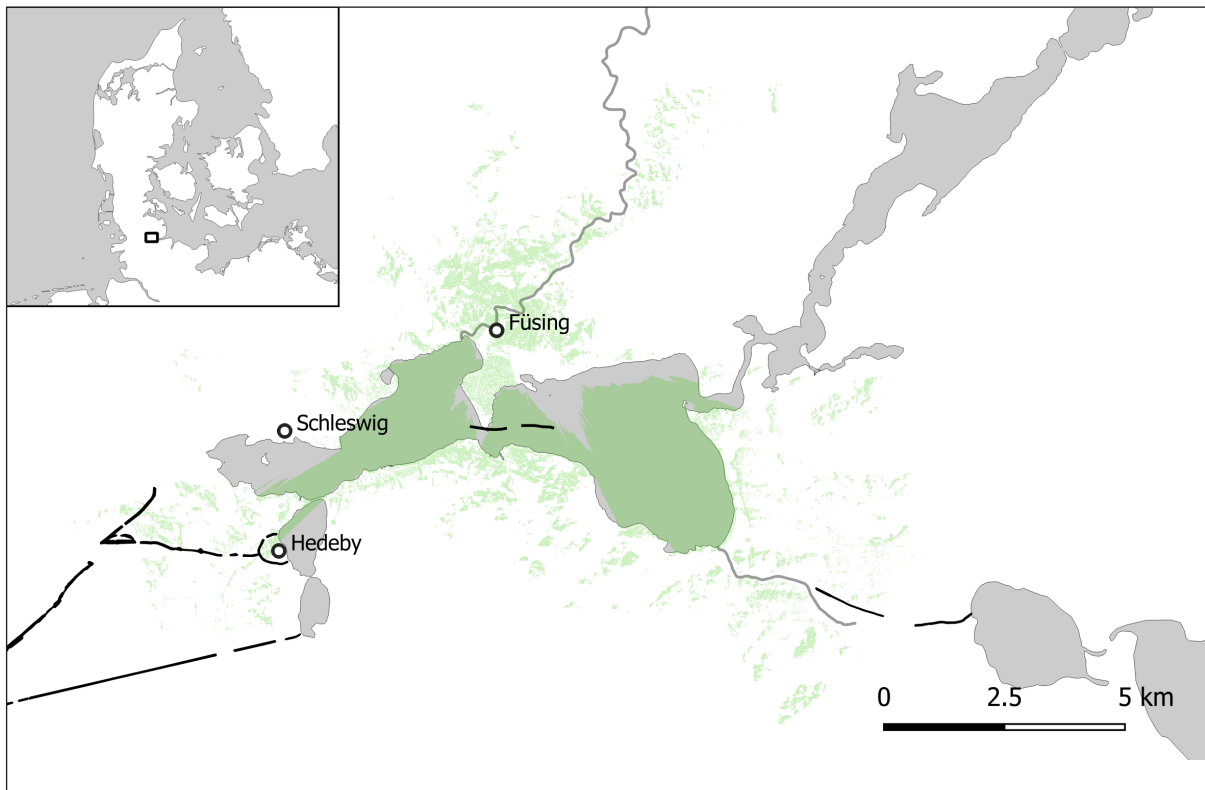


Figure 1. Fösing and important sites and monuments in the inner Schlei region (Hedeby, Schleswig, the earthen rampart sections of the Danevirke and the barrage/barrier at Reesholm). Green layer: viewshed analysis indicating visibility of surrounding terrain and structures at the site (Graphics: Casper Skaaning Andersen, Archaeological IT, Aarhus University).

However, the accounts in the Frankish Annals are not very specific, and all they imply is that Sliesthorp was positioned at the shores of the Schlei fjord and somehow connected with both Hedeby and the Danevirke.

In 2003, metal detector surveys led to the discovery of a hitherto unknown Viking Age settlement site at Fösing (LA 73), on the northern shores of the Schlei Fjord, within the range of vision from Hedeby and in direct connection with the Danevirke (Figure 1). The site has since been the subject of intensive metal detector and geomagnetic surveys, and from 2010 to 2014, excavations were conducted on the site.

Finds and building features, notably three-aisled longhouses and pit houses (sunken featured buildings) indicate a residential ‘farm-like’ complex with various auxiliary buildings. The settlement flourished from around 700 to around 1000, serving as an assembly place with economic but first and foremost military/defensive functions. As such, the site is not only a new possible candidate for Godfred’s Sliesthorp besides Hedeby; it also offers new possibilities for broadening our understanding of

the Viking Age emporia and the character and development of the economic and political networks that connected early medieval Europe and Viking Age Scandinavia.

Regional setting and hinterland

Positioned on the elevated terrain of a sandy moraine plateau, Fösing is surrounded to the west and south by the inner section of the Schlei Fjord (the ‘Grosse und Kleine Breite’) and to the north by the Fösing River. Surrounded by water and/or marshy ground on three sides, the site was situated in a strategically advantageous and naturally secured area.

With the Schlei Fjord, penetrating the Jutland peninsula from its eastern coast and leading up to Hedeby and Schleswig, Fösing was connected to an important waterway, both on a supra-regional and on a local level (Figure 1 and 2). In a more regional perspective, the Fösing River constituted a transport route, allowing at least smaller vessels to penetrate further into the site’s hinterland, the



Figure 2. View over the site (in the centre) and the inner part of the Schlei Fjord from northeast in early August 2006. Top left: Haddeby Bay and the settlement area of Hedeby; top centre: the area of medieval Schleswig (Photograph: Esben Schlosser Mauritsen).

southern part of the landscape of Angel. Here, 9th- and 10th-century grave finds point to a densely settled landscape. Of particular interest is a dense cluster of chamber graves and weapon graves with riding equipment (Lemm 2016, 106). They represent members of an aristocracy with direct affiliations to the 10th-century Jelling dynasty (Randsborg 1980, 129) and reflect a recolonisation in the aftermath of the conquest and incorporation of the Schleswig region into the Jelling dynasty's sphere of influence (see Andrén 1983, 53; Unverhau 1990, 22-28).

Both the northern shores of the Schlei Fjord – here forming a protecting bay – and the river provided natural anchorages and protection for large numbers of vessels. Seen from the fjord, the position of the settlement was prominent and visible within a distance of nearly 10 km. In the same way, it is possible, from the elevated position of the settlement plateau, to overview most of the inner Schlei Fjord, from Missunde in the east to the narrow entrance to the Haddebyer Noor and the settlement area of Hedeby as well as the area of medieval Schleswig (Figure 1 and 2).

Also visible from the settlement plateau was the peninsula of Reesholm, forming a bottleneck between the northern and southern shores of the fjord 1,500 m south of the settlement. Around 737 (according to dendrochronology), a massive barrage or barrier was constructed around the tip of the Reesholm peninsula (Kramer 1994; Auer and Nakoinz 2017). The structure consisted of square-shaped log-built boxes, approximately 4 m in length and width, with semi-worked logs and planks primarily of oak. It formed a 1,600 m long, linear structure with an east-west orientation, extending both east and west of the southern tip of the Reesholm peninsula. Chronologically, the structure is linked to the large-scale refurbishing and extension of the main defensive line of the Danevirke (the so-called 'Main Wall'). It was a central element of the overall defensive system of the Danevirke, protecting the Jutland peninsula against intruding forces from the south. In this system, the bottleneck south of Reesholm, where the fjord's northern and southern shores originally were less than 150 m apart, was of great strategic significance. Not only did it constitute a suitable point of control of seaborne traffic to

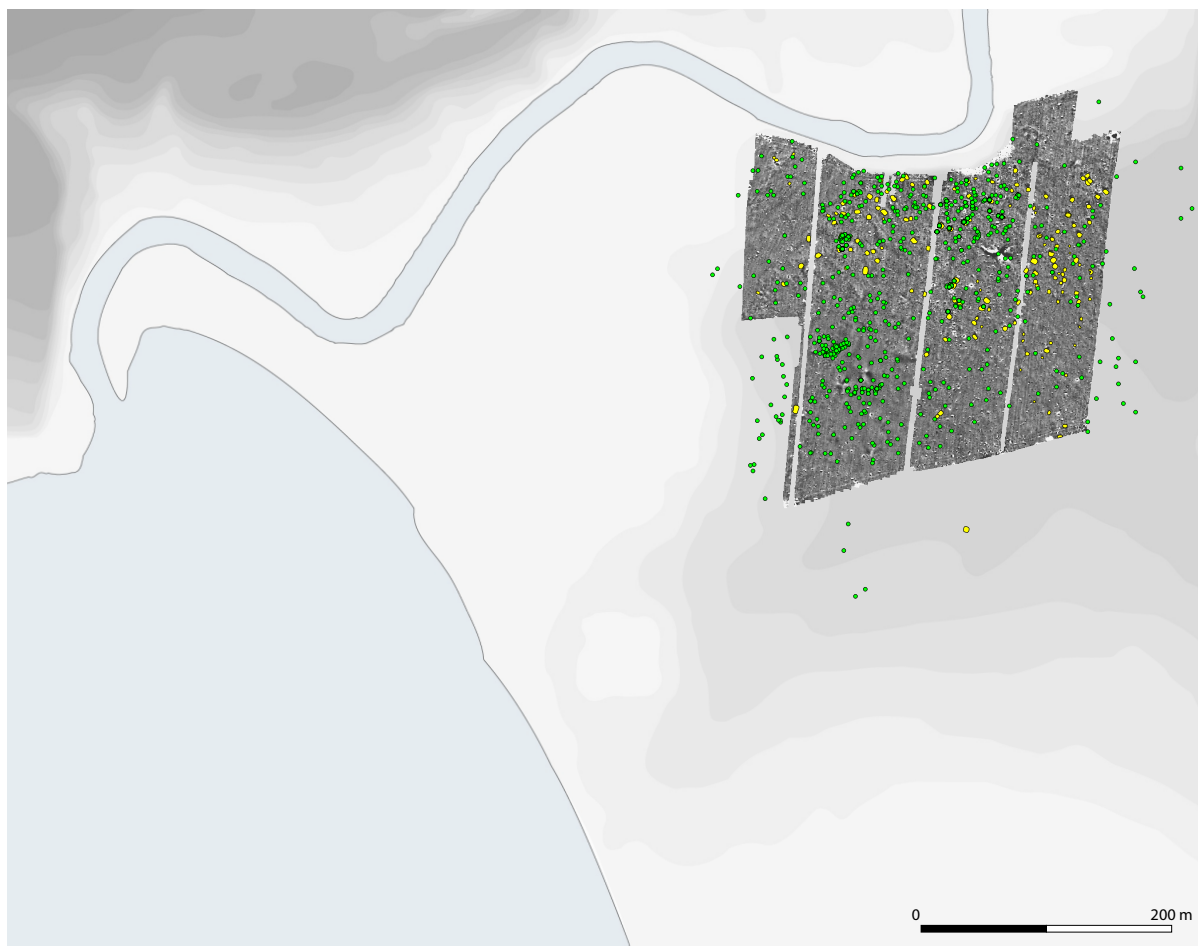


Figure 3. Combined result of non-invasive investigations at Füsing between 2003 and 2014. Yellow: geomagnetic and growth anomalies indicating pit houses and other structures (based on survey conducted by the Institute of Geosciences, Department of Archaeo-Geophysics at CAU-Kiel, Harald Stümpel and Esben Schlosser Mauritsen); green: metal detector and other surface finds (Graphics: Casper Skaaning Andersen, Archaeological IT, Aarhus University).

Hedeby and Schleswig and vice versa. It was also a vulnerable point in the defensive line of the Danvirke, making it a potential crossing point over the fjord for hostile forces coming from the south. The original function of the enormous construction remains dubious. One of its purposes may have been to prevent hostile forces from bypassing the Danvirke system by crossing the fjord at Reeshol. Besides that, one cannot rule out alternative or additional functions, such as that of a fortification of a naval base and harbour or a navigational barrier, facilitating the control of the waterway.

Discovery, methodological background and history of the investigations

Isolated stray finds and undocumented observations of prehistoric features on and around the settle-

ment plateau of Füsing since the 1950s had long indicated Viking Age settlement activity. It was, however, not until the first metal detector surveys that the Füsing site could be positively identified as a large settlement site. The initial metal detector surveys were conducted in 2003, following up on the results of a pilot study on the maritime cultural landscape of the Schlei Fjord during the Viking Age (Dobat 2003). They led to the discovery of the first metal artefacts, including scrap metal and fragments of dress accessories (Figure 3).

In 2005, a geomagnetic survey was conducted by the Department of Geophysics/ Institute of Geological Sciences, University of Kiel, using a high-resolution fluxgate magnetometer. The survey covered most of the supposed settlement area and resulted in the identification of a large number of more or less well-defined, positive geomagnetic anomalies (Figure 3). During the dry summer of

Figure 4. Total result of the four excavation campaigns from 2010 to 2014 with pit houses, longhouses and other building structures (Graphics: Casper Skaaning Andersen, Archaeological IT, Aarhus University).



2006, a series of aerial photographs were taken and analysed, confirming the evidence from the geomagnetic survey (on the background and results of the non-invasive surveys carried out prior to the excavation campaigns, see Dobat 2010).

In 2010, a generous donation by the Danish Carlsberg Foundation opened up the possibility to conduct the first excavations at Fusing. During four campaigns between 2010 and 2014, excavations uncovered 12,700 m² of the settlement area (Figure 4). The excavations were organised and run by Aarhus University in cooperation with the Archäologisches Landesamt Schleswig-Holstein and the Stiftung Schleswig-Holsteinische Landesmuseen. Campaigns in 2011, 2012 and 2014 were training excavations for students from Aarhus University (DK) and Harvard University (US), respectively. Their primary goals were

- 1) to gain insights into the overall structure of the site;
- 2) to identify the dominant types of buildings; and
- 3) to gain a better understanding of the site's chronological and functional background.

With the aim to get a representative picture of the settlement structure, the excavation followed a twofold strategy including the digging of linear trial trenches and the subsequent excavation of larger areas, where trial trenches had contained features of particular interest.

The settlement¹

Geomagnetic surveying and the aerial photographs provided a first insight into the size and overall structure of the Viking Age settlement. Seen in combination with the distribution pattern of metal detector finds, the non-invasive surveys indicate that the total spatial extent of the settlement was between 60,000 and 85,000 m² with a focal point of activities on the elevated ground along the southern riverbank in the settlement's northern part.

In light of the general appearance of settlements in Viking Age Scandinavia, the majority of the 100+ more or less well-defined growth- and geomagnetic anomalies can be interpreted as pit houses (compare Brown, Goodchild and Sindbæk 2014, 4.4) – an interpretation which is largely supported by excavation data. Pit houses obviously constituted a dominant architectural feature of the site. As anticipated, however, neither the geomagnetic survey nor the aerial photos resulted in the identification of any post-built structures at Fusing.

Most of the recorded houses and other forms of constructions are post-built houses of different shapes and sizes (Figure 4 and 5). The 24 longhouses of Viking Age date are mainly typical three-aisled constructions, consisting of a varying num-

¹ A complete dataset covering all data generated during the investigations at Fusing between 2003 and 2014 can be accessed via <https://museumsgis.dk/projekt/fusing/>

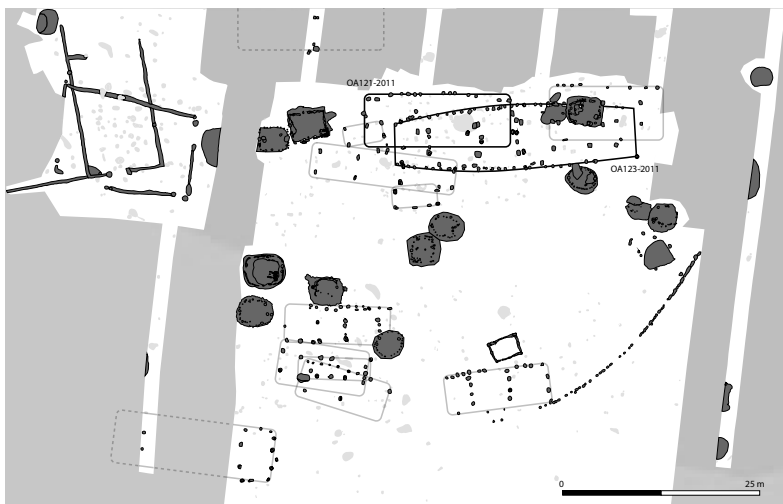


Figure 5. The excavation in the north-eastern part of the settlement. Discernible are 15 pit houses and several longhouse constructions, with the biggest of the longhouses (OA123-2011) hitherto discovered at Füsing in the trench's northern part (Graphics: Casper Skaaning Andersen, Archaeological IT, Aarhus University).

ber of pairs of roof-supporting posts, lines of wall posts and, in some cases, entrance sections. Of these, 15 have been recorded in their entirety, while the remaining ones have only been identified partially. The longhouses at Füsing vary considerably in size, with the longest building (2011-OA123) measuring between 28 and 31.25 m (depending on the interpretation of the record) in length and 8 m in maximum width. Characterised by a maximum width of 8 m and six pairs of roof-supporting posts as well as a substantial wall construction with a curved alignment, the building is a classic example of longhouse architecture in Viking Age Scandinavia (Skov 1995; Eriksen et al. 2009, 29-66). Most of the houses that have been documented in their full spatial extent, however, are considerably smaller, ranging between 6 and 20 m in length. All of the longhouses except one are orientated east-west. Finds of fragments of clay daub with a coating of chalk whitewash suggest that at least some of the longhouses at Füsing had white-coloured walls (Henriksen and Holst 2014).

The three-aisled longhouse is emblematic of Iron and Viking Age Scandinavia, and all the buildings discovered at Füsing fit well into the broad spectrum of longhouse architecture of farms and manors in the eastern parts of Jutland and the Danish isles of this period (e.g. Christensen 2016, 133-150). Based on size and construction, most of the longhouses at Füsing probably served as secondary stable or storage buildings. Another functional significance can be assumed for the few bigger longhouses, notably OA123-2011 but possibly also OA2-2010 and OA121-2011 (Figure 4). In light of their special topographic position and

relation to other buildings on the site, they most likely served as living quarters, forming the centre of a settlement complex.

Besides post-built structures, the dominating element of the settlement at Füsing was pit houses (Figure 4 and 5). Of the 52 pit houses recorded in the excavated area and the trial trenches, 25 have been fully investigated. Assuming a more or less even spatial distribution, the total number of pit houses at Füsing can be hypothetically extrapolated to between 250 and 350 individual features. It is possible to distinguish between two basic types of pit houses, with the clear majority (type 1) being characterised by a basic construction consisting of a pair of roof-supporting posts, originally supporting a presumably tent-like roof, and a line of wall posts placed at irregular intervals. While some are characterised by a round or oval ground plan, others tend to have a wall with a more rectangular shape with distinctly rounded corners. In both shape and construction, the pit houses at Füsing resemble the dominating type of pit house known from an abundance of settlements in South Scandinavia (e.g. Thomsen 2009; Tummuscheit 2011; Schade 2018, 25-33). A different constructional solution and hence shape characterises a smaller group of houses (type 2) with a strictly rectangular ground plan, one to four corner posts in addition to the roof-supporting ridge posts, and a wall trench suggesting a wall consisting of horizontal planks.

A limited number of pit houses at Füsing show traces of a more permanent use in the form of cultural layers (floor layers), and only one third was equipped with either a fireplace or a stone-built

oven construction. Most of the pit houses at Füsing are characterised by a rather flimsy construction (with notable exceptions), which can be indicative of largely seasonal usage. This is supported by the lack of evidence of craft and production activity in the primary context of the pit houses' floor layers (apart from tools for textile work such as spindle whorls and loom weights, which were found in most of the pit houses). All this suggests that the Füsing pit houses were used as dwellings, mostly on a seasonal or cyclical level.

Besides the pit houses, pits of varying sizes and fill consisting mainly of fire-cracked stones constitute another characteristic feature at the settlement. The production of foodstuff or beverages seems to be the most plausible functional explanation. One group of stone-filled pits with a central pit containing the deposition of an axe head together with a large iron knife (OA58-2010) may also suggest a cultic background. Ritual activity, notably the deposition of butchery waste and weapons, is a characteristic feature of elite residences across Scandinavia (Helgesson 2004, 226; Jørgensen 2009, 338). It is possible that this group of stone-filled pits has an equivalent background and reflects the sort of cultic/religious activity that was closely associated with chiefly estate centres and the military and religious authorities residing at these sites.

In two areas, the excavations led to the discovery of longhouse complexes: On top of the plateau in the southern part of the settlement, where the geomagnetic surveying had not indicated any significant features, two three-aisled longhouses were recorded in 2010: one larger building (OA2-2010) with five pairs of roof-supporting posts, curved long-walls and a length of 24 m, and one slightly smaller (OA18-2010) also with five pairs of roof-supporting posts and 20 m in length. Based on the architectural traits and carbon-14 dating (see appendix 1), the structures can be assumed to belong to the settlement's later phase, probably the 10th century.

On the high plateau in the northern part of the settlement, the area which according to the results of both surface surveying and excavation appears to have been the focus of the Viking Age occupation at Füsing, more than six partly intersecting



Figure 6. The iron foot trap or crow's foot discovered inside the filling of one of the entrance posts of the large longhouse OA123-2011 (before restauration) (Photo: the author).

post-built longhouses could be documented, together with a section of a palisade fence (Figure 5). The latter was probably not of defensive character, but merely served to limit access and/or demarcate an area reserved for special activities. The large longhouse (OA123-2011) was recorded here, on the very top of the natural settlement plateau. The house was built on the same spot in two successive phases at some point around 900 or the first half of the 10th century according to architectural traits, carbon-14 dating (see appendix 1) and stratigraphic relations. The building was burned down, as is indicated by substantial amounts of charcoal and other carbonised or burned material in the filling of the posts belonging to this particular building phase. In one of the two entrance posts, the excavation resulted in the discovery of a bodkin-type arrowhead. In the second entrance post, a caltrop (or foot trap or crow's foot) was found (Figure 6). Well known from the high medieval period until recent times, when they were used effectively against cavalry attacks, the caltrop is the first of its kind from a secure Viking Age context. The find and its context in one of the entrance posts calls to mind the brutal accounts of family feuds in later Norse written sources, when an opposing party was enclosed in the family hall, which was then set on fire, for instance in *Njal's Saga* (chapter 129). Although not provable, a similar event may have been the background for the burning of the largest of the Füsing longhouses, with the arrowhead and the caltrop reflecting the final stage



Figure 7. Selection of typical metal detector finds from the Fusing site with Scandinavian, Continental and Western European objects dating from the 7th to the 10th centuries. The width of the disc-brooch at the top right is 2.6 cm (Drawing: Gert Hagel-Bischof, Stiftung Schleswig-Holsteinische Landesmuseen).

of a violent conflict, probably at some point during the first half of the 10th century.

The finds

Systematic metal detector surveys and excavations in the search for artefacts buried in the plough soil at the site have produced a comprehensive finds assemblage (for a more detailed discussion of the artefacts produced prior to the excavations between 2010 and 2014, see Dobat 2010, 151-171) (Figure 7-10). During excavations, the secondary filling material of post hole features and pit houses as well as the pit houses' floor layers was sieved through a two-millimetre strain, which resulted in a large number of small-sized artefacts, notably beads and glass fragments (Figure 9 and 10b).

The finds resulting from detector surveys consist of mainly non-ferrous metal objects (signals indicating iron objects were discriminated). The majority of the assemblage consists of functionally unidentifiable fragments of predominantly lead and copper alloy, among these ingots, melting taps and a single crucible, which reflect craft activity. A touchstone and other items indicate the presence of specialised craftsmen practicing not least bronze casting and possibly even glass working, as is suggested by a small number of tesserae and melted glass.

One must ask the question whether indications of craft and production necessarily reflect a central function of the site per se, or whether they are connected with the site's function as an assembly place and military stronghold. Not least warriors would have had the need to repair and maintain their equipment and infrastructure on a daily basis, which could be an alternative explanation, notably for those finds indicating metalwork (compare Ulriksen 2018, 379; Hadley and Richards 2018, 11). Dress accessories such as brooches, pins, pendants and various types of fittings primarily of copper alloy represent a significant amount of the assemblage of surface finds and finds from the pit houses (Figure 7). The vast majority are common Scandinavian types, paralleled in the broad spectrum of especially South Scandinavian grave and settlement assemblages from the second half of the 7th to the 10th century.

A small group of artefacts attract particular attention due to their more exclusive character or their qualitative manufacture. Among these are several high-status objects of Carolingian origin and Scandinavian pieces of figurative metalwork which can be associated with the aristocratic sphere (Figure 8) (Dobat 2010, 163-169). The latter applies, for instance, to a fragment of a gilded mount from an exclusive type of 10th-century harness bow (2003-X1296). As pieces of highly figurative art displaying pre-Christian mythological



Figure 8. Selection of finds of special character from Füsing. Animal head-shaped clasp mount (top left); fragment of a mount from a harness bow (bottom left); Carolingian mount of unknown function with glass inlay and ornamentation in Tassilokelch style (centre); Carolingian strap end with silver and gold plating (bottom right); Trimisses with secondary eyelet and cross-shaped ornament (top centre); golden arm-ring (top right). Maximum length of the arm-ring 73 mm (Photo: the author).



Figure 9. Glass finds. Vessel shards and flat glass (left) and beads (right) from the filling material of pit houses (Photo: the author).

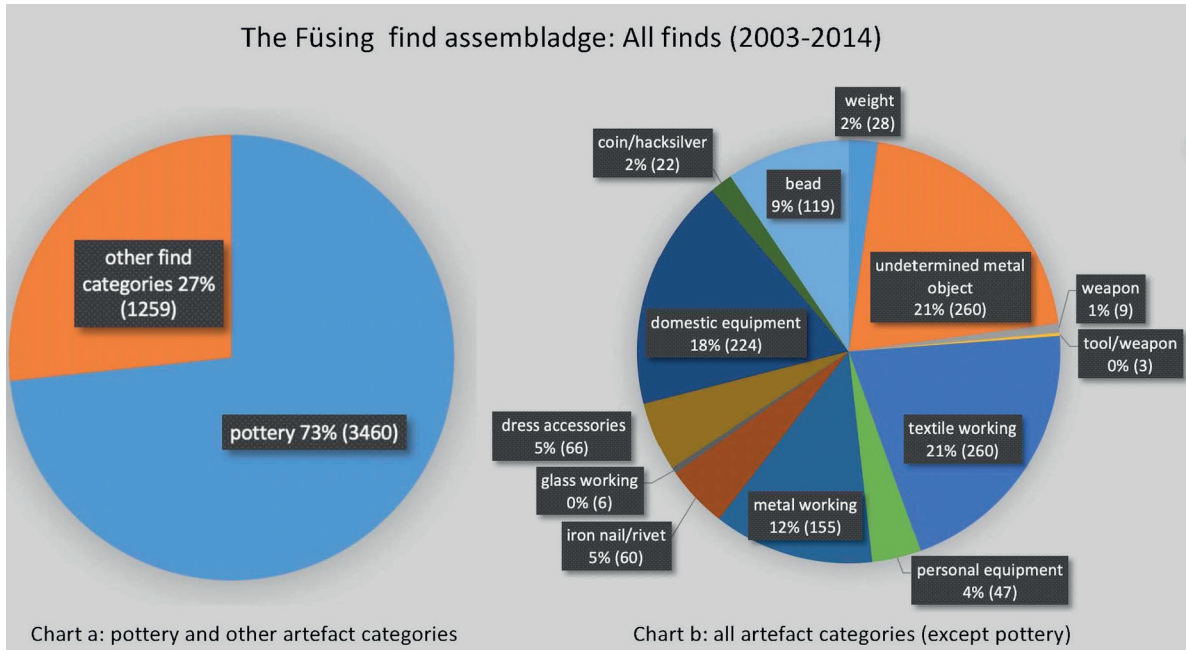


Figure 10. The Viking Age finds assemblage recovered at Füsing between 2003 and 2014. Chart a: all finds; chart b: all finds except pottery from plough-soil context and excavated features (Graphics: the author).

concepts, this and comparable artefacts represent the highest standard of craftsmanship in figurative metalwork in Viking Age South Scandinavia. Parallels to the Füsing piece are known from a small number of graves or hoards, which all seem to have been associated with the aristocratic sphere of 10th-century Denmark (Dobat 2004, 288). A gold arm-ring (2003-X1307) presumably derives from a disturbed hoard from the settlement area. Not least due to the rareness of gold objects compared to silver objects in the Viking Age, the piece has to be connected to the highest social level of the Scandinavian societies. Another special piece is a gold tremissis, minted in the 7th century, presumably in modern-day Holland (2005-X1184). It was secondarily used as a pendant, with a Christian cross on the obverse side, making it one of the oldest known cross amulets in Northern Europe.

Excavations of the pit houses yielded not only a large assemblage of ordinary settlement waste, i.e. animal bones/teeth (including fishbone) and pottery, but also iron implements, the majority being knives, nails, rivets and rivet plates used primarily in clinker-built vessels (Figure 10b). The repair and possibly even building of ships, obviously, was an important element at the site. Among the iron objects are a comparably large number of finds

which underline the site's martial character, e.g. at least seven arrowheads (2012-X121; 2010-X574), axes or axe fragments (2010-X1; 2012-189-X182; 2012-189-X366) as well as a single iron sword pommel (2005-X1244). A military background can also be assumed for a number of artefacts of British/insular origin, most probably representing booty from raiding campaigns. Among these are also four lead gaming pieces (e.g. 2012-X165; 2014-X129), which can be linked to the material world of the Great Heathen Army operating in England during the 860/70s (Dobat 2017).

Somewhat surprising is the large amount of glass artefacts (Figure 9-10). In total, the 25 pit houses have produced 110 glass beads of varying sizes and shapes and around 30 shards from at least 15 individual drinking vessels. Especially the presence of glass drinking vessels underlines the high social status of the site, given its relative rareness in 'rural' settlements in general.

Weights, hacksilver and complete or fragmented silver coins (dirhams) suggest trade and exchange. This is supported by the many glass beads and vessel shards found, which probably functioned as a form of currency in the period prior to the hacksilver economy of the 9th and 10th centuries (compare Sindbæk 2012, 7). With respect to the evidence of craft and production, one must question whether

these finds are indicative of the site's function as a trading place or whether they are merely a natural by-product of the presence of people, notably warriors, at the site (compare Hadley and Richards 2018). The site's integration into the contemporary supra-regional and regional trade networks is also underlined by the large number of quernstone fragments of Rhinish basalt (< 157 fragments weighing 8.1 kilo, from 18 features), which probably reached Scandinavia as a by-product of the continental trade in the form of ballast material in the hull of trading ships. Continental/Frisian type brooches (e.g. 2003-X1251; 2005-X1187) are indicative of the presence of people of Western European origin, at least during the early phase of the site. In comparison with nearby Hedeby, however, imported finds and notably Rhinish pottery or later Slavonic/Baltic pottery are underrepresented in the Füsing material, suggesting that overall, the site did not have a central role in international trade.

Chronological development

The settlement was established at some point during the second half of the 7th century and at the latest around 700, according to metal finds. Altogether, 15 individual brooches can be assigned to the chronological horizon of the 7th and 8th centuries, among these a classic beak-shaped brooch, early oval brooches and rectangular plate brooches (e.g. find numbers: 2014-X174; 2011-X79; 2012-X67). A significant part stems from the pit house floor layers, for which also other finds and carbon-14 dating (see appendix 1) indicate a comparably early date, which cements the chronological significance of these objects as marking the beginning of the Viking Age settlement at Füsing.

The early beginning of the settlement activities is further substantiated by carbon-14 dating of carbonised grain, burned bone or charred nutshells from pit houses and longhouses (see appendix 1). Of 30 available analyses, one third have provided date ranges covering the 7th and 8th centuries. The majority stem from pit houses, but also at least two of the three-aisled longhouses can be assigned to the earliest horizon of settlement activity in the 7th century, with due reservations (see appendix 1).

In conclusion, finds and carbon-14 dating of settlement structures provide a somewhat surprising but nevertheless well-founded dating frame for the beginning of the Viking Age settlement activity at Füsing around 700 at the latest, probably already during the second half of the 7th century. Füsing is thus one of the first sites in the region with direct evidence of settlement activity during the 7th and early 8th centuries, which invalidates earlier ideas of the migration period settlement hiatus in the region of Angel (the continental equivalent of East and West Anglia) lasting until the 9th century (see also Lemm 2018, 55). The site's foundation clearly corresponds with the earliest building phases of the Danevirke and the Reesholm barrier in the 7th century and around 737. It also corresponds with the earliest indications of settlement activity around Haddeby Bay (Südsiedlung), later Hedeby (Hillberg 2018, 135-140).

Finds and carbon-14 dating of settlement structures indicate continuous occupation throughout the Viking Age with a focus on activity in the early settlement phase, during the 7th and 8th centuries and the 10th century, respectively. While pit houses were the dominant element of the site during its early phase, the ¹⁴C dates obtained from the longhouses are more evenly spread across the settlement's entire lifetime. All available data suggest that the settlement at Füsing was abandoned – or moved to a new location – at some point during the last decades of the 10th century and at the latest around 1000.

Structure, function, and social background

Structurally, the Füsing site appears to have been divided into two areas: a permanent residential area with longhouses and auxiliary buildings occupying the elevated part of the settlement plateau and a more seasonal activity area, dominated by pit houses in the lower terrain. Most of the pit houses belong to the site's early phases, the 7th and 8th centuries, suggesting a more seasonal/periodic usage of the site during this period. By the 9th and 10th centuries, the site's permanent nature and 'farm-like' character emerge more clearly. Despite its rural character, there is no indication of the site being an active agrarian farmstead. On

the contrary, the limited zoological material indicates that animals were not held at the site but only brought in for consumption.

Füsing apparently also functioned as an assembly place (compare Jørgensen, Jørgensen and Thomsen 2011). As such, the site fulfilled various functions, including economic transaction, jurisdiction, religious and political meetings and military/defensive purposes. The intensity of activity at Füsing, and hence also the number of residents, probably varied considerably, with a high level of activity on special occasions (market, religious/political gatherings, etc.) and in situations of acute need (military threat, royal presence, etc.).

For a sailor passing through the bottleneck between the southern shore and the Reesholm peninsula, the plateau of the Füsing settlement would have been visible from a considerable distance (Figure 1). The importance of this aspect and the intentionality of the site's commanding setting is underlined by the evidence of whitewashed buildings. The outer walls of at least some of the longhouses would have made them stand out even more against the skyline above the fjord's northern shore. Bearing in mind the central role of the longhouses in religious, political and military aspects, and their significance as elements of rulership identity in Viking Age Scandinavia, the prominent position of the buildings at Füsing should also be seen as signalling rights and authority on behalf of their residents (Roesdahl 1997).

There is a clear Scandinavian footprint in both the structural remains and the finds assemblage. The site and the majority of its inhabitants (with few exceptions notably during the site's early phase) were obviously firmly embedded in a Scandinavian cultural context. With regard to the site's social background, especially the prestigious metal objects suggest an association with the upper strata of the social hierarchy of Viking Age society.

The longhouse complex in the settlement's northern part, which has to be regarded as an example of high-status architecture, obviously supports this reading of the material. Füsing does not match the scale and magnitude of hall buildings at contemporary royal sites such as Tissø or Lejre. However, its architectural traits, spatial continuity and prominent position in the landscape make it similar to hall buildings in estate centres all

over South Scandinavia (e.g. Christensen 2016, 133-150; Jørgensen 2009). The leading protagonists residing at the site on a permanent basis were members of an aristocratic elite and participated in a network of social relations that also involved the changing royal powers. This is further substantiated by the special ownership constellations and juridical status of the nearby village of Kahleby (on the possible significance of the place name, see Dobat 2011, 65), suggesting that Füsing and the surrounding area originally belonged to the king's personal land holdings (patrimonium) or the crown estate (*kongeleiv*) (see Andréén 1983). The clustering of 10th-century chamber and weapon graves with close links to the 10th-century Jelling dynasty in the immediate hinterland of the site points in the same direction. At the same time, the site was characterised by a high level of social diversity, with the occupants comprising both a permanent household and presumably changing numbers of short-term visitors. Among the latter, we must assume that there were a significant number of warriors/naval forces, which is highlighted by the evidence of shipbuilding or repair.

Probably the most convincing parallel to the Füsing site, not only in terms of social background and status but also in terms of structure and function, is the 8th- to 10th-century settlement at Aggersborg, Northern Jutland. The site has been interpreted as a royal estate centre (*kongeleiv*), established with the special purpose to monitor the strategically significant naval passage through the Limfjord (Roesdahl, Sindbæk and Pedersen 2014, 133-137). The newly discovered estate centre at Munkebo at the Kerteminde Fjord in the north-eastern part of Funen (Beck 2016) provides another parallel in this respect, as both were overlooking important naval waterways – and in the case of Munkebo also a defensive naval barrier. The estate centre at Erritsø, situated in direct proximity to the passage between Jutland and the island of Funen (Pedersen, Ravn and Lindholm 2019) or the settlement at Bejsebakken in the eastern part of the Limfjord in Northern Jutland (Sarauw and Enevold 2019), can be drawn upon as other fitting comparisons.

Discussion

The starting point of settlement activity at Füsing around 700 corresponds with the construction of the barrage or barrier at Reesholm and the large-scale refurbishing and extension of the Danevirke around 737 (Kramer 1994; Auer and Nakoinz 2017). It is likely that the site's foundation is somehow related to this massive investment into the Danevirke as the main defensive line for the Jutland peninsula (Dobat 2008; Tummuscheit and Witte 2019). The establishment of Füsing also coincides with the earliest indications of settlement activity around the Haddeby Noor, which marks the earliest nucleus of the later emporium Hedeby (Hilberg 2018; Kalmring and Holmquist 2018); and throughout the 9th and 10th centuries, Füsing flourished simultaneously with this international nodal point of global trade and precursor of medieval Schleswig (Hilberg and von Carnap-Bornheim 2007; Schultze 2008; Radtke 2009; Kalmring 2010; Hilberg 2016).

All this begs for a discussion of the possible role and significance of Füsing in relation to both the Danevirke and Hedeby/Schleswig.

Hedeby and Füsing

The coexistence of Hedeby and Füsing as places of production and exchange until around 1000 underlines the fact that Viking Age urbanism, in contrast to later periods, did not entail urban monopoly on economic functions, even within a narrow regional context. The two sites' concurrence can be seen as reflecting a functional specialisation rooted in the orientation towards different cultural and economic spheres: While Hedeby was orientated first and foremost towards the continent, functioning primarily within a superregional context (e.g. Jankuhn 1986; Sindbæk 2005), Füsing appears to have been deeply rooted in a traditional Scandinavian context and focused on its regional hinterland.

Füsing thus also highlights the special character of the economic networks in Viking Age Scandinavia until the 11th century, when the new urban centres of international trade, the emporia, existed in parallel with a traditional system of economic

relations based on manorial centres. As a Scandinavian counterpart to the multicultural emporium Hedeby, the site may have served as a distribution centre for import goods within the regional exchange networks, thus linking the traditional Scandinavian 'manor economy' and the new urban economy. It is these two different economic networks, which at a later stage during the 11th century merged to form the first medieval towns, in which political and religious power with a monopoly over economic functions were unified.

As another possible approach to the background of the close spatial proximity of Füsing and Hedeby (Figure 1 and 2), one must incorporate the aristocratic residences at other emporia in Scandinavia and the southern Baltic coast. Especially transparent is the case of Adelsö/Hovgården on the island of Adelsö, located directly north of Birka or Skiringssal/Husby at the Viksfjord, in the northern hinterland of Kaupang (Hedenstierna-Jonson 2016; Skre 2007, 223). Situated only a few kilometres away, though still in close proximity of the trading sites, these elite residences were essential components of the emporia's topography and a presupposition for the chief's/king's obligation to secure market peace, while at the same time being the base from where he/she exercised the right to demand a share in the economic transactions at the sites. Not least the frequent mentioning of royal visits or the reference to a royal representative named Hovi (*comes praefati vici*) in the 9th century *Vita Ansgarii* (Life of Ansgar, 104) indicates a similar setup for Hedeby.

Another, and possibly more fitting, parallel to the proximity of Füsing and Hedeby may be the so-called Birka garrison. Established during the 10th century, at a distance from the harbour and the early town, this site comprised a three-aisled longhouse on a high plateau, surrounded by defensive earthworks. A distinct finds assemblage connects the complex with an elite troop of warriors, stationed here to both secure and control the economy and the movement of people and valuable goods at the site (Hedenstierna-Jonson 2016).

Viewing the commanding position of the settlement at Füsing, in eyesight of Hedeby and vice versa, and considering the strategic significance of the peninsula Reesholm for the control of this waterway, Füsing might have fulfilled a similar role as the

above-mentioned royal estate centres in the vicinity of other emporia – at least until sometime in the second half of the 10th century (see also Schietzel 2014, 32).

Füsing could have been the residence of a royal representative, a steward or jarl, together with his retinue, similar to the later ‘husebyer’ in Scandinavia (Christensen, Lemm and Pedersen 2016). As such, the site would not only have signalled royal presence and responsibility in the area. From the site, the early kings would also have secured peace and asserted royal interests and involvement in the emporia’s mercantile activities. Warriors were the basis of the early king’s power and of the royal patronage over the early emporia. Since the economic success of the early towns was dependant on their status as neutral zones, military forces would ideally have been stationed outside the spatially demarcated urban area. In its strategic position on the way to, and in eyesight of, the urban settlement area at the Haddeby Bay, Füsing would have been ideally placed as a military base, a garrison, in connection with Hedeby.

Füsing also underlines the special character of Hedeby/Schleswig as one of the Scandinavian emporia which, unlike the later medieval towns, had a more dispersed structural appearance, with the different institutions and functions, notably royal representation and military presence, being scattered over a larger geographical area.

Füsing, Reesholm and the Danevirke

With the contemporary barrage or barrier at Reesholm, the Füsing site is placed in direct proximity to a central element of the Danevirke system; a system of linear earthworks between Eckernförde Bay and the Schlei Fjord in the east and the rivers Treene and Eider in the west. This massive defence work dates back to as far as the second half of the 7th century, possibly even earlier. Its primary function was to control and, if necessary, block the natural bottleneck of the Schleswig Isthmus, and to prevent hostile forces from penetrating deeper into the Jutland peninsula (Dobat 2008; Tummuscheit and Witte 2019).

As outlined above, the barrage or barrier at Reesholm was an integrated element of the Dane-

virke system. Situated at the narrow bottleneck south of Reesholm, where the fjord’s northern and southern shores originally would have been less than 150 m apart, one of its functions was probably to prevent hostile forces from crossing the fjord and thus bypassing the Danevirke ramparts. However, it may also have been used as the fortification of a naval base and harbour or as a navigational barrier, facilitating the control of the waterway.

There is a clear chronological overlap between the establishment of Füsing and the earliest Danevirke in the second half of the 7th century as well as the barrage or barrier at Reesholm from around 737. Beyond that, ship rivets together with arrowheads and other examples of weaponry as well as other finds in the assemblage at Füsing suggest military functions and the presence of warriors. The Danevirke, at least during its early phases, most probably was not manned with a corps of troops guarding the structure on a permanent basis. Activity at and around the defensive structure was most likely limited to periods of acute crisis (Dobat 2008, 55-56). In this light, also the many pit houses at Füsing, suggesting seasonal occupation and a high level of activity on special occasions, could point towards a relationship between Reesholm/Danevirke and the Füsing site.

Geographically, Füsing and Reesholm are situated at the very centre of the Danevirke system, with its western flank (the main wall) and its eastern flank (eastern wall) roughly six kilometres away across the open water of the fjord. In this strategic setting, Füsing may have fulfilled a key role in the defensive system, not only as one of the strategic nodes in the organisation and defence of Danevirke but also, in times of acute crisis, as a garrison behind the Reesholm blockage. Apart from blocking the crossing over Reesholm, the barrier would, in combination with the natural harbours east and west of the peninsula, have constituted a perfect naval base. In the event of a military attack, both the western and the eastern sections of the Danevirke were within reach via the open waters of the fjord. This would have been of vital importance, given the significance of ships and naval transportation in warfare at the time. Even though the Danevirke is a terrestrial defensive system, military organisation in the Viking Age was still primarily

centred on naval warfare and ships. This is indicated not least in the Frankish Annals' account of the events in 804 and 808.

The existence of a strategic node in the organisation and defence of the Danevirke, possibly in combination with a periodic garrison, is indicated in the Frankish Annals with the reference to the year 817 and a certain Gluomi as the Danish border guardian (*custos Nordmannici limitis*) (Frankish Annals, 114). This Gluomi must have been living somewhere in the hinterland of the Danevirke. It is possible that he was one of the magnates residing at Füsing during the early 9th century, together with a group of military personnel with a special obligation to watch over the Danevirke.

Sliesthorp

The reference to King Godfred's Sliesthorp in the Frankish Annals for the years 804 and 808 is traditionally seen as relating to the so-called Südsiedlung – until recently the only known settlement in the vicinity of Hedeby dating back to earlier than 800. Situated immediately south of the semi-circular rampart, the Südsiedlung is characterised by square-shaped pit houses. The archaeological evidence indicates production and trade and a population with close links to the Continent and the North Sea region (Steuer 1974; Hillberg and von Carnap-Bornheim 2007). The Südsiedlung, hence, does not necessarily echo what could be expected from a site with close relations to Danish royal power and its military troops/naval forces. Also, when it comes to settlement structure, the Südsiedlung with its clear coastal orientation and the lack of longhouses, does not resonate with the concept of a manor or farm, as implied in the place name Sliesthorp (see also Hillberg 2018, 140-142). Unlike the form [Slies]-vic, which is used in all written references after 808, the specific place name component [Slies]-thorp is rather untypical for a coastal settlement and a trading site. In the perspective of the Frankish author and his audience, Sliesthorp would probably have denoted a village, farm or manor. Only with the reference to the site as 'portus' in 808, the name would have been understood as denoting a coastal trading site (see also Laur 1955, 67-83).

The Südsiedlung, however, is not the only early settlement around the Haddeby Bay. More recent investigations around the Hedeby settlement area and the so-called 'Hedeby Hochburg' suggest that the earliest roots of the settlement at Hedeby go back to at least the early 8th century (Kalmring and Holmquist 2018, 282; Hilberg 2018). However, the indications of an early settlement horizon at the Haddeby Bay (Hedeby) are still more or less anecdotal, compared with the direct evidence of settlement activity during the 7th and early 8th centuries at Füsing. This naturally begs the question whether Sliesthorp in the Frankish Annals may be associated not with the early settlement phase at Hedeby, but with Füsing.

According to the few details extractable from the Frankish Annals, the historical Sliesthorp was:

- 1) a farm- or manor-like settlement;
- 2) providing harbour facilities for a large unit of naval forces and access to the sea;
- 3) situated at the border between a Danish kingdom and Saxony and
- 4) placed in geographical connection to both Hedeby and the Danevirke (Frankish Annals, 79, 89).

All these factors are met by the Füsing site. At the time of the events around 804 and 808, it obviously was a well-established settlement. It was strategically well-placed, naturally protected against land-based attacks from the north and at a perfect natural harbour around the mouth of the Füsing River and the north-eastern shores of the Kleine Breite. Last but not least, the site was situated in direct proximity to the Reesholm barrier, which was established 70 years before Godfred rallied his naval forces in the Schlei Fjord. In this geographical position, Füsing/Sliesthorp would have been strategically well-placed at the very centre of the Danevirke defensive line (see above). By the time of Godfred's campaigns, the Reesholm barrage or barrier would probably still have been in place and would have provided harbour facilities on both sides of the Reesholm peninsula.

Another strategic advantage of the location of Füsing would have been its position in the northern hinterland and behind(!) the Danevirke and the natural barrier of the fjord. In comparison, the early settlements around the Haddeby Bay would have been in a more vulnerable position, more

than 2000 m south and in front of the Danevirke – in ‘no man’s land’. In addition, Hedeby is exposed towards the ‘Oxen or Army Road’ only a few kilometres to the west, which would have been the preferred passageway for an invading force penetrating from the south (as proved to be the case during later conflicts in the 19th century, when the Danevirke was also used as a defensive line) (Dobat 2008, 43–44). Such strategic considerations do not provide definite answers. Nevertheless, the Frankish Annals inform us that king Godfred and his forces in the years 804 and 808 were manoeuvring under acute threat. Immediately prior to both events leading to the mentioning of Sliesthorp, Frankish forces had crossed the Elbe River. And although Godfred’s military power obviously was based on highly manoeuvrable naval forces, it simply seems odd that he would have opted for a military base in the vulnerable and exposed strategic position south of the defensive line of the Danevirke.

One can conclude that Füsing resembles the report in the Frankish Annals referring to Sliesthorp as the centre of Danish King Godfred in 804 and 808: the geographical position at the border between a Danish kingdom and Saxony; the perfect natural harbour of the Füsing River and direct access to a major waterway; the proximity to Hedeby; and finally, its strategic location at the centre and in the northern hinterland of the Danevirke system. On this background, it is possible – as already suggested by Skre (2007, 459) – that the settlement at Füsing was Godfred’s ‘*manor/village at the Schlei fjord*’ from where he or his representatives not only administered the refurbishment of the Danevirke, but also laid the foundations for the development of Hedeby as a trading centre in 804 and 808.

To provide a balanced reading of the data at hand, it needs to be emphasised that the available ¹⁴C data for building structures (longhouses and pit houses) clearly point at the 7th and 8th as well as the 10th century as the main period of activity at Füsing. The 9th century remains somewhat elusive, at least in the ¹⁴C data, possibly due to the periodic nature of Godfred’s military campaigns in 804 and 808.

Füsing and Schleswig

Finally, it is striking that the end of the settlement activity at Füsing corresponds to the supposed beginning of Schleswig as a royal and ecclesiastical centre at the northern shore of the Schlei Fjord – at a certain distance from Hedeby (Figure 1). The earliest absolute chronological dates indicate the establishment of the medieval town of Schleswig in the second half of the 11th century. Both archaeological and written sources, however, indicate an earlier foundation (Schlesinger 1972, 87–91; Lüdtke 1985, 131–138; Radtke 2009, 151–156). The spatial separation of the ecclesiastical and political institutions in Schleswig (*civitas*) from the commercial activity at Hedeby (*emporium*) was maintained until the middle of the 11th century, when Hedeby was abandoned, and the economic functions were moved to the northern shore of the Schlei Fjord (Hilberg 2016, 75).

The establishment of Schleswig at the beginning of the 11th century has to be seen against the historical background of the establishment of a second generation of towns (*Civitates*) in South Scandinavia. These new towns evolved from older chiefly or royal estates, and it is primarily the function of these older sites as mainly religious and political centres that the new generation of towns take over (Hodges 1982, 171–173; Skre 2007, 455). Examples of these developments around 1000 are Uppåkra in Southern Sweden, which is replaced by Lund or Lejre on Zealand, which is replaced by Roskilde (Hårdh 2010; Christensen 2016, 275–285; Jørgensen 2009). It is possible that the end of Füsing and the corresponding rise of Schleswig have to be seen against a similar background. With the establishment of Schleswig as a royal and ecclesiastical central place, Füsing might have lost its functional *raison d’être*. The rise and decline of Füsing can thus also be seen as exemplifying the long-term transformation of the Viking Age emporia from urban islands in a rural sea, into towns within an urbanised society.

Conclusions

Finds and features suggest that Füsing was an estate centre and assembly place that flourished from the

early 8th to the late 10th century. As such, however, the site cannot immediately be placed inside a fixed template of high-status settlement types in Viking Age Scandinavia. Throughout its existence, it developed from a partly seasonal assembly place to a more permanent settlement and estate centre. Its later phase certainly comprises the structural elements of a manorial estates. It is, however, more questionable, whether the site ever functioned as such. As an estate centre, the site would have been supplied and sustained by the surrounding agrarian communities. However, in contrast to the large chiefly and royal manorial estate known all over Scandinavia, the primary function of the Füsing site was of a military/defensive and strategic nature. As a garrison and naval base in the southern borderland of the early Danish kingdom, it was primarily related to the Danevirke. Beyond that, it may also have served as the seat of a royal representative in the region, notably in connection with the emporium Hedeby. Füsing was probably the residence of a royal representative, a steward or jarl, and in its commanding position high above the fjord, the site would have signalled royal presence and responsibility in the area. As a regional centre of production and trade/exchange, Füsing may also have fulfilled the role as reloading point, linking supra-regional and regional exchange networks. Until future discoveries in the region prove otherwise, it is possible that Füsing is identical to King Godfred's Sliesthorp, mentioned in the Frankish Annals. All these hypotheses are based on the current state of the archaeological evidence regarding the contemporary settlement landscape around the inner fjord. Future discoveries (for example the discovery of another candidate for the site of the historical Sliesthorp or a royal estate in connection with Hedeby) will most likely change this interpretation.

What in other circumstances would have been merely another productive site and estate centre hence takes on a different significance because of

its connection with the Schlei Fjord, the emporium Hedeby, medieval Schleswig and the defensive structure of the Danevirke. With these manifestations of the development of supra-regional trade relations, urban culture and centralised military/political power in Northern Europe, Füsing is embedded in a unique geographical context. In this special setting, Füsing positions itself in the wider context of estate centres in Scandinavia; places such as Aggersborg, Munkebo and Erritsø, which are all situated at strategic points along important waterways. As estate centres within a network of royal landholdings, these sites, like Füsing, held special significance in the contemporary geo-political and military/defensive organisation of the early Danish kingdom. Not least during the politically troubled times of the early 9th century, when strong warrior kings, among them Godfred, saw their maritime kingdoms around Jutland threatened by the expansion of the Frankish Empire.

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References

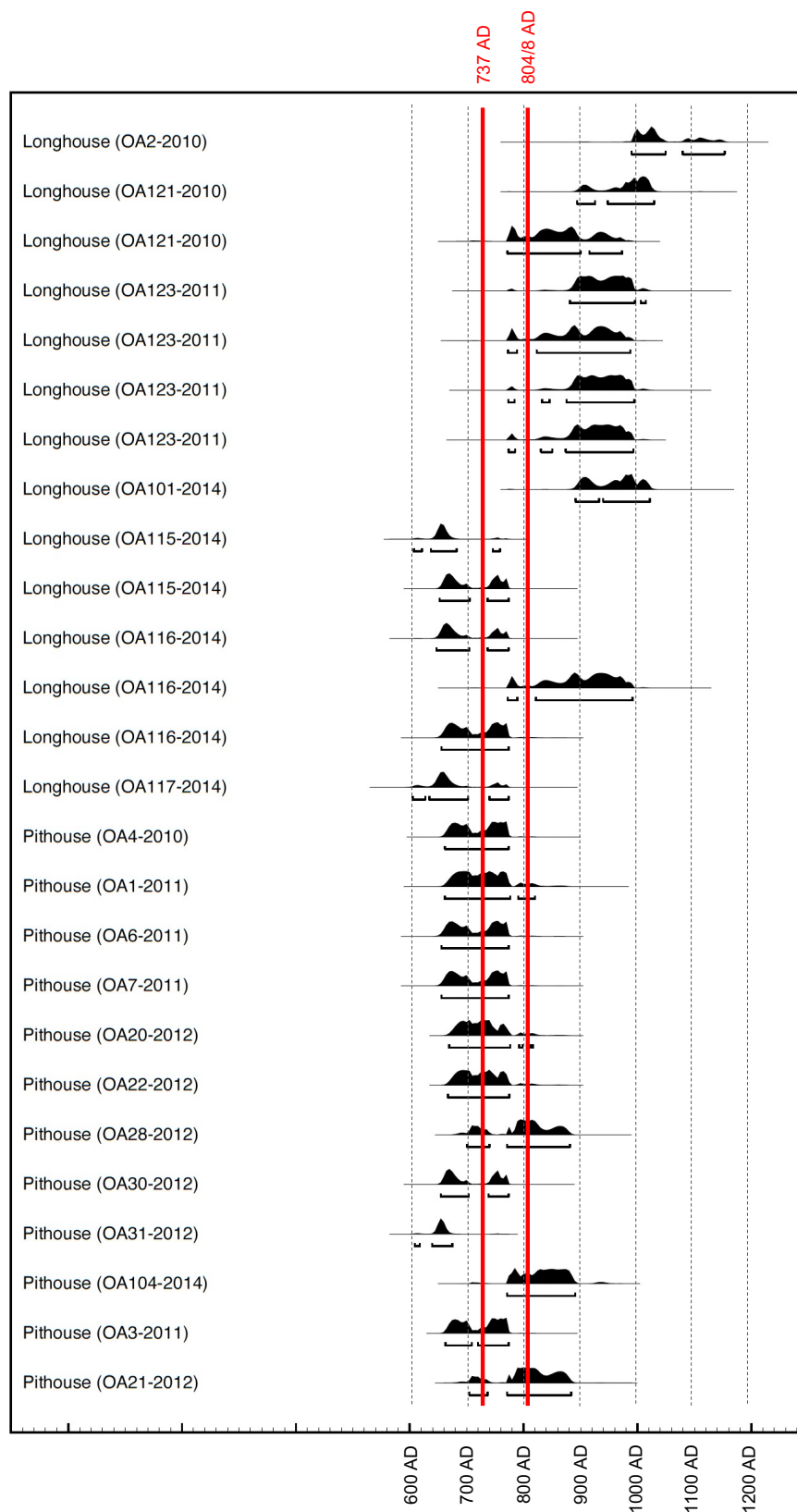
- Andrén, A., 1983. Städer och kungamakt – en studie i Danmarks politiska geografi före 1230. *Scandia* 49, 31-76.
- Auer, J. and Nakoinz, O., 2017. Archaeology in Murky Waters: recent investigations of an 8th century structure in the Schlei, Northern Germany. A submerged structure in the Schlei: preliminary report. In: J. Litwin, ed. *Baltic and beyond. Change and continuity in shipbuilding*. Gdańsk: The National Maritime Museum, 89-94.
- Beck, M.R., 2016. Vikinger på Munkebo Bakke. *Cartha* 2015/2016, 39-58.
- Brown, H., Goodchild, H. and Sindbæk, S.M., 2014. Making Place for a Viking Fortress. An archaeological and geophysical reassessment of Aggersborg, Denmark. *Internet Archaeology* 36. <https://doi.org/10.11141/ia.36.2>
- Christensen, T., 2016. *Lejre bag myten. De arkæologiske udgravninger*. Højbjerg/Aarhus: Jysk Arkæologisk Selskab/Aarhus Universitetsforlag.
- Christensen, L.E., Lemm, T. and Pedersen, A., (eds.) 2016. *Husebyer – status quo, open questions and perspectives*. Copenhagen. The National Museum.
- Dobat, A.S., 2003. The maritime hinterland of Hedeby. *Jahrbuch Bodendenkmalpflege Meckenburg-Vorpommern* 51, 419-435.
- Dobat, A.S., 2004. Der Neufund eines wikingerzeitlichen Krummsielbeschlagnagel aus dem Landesteil Schleswig. *Archäologisches Korrespondenzblatt* 34, 277-292.
- Dobat, A.S., 2008. Danevirke revisited. An investigation into military and socio-political organisation in south Scandinavia (c. AD 700 to 1100). *Medieval Archaeology* 52, 27–67. <https://doi.org/10.1179/174581708x335431>
- Dobat, A.S., 2010. Füsing: Eine jüngereisenzeitliche Siedlung im Umfeld von Hedeby/Schleswig (Vorläufiger Bericht über die Ergebnisse der Prospektionen 2003-05). In: Birte Anspach, Andres S. Dobat, eds. *Forschungen zu Haithabu und Füsing* (Die Ausgrabungen in Haithabu 16). Neumünster: Wachholtz Verlag.
- Dobat, A.S., 2011. Mapping social order. Place-names containing rink or karl and the development of political administration in 10th century Southern Scandinavia. *Norna-Rapporter* 86, 41-73.
- Dobat, A.S., 2017. From Torksey to Füsing and Hedeby: gambling warriors on the move? In: B.V. Eriksen et al., eds. *Interaktion ohne Grenzen: Beispiele archäologischer Forschungen am Beginn des 21. Jahrhunderts*. Neumünster: Stiftung Schleswig-Holsteinische Landesmuseen, 597-606.
- Eriksen, P., Egeberg, T., Olesen, L. H. and Rostholm, H., 2009. *Vikinger i vest. Vikingetiden i Vestjylland*. Højbjerg: Jutland Archaeological Society.
- Frankish Annals 1977. Die Reichsannalen (Quellen zur Karolingischen Reichsgeschichte), translated by R. Rau. In: R. Buchner, ed. *Ausgewählte Quellen zur deutschen Geschichte des Mittelalters V*. Darmstadt: Wissenschaftliche Buchgesellschaft, 1-162.

- Hadley, D.M. and Richards, J.D., 2018. In search of the Viking great army: beyond the winter camps. *Medieval Settlement Research* 33, 1–17. <https://doi.org/10.5284/1059013>
- Hedenstierna-Jonson, C., 2016. Spaces and Places of the Urban Settlement of Birka. In: L. Holmquist et al., eds. *New Aspects on Viking-age Urbanism c. AD 750-1100*. Stockholm: Stockholm University, 23-34.
- Helgesson, B., 2004. Tributes to be spoken of. Sacrifice and Warriors at Uppåkra. In: L. Larsson, ed. *Continuity for Centuries: a ceremonial building and its context at Uppåkra, southern Sweden*. Stockholm: Almqvist & Wiksell International, 223–239.
- Henriksen, P.S., and Holst, S., 2014. First evidence of lime burning in southern Scandinavia: lime kilns found at the royal residence on the west bank of Lake Tissø. *Danish Journal of Archaeology* 3:2, 119-128. <https://doi.org/10.1080/21662282.2014.990310>
- Hillberg, V. and von Carnap-Bornheim, C., 2007. Recent archaeological research in Haithabu. In: J. Henning, ed. *Post Roman Towns – Trade and Settlement in Europe and Byzantium* 1. The Heirs of the Roman West. Berlin/New York: De Gruyter, 199-218.
- Hilberg, V., 2016. Hedeby's Demise in the Late Viking Age and the Shift to Schleswig. In: L. Holmquist et al., eds. *New Aspects on Viking-age Urbanism c. AD 750-1100*. Stockholm: Stockholm University, 63-80.
- Hilberg, V., 2018. Detektorundersuchungen in Haithabu 2003-2015. Aussagemöglichkeiten und Erkenntnisgewinn für die Entstehung eines wikingerzeitlichen Handelszentrums. In: V. Hilberg and T. Lemm, eds. *Viele Funde – große Bedeutung? Potenzial und Aussagewert von Metaldetektorfunden für die siedlungsarchäologische Forschung der Wikingerzeit*. Schleswig: Verlag Ludwig, 125-153.
- Hodges, R., 1982. *Dark Age Economics: The origins of towns and trade A.D. 600-1000*. London: Duckworth.
- Hårdh, B., 2010. Case study 2: Uppåkra – Lund. A central place and a town? Western Scania in the Viking Age. In: B. Ludowici et al., eds. *Trade and communication networks of the first millennium AD in the northern part of Central Europe: central places, beach markets, landing places and trading centres*. Stuttgart: Theiss, 101-111.
- Jankuhn, H., 1986. *Haithabu: ein Handelsplatz der Wikingerzeit*. Neumünster: Karl Wachholz Verlag.
- Jørgensen, L., 2009. Pre-Christian cult at aristocratic residences and settlement complexes in southern Scandinavia in the 3rd-10th centuries. In: U. von Freeden et al., eds. *Glaube, Kult und Herrschaft. Phänomene des Religiösen im 1. Jahrtausend n. Chr. in Mittel- und Nordeuropa*. Frankfurt: Römisch-Germanische Kommission des Deutschen Archäologischen Instituts, 329-354.
- Jørgensen, A.N, Jørgensen, L., and Thomsen, L.G., 2011. Assembly sites for cult, markets, jurisdiction and social relations. Historic-ethnological analogy between North Scandinavian church towns, Old Norse assembly sites and pit house sites of the Late Iron Age and Viking Period. *Arkaologi i Slesvig/ Archäologie in Schleswig* 2010, 95-111.

- Kalmring, S., 2010. *Der Hafen von Haithabu*. Die Ausgrabungen in Haithabu 14. Neumünster: Wachholtz.
- Kalmring, S., and Holmquist, L., 2018. Hedeby Hochburg – Theories, State of Research and Dating. *Offa* 2014/15, 71/72, 241-291.
- Kramer, W., 1994. Ein Seesperrwerk des 8. Jahrhunderts in der Schlei. *Archäologie in Deutschland* 1994(3), 20-21.
- Laur, W., 1955. Sliesthorp, Schleswig, Hedeby und Hadeby. Die Namen von Schleswig-Haithabu und ihre Nachfahren. *Namn och Bygd* 42, 67-83.
- Lemm, T., 2016. Husby and the Equestrian Graves in Angeln and Schwansen – Different Chronological Stages in the Development of a Royal Administration? In: L. Holmquist et al., eds. *New Aspects on Viking-age Urbanism c. AD 750-1100*. Stockholm: Stockholm University, 97-114.
- Lemm, T., 2018. Husby Auf der Suche nach dem Hof des königlichen Statthalters – Ergebnisse systematischer Detektorbegehungen in Husby, Kreis Schleswig-Flensburg. *Bericht des 33. Tverfaglige Vikingsymposiums* 9, 49-66.
- Life of Ansgar 1990. Rimberts Leben Ansgars (Vita Ansgarii). In: W. Trillmich, ed. *Quellen des 9. und 11. Jahrhunderts zur Geschichte der hamburgischen Kirche und des Reiches*. Darmstadt: Wissenschaftliche Buchgesellschaft, 17-133.
- Lüdtke, H., 1985. *Die mittelalterliche Keramik von Schleswig. Ausgrabungen Schild 1971-1975*. Ausgrabungen in Schleswig. Berichte und Studien 4. Neumünster: Wachholz Verlag.
- Njal's Saga 1861. G.W. Da Sent, ed. *The Story of Burnt Njal*. London 1861.
- Radtke, C., 1999. Haiðaby. *Reallexikon der Germanischen Altertumskunde* 13, 363-381.
- Radtke, C., 2009. Haithabu. Perspektiven einer Stadtentwicklung in drei Stationen – 800, 900, 1000. *Zeitschrift für Archäologie des Mittelalters* 2009 (37), 135-162.
- Randsborg, C., 1980. *The Viking Age in Denmark. The formation of a state*. London: Duckworth.
- Pedersen, A., Ravn, M. and Lindblom, C., 2019. Erritsø – new investigations of an aristocratic, early Viking Age manor in Western Denmark c. 700-850 AD. In: R. Annaert, ed. *Early medieval water-scapes: Risks and opportunities for (im)material cultural exchange*. Braunschweig: Braunschweigisches Landesmuseum, 37-46.
- Reimer et al., 2020. The IntCal20 Northern Hemisphere Radiocarbon Age Calibration Curve (0-55 cal kBP), *Radiocarbon* 62(4), 725-757. [https://doi: 10.1017/RDC.2020.41](https://doi.org/10.1017/RDC.2020.41)
- Roesdahl, E., 1997. Landscape sculpture in Viking Age Denmark. *Aarhus Geoscience* 7, 147-155.
- Roesdahl, E., Sindbæk, S.M. and Pedersen, A., 2014. *Aggersborg i vikingetiden – Bebyggelsen og borgen*. Højbjerg: Jutland Archaeological Society.

- Sarauw, T., and Enevold, R., 2019. *Bejsebakken: en nordjysk bebyggelse fra yngre jernalder og vikingetid*. Copenhagen: Royal Society of Northern Antiquaries.
- Schade, T., 2018. *Die wikingerzeitliche Siedlung von Kosel-Ost (LA 198). Ein ländlicher Fundplatz im Kontext der altdänischen Siedlungslandschaft des 10. Jahrhunderts*. Bonn: Verlag Dr. Rudolf Habelt.
- Schietzel, K., 2014. *Spurensuche Haithabu. Dokumentation und Chronik 1963-2013*. Neumünster: Wachholtz.
- Schlesinger, W., 1972. Unkonventionelle Gedanken zur Geschichte von Schleswig/Haithabu. In: H. Fuhrmann, H.E. Mayer, K. Wriedt, eds. *Aus Reichsgeschichte und Nordischer Geschichte* (Festschrift K. Jordan). Stuttgart: Ernst Klett, 70-91.
- Schultze, J., 2008. *Haithabu – die Siedlungsgrabungen* Bd. 1. Methoden und Möglichkeiten der Auswertung. Die Ausgrabungen in Haithabu 13. Neumünster: Wachholtz.
- Sindbæk, S.M., 2005. *Ruter og rutinisering: Vikingetidens fernhandel i Nordeuropa*. København: Multi-vers.
- Sindbæk, S.M. 2012. Møntskatten fra Hedeby's havn til revision. *Nordisk Numismatisk Unions medlemsblad* 2012(1), 4-8.
- Steuer, H., 1974. *Die Südsiedlung von Haithabu: Studien zur frühmittelalterlichen Keramik im Nordseeküstenbereich und in Schleswig-Holstein*. Die Ausgrabungen in Haithabu 6. Neumünster: Karl Wachholtz.
- Skre, D., 2007 (ed.). *Kaupang in Skiringssal*. Kaupang Excavation Project Publication Series 1. Aarhus: Aarhus University Press.
- Skov, H., 1995. Hustyper i vikingetid og middelalder. *Hikuin* 21, 139-162.
- Thomsen, L.G., 2009. Pit Houses on Zealand in the Late Iron Age and the Viking period – a survey based on the material from the excavation at Tissø. In: U. von Freeden et al., eds. *Glaube, Kult und Herrschaft. Phänomene des Religiösen im 1. Jahrtausend n. Chr. in Mittel- und Nordeuropa*. Frankfurt: Römisch-Germanische Kommission des Deutschen Archäologischen Instituts, 501-510.
- Tummascheit, A., 2011. *Die Baubefunde des frühmittelalterlichen Seehandelsplatzes von Groß Strömendorf*. Forschungen Zu Gross Stromkendorf IV. Schwerin: Dr. Ludwig Reichert.
- Tummascheit, A., and Witte, F., 2019. The Danevirke: Preliminary Results of New Excavations (2010-2014) at the Defensive System in the German-Danish Borderland. *Offa's Dyke Journal* 1, 114-136. <http://dx.doi.org/10.23914/odj.v1i0.253>
- Ulriksen, J., 2018. *Vester Egesborg: en anløbs- og togtssamlingsplads fra yngre germansk jernalder og vikingetid på Sydsjælland*. Aarhus: Aarhus Universitetsforlag.
- Unverhau, H., 1990. *Untersuchungen zur historischen Entwicklung des Landes zwischen Schlei und Eider im Mittelalter*. Neumünster: Wachholtz Verlag.

Supplementary



Appendix 1. Multiplot of calibrated radiocarbon dates for individual archaeological structures (long houses and pithouses) from Fusing. Dates have been calibrated in OxCal 4.4 using the IntCal 2020 calibration curve (Reimer et al. 2020). Red lines represent 1) the 737 AD event of the construction of the Reesholm blockage and the Danevirke refurbishment and 2) the references to Sliethorp in the Frankish Annals for the years 804 and 808 AD (Graphics: OxCal 4.4 and the author).