RURAL BUILDINGS FROM THE VIKING AND EARLY MEDIEVAL PERIOD IN CENTRAL NORWAY

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ABSTRACT

There are 23 rural buildings dating to the Late Iron Age and Early Medieval Period known from Central Norway. This article presents a review of all of these buildings, and the five construction types they represent: three-aisled buildings, single-aisled buildings, pithouses, U-shaped buildings and cross-timbered buildings. An excavation at Viklem will be presented as an example of a farmstead consisting of several buildings of varying type, each with a unique function. This represents the separation of activities previously performed under a single roof. The development is consistent with a general development in farm settlement across Northern Europe. Changes in building techniques throughout the period will be discussed as well. At the outset of the Early Iron Age three-aisled constructions dominate, but around AD 900 single-aisled buildings with new construction principles are introduced. The cross-timber technique appears to be introduced in the 11th century. Functional division of farm buildings seems to coincide with pervasive changes in settlement structure and farm organization between the Early and Late Iron Age, with the gradual introduction of new building traditions which break with earlier patterns.

INTRODUCTION

The development of rural building traditions in the Late Iron Age and Medieval Period of Central Norway has received relatively little attention. Much of what we know about buildings and building traditions has come to us through excavations of Medieval urban contexts. Although some material is known from outside of the towns, it has not been analyzed or presented in a general review. It is also a fact that the various source material has increased considerably in recent years, as a result of development-initiated excavations in the areas surrounding historic farms. This places us in a much better position to investigate buildings on the farms, outside of the medieval towns in this period.

There is a widespread belief amongst researchers that building traditions underwent major changes in the Late Iron Age and Early Medieval Period. The standard narrative has three-aisled, multifunction longhouses with support posts buried into the subsoil being replaced by smaller, single- or limited-function buildings (Skov 1994; Skre 1996;

Myhre 2002; Jensen 2004; Martens 2009; Eriksen 2015; Sørheim 2015). The cross-timber technique was introduced during the Late Iron Age and Early Medieval Period and became, over the course of the period, the main building tradition, particularly in medieval towns (Schia 1979; Schia and Molaug 1990; Christophersen and Nordeide 1994).

This development must have occurred in parallel with substantial changes in the already established building tradition in which the main load bearing structure consisted of posts. This long-lived building tradition changed over the course of the Viking Period throughout Northern Europe. In broad terms, the changes involve the transition from three-aisled stave constructions with posts dug into the subsoil, to single-aisled redeveloped stave structures set on a wooden frame above the ground level (Zimmermann 1998; Jensenius 2010). The result of this development can still be seen today in some of Norway's best known, still-standing medieval buildings, stave churches (Christie 1974).

In this article, we attempt to investigate the general characteristics of the evolution of building styles in the Late Iron Age and Medieval Period, based on material from Trøndelag, Nordmøre og Romsdal - here referred to as Central Norway. Firstly, we want to look at whether the region's material follows the same general lines of development of building traditions described in archaeological research from Southern Norway and Northern Europe, or whether we can see regional characteristics that provide a different picture. We also want to examine specifically the changes in building techniques which can be detected throughout the period and how this appears against the overall picture of development outlined above. For this we will use material from a 2014 excavation on the Viklem church grounds, in Ørland, Sor-Trondelag.

RURAL BUILDINGS DATING TO THE LATE IRON AGE AND MEDIEVAL PERIOD IN CENTRAL NORWAY

Archaeological evidence of settlement and buildings in rural areas dating to this period must be regarded as sparse for most areas of Norway (Berglund 2003; Grind Kaasa 2007; Martens 2009). This stands in contrast to the abundant material from the same period known in medieval towns. The major archaeological surveys in Trondheim center in the 1970s and '80s uncovered a large number of wooden buildings dating from the late 10th century to the mid- 14th century (Christophersen and Nordeide 1994). This imbalance has led to several studies of medieval construction methods in urban contexts (eg. Høgseth 1997 and 2007), while few equivalent analyses of the corresponding rural material have been undertaken. An important contributory factor to this disparity is the lack of archaeological investigation in areas where preserved Late Iron Age and medieval farm settlement might be located, often presumed to be associated with modern farmsteads.

This work assembles available information on buildings from the period AD 600–1100. In total, we have information on about 23 buildings. The material is summarized in Table 1, and presented in more detail in Table 2.

Table 1.

Main shape	Construction	Nº.	Place
Single-aisled	Single-aisled longhouse with roof supported by wall posts in ground	4	Ranheim Structure 10, Ranheim Structure 11, Viklem House I, Viklem House V
Single-aisled	Single-aisled longhouse with roof supported by wall posts in ditch and by angled posts on one side	1	Viklem House III
Single-aisled	Single-aisled longhouse with convex walls and roof supported by wall posts in ditch and by angled posts on one side	1	Viklem House IV
Single-aisled	Single-aisled house with roof supported by wall posts in ground	2	Nedre Humlehaugen House I, Mære
Pit house	Pit house with earthen walls and roof supported by internal posts in ground	1	Viklem
U-shaped	U-shaped wall ditch and roof supported by internal posts in ground	2	Kvenild Søndre House A, Saltnessand House II
Cross-timbered	Cross-timbered house	3	Ommundgarden House K10 and House K20, Mosetet
Three-aisled	Three-aisled house with roof supported by internal posts in ground and angled posts on both sides	1	Ranheim Structure 5
Three-aisled	Three-aisled house with roof supported by internal posts in ground and no visible traces of outer walls	5	Ranheim Structure 1, 2, 3, 4 and 9
Three-aisled	Three-aisled house with roof supported by internal posts in ground and traces of outer walls	2	Vikebukt House III (south), Vikebukt House IV (north)
Three-aisled	Three-aisled house with earthen walls and roof supported by internal posts in ground	1	Skei House 5

Table 1. Main construction and building types

Table 2.

Site	Main type	Construction	Radiocarbon dating	Sources
Nedre Humlehaugen	Single-aisled	Single-aisled house with wall posts in ground	Viking Age. Post no. 100: 1100 ± 30, cal. 895 - 990 AD.	Øyen 2010
Mære ("The Wooden Church")	Single-aisled	Single-aisled house with wall posts in ground	Viking Age-Early Middle Ages (pre. 1150)	Lidén 1969

Site	Main type	Construction	Radiocarbon dating	Sources
Ranheim Structure 10	Single-aisled	Single-aisled longhouse with roof supported by wall posts in ground	Late Iron Age/Viking Age	Grønnesby and Heen Pettersen 2015, Heen Pettersen and Grønnesby in pres.
Ranheim Structure 11	Single-aisled	Single-aisled longhouse with roof supported by wall posts in ground	Late Iron Age/Viking Age	Grønnesby and Heen Pettersen 2015, Heen Pettersen and Grønnesby in pres.
Vikebukt House IV	Three-aisled	Three-aisled house with roof supported by internal posts in ground and traces of outer walls	Merovingian/Viking Age. Post no. 86: 1335 ± 50, cal. 660-760 AD (T-16674). Fireplace 93: 1220 ± 95, cal. 680-960 AD (T-16675).	Haug and Johansen 2003, Johansen 2003
Vikebukt House III	Three-aisled	Three-aisled house with roof supported by internal posts in ground and traces of outer walls	Late Iron Age/Viking Age. Post no. 56: 1595 ± 60, cal. 415-545 AD (T-16190). Post no. 68: 1350 ± 75, cal. 640-770 (T-16191). Post no. 74: 1195 ± 105, cal. 700-980 AD (T-16192).	Haug and Johansen 2003, Johansen 2003
Kvenild Søndre 2005 House A	U-shaped	U-shaped wall ditch and roof supported by internal posts in ground	Viking age	Normann & Ellingsen 2006
Saltnessand House II	U-shaped	U-shaped wall ditch and roof supported by internal posts in ground	Merovingian/Viking Age. Post no. 164: cal. 780-1020 AD (T17891). Post no. 229: cal. 780-1020 AD (T17890). Wall ditch: 1040-1270 AD (T-16962).	Rønne 2009
Mosetet	Cross-timbered	Cross-timbered	Late Viking Age/Early Middle Ages. Charcoal from coal rich layer beneath cultural layer in the house: 1150 ± 80, cal. 760-1020 AD (T-714) Brennmoen II, from house: 910 ± 100, cal. 960-1280 AD (T-967). Brennmoen III, from house: 910 ± 70, cal. 1015-1260 AD (T-968). Norwegian coins from the 11th century.	Berglund 2003, Vestrum 2009
Ommundgarden Tuft K10	Cross-timbered	Cross-timbered	Early Middle Ages. Cultural layer, dated twice: cal. AD1025-1245, AD1030-1220.	Berglund 2003
Ommundgarden tuft K20	Cross-timbered	Cross-timbered	Early Middle Ages – High Middle Ages. Top layer: cal. AD1285-1395.	Berglund 2003
Ranheim Structure 5	Three-aisled	Three-aisled house with roof supported by internal posts in ground and angled posts on both sides	Viking Age/Early Middle Ages. Post no. 159: 1070±30, cal. AD 985-1040, 1110-1115 (BETA-376141). Post no. 631: 1190±30, cal. AD 770-900, 925-945 (BETA-376180). Post no. 630: 1180±30, cal. AD 775-970 (BETA-376181). Post no. 518: 1120±30, cal. AD 780-785, 880-990 (BETA-376182).	Grønnesby and Heen Pettersen 2015, Heen Pettersen and Grønnesby in pres.

Site	Main type	Construction	Radiocarbon dating	Sources
Ranheim Structure 9	Three-aisled	Three-aisled house with roof supported by internal posts in ground and no visible traces of outer walls	Viking Age, mainly 770-995 AD. Post no. 94: 1140±30, cal. AD 775-975 (BETA-376144). Post no. 95: 1200±30, cal. AD 770-900, 925-945 (BETA-376147). Post no. 99: 1280±30, cal. AD 685-885 (BETA-376169). Post no. 101: 1650±30, cal. AD 390-540 (BETA-376158). Post no. 104: 1150±30, cal. AD 780-790, 870-985 (BETA-376160). Post no. 391: 1230±30, cal. AD 725-740, 770-895, 925-940 (BETA-376143). Post no. 393: 1180±30, cal. AD 770-900, 925-945 (BETA-376145). Post no. 400: 1110±30, cal. AD 895-1020 (BETA-376146). Post no. 417: 1140±30, cal. AD 885-995 (BETA-376159). Post no. 745: 1200±30, cal. AD 775-970 (BETA-376170).	Grønnesby and Heen Pettersen 2015, Heen Pettersen and Grønnesby in pres.
Skei Tuft 5	Three-aisled	Three-aisled house with earthen walls and roof supported by internal posts in ground	900-1000 e.Kr. Burnt deposit in top of wall mound: 970 ± 65 BP, cal. 1000-1160 AD (T 8908).	Stenvik 2001
Ranheim Structure 1	Three-aisled	Three-aisled house with roof supported by internal posts in ground and no visible traces of outer walls	Viking Age	Grønnesby and Heen Pettersen 2015, Heen Pettersen and Grønnesby in pres.
Ranheim Structure 4	Three-aisled	Three-aisled house with roof supported by internal posts in ground and no visible traces of outer walls	Viking Age. Post no. 111: 1210±30, cal. AD 775-975 (BETA-374321). Post no. 112: 1150±30, cal. AD 780-785, 880-990 (BETA-374308). Post no. 120: 1130±30, cal. AD 780-790, 870-985 (BETA-374310). Post no. 540: 1190±30, cal. AD 775-970 (BETA-374305). Post no. 550: 1170±30, cal. AD 885-995 (BETA-374323). Post no. 578: 1210±30, cal. AD 775-970 (BETA-374309).	Grønnesby and Heen Pettersen 2015, Heen Pettersen and Grønnesby in pres.
Ranheim Structure 2	Three-aisled	Three-aisled house with roof supported by internal posts in ground and no visible traces of outer walls	Late Iron Age/Viking Age	Grønnesby and Heen Pettersen 2015, Heen Pettersen and Grønnesby in pres.

Site	Main type	Construction	Radiocarbon dating	Sources
Ranheim Structure 3	Three-aisled	Three-aisled house with roof supported by internal posts in ground and no visible traces of outer walls	Late Iron Age/Viking Age	Grønnesby and Heen Pettersen 2015, Heen Pettersen and Grønnesby in pres.
Viklem House I	Single-aisled	Single-aisled longhouse with roof supported by wall posts in ground	975-1030 e.Kr. Post no. 353: 900 +/- 30 BP, cal. AD 1035-1215 (BETA-406522). Post no. 510: 1030 +/- 30 BP, cal. AD 975-1030 (BETA-406525).	Mokkelbost and Sauvage 2014
Viklem House II	Grophus	Pit house with earthen walls and roof supported by internal posts in ground	970-1165 e. Kr. Layer no. 454: 1040 +/-30 BP, cal. AD 970-1025 (BETA-389190). Burnt layer in bottom of stone fireplace, no. 8149: 930 +/-30 BP, cal. AD 1025-1165 (BETA-389189).	Mokkelbost and Sauvage 2014
Viklem House III	Single-aisled	Single-aisled longhouse with roof supported by wall posts in ditch and by angled posts on one side	780-1020 e. Kr. Wall ditch no. 425: 1120 +/-30 BP, cal. AD 780-785, 880-990 (BETA-389188). Internal post 230: 1070 +/- 30 BP, cal. AD 895-925, 940-1020 (BETA-401518). Post no. 372: 1060 +/- 30 BP, cal. AD 900-925, 945-1020 (BETA-401516).	Mokkelbost and Sauvage2014
Viklem House IV	Single-aisled	Single-aisled longhouse with convex walls and roof supported by wall posts in ditch and by angled posts on one side	Early Middle Ages. Wall ditch no. 345: 890 +/-30 BP, cal. AD 1040-1220 (BETA-389187). Post no. 6620: 590 +/- 30 BP, cal. AD 1295-1370, 1380 to 1415 (BETA-406523). Post no. 6609: 570 +/- 30 BP, cal. AD 1305-1365, 1385-1420 (BETA-401517).	Mokkelbost and Sauvage 2014
Viklem House V	Single-aisled	Single-aisled longhouse with roof supported by wall posts in ground	Viking Age-Early Middle Ages	Mokkelbost and Sauvage 2014

Table 2. Known excavated rural buildings from the Viking and Early Medieval Period in Central Norway

THE EXCAVATIONS AT VIKLEM

The grounds of Viklem church are located in Brekstad, Ørland municipality, on a height with good visibilty of the surrounding landscape and coastline. The present church was probably built in the Late Medieval Period and is a whitewashed stone building. It has not been studied in depth and very little is known of its history. Written sources date the church grounds back to the mid-12th century. Viklem was a manor in the Medieval Period and both the farm and the church seem to have been incorporated into the larger church organizational structure by AD 1300 at the latest (Brendalsmo 2006). Close by the church is one of Sør-Trøndelag's largest burial mounds, Viklemshaugen. The mound testifies to the fact that the site was of great importance long before Viklem became a church. A similar relationship between church and pagan burial monument can also be found at Alstadhaug, Skogn, Nord-Trøndelag (Stenvik 2005).

NTNU Museum has previously conducted several archaeological excavations at Viklem. In the area

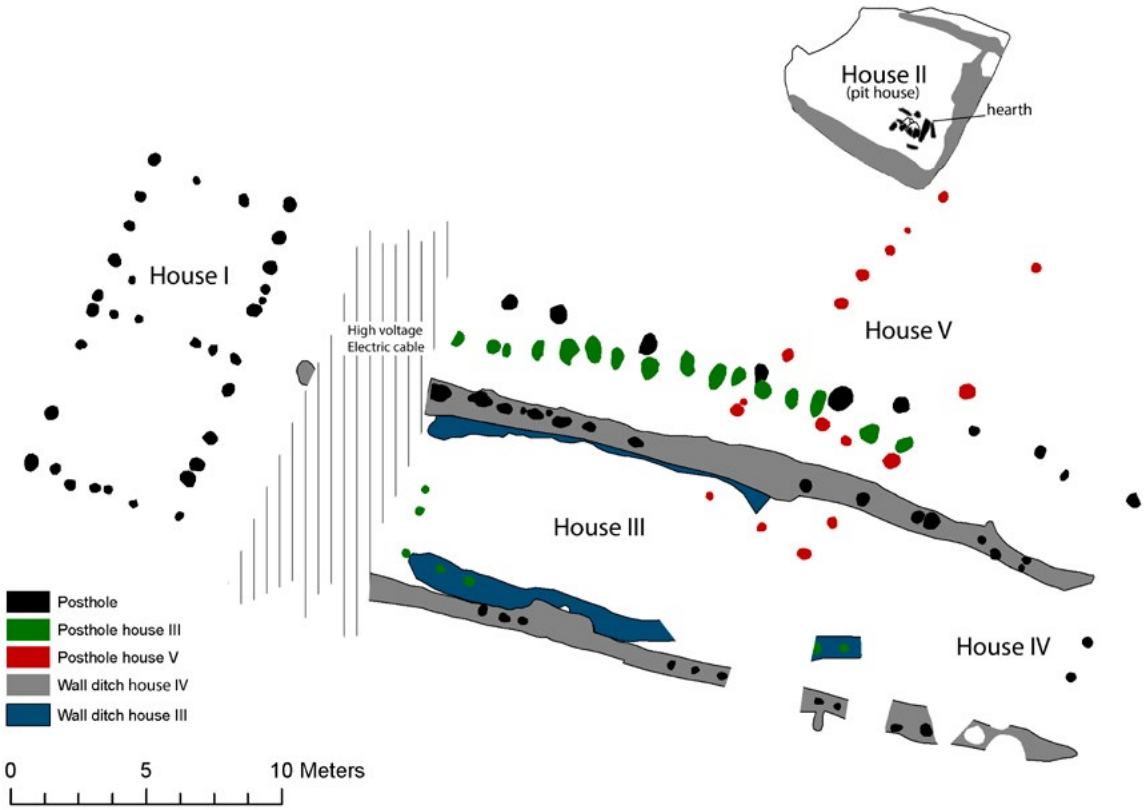

Figure 1. Plan of buildings excavated in 2014. Illustration Raymond Sauvage, NTNU University Museum.

west of the church these were undertaken in 1995, 2000, 2001 and 2007. These investigations resulted in evidence of nine houses, most dating to the Late Iron Age. In 2014, excavations were carried out in connection with a planned expansion of the cemetery (Mokkelbost and Sauvage 2015). This excavation resulted for the first time in unambiguous findings of buildings and settlement evidence which we believe belong to a Late Iron Age and medieval farmyard associated with Viklem farm.

Five buildings were investigated in total, four single-aisled buildings with posts dug into the subsoil and one pit-house (Fig. 1).

The two largest buildings were overlapping, parallel constructions oriented NW. The first house (House III) was 18 meters long and 7 m wide, consisting of two parallel convex wall ditches. These wall ditches were up to 50 cm deep, and contained rows of evenly spaced postholes placed every 80 cm. On the outside of the northern wall lay a slightly curved row of 16 angled postholes which would have provided support for the wall. The documentation suggests that House III had curved long walls. Soil samples from these postholes contained high amounts of charcoal. It is unclear why the house was abandoned, but the high amounts of charcoal may indicate that the house

burned down. The radiocarbon dates fall within the period AD 780–990 (Mokkelbost and Sauvage 2015). Since there are no post-Viking Period dates associated with the house, one can imagine that the house burned down at the end of this period.

In the next phase, House III is replaced by a larger building placed on the exact same location and with the same orientation. House IV was single-aisled structure, at least 27 meters long and 8.8 meters wide, comprised of two parallel, straight wall ditches. As with House III, the wall ditches contained rows of postholes; however, these were unevenly spaced and may therefore indicate some changes to the building structure over the course of its life. House IV also had angled support posts along the outside of the northern wall. Three of the four analyzed plant macrofossil samples contained carbonised barley and rye grains. The dates for this building fall largely within the Early Medieval Period and High Middle Ages (Mokkelbost and Sauvage 2015): however, the deviation in the radiocarbon calibration curve for this period gives the dates a relatively broad range, so we cannot exclude a Late Medieval date. We do believe that the large overlap in the Early Medieval and High Middle Age dating results is such that there is reason to believe that the house replaced the older House III relatively quickly. This is also supported by the location and the similarities of construction.

In addition to the two largest houses, two smaller houses were excavated. Houses I and V were both single-aisled longhouses with posts dug into the subsoil. The houses had a rectangular ground plan with straight gable and long walls, measuring approximately 12.5 m x 6 m. There were traces of internal dividing walls which split each of the buildings into two separate compartments. The wall posts had solid foundations dug into the subsoil with large support stones in over half of the postholes (18 of 33). Datings of one of the buildings is based on charcoal and cereal from postholes, and fall within the ranges AD 974–1300 and AD 1035–1215.

In addition to the buildings that were identified from wall ditches and postholes, one pit-house with a preserved cultural layer was excavated. The pit-house was almost square in plan, measuring 6.5 m on a side, and was located some distance away from the other houses. The internal area has been estimated at approximately 20 m^2. The pit-house was dug 50-60 cm into the underground, and the load bearing function was performed by internal posts. The house seems to have originally had a hard-packed earth floor which was covered by cultural deposits and a floor layer deposited over the course of the house's life. The outer walls seem to have been covered by peat, remnants of which were found in the cultural layer. In the southern corner of the pit-house there was a corner fireplace with furnace chamber, the superstructure of which had been built up of blue clay and stones. The fireplace proved to be partially buried in the ground, the chamber itself was buried approximately 50-60 cm below the floor level. The chamber had a flat slab at the bottom, and was built of dry masonry boulders placed in rings on top of each other. The oven had sides which were formed by leaning flat slabs and an opening at floor level. Artefacts recovered from the cultural layer included spindle whorls, a fragment of a loom weight and a sewing needle, all of which testify to textile production during the building's phase of use. A 24-gram copper alloy measuring weight was also found. The dating of the pit-house falls within the period AD 970–1165 (Mokkelbost and Sauvage 2015).

The buildings on Viklem all lay within a limited area and it appears that the settlement organization remained the same over several centuries during the Viking-Medieval Period transition, except the largest house, which was rebuilt after a fire. Overall it is likely that we are looking at a farmstead. The

buildings were perpendicular to each other, creating a defined yard with good shelter from the prevailing southwest winds.

All the buildings identified at Viklem had structures that were buried in the ground, either in the form of postholes dug into the subsoil, wall ditches or a pit-house. This common feature made them possible to recognize using machine topsoil stripping. The similarity of building techniques was also great. All of the buildings were single-aisled with load-bearing wall lines.

The pit-house is the building type with the most readily identifiable function. Earlier surveys of pit-houses in Scandinavia have shown that these were a common building on farms in the Late Iron Age (Christensen 1990; Åqvist 1992; Fall Branch 1994). A popular interpretation links this building type to craft production. The find material shows evidence, among other things, of metallurgy and textile production (Fall Branch 1994; Mileks 2012). The pit-house at Viklem produced tools associated with textile production: spindle whorls, loom weights, needles and needle sharpeners. A corner fireplace provides evidence of cooking and baking, as well as heating.

Two single-aisled houses with wall posts dug into the subsoil identified at Viklem, House I and House V, can be interpreted as dwellings. Neither of them had traces of fireplaces, but we assume that these houses may have raised floors, so the fireplaces would not have left visible traces in the subsoil. Both buildings were divided into two rooms, which one may imagine was important for limiting heat loss in a house of this size (75-85 m^2). Such two-room buildings are consistent with the classic image of common residential houses in the Medieval Period, smaller, two-room cross-timber structures (Grindkåsa 2007; Sørhiem 2015). The size and internal division suggests, therefore, that this was a dwelling.

Two other buildings from Viklem appear, in our opinion, to hold a central or elevated status on the farm. These are House III and House IV, which we here have interpreted as substantial buildings with no clear room division. The two overlapping buildings occupy the exact same location and have the exact same orientation. The oldest was built in the Viking Period, while the younger was used well into the High Middle Ages. These houses may have held a special position on the Viklem farm in the Late Iron Age. The height which Viklem occupies is one of only a few such locations in Ørland municipality, and has probably been a site of significance in the terrain since the land rose from the sea in the Bronze Age. That a house the size of House III, nearly 140 m^2, was replaced after being burned down in the Early Medieval Period, attests to its importance. That it was replaced by a house nearly double its size underscores this. The farm's central position and function in connection with the medieval church site can be an important starting point for interpreting the function of these buildings.

THE EVOLUTION OF RURAL BUILDINGS IN CENTRAL NORWAY

There appears to be a consensus amongst researchers that the rural building tradition in Norway underwent a radical change in the Late Iron Age and Early Medieval Period. Longhouses were largely replaced by single-aisled buildings (Skre 1996; Grindkåsa 2007; Eriksen 2015), eventually without support structures dug into the subsoil (Jensenius 2001).

Skov's (1994) overview of the archaeology of buildings from southern Scandinavia can be a good point of departure for comparison with Central Norway. Using 171 localities, Skov compiled a synthesis of developments in building styles. Between AD 600 and about AD 900 three-aisled longhouses and pit-houses dominate. Around the year AD 1000 the three-aisled longhouse becomes less significant,

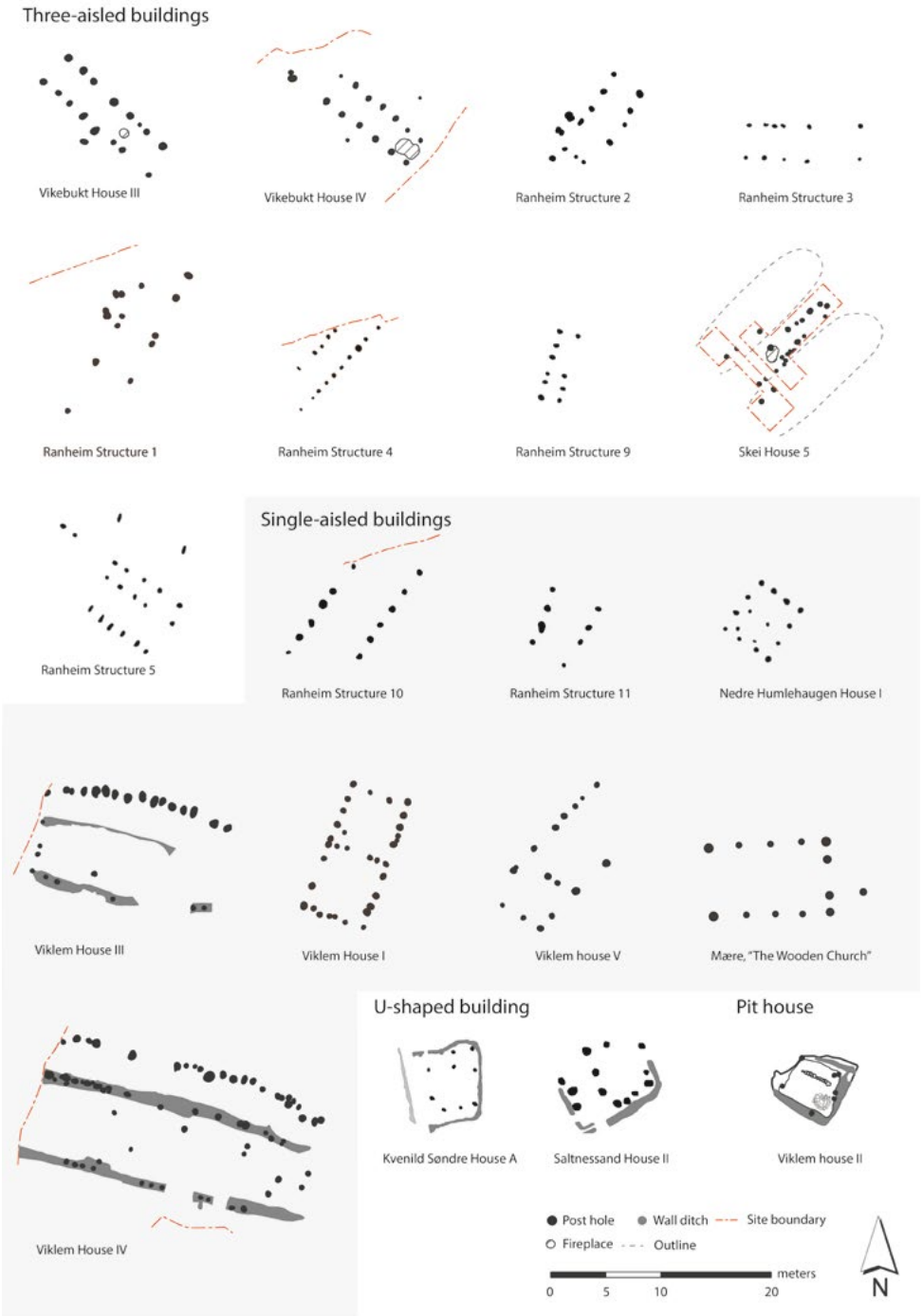

Figure 2. Plans of known excavated buildings from the Viking and Early Medieval Period in Central Norway, excluding cross-timbered buildings. Illustration: Marte Mokkelbost, NTNU University Museum.

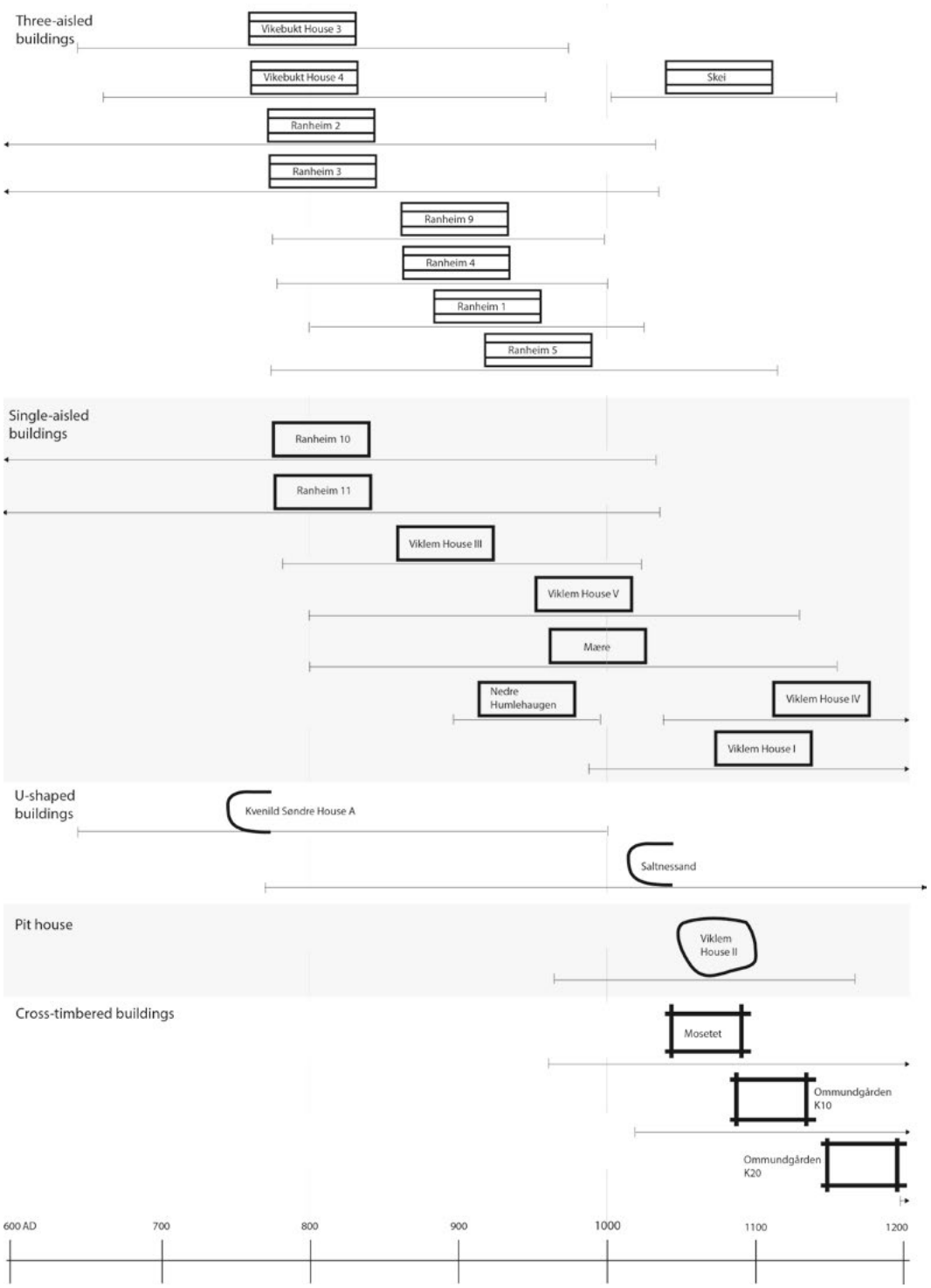

Figure 3. Chronological overview. Illustration Raymond Sauvage and Marte Mokkelbost, NTNU University Museum.

and disappears between roughly AD 1100 and AD 1200. Furthermore, single-aisled buildings with wall posts dug into the subsoil appear at the beginning of the 10th century. The complete overview of known buildings from Central Norway in this period (Tables 1 and 2) shows that we have nine three-aisled buildings, eight single-aisled buildings, three cross-timbered buildings, two U-shaped buildings and one pit-house (Fig. 2). Remains of the cross-timbered structures were, unfortunately, not sufficiently preserved to allow for presentation in plan. The suggested chronological positions of the different buildings are shown in Figure 3.

The analyses in this article are first and foremost based on the buildings that we have been able to identify in the form of postholes. These buildings are the easiest to analyze in terms of architectural style, shape and size. Sufficient remains of the U-shaped houses and cross-timbered buildings were not available to allow for an analysis of construction and building techniques. The three cross-timbered buildings in the data set have been previously treated by Berglund (2003). We know very little about the U-shaped buildings. They consist of U-shaped wall ditches and internal roof bearing posts, which do not appear to be placed in pairs. We do not have immediate parallels to these houses, and it is difficult to understand their physical structure. The nearest archaeological parallels are in Møre og Romsdal and date to the Bronze Age and Pre-Roman Iron Age (eg. Haug 2000).

FROM THREE-AISLED TO SINGLE-AISLED

Stave construction is a general term for several related types of construction common in prehistoric and historic times. The main feature is a load bearing structure consisting of vertical staves and horizontal beams and cross-beams. Stave construction has its origins in the double-aisled buildings of the Neolithic (Olsen 2009). Most of the identified buildings from Central Norway are examples of stave construction. There are two forms which dominate: three-aisled stave constructions with internal support beams dug into the subsoil and single-aisled stave constructions with wall posts dug into the subsoil supporting the roof load. The introduction of single-aisled stave buildings during the Viking Period represents a marked change in the building technology of the period. On the basis of the material used here, it seems that this building method is common in Central Norway from around AD 900. This coincides well with the occurrence of single-aisled buildings with posts dug into the subsoil in the southern Scandinavian material (Skov 1994). The introduction of this building tradition represents something new in the material, a development which we believe happened simultaneously over large parts of Scandinavia.

From a structural standpoint, these buildings differ from three-aisled buildings in that the roof load if borne by the walls rather than internal support posts. We have no preserved building remains in the material and it can be difficult to determine the building principles on the basis of postholes alone. However, we have some comparative material which may contribute to an interpretation. We here suggest that the single-aisled houses we know today from rural Central Norway are an evolved form of stave constructions with corner and mid-wall line staves, as in the medieval stave construction in towns and in the oldest remains of wooden churches. Evolved forms of stave construction are known from archaeological contexts in most parts of northern Europe (Christie 1974; Hauglid 1989; Jensenius 2010). Many of these buildings are distinct from later stave churches in that they consist of staves dug into the ground with recessed, bottom sills between the staves. Traces of this type of building are often found beneath medieval churches, on the occasions where excavations beneath the floors of these churches have

taken place (Jensenius 2010). Later stave churches are based on the same principle, but are supported by integrated frameworks consisting of bottom sills and corner poles with no soil dug element (Jensenius 2010). Archaeologically identified stave buildings in Norway generally have staves dug into the subsoil with mid-wall line staves and recessed sills between the staves. One example from Central Norway is a post-built structure from the earliest activity phase on the site of the Folkebibliotek in Trondheim (Christophersen and Noreide 1994).

A stave building at least 6 meters in length was found on the Folkebibliotek site. The surviving parts of the house consisted of a post dug into the soil and two sills with grooves on the side where the wall planks originally stood. Northern Europe also provides examples of lay-buildings erected using this technique, such as a building from the 10th century in Husterknupp, Germany (Hauglid 1989). Here most of the support framework has been preserved, consisting of posts dug into the ground and mid-wall line posts with an interstitial bottom sill. The building is very similar to that found on the site of the Folkebibliotek in Trondheim. It is also interesting to note that the oldest buildings in this technique seem to be about the same age as those in Central Norway. The only soil dug elements of such buildings are holes for the posts. It is quite probable that these types of features will be the only identifiable remnants of such buildings in rural/farmed areas. The layout of the soil dug elements in these buildings, in our view, agree well with the single-aisled buildings presented here.

An obvious example is the building found beneath the church at Mære in Nord-Trondelag, interpreted as a single-aisled church of post-construction (Lidén 1969). We also believe that all preserved single-aisled buildings at Viklem were probably constructed using such a technique. Wall posts are substantial and placed at even interval, in good accordance with the corner and mid-wall line posts of the evolved form of a stave construction. This substantiates our view that most of the single-aisled buildings with wall posts dug into the subsoil from rural contexts in Central Norway represent the evolved form of stave construction.

An interesting feature that we have not previously seen are in two of the buildings from Viklem, where there are clear indications of external, angled support posts. The northern long walls of both houses were fitted with these. Such angled-support posts are well known in connection with stave construction, where they are known are *skårder*, or exterior wall supports. This technique may have been used in exceptional circumstances, e.g. in harsh environments or when houses were built to a considerable height. Both the stave churches at Kvernes, Averøy and at Rødven, Rauma have *skårder* (Christie 1978). They are part of the Møre type of stave church, characterized by long walls with corner posts and mid-wall line posts. It is believed that the Møre type did not have balconies, but from the beginning was supported by *skårder*. The location at Viklem is central and exposed to the elements and this may have been the determining factor. Such external angled support posts are also known from southern Scandinavia, where they are a feature of well-known building types from Trelleborg and Hedeby. These houses, however, are three-aisled constructions (Skov 1994).

THE FUNCTIONS OF STAVE-CONSTRUCTED BUILDNGS

The origin of the stave-construction technique has been widely debated in architectural historical and archaeological research. The three-aisled stave constructions which appear in the material from Central Norway seem to have had various functions. Most three-aisled buildings have been interpreted as associated with peripheral farm activities, perhaps sheds or simple outbuildings. This can be seen at

Ranheim (Grønnesby and Heen-Pettersen 2015) and at Vikebukt, Vestnes (Haug and Johansen 2003), in the form of a smithy and a barn. The only building that stands out is Tuft 5 at Skei, which is part of a circular arrangement of structures dated to the Viking Age (Stenvik 2001). The building's context is not expressly a farm context, but rather a place that is interpreted as a meeting point and focal point for military activities. This building represents an exception. We therefore believe that most three-aisled stave-buildings from Central Norway from the Late Iron Age and Early Medieval Period are associated with various agricultural functions. There is amongst three-aisled buildings, no clear residential function.

Regarding single-aisled stave construction, we see a more complex picture. Berglund (2003) interpreted stave constructed houses as lower status than cross-timbered houses. Stave construction may have been an older building style that came to be used for such lower status houses. This is supported by, among other examples, the material from the site of the Folkebibliotek in Trondheim; stave construction was used in free-standing structures and smaller structures, such as simple house additions and sheds (Christophersen and Nordeide 1994). Such an interpretation may be applied to some of the single-aisled buildings in the data set, such as Ranheim Structure 10 and Structure 11, but we see a more central role for most of these buildings. At Viklem two single-aisled buildings built in the evolved form of stave construction, House I and House V, have been interpreted as dwellings. Rural medieval residences in the form of two-bedroom buildings were not exclusively built using the cross-timbering technique, as they were in the towns, but are represented in the evolved form of stave construction. This indicates that the evolved form of stave construction was commonly used for residential structures.

Two other buildings are also important for highlighting the use of stave construction in houses, House III and House IV at Viklem. These buildings stand out in terms of their central location, substantial construction and impressive size. If the assumption that these buildings served public functions linked to manor farms is correct, it highlights how stave construction was used in high status buildings. That this form of construction was used in lay-buildings associated with public functions on larger farms in the Medieval Period can be seen in the still-standing building known as *Finnesloftet* at the Finne farm, Voss. This building, dating to the late 1200s, is built in the evolved form of stave construction with two cross-timber arches on the lower level and has been interpreted as a hall for feasts/gatherings (Berg 1951). The Viklem farm's central position and status in Ørlandet suggest that it may well have held similar functions, and the two large buildings (House III and House IV) are, in our view, reasonable candidates for this purpose. The evolved form of stave construction permits buildings to be built higher than is possible with three-aisled stave construction (Olsen 2009). Terje Gansum (2008) believes this was the preferred method of construction for hall buildings.

Perhaps the most well-known use of the evolved form stave construction is in church buildings, and a religious function must always be considered when evaluating buildings in this construction style in Central Norway. The origins of the stave church are thought to be found in Pre-Christian, Scandinavian religious architecture (Lidén 1969; Sundqvist 2006; Grindkåsa 2007), an interpretation supported by the placement of several stave churches and stone churches on earlier cult sites. Stave constructions are also generally treated in discussions about church buildings and the development of the early wooden churches (e.g. Christie 1974; Hauglid 1989; Jensenius 2001). One building from the Central Norwegian

house material can be said to be relevant to such a discussion, a single-aisled building discovered beneath the church at Mære, Nord-Trondelag. This is interpreted as an early wooden church built in the stave technique with support posts dug into the subsoil (Lidén 1969). Traces of older buildings, interpreted as Norse cult buildings, as well as some 20 gullgubber, among other finds, were also found on this site.

CONCLUSION

The archaeological building material which has been presented in this article seems to largely coincide with the known development of building traditions in northern Europe and southern Norway. At the beginning of the Late Iron Age one primarily finds three-aisled buildings serving either one, or a limited number of function (e.g. barn, smithy, outbuilding). This constitutes a break with the older tradition of multifunctional longhouses. From c. 900 AD, we see the introduction of single-aisled buildings to the material. We cannot see any typical longhouses as they are known in the Early Iron Age. Rather, we see several buildings built in varying styles and it appears relatively clear that each building has had some specific and limited function or functions. Viklem is a good example of how a farm can contain several buildings with unique functions, including the main dwelling, a pit-house with associated functions, and larger buildings possibly serving a feasting/gathering function, or some other key social function.

A general development from multifunctional longhouse to smaller buildings with one or few functions seem to have broad support amongst archaeologists (Åqvist 1992; Skov 1994; Skre 1996; Ramqvist 1998; Myhre 2002; Jensen 2004; Grindkåsa 2007; Martens 2009; Eriksen 2015). It is in our opinion possible to trace an incipient division of building function in Central Norway from about AD 600. This first appears in three-aisled buildings. Interestingly, the onset of this process coincides with the pervasive, larger-scale changes occurring in this phase. It appears that settlement structure changes at several places in Norway, Scandinavia and Northern Europe at the transition between the Early and Late Iron Ages (Göthberg 2000; Hamerow 2002; Myhre 2002; Grønnesby 2013).

This itself coincides with a series of radical changes in the archaeological material at the transition between the Migration and Merovingian Periods. It is in this context that it is suggested that over the course of the Merovingian Period, settlement appears to centralize around areas where modern farmsteads occur (Myhre 2002; Grønnesby 2013; Grønnesby and Heen-Pettersen 2015). Viewed in relation to rural building traditions, we believe that this transition corresponds to how farm buildings are organized and used, and that one has largely moved on from the traditional longhouse. Perhaps the longhouse was considered an older and no longer relevant farm structure?

Within the purely technical aspects of building construction, there are two innovations in the Late Iron Age and the Early Medieval Period. The introduction of single-aisled buildings in the evolved form of stave construction appears to have occurred around AD 900, across Northern Europe generally as well as in Norway (Christie 1974; Haug Lied 1989; Jensenius 2010). An important contribution of this article is that it has been possible to identify buildings in the evolved form of stave construction in rural areas, without preserved building remains. It is probable that most single-aisled buildings identified during standard machine topsoil stripping represent this type of construction. Towards the end of the Viking Period and into the Medieval Period cross-timbered buildings also appear in the material. Space limitations prevent a discussion of this building type in the present article, but it is worth

noting that the appearance of this style coincides with the founding of medieval towns, where it was the preferred building tradition.

Carpentry and building construction are crafts that are difficult to verbalize. They exist in the form of practical knowledge expressed, among other experiences, through tools use, actions and gestures (Molander 1996; Molander 2004; Høgseth 2007). This can cause a certain conservativism in craft industries, and thus slower process of change. It is interesting to see that the evolved form of stave construction was introduced simultaneously in Central Norway, Scandinavia and Northern Europe. It is therefore difficult to use a traditional diffusion model for explaining the introduction of the technique. It is possible that it is not a coincidence that such a building traditions were spread in this particular period. The extensive contact over large areas typical of the Viking Period may have led to the rapid transfer of craft knowledge through social and economic interaction.

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