

CHAPTER 10

ULF FRANSSON

Department of Archaeology and Cultural History, NTNU University Museum
ulf.fransson11@gmail.com

A farmstead from the late Viking Age and early medieval period. House constructions and social status at Vik, Ørland

ABSTRACT

The excavations at Vik were largely dominated by settlement remains from the Early Iron Age. However, in the southern part of Field E, longhouses, wells, ditches and a pit house from the late Viking Age and early medieval period were excavated. Relatively few settlements from this period have been identified in the Scandinavian countryside. In Ørland, however, another settlement from this period has been examined at Viklem. In total, there are about ten houses from the period on the peninsula. In this context, the houses at Vik constitute a starting point for an analysis of settlement and house construction during the period. The remains at Vik are discussed in a larger context with other Late Iron Age and medieval remains in Ørland and in Trøndelag. Finally, the remains are discussed in a social perspective.

INTRODUCTION

The aim of this paper is to present and discuss the remains of the late Viking Age / early medieval period farm at Vik (Figure 1). In the southern part of Field E, a farmstead from the late Viking age and early medieval period was excavated (Figure 2).

The shortage of excavated houses from the Late Iron Age and early medieval period in Scandinavia has been highlighted by several authors (Skre 1996:63; Göthberg 2007: 440–445, Figure 15; Gjerpe 2017: 132–136, 194–210, Figure 9.2). These conditions also characterize the countryside in Trøndelag (Rønne 2005: 29–30). However, over the last decade a couple of new settlements from the period have been excavated, at Ranheim east of Trondheim

(Grønnesby & Heen-Pettersen 2015) and at Viklem in Ørland (Sauvage & Mokkalbost 2017, Ellingsen and Sauvage, Ch. 13).

Viklem is located just under a kilometer south of the settlement at Vik, and at the two sites a handful of longhouses and some other types of buildings from the Viking Age and early medieval period have been excavated. There are more longhouses from the period in Trøndelag, but those from Ørland are in general better preserved. At Vik, a longhouse from the Migration Period, House 25, has been excavated (Fransson & Mokkalbost 2018). At the nearby site Hårberg, House 1 is dated to the Merovingian period (Birgisdottir & Rullestad 2010). While these longhouses do not give a complete representation

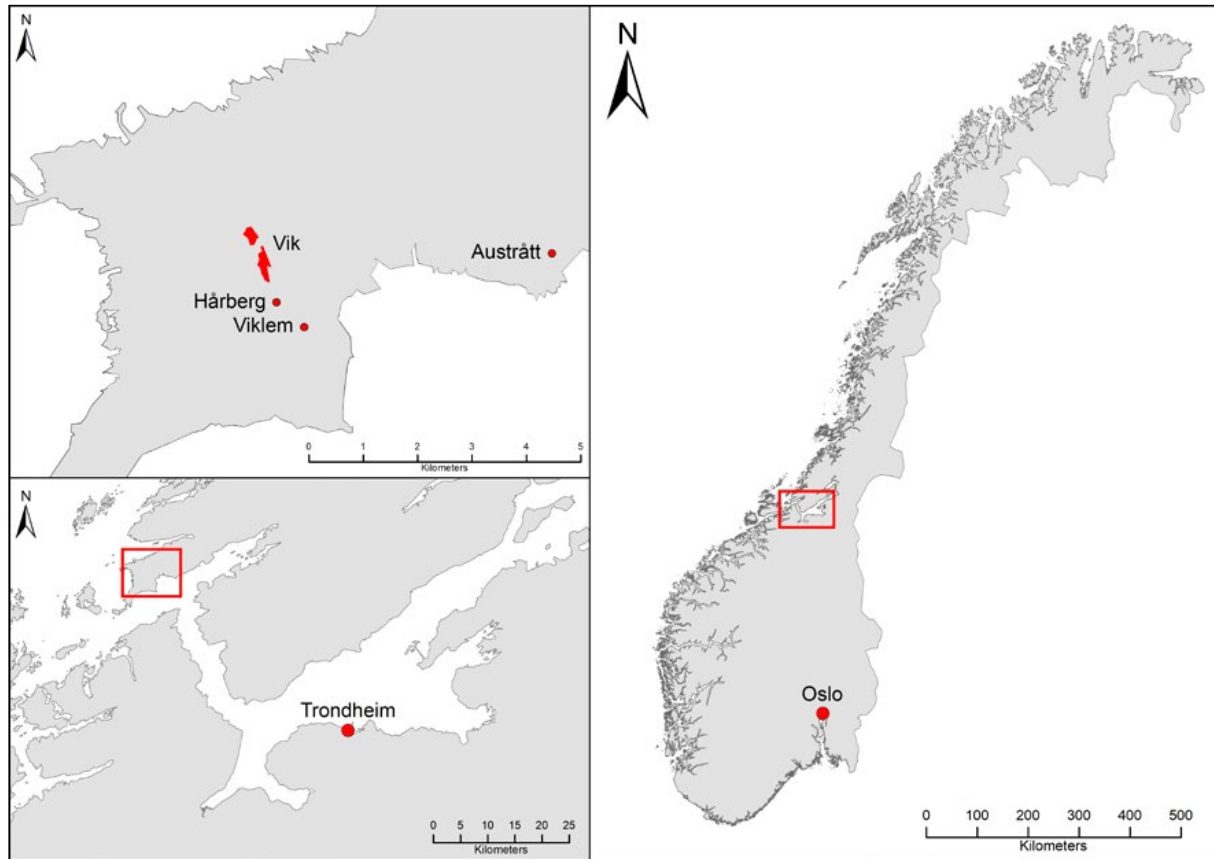


Figure 1. The location of the excavation sites at Vik, Viklem and Hårberg. Illustration: Magnar Mojaren Gran, NTNU University Museum.

of the changes in longhouse construction between the years AD 500 and 1200, they do provide the opportunity to discuss a few aspects of changes in the constructions of longhouses in Ørland during the Late Iron Age.

The location of House 20 was a relatively damp area, not ideal for settlement. The site was abandoned both during the Migration period and again during the 13th century. These events are discussed in relation to climate variations. Finally, the establishment and occupation of House 20 in the late Viking Age

/early medieval period is discussed in relation to the social status of the inhabitants.

THE EXCAVATIONS AT VIK

There were significantly fewer features at Vik dated to after c. AD 550 than to before. However, the southern part of Field E was an exception, with a concentration of features dating from the 10th and 13th centuries AD. The excavated farm in Field E consisted of at least one longhouse (House 20), some outbuildings, a pit house, wells, waste pits and ditches (Figure 5).

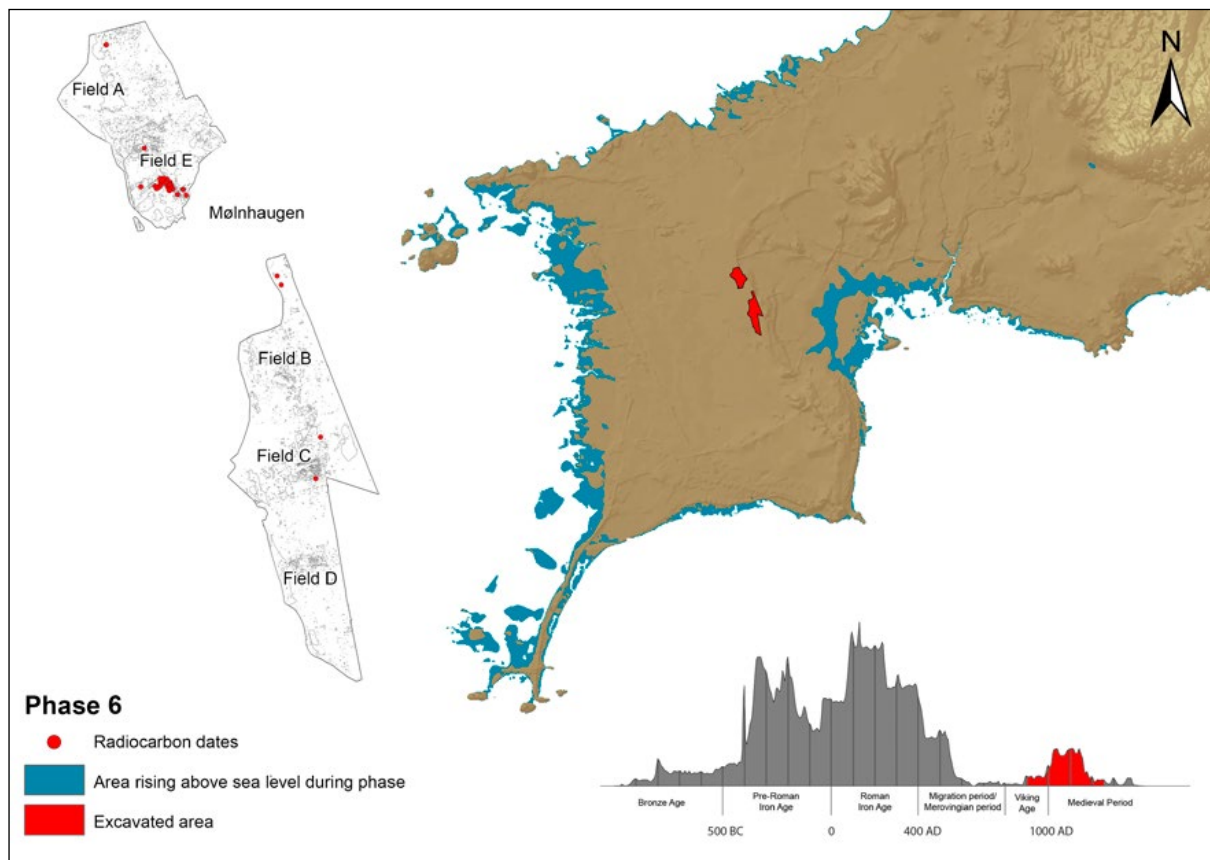


Figure 2. The shoreline at Ørland and dated features at Vik in Phase 6. Illustration: Magnar Mojaren Gran, NTNU University Museum.

The excavation areas at Vik were divided into Fields A-E. In this paper, focus is on Fields A and E, which lay north of a rocky outcrop, Mølhaugen. Fields B-D lay south of Mølhaugen. All the excavation fields at Vik were dominated by settlement remains from the Early Iron Age. In Fields A and E, all longhouses were located on a flat ridge with a north-south orientation (Figure 3). All over the area a large number of features from the Early Iron Age were excavated, including several longhouses, waste deposits, cooking pits, ditches and sunken lanes. A

couple of longhouses dated to the pre-Roman Iron Age were excavated in the northern part of the area. During the Roman Iron Age and the Migration period, the activity was more intense in the central parts of Fields A and E. In the southern part of Field E, directly north of Mølhaugen, several cooking pits and postholes from the Early Iron Age were excavated. House 25 found in this area was dated to the Migration period (Figure 5; Ystgaard, Gran & Fransson, Ch.1).

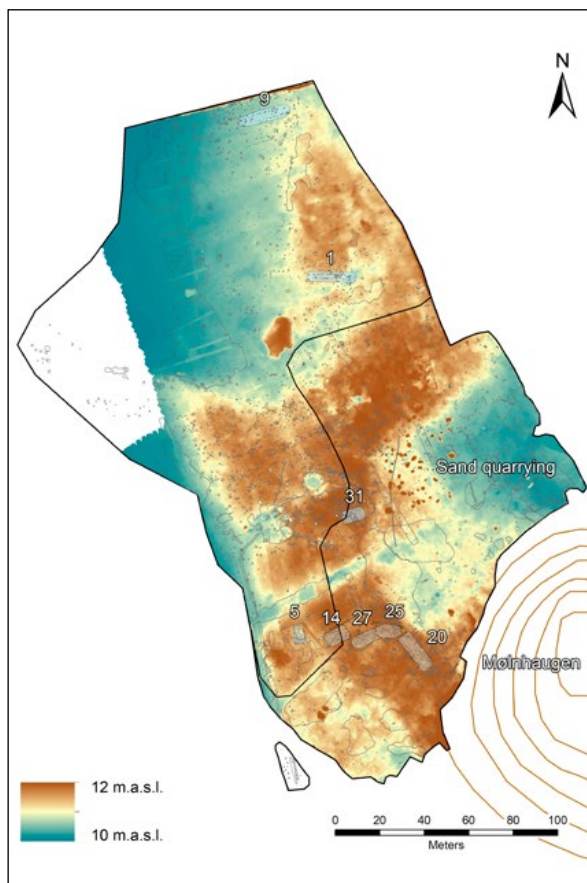


Figure 3. Topographic model over Fields A and E, Vik. In the western part of the model, the ground is disturbed by a modern gravel pit. Illustration: Magnar Mojaren Gran.

THE DATING OF A LATE VIKING AGE / EARLY MEDIEVAL PERIOD FARMSTEAD

Most features dating from the late Viking Age and early medieval period were found in the area around House 20. These features represented a wide time span from c. AD 700 until the end of the 14th century. Only two dates stemmed from the end of the Merovingian period, from which there are generally very few signs of occupation in Vik. Three features were dated to the 900s AD,

while 25 samples were dated to the period from c. AD 990 to 1215. Only three dates were later than AD 1215, between them covering the 13th and 14th centuries. There were no features with later dates. The distribution of dated features indicated that the southern part of Field E was extensively used during the Merovingian and early Viking Age, as well as after the 13th century. The twenty-five dates between c. AD 990 and 1215 indicated an intensive use of the site during the last part of the Viking Age, in the early medieval period, and in the first part of the high medieval period.

Nearly all the dated samples from the Late Iron Age and early medieval period at Vik are analyzed on charcoal. Tree species and tree parts with a higher likelihood of a low own age were prioritized for dating. Some of the ¹⁴C dates were calculated on charcoal from the filling in postholes in the external walls of the buildings. These are not ideal sampling contexts, but in Field E better sampling contexts were not available. Another source-critical problem was the presence of features of older dates on the site. In some cases, this has resulted in earlier material being mixed into later features. This makes the interpretation of the date of each feature more difficult (Fransson 2018b with references). Radiocarbon dating in the Late Iron age and early medieval period is also complicated by a couple of short plateaus in the ¹⁴C curve. They create problems in establishing detailed chronologies during the periods. In this case, the most important plateau is from c. AD 1050 to 1200 (Gjerpe 2017: 204).

Several of these source-critical problems affect the dating of House 20. Out of ten dates, six are from the Early Iron Age (Figure 5). This is probably a result of contamination from earlier activity. Four dates in and near House 20 are concentrated to the time span between AD 1022 and 1155, and they probably date the occupation period of the house.

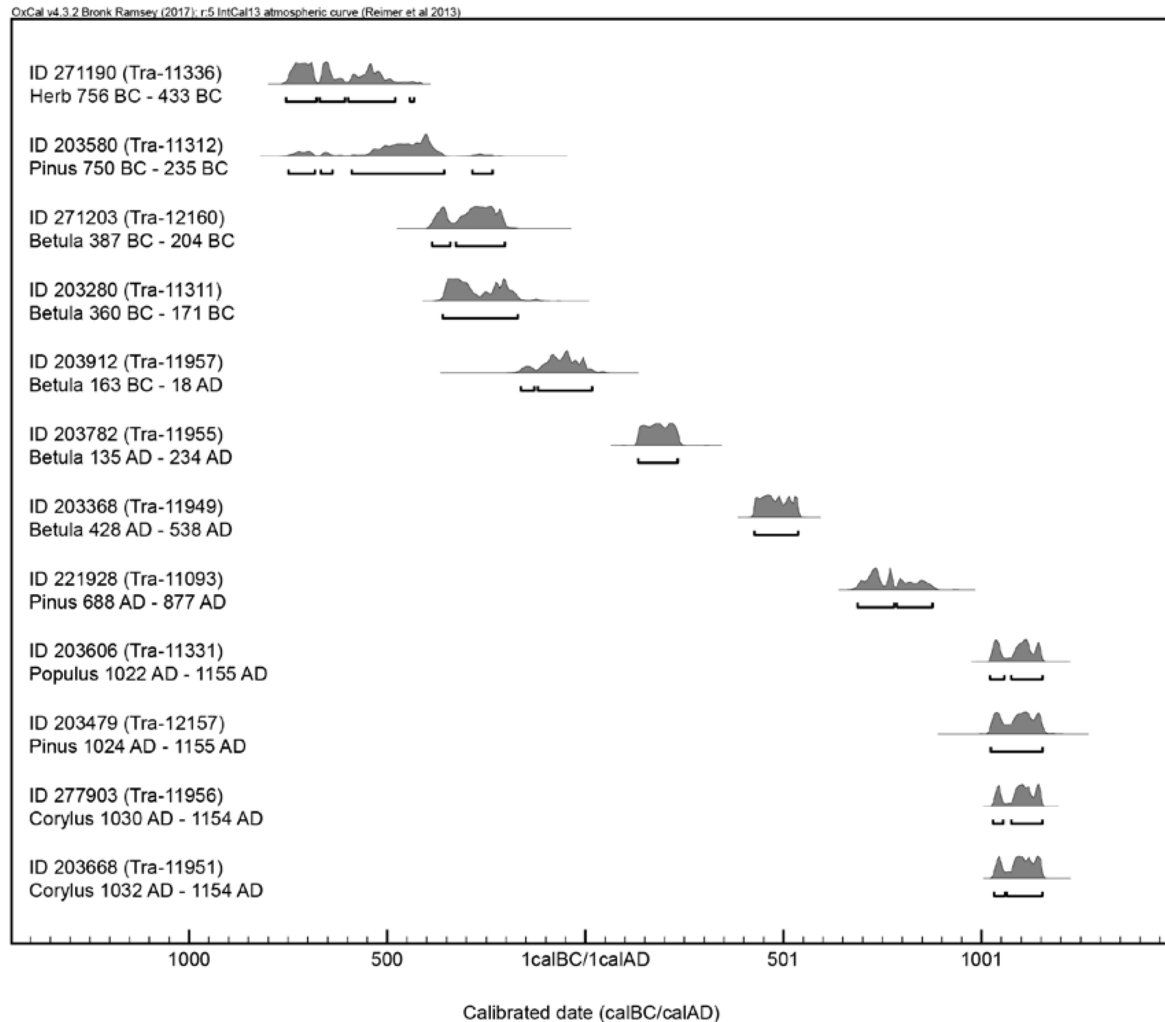


Figure 4. Radiocarbon dates from House 20, Vik. Illustration: Magnar Mojaren Gran, NTNU University Museum.

However, the plateau in the calibration curve affects these dates, and House 20 can therefore not be dated more accurately than to the 200-year period from AD 1000 to 1200 (Fransson & Mokkelbost 2018: 287–288, Figure 6.35).

The suggested dating of House 20 is supported by the fact that it is a two-aisled longhouse. In Scandinavia, two-aisled longhouses are either dated to the Neolithic and Early Bronze Age (Myhre 2002:

45), or to the Viking Age and early medieval period (Skov 1994; Artursson 2005: 122–123; Göthberg 2000: 79–81). Vik is so low above the sea level that it could not have been inhabited before the end of the Bronze Age (Romundset & Lakeman, Ch. 3).

Studies have exposed that longhouses with roof-supporting wooden posts were unlikely to have survived longer than c. 50–100 years (Göthberg 2000: 108–109; Webley 2008: 39–40; Diinhoff

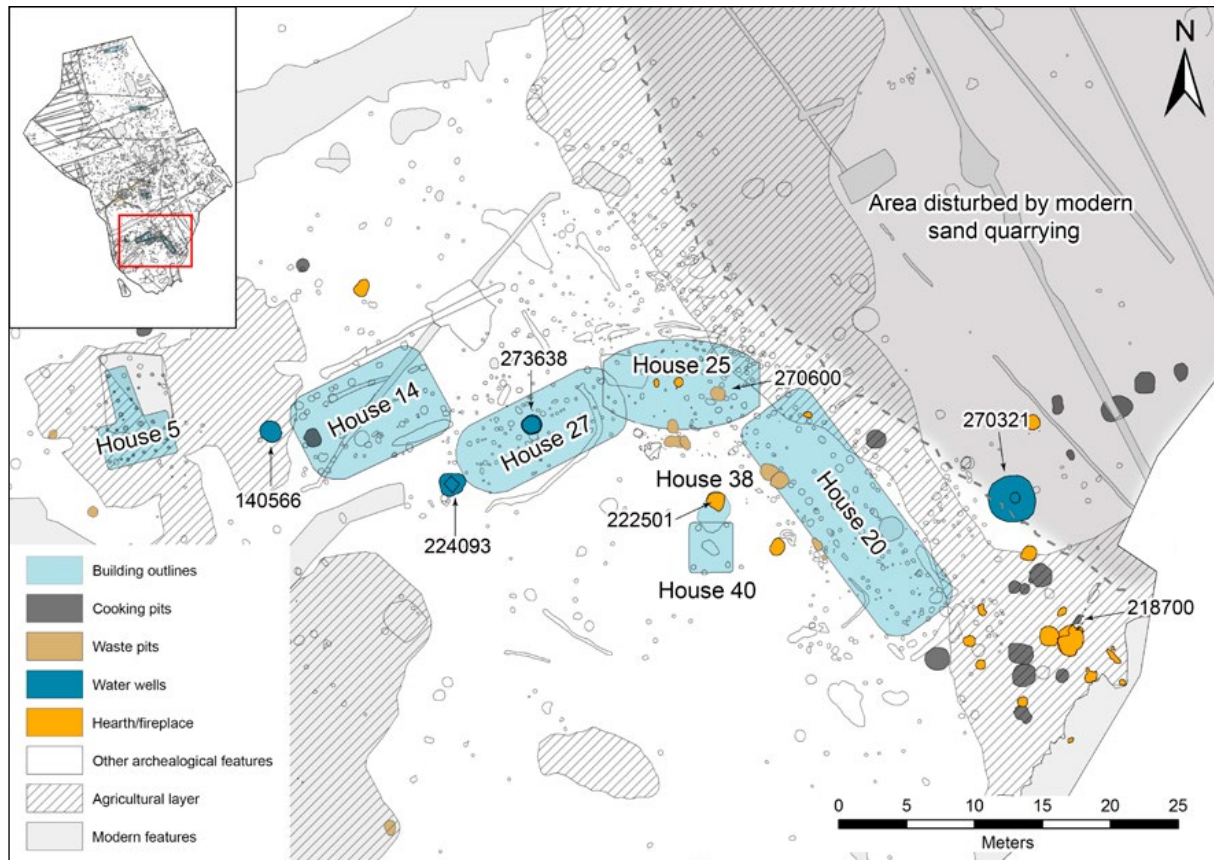


Figure 5. Archaeological features and buildings in the southern part of Fields A and E. Illustration: Magnar Mojaren Gran, NTNU University museum.

& Slinning 2013: 67, 74). The southern part of House 20 has been repaired at least once, but the other parts of the building appear to have been left intact after it had been built. The repairs may indicate that the longhouse has been standing for a longer period, but it is highly uncertain whether it has existed for 200 years. Since the postholes are only superimposed by modern features, House 20 should have been one of the latest longhouses on the site. This indicates that the longhouse can probably be dated to the 12th century, even if it is possible that the settlement already existed during the 11th century.

The interpretation of the occupation period of House 20 is strengthened by the ¹⁴C-analyses of material from a couple of well-defined contexts nearby (Figure 5). A few meters north of the longhouse, a waste pit was excavated (id. 270600). A thick charcoal layer at the bottom of the pit was dated to AD 970–1118 (Figure 6, layer 5, TRa-11117, 1020±25 BP). With a slightly lower probability of 94.1%, the time span is reduced to AD 970–1043. This is one of few dates at the site that can be considered to be earlier than the plateau in the ¹⁴C-curve. A second date comes from a cooking pit (id. 218700) just south of House 20. It is the only cooking pit from

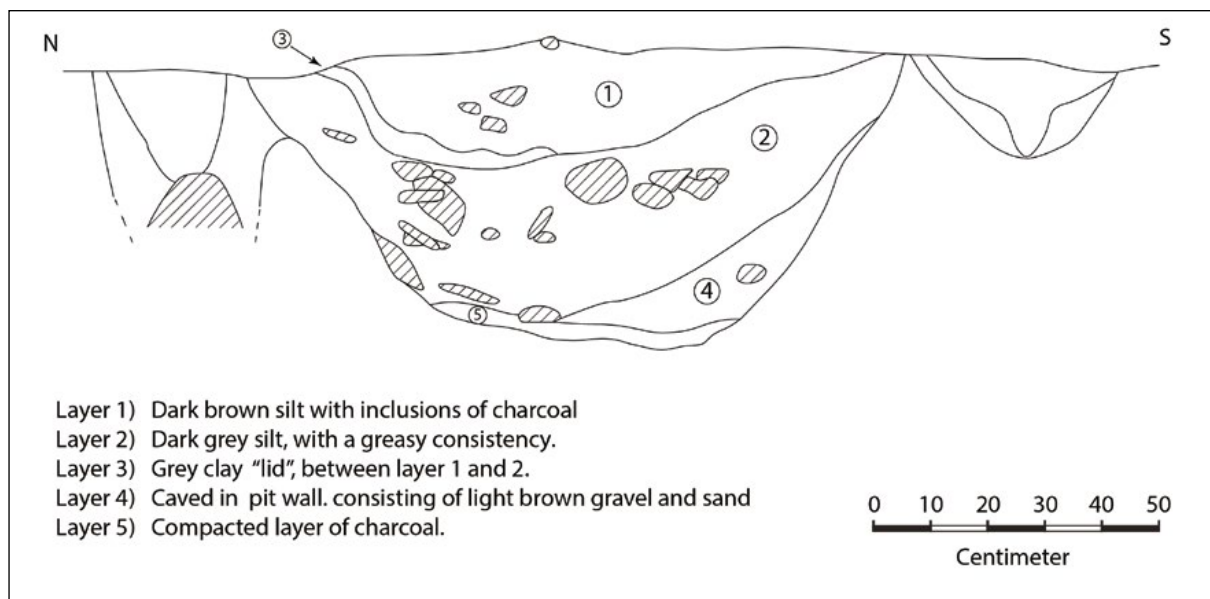


Figure 6. Waste pit 270600, profile. Illustration: Magnar Mojaren Gran, NTNU University museum.

the Late Iron Age at Field E, and it is dated to AD 880–975 (TRa-11308, 1120±15 BP). A third early date to AD 989–1029 (TRa-11116, 1020±15 BP) stems from the bottom of the posthole id. 225501 in the pit house (House 38) situated some meters to the west of House 20 (Figure 5 and 10). It should be pointed out that wood can be preserved for a long time before use (Fransson 2018a with references). It is therefore not possible to claim that the farm was already established in the late 900s.

The waste pit id. 270600 had been sealed with a layer of clay (Figure 6, Layer 3). The latest layer deposited under the clay is Layer 2. It is ¹⁴C-dated on charcoal from birch, c. three annual growth rings under the bark, to AD 1046–1214 (TRa-11102, 890±20 BP). In Layer 2 a button of amber (T:27403:2) and some continental ceramic shards (T:27403:18) were found (Figure 7). The shards were unglazed with an earthenware similar to stoneware typical for the continental Paffrath ceramics. The type constitutes a subgroup under the Pingsdorf ceramics, and was

manufactured in the Rhineland between c. 900 and 1250. This particular type of Paffrath ceramics is dated to the end of the 12th century or to the first half of the 13th century (Dunning et al. 1959: 56–60, Fig. 32, Fransson & Mokkelbost 2018: 338–340).

The Paffrath type ware is important because it indicates that the farm still existed around 1200 AD. Layer 1, above the clay layer, is ¹⁴C-dated to AD 1056–1155 (TRa-11101, 950±20 BP). It is likely to have been a secondary culture layer, containing material from the farm which has been deposited on the clay layer at a later occasion. The dates from both Layer 1 and 3 lie in the time span of the plateau between AD 1050 and 1200. This strengthens the interpretation that the Paffrath type vessel had not been used for a long time before it was deposited. It was part of a sealed waste layer deposited during the early medieval period. There are also very few dates from the site from the 13th and 14th centuries. Together, all these dating results indicate that the farm was abandoned during the first decades of



Figure 7. Artifacts from the waste pit id. 270600. To the left shards from a Paffrath type vessel. Centre top, a nail, center below, a piece of amber from a button. To the right a fragment of a baking stone (no. *bakstehelle*). Photo: Åge Hojem, NTNU University Museum

the 13th century, and that the area was used only extensively afterwards.

THE SITE AND THE TWO-AISLED LONGHOUSE: HOUSE 20

Most of the remains on the southern part of Field E were found on two narrow elevation ridges. One extended in a north-south direction over both Fields E and A. On that ridge a variety of cooking pits, wells, ditches as well as Houses 20 and 25 were excavated. The other ridge stretched in an east-west direction from House 25 and sloped gently down to the wetlands in the west. On the east-west ridge, cooking pits, wells, ditches and Houses 5, 14 and 27 were excavated (Figures 3 and 4).

The north-south ridge was originally wider. Directly east of Houses 20 and 25, a clear north-south terrace indicated the location of the western boundary of the large modern sand quarry in the

east (Figures 3 and 4). In the north, the southern part of Fields A and E was delimited by a modern, east-west oriented ditch. In the south, Field E was delimited by Mølnhaugen, a rocky hillock which was removed during World War II. Directly south of Mølnhaugen, in Field B, a couple of waste pits were dated to AD c. 950–1140 (Fransson 2018b: 437–438). This could indicate that the early-medieval farm also used land south of Mølnhaugen (Ystgaard, Gran & Fransson, Ch. 1, Figure 3).

The early medieval House 20 was 18.5 meters long and had straight gable walls. The building was two-aisled with grounded posts along the external walls. The long walls were basically straight, but with some irregularities. The width of the house therefore varied between 3.5–3.9 meters (Figure 8). The house was built as a stave construction with roof supporting posts, timber frames and walls with either vertical or horizontal planks. In parts of Scandinavia, it has

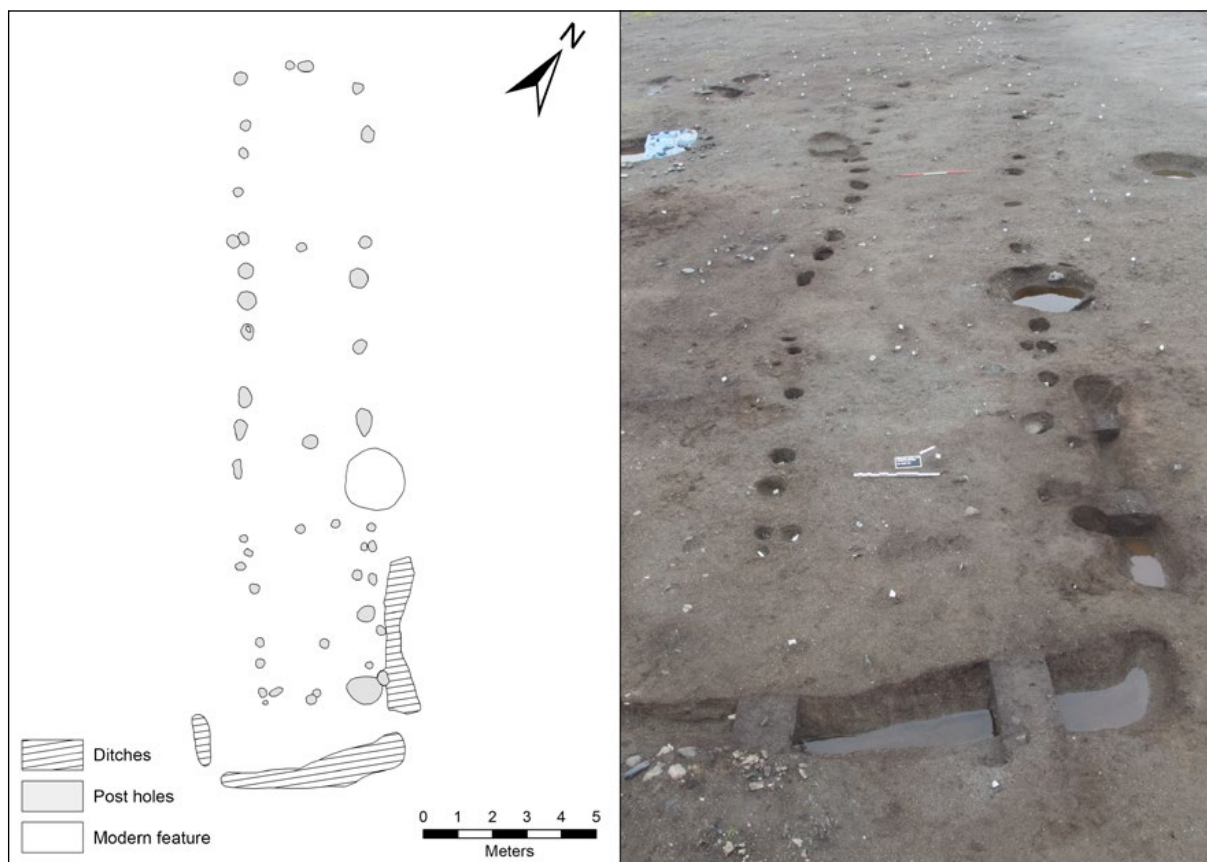


Figure 8. House 20 in plan (left) and photographed towards the northwest (right), with drainage pits emptied. Illustration: Magnar Mojaren Gran, NTNU University museum.

been observed that there can be significant differences in the distance between the roof supporting posts. In House 20, the distance can be defined as short, which indicates that the sills that carried the plank walls were also short (Göthberg 2000: 81).

A single row of postholes ran along the longitudinal axis of the house. The distance between these posts was 5.3–5.8 m. Adjacent to the third center post from the northwest were a couple of shallow postholes which could represent an inner wall. On the southwestern long wall, west of the same center post, an unusually wide distance between the wall posts could indicate the location of an exterior door.

There may have been another door on the opposite northeastern side of the longhouse, but that part of the external wall was damaged by a modern pit.

In the southeastern end of the longhouse was a parallel row of postholes along the exterior wall. This indicates repair, possibly due to the fact that the house had been exposed to moisture damage. Some of the early postholes were overlaid by one of three oval trenches. This shows that these three trenches did not form a part of the original longhouse, but that they were dug around the gable in connection with the repair of the house (Fransson & Mokkelbost 2018: 286–295, Figure 6.38).

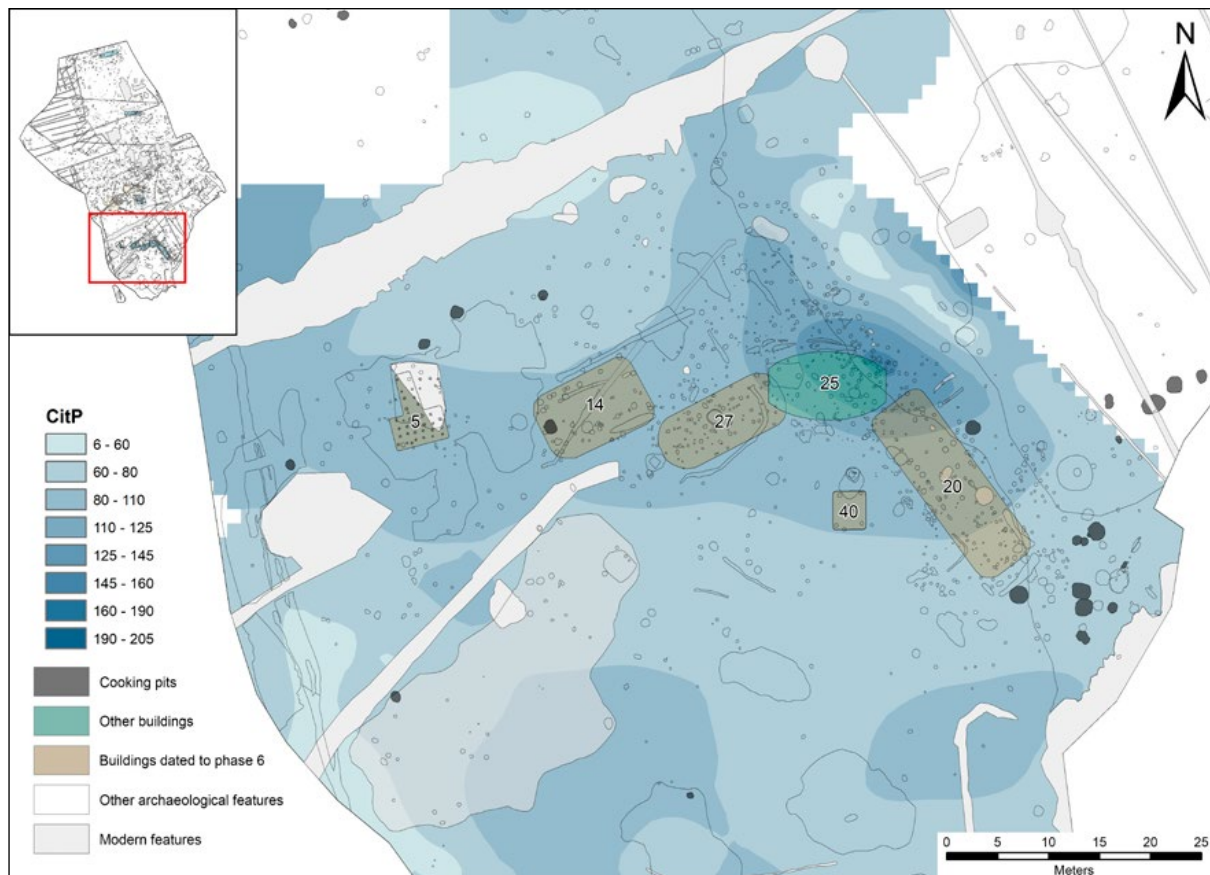


Figure 9. Soil phosphate mapping (Cit-P) of the southern parts of Fields E and A. Illustration: Magnar Mojaren Gran, NTNU University museum.

The comparatively low phosphate values (Figure 9) and the lack of macrofossil finds suggest that House 20 lacked a barn (Buckland et al. 2017: 75, Figure 67, Moltsen 2017: 9). Several studies in Scandinavia have pointed out that the barn was separated from the longhouse during the Viking Age. This forms part of a general trend where the older, three-aisled, multifunctional longhouse gradually splits up into several smaller buildings (Myhre 1980: 358, 368, Skre 1996: 63–65, Myrdal 2011: 91–92). This interpretation is strengthened by the fact that in the Danish material, single- and two-aisled longhouses

from the period usually lack indications of barns (Svart Kristiansen 2005: 181).

THREE BUILDINGS WITH UNCERTAIN DATES AND FUNCTIONS

West of House 20, on the east-west ridge, three houses or house-like structures were identified: Houses 5, 14 and 27 (Figure 5). In the area there were a lot of scattered post holes with dates stretching from the Roman Iron Age to the medieval period. The dates demonstrate that there was activity, and possibly buildings, on the site during several

periods. The fillings in the postholes had either a gray or a dark-brown color. The dates from the postholes indicate that the gray fillings are earlier, and can possibly be connected to Early Roman Iron Age or pre-Roman Iron Age activity (Fransson & Mokkelbost 2018: 263–265, Figure 6.156).

Interpretations of Houses 14 and 27 also imply recurring reuse of the site. In both cases, the houses had a construction that appears typologically to stem from the Late Iron Age or the medieval period. All dates in House 14 were, however, from the Roman Iron Age. Next to House 14, a pit was excavated where the filling was dated to the Roman Iron Age (id. 140566). The composition of the filling indicated

that the pit had been a well (Fransson & Mokkelbost 2018: 280–285, 315–317). The presence of a well indicates a nearby house during the same period. The lay-out of House 14, however, makes it difficult to conclude whether this building was erected during the Roman Iron Age, which it is dated radiologically to, or during the medieval period, towards which the construction of the building points.

The number of postholes inside and around House 27 makes the reconstruction uncertain. It is not clear whether House 27 was a one- or two-aisled longhouse. The length of the building is also unclear. Different interpretation alternatives imply lengths of 8 or 10, 6 m. It is probable that more houses or



Figure 10. Photo showing House 5 after excavation. Photo NTNU University Museum.

constructions were present in the area, although they could not be discerned during excavation. A posthole in the central part of House 27 was superimposed by a well, id. 273638. Unburned wood from the bottom of the well has been dated to the plateau in the ¹⁴C-curve between AD 1050 and 1200. Palaeobotanical analyses indicate that the well was abandoned rather quickly, and left open for a long time during which it was successively filled with plant material. This indicates that House 27 was earlier than the well, and that there were probably no later buildings at this spot (Fransson & Mokkelbost 2018: 296–301, 324–329).

West of House 14, House 5 was excavated. House 5 was situated in a humid place and consisted of 33 rather tightly placed postholes positioned in the shape of the letter T (Figure 10). Comparable constructions, called *Pfostenrosten*, and interpreted as the foundation for a raised platform or foundation in wood for warehouses or storage rooms, have been excavated in Denmark and northern Germany (Zimmermann 1992: 228–261, Abb. 191, 201, 204, Schütz & Frölund 2007: 163, Figures 3 & 6).

House 5 includes a continuous sequence of dates from the pre-Roman Iron Age to AD 14th century. This probably demonstrates that the postholes were dug through earlier layers. The latest dating probably gives an idea about when it was erected, but it is also possible that the construction is even later (Fransson & Mokkelbost 2018: 275–278, Figure 6.164). The so-called *Pfostenrosten* houses are usually dated to the Roman Iron Age, but similar constructions from the 17th century have been described in England (Zimmermann 1992: 261). A comparable and well-known Scandinavian building with posts that carry the floor a bit above the ground is a type of warehouse building called “*stabbur*” in Norway and “*härbre*” in Sweden. This is a type of building that has been in use right up to the 20th century.

The location of House 5 can be compared to a pair of late structures on the western and humid part of Field B. Here, some pits with slaughter waste from cows were dated to the 16th and 17th centuries. Written sources describe summer barns of a local type (Norw.: *løer*) adjacent to the wetlands directly west of the excavation areas. From that perspective, the slaughter waste probably indicates the importance of animal husbandry and grazing on the wetlands (Fransson 2018b: 372–373 with references, Figure 8.7). There are no traces of slaughter near House 5, and the construction has been interpreted as a storehouse, or a hay barn (Mokkelbost 2016:14–15; Fransson and Mokkelbost 2018: 275). Indirectly, this demonstrates that the wetland was an important resource. However, the dating indicates that House 5 is considerably later than House 20. It also indicates that House 5 possibly constituted an example of a later agricultural system without any connection with the farm from the early medieval period.

WELLS, AND TRACES OF WOODEN WALLS AND FLOORS

The area with Houses 14 and 27 has not only been used as a building area. In total, three wells were excavated here (Figure 5). One was, as mentioned above, dated to the Roman Iron Age (id. 140566). A few meters to the west of the medieval well id. 273638, a third well was excavated (id. 224093). In the bottom section of this well a wooden frame was preserved. Two dendrochronological analyses showed that the wood was felled during the AD 1090s. The woodwork consisted of some recycled boards from a boat, but above all of recycled boards from houses with plank walls. The boards had a lot of drilled holes, and one board was burnt on one side.

Traces of wood craftsmanship were also found in the well, including processed wood pieces. One of the pieces was a notched log from the corner joint system used in log houses (Fransson & Mokkelbost

2018: 321–322, T27400: 12). This suggests that there may have been a log house or log construction on the site. If parts of Houses 14 or 27 were built using that technology, it could explain why they were difficult to reconstruct. Cases where different parts of an early medieval wooden house were constructed in different technologies are well documented in the medieval layers in Trondheim (Christophersen & Nordeide 1994: 161–169).

The micromorphological analysis of samples from the two medieval wells showed that they contained animal faeces in combination with traces of wood. This has been interpreted as residue after cleaning of wooden floors and could indicate that the animals had access to houses with wooden floors (Macphail 2017: 13–14, 20–25, 33–36). This could indicate that Houses 14 and / or 27 were used as barns. The phosphate analysis also indicates that animals occupied the area, but the phosphate values in the postholes were not high enough for it to be possible to prove that the two houses had indeed been barns (Buckland et al. 2017: 75, Figure 63).

A fourth well, id. 270321, was excavated to the east of House 20 (Figure 5). Here were found, among other things, preserved leather shoes, a miniature wooden boat and food remains in the shape of animal bones (Randerz, Ch. 11). The boat and the shoes were found in different layers in the well, but were both ¹⁴C-dated to the plateau between AD 1050–1200 (Fransson & Mokkelbost 2018: 330–334). The dates probably indicate that the well has been refilled with waste and cultural layers from the nearby House 20 after it went out of use.

A PIT HOUSE AND A SMALL FOUR-POST BUILDING

Ten meters west of House 20 a pit house, House 38, was excavated. It had a rectangular shape, 3 x 2.75 m in size (Figure 11). In the northern corner, the remains of a filling of soil and fire-cracked

stones was interpreted as the base for a hearth. The construction had originally been almost square and c. 20–25 cm thick. It probably consisted of a built-up earthen foundation with a wooden frame. On top of the base, a slightly oval hearth was preserved (Fransson & Mokkelbost 2018: 303–312). Similar features are known from Late Iron Age and early medieval period Norwegian and Swedish countryside contexts (Ramqvist 1998: 52–86, 139, Fig. 38, 40b, Skre 1996: 67, Sørheim 2003: 98–100, Finstad 2009: 115, 123–125, Fig. 2, 6–8). The use of timber in similar constructions in the region is evident from excavations at Foss Lian in Melhus, Trøndelag. Here a pit house with walls of timber logs has been dated to the Viking Age (Fretheim & Henriksen in prep.).

Charcoal of hazel from a posthole in the pit house has been dated to AD 989–1029 (TRa-11116, 1020±15 BP), a date that can be older than the plateau in the ¹⁴C-curve. However, another date on charcoal of birch from the hearth coincides with the plateau. The assessments of how long a pit house has been in use vary greatly, from 30 to 140 years (Lindkvist 2017: 113–114). It is therefore uncertain whether the pit house should be dated solely to the 11th century, or if it was also in use during the 12th century.

A large fragment of a soapstone baking stone (no. *bakstebelle*, T27403: 8) was found next to the hearth. On the floor, next to the base of the built-up earthen foundation, a large fragment of a soapstone pot (T27403: 3) was found. On the northern side of the same foundation there was a concentration of c. 200 hard burned fragments of bone from pig or unspecified medium mammals (Storå et al. 2017). Phosphate analyses demonstrated higher values on the floor than on the surfaces around the pit house, confirming the impression that the pit house had been used for cooking meat (Buckland et al. 2017: 83, Fig. 69). No fish or poultry bones were found

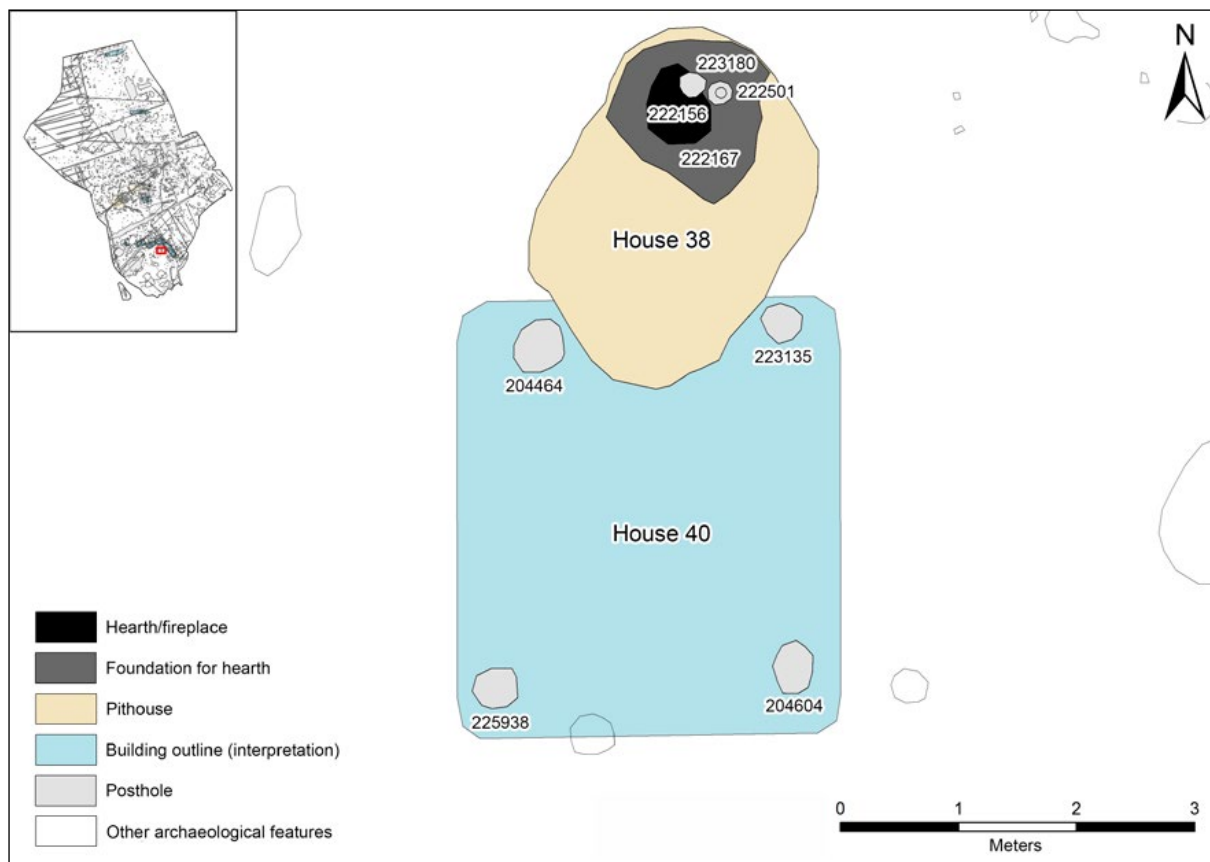


Figure 11. Pit house (House 38) and four-post building (House 40). Illustration: Magnar Mojaren Gran, NTNU University museum.

(Storå et al. 2017), possibly indicating that the cooking was relatively specialized.

A small, rectangular building, House 40, lay directly south of the pit house (Figure 11). Three postholes with similar solid stone packings were excavated, and charcoal of pine from one of these has been dated to the same plateau in the ^{14}C -curve as the pit house. It is therefore not possible to determine which of the buildings is the earliest (Fransson & Møkkelbost 2018: 312–314). However, the two houses indicate that the area was used for several different activities.

VIKING AGE AND EARLY MEDIEVAL LONGHOUSES FROM ØRLAND AND TRØNDELAG

The shortage of excavated houses from the Late Iron Age and early medieval period in the countryside has been highlighted by several authors (Skre 1996: 63, Göthberg 2007: 440–445, Figure 15, Gjerpe 2017: 132–136, 194–210, Figure 9.2). Several early medieval houses have been excavated in the town of Trondheim in Trøndelag (Christoffersen & Nordeide 1994). In the countryside, the shortage of excavated houses has been the same as in other parts of Scandinavia (Rønne 2005: 29–30). However,

over the last decade, a couple of new settlements from the period have been excavated. Eight more or less fragmented longhouses were recently excavated at Ranheim, east of Trondheim. The exterior walls were preserved in only one three-aisled building. In some of the other houses, the distance between the two roof-carrying post rows was less than 1.5 m, which probably indicates that these longhouses were also three-aisled. In two cases, the distance was greater than 4 m, which may indicate single-aisled houses. Three of the longhouses have been ¹⁴C dated, and most of the dates stem from the Viking Age (Grønnesby & Heen-Pettersen 2015:178, 182-183, Tabell 1).

Four single-aisled houses and a pit house dated to the Viking and Middle Ages have been excavated at Viklem in Ørland (Figure 12). A well-preserved dwelling building, House I, measured 12.5x6 m. It was divided into two roughly equal rooms. Two considerably larger houses, Houses III and IV, had convex exterior walls. The earliest, House III, dated to the Viking Age. It was 18x7 m in size. By the end of the Viking Age it had already been replaced by a similar long house, House IV, with a preserved length of 27 m and width of 8.8 m. ¹⁴C dates indicate that this house was in use during the early medieval period. All these houses had postholes along the exterior walls, and there were no inner

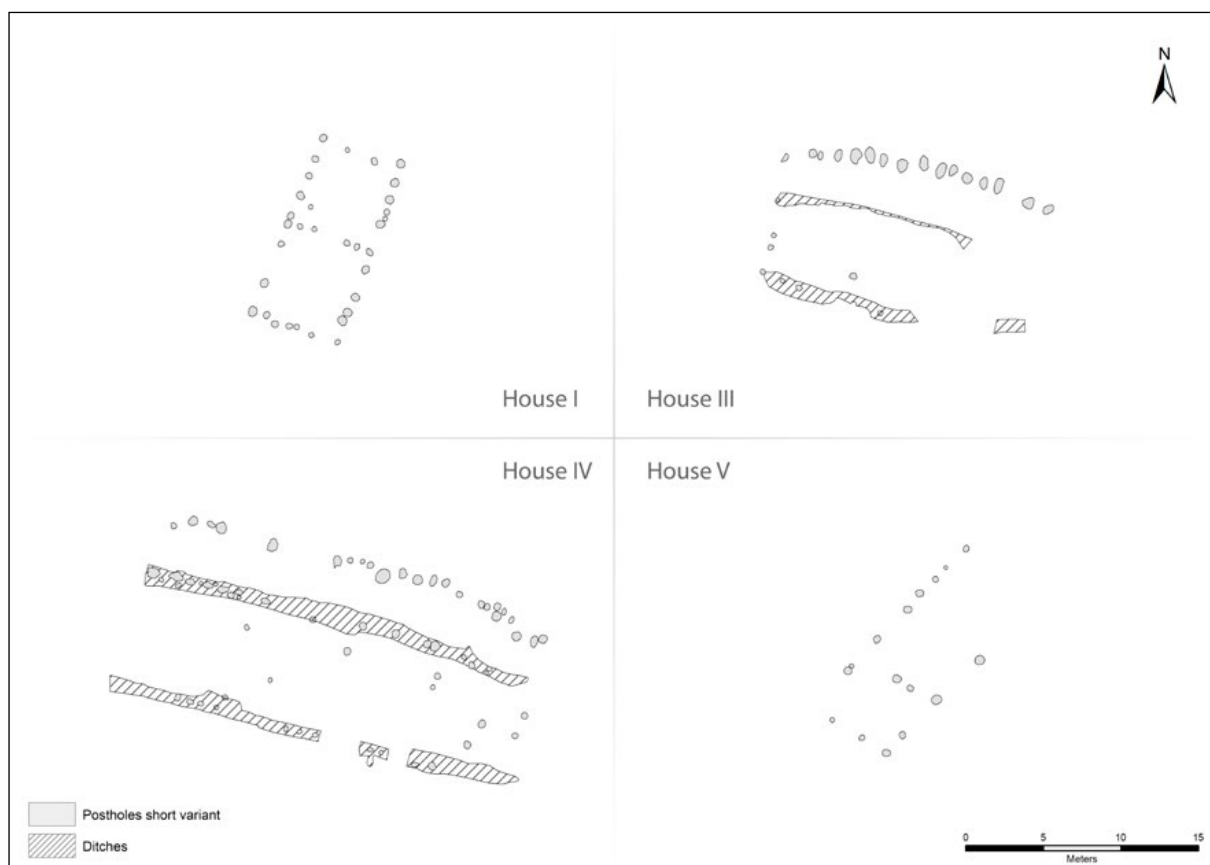


Figure 12. Late Iron Age buildings at Viklem, Ørland. Illustration: Magnar Møjaren Gran, NTNU University museum.

roof-supporting postholes. Postholes from external, supporting posts (no. *skårder*) were excavated outside the exterior walls on the two largest houses, a type of construction recognized from the Trelleborg houses (Sauvage & Mokkelbost 2017: 281–283, 287, Figure 1, Table 2). These two large houses have been interpreted as halls on a significant farm (Ellingsen & Sauvage, Ch. 13).

In addition to these excavations, a house dated to the 15th century has been excavated in connection with the enlargement of the modern day cemetery at Viklem (Berglund & Solem 2017: 218, Figure 6). Another earlier example from Viking Age Trøndelag is a single-aisled house at Nedre Humlehaugen, Trondheim municipality (Sauvage & Mokkelbost 2017: Figure 2–3, Table 2). South of Trondheim, three log houses have been excavated. They have been dated to the Viking Age and the first half of the Middle Ages (Berglund 2003: 38–49).

The limited number of houses from the period creates a risk of over-interpretation. It is therefore important to emphasize tendencies in the material instead of trying to create a detailed chronology (Diinhoff 2009: 160–162, Eriksen 2015: 52, Fig. 3.3). At the same time, it should be emphasized that it is important to analyze even relatively limited materials. There have been examples of unique, or exceptionally exclusive, artifacts in archaeology that have been given great attention, despite the fact that these artifacts, because of their exclusive nature, often lack good comparative material.

In Ørland, at least two farms from the Viking Age and early medieval period have been excavated. In the same area, a few longhouses from the Migration and Merovingian periods have also been excavated. In total, this means about 10 longhouses from the Late Iron Age and medieval period. This limited number can be considered too small for an analysis of the development of longhouse construction during the period. However, there is no general rule that

determines how many longhouses, or artifacts for that matter, it takes for an analysis to be possible. There is always a chance that new excavations and new results will generate new knowledge.

In this case, the longhouses represent several different types of buildings, and they are spread on a time line from the Migration period that extends from the Late Iron age to the early medieval period. This offers an opportunity to highlight changes over time, and at the same time point out indications of social differences. The conclusions can be discussed, but the discussion about these issues must start somewhere, probably in a particular locality, and why not on Ørland with all the peninsula's longhouses?

LONGHOUSE CONSTRUCTION IN ØRLAND DURING THE LATE IRON AGE AND EARLY MEDIEVAL PERIOD

Several Early Iron Age longhouses have been excavated at Vik. Among those dated as the latest was House 25, which was excavated directly north of House 20. House 25 is dated to the Late Roman Iron Age and/ or the Migration period. The latest dating suggests a time span for these longhouses that stretches to the year AD 580, and gives no dates from the 600s or 700s.

House 25 was built in an east-west direction. The central aisle was c. 1.8 meters wide, but the last trestle in the west was nearly three meters wide. This probably constituted the gable posts. In the east, the building bordered on an area disturbed by the modern gravel pit in the eastern part of Field E (Figure 3 and 4). A pair of postholes in the eastern part of House 25 may have been gable posts. Based on this reconstruction, House 25 was approximately 10 m long. However, postholes excavated and dated in the damaged area east of the building indicate that House 25 could have been 5–10 m longer (Figure 13).

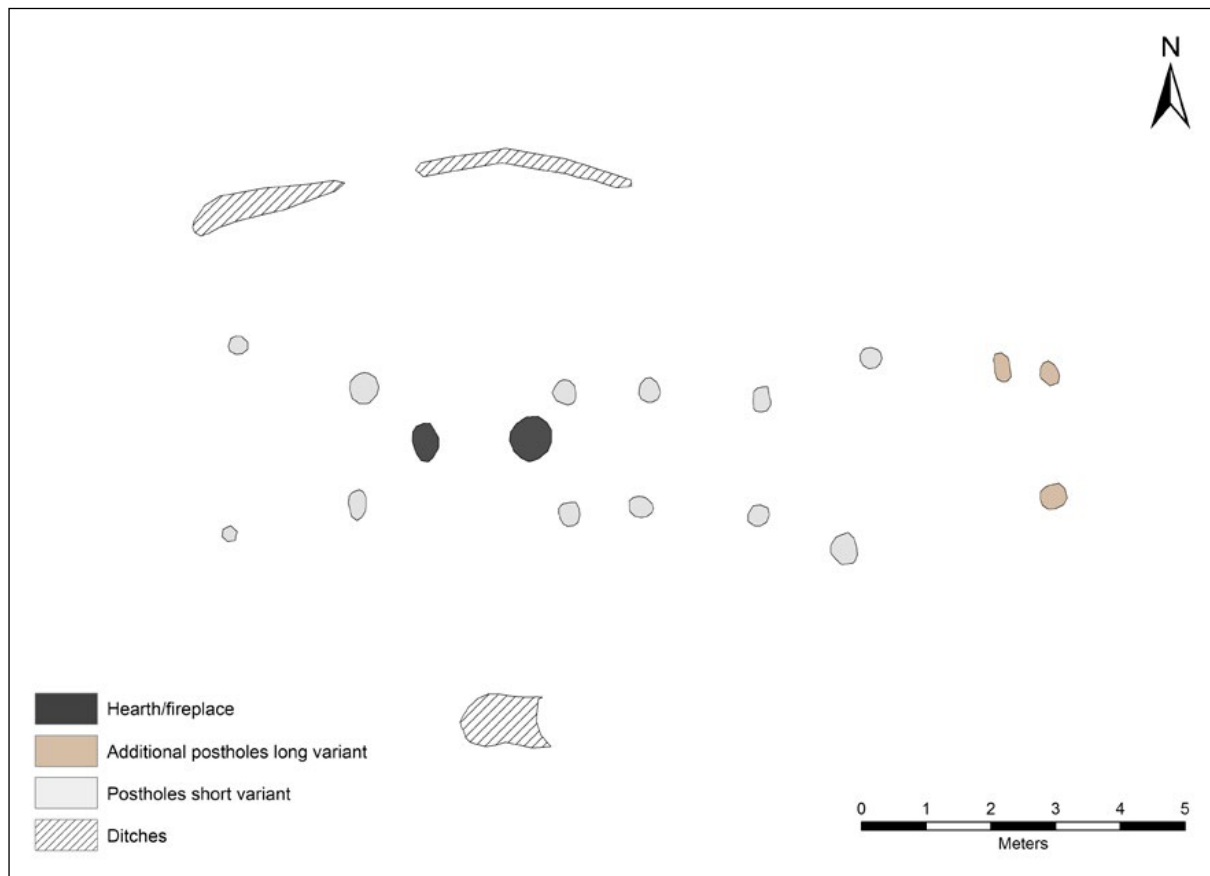


Figure 13. House 25, two interpretations. Illustration: Magnar Mojaren Gran, NTNU University museum.

In the preserved parts of House 25, two hearths were excavated. The palaeobotanical analysis indicates that this part of the building had a residential function (Moltsen 2017: 16–17). At the same time, an area with very high phosphate values was measured directly east of the preserved parts of the building. If House 25 was, in fact, longer than 10 m, then the phosphates could indicate the location of a destroyed barn (Figure 9).

The gable posts in the west demonstrate that the house could have been at least three meters wide. House 25 did not have preserved exterior walls, but a pair of drainage ditches were found along

the northern side of the exterior wall, and traces of another ditch were found to the south. The ditches indicate that the house was 6–7 m wide, and their shape suggests that the exterior walls were convex (Fransson & Møkkelbost 2018: 266–274).

Most of the longhouses from the Roman Iron Age at Vik lacked exterior walls. In cases where traces of exterior walls were found, clear examples of convex long walls were missing. However, a later longhouse with heavily convex walls has been excavated at Hårberg, a site 1,3 km south of Field E. House 1 at Hårberg had a well-preserved northern exterior wall that consisted of a row of posts dug down

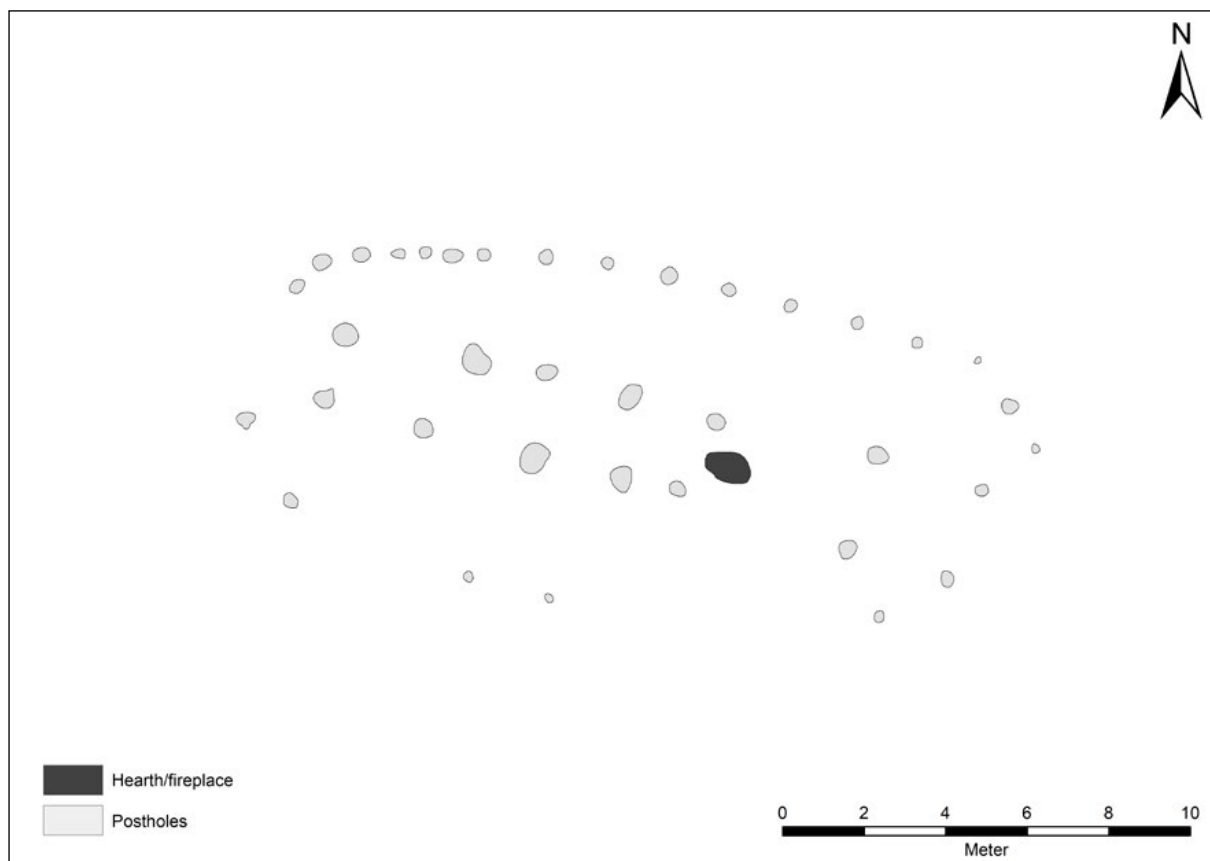


Figure 14. House 1 at Hårberg. Illustration: Magnar Mojaren Gran, NTNU University museum after Birgisdottir and Rullestad 2010.

into the subsoil. The exterior wall on the southern side was poorly preserved but had a similar shape (Figure 14). The longhouse was 20 m long, and the central part had a width of 8.5 meters. Three ¹⁴C analyses, two from postholes and one from the central hearth, were all within the time span of AD 655–785 (Birgisdottir & Rullestad 2010: 10–12, Appendix 9). The dates clearly indicate that the longhouse is from the Merovingian period, most likely from its second half.

If longhouses from the Viking Age and the early medieval period are unusual in Scandinavian archaeology, longhouses from the Merovingian period

are still more unusual. Only one well preserved longhouse from this period has been excavated in Trøndelag, and that is the one from Hårberg. Together, House 25 at Vik and House 1 at Hårberg represent a transitional period between the three-aisled longhouses of the Roman Iron Age, and the later two-, or single-aisled longhouses of the Viking Age and early medieval period. More than 100 years passed between the two longhouses. Still, they share a couple of common features. Both houses were relatively short compared to other three-aisled longhouses from these periods. They also had convex long walls, a phenomenon that is rather common

in other regions of Scandinavia during the same period. In several works, it has been argued that the central aisle of smaller and medium-sized longhouses became narrower in relation to the total width of the longhouse during the second half of the Early Iron Age. There are regional differences, but the general change meant that the longhouses had increasingly underbalanced roof constructions (Løken 1999: 56, Göthberg 2000: 48, 2007: 405–406, Artursson 2005: 104–113, 121–125, 150, Karlenby 2007: 132–133, 135–136, Figure 9, Gjerpe 2017: 111–113). In Vik House 25 and Härberg House 1, the two rows of roof-supporting posts were straight. In combination with the house's convex exterior walls, these constructions were considerably underbalanced. This is most evident in Härberg House 1.

During the Roman Iron Age and Migration periods, it is common that there are no remains of postholes for the exterior walls (Liedgren 1992: 136; Løken 1999: 55). During the Merovingian period, however, long rows of deep postholes along the exterior walls are more common, probably due to the fact that the underbalanced roof constructions needed increasingly stronger exterior walls. Härberg House 1 exemplifies these new exterior walls, and can be considered as a transitional form, pointing forward towards the Viking Age's single-aisled houses (Göthberg 2000: 49).

Scandinavian Viking Age buildings are characterized by a great diversity. Single-aisled houses existed in parallel with two-aisled and more or less three-aisled buildings. During the same period, houses were also built on wooden sills, a phenomenon that became increasingly common during the Middle Ages. The narrow central aisle that was often found during the Merovingian period disappeared gradually. This probably had a background in the ever-increasing importance of the roof-supporting walls. In many cases the number of trestles decreased, and the roof-supporting posts were placed closer

to, or even adjacent to, the exterior walls. In practice, this meant that the roof constructions were usually balanced or heavily overbalanced (Myhre 1980: 260–362; Göthberg 2000: 79–81, 92; 2007: 406–407, 410; Øye 2002: 276–277; Artursson 2005: 122–124, 140–141, 147; Gjerpe 2017: 211–216; Bjørdal 2017: 244).

It is uncertain when the three-aisled longhouses finally disappeared in Western Scandinavia. In the southeast of Norway they disappeared during the Viking Age. In Rogaland, they were still in use during the Middle Ages, in parallel with single-aisled houses. In Nordland, there are also examples of very large three-aisled multifunctional longhouses, like the one in Borg in Lofoten (Skre 1996: 65, 68; Bjørdal 2017: 261; Øye 2002: 278–279).

It is uncertain if three-aisled longhouses in Trøndelag were common during the early medieval period. A three-aisled longhouse dated to the 15th century has been excavated at Viklem cemetery on Ørland (Berglund & Solem 2017: 218, Figur 6). However, it is uncertain whether this was a residential building, and there are no other medieval examples in Trøndelag.

The small number of excavated houses from Viking Age Trøndelag means that the change from three- to single-aisled longhouses cannot be followed in detail. Both types appear to have been represented at Ranheim near Trondheim, but they were poorly preserved and there was no clear chronology (Grønnesby & Heen-Pettersen 2015). A better preserved longhouse is the earliest hall, House III, at Viklem. House III indicates that the single-aisled construction with roof-supporting wall posts existed in Ørland during the 10th century (Sauvage & Mokkelbost 2017: 286, Table 2).

This dating is in line with how the single-aisled houses have been dated in southern Scandinavia (Skov 1994: 139–141). Today, researchers consider that single-aisled houses existed earlier, and that

there were already single-aisled dwelling houses in southern Scandinavia at the end of the Merovingian period (Göthberg 2007: 405–410; Gjerpe 2017: 99–100; Artursson 2005: 141). The origin of the two-aisled longhouse has a more uncertain history. In Denmark, two-aisled longhouses occur during the 10th century and are considered to be common in the early Middle Ages (Skov 1994: 141–142). The construction with two aisles probably implied that the houses could be made wider. However, there are postholes along the middle axis even in houses that are only four meters wide. It has also been noticed that the center posts have sometimes been placed on flat stones, or as a parts of interior walls. This indicates that there might have existed a considerably higher number of two-aisled houses than has been identified, and that they may have already existed before the year AD 900 (Svart Kristiansen 2005:168).

Another example of diversity is that the two-aisled longhouse at Vik is not directly comparable to the single-aisled houses at Viklem. The dwelling house at Viklem, House I, was shorter, wider and with a more rectangular shape than House 20 at Vik. House I was also divided into two rooms of about the same size, with a construction that is similar to several other houses from the Middle Ages (Skre 1996: 67; Sauvage & Mokkelbost 2017: 283). The difference between House 20 at Vik and the two halls at Viklem is even more obvious. The halls lacked traces of inner roof-supporting posts, and it is uncertain whether they should be compared to the Trelleborg houses (Ellingsen & Sauvage, Ch. 13). In southern Scandinavia, however, there are Trelleborg houses without internal roof-supporting posts. This variety may be due to the halls being built in different types of social contexts (Artursson 2005: 121–122, 131–133, Figure 17–18).

The interpretation is interesting because this emphasizes the importance of diversity during the

period. The archaeological material in Trøndelag is small, but it indicates a broad tradition with several different techniques for building houses – a diversity that is recognized in other parts of Scandinavia.

SETTLEMENT, CLIMATE AND HOUSE 20

The choice of location for the early medieval farm at Vik is not obvious. About 50 m to the north, there was a farmstead in the Roman Iron Age. In the same place, a modern farm was established during the 19th century (Ystgaard, Gran & Fransson, Ch. 1). In this context, it is important to emphasize that the area where House 20 was established seems to be comparatively moist, especially in relation to the Roman Iron Age settlement area in the north. In connection with the excavation, rainwater was standing for several days around House 20. At the settlement area to the north, rainwater was quickly absorbed, and the ground was considerably drier. The settlers were probably aware that the place was damp, and that it needed to be drained. This can be seen from the fact that there was a concentration of more than 10 ditches in connection with House 20.

Ditches were also found in connection with a couple of the earlier longhouses at Vik, but not in the same numbers as in connection with House 20. One long ditch south of House 27, and those north of House 25, were dated to the Roman Iron Age and the Migration period. Generally, these early ditches were seldom straight in shape, and were comparatively shallow, rarely more than c. 15 cm in depth. The fillings in four of the other ditches near House 20 have been dated to the Late Viking Age and the early medieval period (Figure 15). Another couple of undated ditches next to the southeastern gable of House 20 are definitely from the same period. This is evident not least from the ditch id. 277225, which was dug after the southeastern part of House 20 had been repaired (Fransson & Mokkelbost 2018: 343–350, Tabell 6.58).

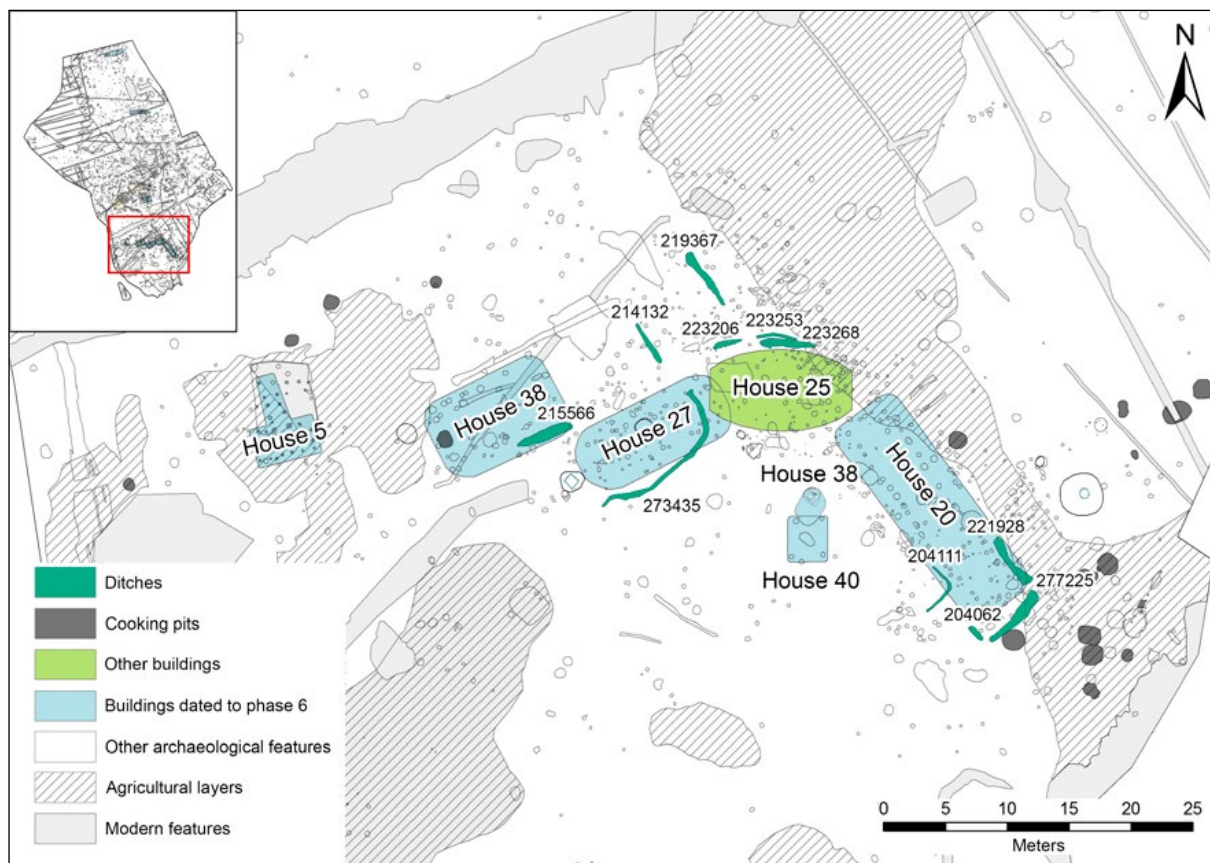


Figure 15. Ditches in the southern part of Field E. Ditch 273435, 223206, 223253 and 223268 all have Roman Iron Age/ Migration period dates. Illustration: Magnar Mojaren Gran, NTNU University Museum.

A peculiarity was that the late ditches were relatively deep and lacked drainage. Two of the ditches southeast of House 20 had a depth of up to 30 cm, were four to five meters long and they were oblong in shape, but they had no drainage (Figure 16). In the early medieval layers in Trondheim, similar ditches have been interpreted as markings of boundaries between different properties (Christoffersen & Nordeide 1994: 117-122). This has probably not been the case at House 20. It can also be questioned whether they were in fact ditches, but no elements in the filling indicated that they had been used as waste pits. They also show

similarities with oblong and fairly deep ditches recorded in connection with house foundations' terraces in Hälsingland in eastern Sweden. These ditches often lacked a sloping bottom and drainage, and they have been interpreted as water collectors, where the water would later sink down into the subsoil (Liedgren 1992: 124). In reality, these ditches probably lowered the groundwater level both inside and outside the houses. They should therefore be considered effective as drainage ditches, even though they did not have the same function as the later and longer drainage ditches that were dug during early modern times.



Figure 16. Excavation of the large ditches at the southeast end of House 20. Photo: NTNU University Museum.

The fact that the site was damp may also have contributed to its abandonment on several occasions. The number of dates at Vik are few from c. AD 600 to 900. The decline started as early as in the 5th century, but accelerated in the 6th century (Ystgaard, Gran & Fransson, Ch. 1). The longhouse with the latest date from the earliest occupational phase is House 25. It was abandoned during the 6th century, and the date of the abandonment seems to correlate with the year AD 536.

A change in the settlement structure in Scandinavia during the 6th century has been obvious

and debated for a long time (Myhre 2002: 170–189, Göthberg 2007: 440–443, Figure 15, Gjerpe 2017: 151, 194–199). New empirical evidence has strengthened the interpretation that a number of volcanic eruptions created a global climate deterioration after AD 536, affecting agriculture and society (Gräslund & Price 2012, Eriksen 2015: 52, Sigl et al. 2015, Iversen 2016: 43–46). Analyses with data modeling have demonstrated that these lower temperatures would quickly have negative effects on agriculture in Trøndelag (Stamnes 2016: 37–38).

The climate has also been highlighted as a factor behind settlement changes during the Viking Age and early medieval period. From the year AD 800, and especially between c. AD 950 and 1200, the climate in Trøndelag probably became warmer and drier. After AD 1200 the climate changed, and became colder and more humid again (Øye 2002: 234–236, 251, Stamnes 2015: 31, Table 2). Like House 25, which was abandoned in connection with the climate changes during the AD 500s, House 20 was also abandoned when a drier and warmer period came to an end.

The repeated abandonment of the site in connection with a deteriorating and humid climate indicated that this was actually an exposed site. This impression is reinforced by the fact that no residences were built at the site after the 13th century. That the site may later have been used more extensively to store hay (House 5) does not contradict this interpretation. The fact that there were much drier and better suited areas to the north indicates that the people who built House 20 had no opportunity to choose the location of their farm. Possibly, they were allotted to the moist soils near Mølninghaugen, something that suggests that they had a relatively low position in society.

SLAVES AND FARMERS

In Hordaland, the emergence of larger estates during the Iron Age and Middle Ages can often be linked to places with early church institutions and large burial mounds (Iversen 2008: 9–10, 65–76, 380–383). It is possible to argue that there were also larger farms in Trøndelag during the Viking and medieval periods. The Ørland peninsula was an important part of the seaborne communications along the Atlantic coast and into the Trondheim Fjord. The settlements at Opphaug and Austrått on Ørland are mentioned in *Heimskringla*, and they belonged to a high ranked dignitary in the region (Berglund &

Solem 2017:223). The Viking and medieval period settlement at Viklem has also been interpreted as an estate, featuring not only Viking Age halls. The building was also erected in an exposed location on a smaller hill next to one of Sør-Trøndelag's largest burial mounds (Ellingsen & Sauvage, Ch. 13). In other words, the peninsula has not lacked representatives of the upper social strata during this period.

In several works, the Iron Age longhouses have been divided into groups based on length and size. The longest longhouses are generally considered to represent people from the highest social strata of society, and already during the Migration period these houses could be more than 50 m in length. At the same time, there was a large and growing group of longhouses that were no longer than 10–20 m. Those who lived in these considerably smaller houses are often considered to belong to lower social groups. On the other hand, analyses indicate that even the normal-sized longhouses became shorter during the Late Iron Age (Göthberg 2000: 48, 76–79, 2007: 433, Artursson 2005: 111–112, 127–133, 147, Øye 2002: 277–278).

From that perspective, House 20 with its length of 18.5 m should not be considered a small house. However, it could not compete with the very large longhouses that were erected during the same period. The halls at Viklem were considerably larger. On the other hand, the residential building at Viklem, House 1, was about the same size as House 20. Another indication that the farmstead centering on House 20 should not be considered a low status farm is the discovery of the objects of amber and continental ceramics at the site. It could be discussed how these objects came to the farm. But at all events, the foreign objects and the size of the household point to a relatively prosperous farm.

House 20 is located in the central parts of Ørland's cultivated areas. Nevertheless, the damp location of the settlement, and the fact that there were better

places for a settlement nearby, indicate that the site was a secondary choice.

The organization of the ownership of land in Ørland during the late Viking Age is not known, but, as mentioned above, there were at this time at least two more significant farms on the peninsula. This also means that the probability is high that there have been powerful landowners in the area. Vik lies in the middle of Ørland's most fertile farmland. The area where House 20 is located was moist, but it was no wilderness. The area was probably perceived as valuable. Who owned the land, or who had rights to the land, must have been important during the early medieval period. It can be assumed that it was not possible to establish a farm on this site without some kind of permission or consent from those who claimed entitlement to the land.

In line with Tore Iversen (1994) and Dagfinn Skre (1998), it is possible from such a perspective to argue that House 20 is an example of a farm erected by a released slave family. The increasing number of freed slaves is considered to have formed the basis for the emergence of medieval estates. Released slaves were also important for the cultivation of new agricultural land (Iversen 1994, 2003: 27–28, 43, Myrdal 2000: 96–98, 100, Øye 2002: 259–264). It has been argued that the slaves were usually permitted access to land relatively far away from their original owners' farms. More detailed analyses have, however, revealed examples where released slaves were also allocated land adjacent to the owner's main farm (Iversen 2003: 35–36). This may have been the case at Vik.

An argument for the presence of a freed slave is the damp location, and the fact that this is a farm that could have been built on land that already belonged to someone has already been highlighted. Another argument is the short distance between the roof supporting posts, and the irregular shape of the external walls on House 20 (Figure 8). This is in contrast to the contemporary House I at Viklem,

which had straight external walls (Figure 12, Sauvage & Mokkelbost 2017: 182–283). The irregular walls of House 20 need not be interpreted as an indication that the builder did not master the technique of building straight walls. Instead, they could indicate that the builder was not able to buy or obtain timber with the right dimensions. This interpretation is reinforced by the fact that there was such a short distance between the postholes.

There are medieval documents demonstrating that released slaves were provided with seed and livestock in connection with the right to use land (Iversen 2003: 39, Myrdal & Tollin 2003: 140–141). From that perspective, the irregular walls can be interpreted as a result of the builder receiving building materials as part of a contract, but that the timber was secondhand, and had already been used. The reason behind why the house had such irregular walls, and so short distances between the post, may therefore be due to the fact that the building material had irregular and too small dimensions. The analyses of the building material in the well id. 224093 also showed that nearly all the boards were reused, and that the trees were felled in the 1090s. This fits well with what we know about House 20, which may well have been built during the early 12th century AD.

It is obviously not certain that the person who established the farm was a freed slave. House 20 was not a very small house, and amber and continental ceramics have been found nearby. The cultivation of new land was not the only manner in which settlement changed during the early medieval period. There were also different varieties of division of already existing farms (Øye 2002: 248–251, 247–278). From such a perspective, it is possible to conjecture that House 20 could have been established, for example, by a younger sibling, who acquired the right to use a limited part of a larger farm.

On the other hand, freed slaves were not “equal”. Most of them had only performed heavier jobs, but

there was also a hierarchy, including foremen and the like. Higher-ranked slaves seem to have gained access to larger farms (Myrdal & Tollin 2003: 133–140, 161–162). It is therefore not unreasonable to argue that this house was given to a freed slave, although it is possible to argue for other explanations as well.

CONCLUSION

Remains of a farmstead, dated to the early medieval period, were found at Vik on Ørland. The farm centered on House 20, a two-aisled longhouse built as a stave construction with roof supporting posts, timber frames and walls with either vertical or horizontal planks. A combination of ¹⁴C dates and finds of continental Paffrath type ceramics show that the farm was built during the 11th or 12th century, and that it was abandoned during the first half of the 13th century.

House 20 constituted a distinctly different construction than the nearby tree-aisled Migration period House 25. However, Merovingian period House 1 at Hårberg as well as the Viking Age Houses I, II and III at Viklem can be understood as intermediate building forms that stretch over the Late Iron Age. The Migration House 25 at Vik did not have any wall posts, but the results from excavation indicate that the longhouse had convex external walls. However, the three-aisled House 1 at Hårberg had a clearly convex form where the wall

posts carried a larger proportion of the weight of the roof. The delineation of the wall posts shows that the long walls of the Merovingian period house were convex. The position of the posts in the trestles shows that both houses were underbalanced. The later one-aisled Viking Age Houses at Viklem had straight walls, pointing forward towards the construction of Vik House 20.

Migration Period House 25 was probably abandoned in connection with climate deterioration after AD 536. The re-establishment of the farmstead comprising House 20 in the period between AD 1000–1200 correlates with a warmer and drier period during the late Viking Age and early medieval period. The abandonment of the site possibly correlates with an increasingly cold and humid climate. The site indeed gives the impression of being exposed to humidity, and that it was a secondary choice for a settlement. These factors strongly suggest that those who established themselves on this site during the early medieval period belonged to a lower social group.

It is therefore possible that the farmstead was established by a freed slave or a younger sibling who was given the right to use an inferior part of a larger property. House 20 had irregular long walls and the wall posts were fairly close together. This could possibly be explained by a limited access to suitable building timber, and that the builder had to use recycled building material.

REFERENCES

- Artursson M. 2005: Böndernas hus. In: Carlie, A. (ed.): *Järnålder vid Öresund. Band 1. Specialstudie och syntes. Skånska spår – arkeologi vid Väskustbanan*. UV Syd, avdelningen för arkeologiska undersökningar, pp. 76-161. Riksantikvarieämbetet. Lund.
- Berglund, B. 2003: Hus og gard – den arkeologiske bakgrunnen. In: Skevik, O. (ed.): *Middelaldergården i Trøndelag. Foredrag fra to seminar*, pp. 25-62. Stiklestad Nasjonale Kultursenter.
- Berglund, B. & T. Solem 2017: Maktkontinuitet i munningen av Trondheimsfjorden. Arkeologi og vegetasjonshistorie 800 BC – 1200 AD. *Heimen* 54(3): 206–234.
- Birgisdottir, B. B. & S. Rullestad 2010: Utgravningsrapport 2010. Härberg (gnr. 69/6) Ørland kommune, Sør-Trøndelag fylke. Undersøkelse i tilknytning til reguleringsplan for ny adkomstvei frå Fv. 245 til Härberg bustadfelt i Ørland kommune, Sør-Trøndelag fylkeskommune. NTNU Vitenskapsmuseet topografisk arkiv.
- Björdal, E. 2017: Late Iron Age settlement evidence from Rogaland. In: Iversen, F. & H. Petersson (eds.): *The agrarian life of the North 2000 BC – AD 1000. Studies in rural settlement and farming in Norway*, pp. 241-274. Kristiansand. Portal Academic.
- Buckland, P., J. Linderholm, S. Östman, S. Eriksson, J.-E. Wallin & R. Engelmark 2017: *Environmental archaeological analysis from the archaeological excavations at Ørland kampflybase, Vik 70/1, Ørland, Sør-Trøndelag, Norway*. Environmental archaeology lab, report no. 2017-012. Department of historical, philosophical and religious studies, Umeå Universitet.
- Christophersen, A. & S. W. Nordeide 1994: *Kaupangen ved Nidelva. 1000 års byhistorie belyst gjennom de arkeologiske undersøkelsene på Folkebibliotekstomten i Trondheim 1973-1985*. Riksantikvarens Skrifter nr. 7. Oslo.
- Diinhoff, S. 2009: Middelalderens landbebyggelse på Vestlandet. In: Martens, J., V. V. Martens & K. Stene (eds.). *Den tapte middelalder? Middelalderens sentrale landbebyggelse*, Varia 71: 155-164. Kulturhistorisk museum, Universitetet i Oslo.
- Diinhoff, S. & T. Slinning 2013: Langhus på Gjosund og dateringsproblematikken. In: Diinhoff, S., M. Ramstad & T. Slinning (eds.): *Jordbruksbosetningens utvikling på Vestlandet*. UBAS 7: 65–75. University of Bergen.
- Dunning, G. C., J. G. Hurst, J. N. L. Myres og F. Tischler 1959: Anglo-Saxon Pottery: A Symposium. *Medieval Archaeology*, 01/1959, Vol.3(1): 1-78.
- Eriksen, M. H. 2015: *Portals to the Past: An archaeology of doorways, dwellings, and ritual practice in Late Iron Age Scandinavia*. Dissertation for the degree of philosophiae doctor. Dept. of Archaeology, Conservation, and History. University of Oslo.
- Finstad, E. 2009: Bygge- og ildstedskikk på landsbygda i Sørøst-Norge i middelalder. In: Martens, J., V. V. Martens, & K. Stene (eds.). *Den tapte middelalder? Middelalderens sentrale landbebyggelse*. Varia 71: 111-126. Kulturhistorisk museum, Universitetet i Oslo.
- Fransson, U. 2018a: ¹⁴C-datering og kildekritiske hensyn. In: Ystgaard, I. et al.: *Arkeologiske utgravninger på Ørland kampflybase 2015 – 2016. Rapport*. NTNU Vitenskapsmuseet arkeologisk rapport 2018:27, pp. 54-58.
- Fransson, U. 2018b: Felt B. In: Ystgaard, I. et al.: *Arkeologiske utgravninger på Ørland kampflybase 2015 – 2016. Rapport*. NTNU Vitenskapsmuseet arkeologisk rapport 2018:27, pp. 366-456.
- Fransson, U. & M. Mokkelbost 2018: Felt A og E, søndre del. In: Ystgaard, I. et al.: *Arkeologiske utgravninger på Ørland kampflybase 2015 – 2016. Rapport*. NTNU Vitenskapsmuseet arkeologisk rapport 2018:27, pp. 242-357.
- Fretheim, S. & M. M. Henriksen, in prep.: Arkeologisk undersøkelse av bosetningsspor og kulturlag på Foss Lian. E6 Gyllan-Røskaft, Melhus kommune, Trøndelag. NTNU Vitenskapsmuseet arkeologisk rapport.
- Gjerpe, L. E. 2017: *Effektive hus. Bosetning, jord og rettigheter på Østlandet i jernalder*. Dissertation (PhD), University of Oslo.
- Gräslund, B. & N. Price 2012: Twilight of the gods? The 'dust veil event' of AD 536 in critical perspective. *Antiquity* 86: 438-444.
- Grønnesby, G. & A. M. Heen-Pettersen 2015: Gården i yngre jernalder – et spørsmål om erkjennelse? Belyst ved utgravningen av et yngre jernalders gårdstun på Ranheim. *Viking* 78: 169-188.
- Göthberg, H. 2000: *Bebyggelse i förändring. Uppland från slutet av yngre bronsålder till tidig medeltid*. Occasional Papers in Archaeology 25. Insitutionen för arkeologi och antikens historia, Uppsala universitetet. Uppsala. Dissertation (PhD).
- Göthberg, H. 2007: Mer än bara hus och gård. In: Göthberg, H. (ed.): *Hus och bebyggelse i Uppland. Delar av förhistoriska sammanhang. Arkeologi E4 Uppland – studier, Volym 3*: 403-447. Riksantikvarieämbetet. UV GAL, Societas archaeologica Upsaliensis, Upplandsmuseet. Uppsala.
- Iversen, F. 2008: *Eiendom, makt og statsdannelse. Kongsgårder og gods i Hordaland i yngre jernalder og middelalder*. UBAS. Nordisk, 6. Institutt for arkeologi, historie,

- kultur og religionsvitenskap. Det humanistiske fakultet. Universitetet i Bergen. Avhandling (PhD).
- Iversen, F. 2016: Estate division: Social cohesion in the aftermath of AD 536-7. In: Iversen, F. & H. Petersson (eds.): *The agrarian life of the North 2000 BC – AD 1000. Studies in rural settlement and farming in Norway*, pp. 41–71. Kristiansand. Portal Academic.
- Iversen, T. 1994: *Trelldommen. Norsk slaveri i middelalderen*. Historisk Institutt, Universitet i Bergen. Avhandling (PhD).
- Iversen, T. 2003: Fra trell til leilending - frigivning, bosetning og herredømme i Norge, Norden og Vest-Europa i tidlig middelalder. In: Lindkvist, T & J. Myrdal (eds.): *Trålar. Ofria i agrarsambället från vikingatid till medeltid*, pp. 22–49. Skrifter om skogs- og lantbrukshistoria 17. Nordiska museet förlag. Stockholm.
- Karlenby, L. 2007: Bostadens inre liv under nordisk äldre järnålder – betraktelser kring hem och hall. In: Göthberg, H. (ed.): *Hus och bebyggelse i Uppland. Delar av förhistoriska sammanhang. Arkeologi E4 Uppland - studier, Volym 3*: 123–151. Riksantikvarieämbetet. UV GAL, Societas archaeologica Upsaliensis, Upplandsmuseet. Uppsala.
- Liedgren, L. 1992: *Hus och gård i Hälsingland. En studie av agrar bebyggelse och bebyggelseutveckling i norra Hälsingland Kr.f.-600 e.Kr.* Studia archaeologica universitatis Umensis 2. Umeå universitet. Arkeologiska institutionen. Avhandling (PhD).
- Lindkvist, A. 2017: Under ytan – grophus och centralitet. In: Borenus Jörpeland, L., H. Göthberg, A. Seiler & J. Wikborg (eds.): *at Upsalum - människor och landskapande. Utbyggnaden av Ostkustbanan genom Gamla Uppsala. Arkeologisk undersökning*. Rapport; Arkeologerna, Statens historiska museer 2017:1, Upplandsmuseets rapporter 2017:1, SAU 2017:1, pp. 105–128. Arkeologerna, Stockholm.
- Løken, T. 1999: The longhouses of Western Norway from the Late Neolithic to the 10th Century AD: representatives of a common Scandinavian building tradition or a local development? In: Schjelderup, H. & O. Storsletten (eds.): *Grindbygde hus i Vest-Norge*. NIKU temahefte Vol. 30: 52–64. Oslo: NIKU.
- Macphail, R. 2017: Ørland main Air Station (2016 samples), Norway: soil micromorphology (including SEM/EDS analyses). Report for Museum of Natural History and Archaeology, Norwegian University of Science and Technology, Trondheim, Norway.
- Mokkelbost, M. 2016: Flerstolpehuset på Vik – det eneste i sitt slag? *Spor* nr. 1 2016:14–15.
- Moltsen, A.S.A. 2017: *Udvidede makrofossilanalyser fra Ørland kampflybase*. NOK-rapport nr. 20–2017. Natur og kultur.
- Myhre, B. 1980: *Gårdsanlegget på Ullandhaug, I*. Arkeologisk museum i Stavanger, Skrifter nr. 4. Stavanger.
- Myhre B. 2002: Landbruk, landskap og samfunn 4000 f.Kr. – 800 e.Kr. In Myhre, B. & I. Øye (eds.): *Norges landbruks historie 1. 4000 f.Kr. – 1350 e.Kr. Jorda blir levevei*, pp. 10–213. Det norske samlaget. Oslo.
- Myrdal, J. 2000: Jordbruket under feodalismen, 1000–1700. *Det Svenska jordbrukets historia*, 2. Natur och kultur/Lts förlag, Almqvist & Wiksell, Uppsala.
- Myrdal, J. 2011: Farming and feudalism, 1000–1700. In: Myrdal, J. & M. Morell (eds.) *The agrarian history of Sweden. From 4000 BC to AD 2000*, 72–117. Nordic Academic Press. Lund.
- Myrdal J. & C. Tollin 2003: Brytar och tidigmedeltida huvudgårdar. In: Lindkvist, T & J. Myrdal (eds.): *Trålar. Ofria i agrarsambället från vikingatid till medeltid*. Skrifter om skogs- og lantbrukshistoria 17: 133–168. Nordiska museet förlag. Stockholm.
- Ramqvist, P. 1998: *Arnäsbacken. En gård från yngre järnålder och medeltid*. HB Prehistorica, Umeå.
- Rønne, P. 2005: Arkæologiske undersøgelser over middelalderens landbebyggelse i Midt-Norge som de ser ud i C14-dateringerne. In: Martens, J., V.V. Martens & K. Stene (eds.): *Den tapte middelalder? Middelalderens sentrale landbebyggelse*. Varia 71: 29–52. Kulturhistorisk museum, Oslo.
- Sauvage, R. & M. Mokkelbost 2017: Rural buildings from the Viking and early medieval period in Central Norway. In: Iversen, F. & H. Petersson (eds.): *The agrarian life of the North 2000 BC – AD 1000. Studies in rural settlement and farming in Norway*, pp. 275–292. Kristiansand. Portal Academic.
- Schütz, B & P. Frölund 2007: *Korta hus under äldre järnålder*. In: Göthberg, H. (ed.): *Hus och bebyggelse i Uppland. Delar av förhistoriska sammanhang. Arkeologi E4 Uppland - studier, Volym 3*. Riksantikvarieämbetet, pp. 153–171. UV GAL, Societas archaeologica Upsaliensis, Upplandsmuseet. Uppsala.
- Sigl, M., et al. 2015: Timing and climate forcing of volcanic eruptions for the past 2500 years. *Nature*, 523(7562): 543–549.
- Skov, H. 1994: Hustyper i vikingetid og tidlig middelalder. Udviklingen af hustyperne i det gammeldanske område fra ca. 800 – 1200 e.Kr. *Hikuin* 21: 139–162. Moesgard: Forlaget Hikuin.
- Skre, D. 1996: *Rural Settlements in Medieval Norway, AD 400–1400*. RURALIA I, Památky archeologické – Supplementum 5:53–71, Praha.
- Skre, D. 1998: *Herredømmet. Bosetning og besittelse på Romerike 200–1350 e.Kr.* Acta humaniora 32. Universitetet i Oslo. Scandinavian University Press. Oslo. Avhandling (Ph.D.).

- Sørheim, H. 2003: Ildsteder og de første laftehusene. *Middelaldergården i Trøndelag. Foredrag fra to seminar*, pp. 91-125. Stiklestad Nasjonale Kultursenter.
- Stamnes, A. A. 2016: Effect of temperature change on Iron Age cereal production and settlement patterns in Mid-Norway. In Iversen, F. & H. Petersson (eds.) *The agrarian life of the north 2000 BC – AD 1000. Studies in rural settlement and farming in Norway*, pp. 27-39. Kristiansand. Portal Academic.
- Storå, J., M. Aalders and C. Olson 2017: *Osteological Analysis of Animal Bones from Ørland Kampflybase Field E*. OFL Rapport 2017:10. Osteoarkeologiska forskningslaboratoriet, Stockholms Universitet.
- Svart Kristiansen, M. 2005: Bygninger. In: Svart Kristiansen, M. (ed.): *Tårnby. Gård og landsby gennem 1000 år*. Jysk arkæologisk selskab skrifter 56: 163-264. Moesgård. Højbjerg.
- Webley, L. 2008: *Iron Age households: Structure and Practice in Western Denmark, 500 BC-AD 200*. Jutland Archaeological Society.
- Zimmermann, W. H. 1992: *Die Siedlungen des 1. bis 6. Jahrhunderts nach Christus von Flögeln-Eekhöltjen, Neidersachsen: Die Bauformen und ihre funktionen. Probleme der Küstenforschung im südlichen Nordseegebiet*. Bd. 19. Herausgegeben vom Niedersächsischen Institut für historische küstenforschung, Wilhelmshaven. Verlag Aufust Lax. Hildesheim.
- Øye I. 2002: Landbruk under press 800-1350. In: Myhre, B. & I. Øye (eds.): *Norges landbrukshistorie 1. 4000 f.Kr. – 1350 e.Kr. Jorda blir levevei*. pp. 215-414. Det norske samlaget, Oslo.

