

The First Cross-Timbered Houses of Norway?

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Log houses; construction; corner-timbering; stove; town houses

With the introduction of cross-timbering around 1000 AD in Norway, a several thousand year old building tradition was broken. Because of this totally new building technique, introduced from the east, the traditional long-house with its manifold functions was divided up. This happened at a time of numerous changes in the society, among them the founding of new towns which served as centres for the spread of innovations.

Introduction

During my study of fireplaces found at the excavation in medieval (Medieval period in Norway starts at the end of the Viking period at ca. 1050) Oslo in the 1970s (Sørheim 1975; 1979; 1989), I found an obvious pattern in the shape and way of construction of the dwelling-houses where the fireplaces were found. All these houses were log-built with coggled joints. Except for the oldest layers dated to the early 11th century, they had two rooms – a small ‘hall’ with the entrance, and a door leading into a larger, square main-room with an open fireplace in the corner. The houses were equipped with a wooden floor and sometimes benches (Norw.: ‘moldbenk’) filled, to prevent a draught, with soil or clay along one or more walls. I found the same pattern in other Norwegian medieval towns where similar extensive excavations took place at that time. This assumption has been verified in later excavations dating back to the turn of the first millennium. Finding this interesting, I have examined the reports and publications that are now at last available from these excavations. I have searched for dwelling-houses, i.e. houses with

fireplaces, wooden floors, benches and with finds of objects that can tell about the dwelling-function, such as weights from looms. This is the type of house that in old Norwegian language is called ‘Stove’.

The ‘Stove’

According to the old Norwegian Gulating-law, probably first recorded in the 11th century, there were three houses that should be properly left when the tenant terminated a farm. This was the ‘stove’ (dwelling house), the ‘stabbur’ (storehouse) and the ‘eldhus’ (brewery and cooking-house). The word ‘stove’ appears at first in the written sources early in the second millennium. It is supposed to be the name of a new type of building different from the long-houses of the earlier Viking and older periods (Hauglid 1980, 172). The word ‘stove’ has been central in the Norwegian debate about the history of buildings. Based upon knowledge from known standing houses, this is supposed to be a simple log-timbered building with an open fireplace in the centre of the earthen floor, like houses still preserved in the remote valleys of Norway (Christensen 1995, 79).

Archaeological excavations in medieval Norwegian towns have given us new material that can extend and modify old knowledge or hypothesis. The dwelling is of significant importance in the history of mankind. In my opinion, we should therefore place a great deal of emphasis on the history of buildings and their importance for living conditions, and the way dwellings have integrated into the everyday life of man. This paper is an attempt to put the new finds into a system.

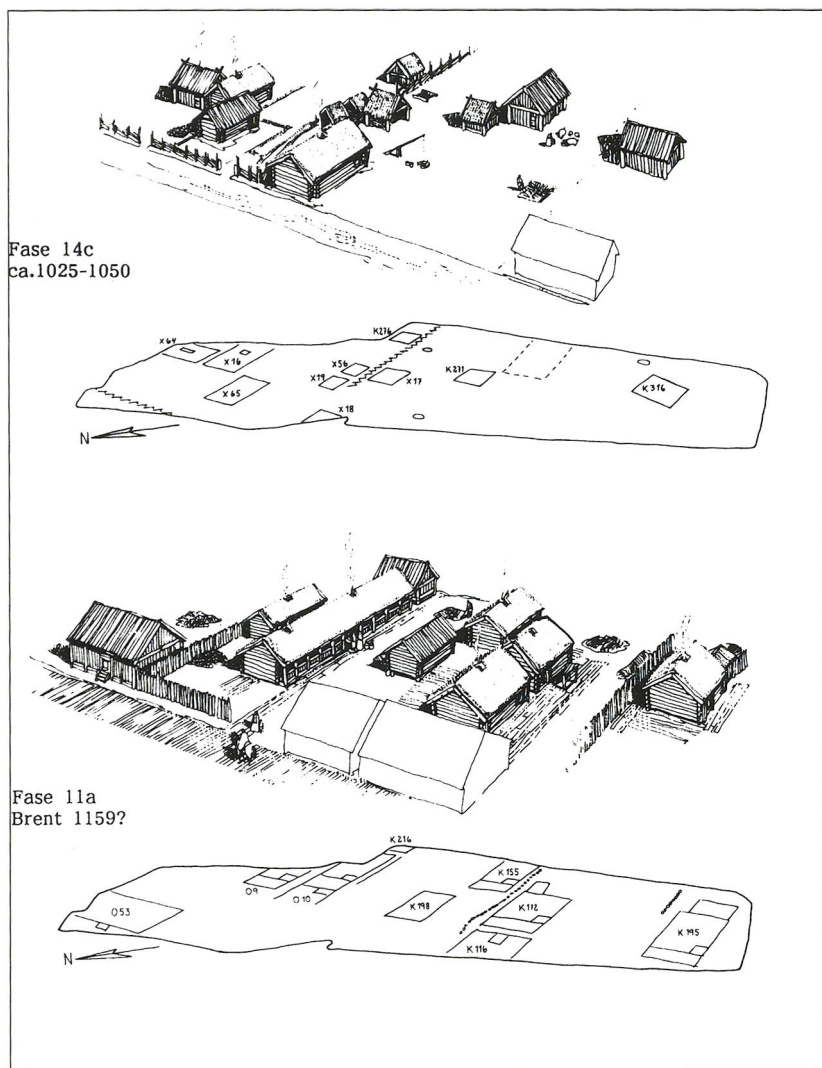


Fig. 1: Reconstructed drawing of houses from the oldest bottom layers from Oslo, ca 1025-1050AD: (over) with the oldest cross-timbered houses. Under a reconstruction of the same area burnt down 1159?, with 5 two-room houses (K195 to the right) and a double house with common entrance with living rooms on both sides. Drawing: M. Brochmann (Schia 1987, 182-183).

It has been difficult to find all the mentioned types of buildings from the excavated remains. Because of fear of fire in the densely built wood-built town, houses with big fireplaces like the 'eldhus', smithies, etc. were situated outside the town. The daily need for cooking was carried out in the dwelling-houses. The fireplaces in the dwelling-houses then had three functions: cooking, heating and light.

Archaeological Finds of the Dwellings – the ‘Stove’

Gamlebyen in Oslo

My previous work about fireplaces from the excavations in old Oslo during the 1970s, concerned 62 indoor fireplaces dating from the early 11th century to ca. 1300 (Sørheim 1979; 1989). About half of these house-remnants

were so well preserved that we could get an idea of the original ground-plan of the house. All of them, except a few from the oldest layers, had wooden floors. All these houses were single storied, and were built from timber with cogged joints.

The three exceptions were found in the oldest layer where the built up area can be described as open but town-like (Fig. 1). These houses, of which at least two for certain were cross-timbered, were very simply built with a clay floor and an open hearth in the middle. Slightly younger, however, was the oldest two-room house. This must have been torn down before a fire that burnt down this part of the town about 1070/80. In the layers over, and younger, than this, the two-rooms houses are totally dominant.

I will use one of the best preserved house-remnants, building K195, as an example to explain the details of this two-roomed type of house (Fig. 2). K195 was burnt down in a fire supposedly identical to a minor town-fire mentioned in 1159. Remnants of the timbered walls with most of the joints were preserved. It was 6.8 m long and 5 m broad and was divided into a small, 1.3 m broad entrance room and a main-room measuring 21.6 square metres. Both rooms had floor boards made from split timber, riding on 'sleepers' directly on the ground, not connected to the wall. In the corner against the partition wall was the hearth. The hearth had low stone frames on three sides. The stones were most often round, but sometimes raised flagstones were used. At the front-corner of the frame, against the room, was a stump. From this stump, a low wooden frame ran alongside the hearth. Often we found benches filled with clay or earth, a 'moldbenk', along the wall from the fireplace, but in this house we only found a 50 cm broad bench, secondarily built upon the wooden floor, along the wall opposite the fireplace. Weights that were found on the floor tell us that there had been a warp-weighted loom standing up against the wall opposite the fireplace. Connected to this house was an annex built in raised timber, which is not pertinent to this paper.

What these buildings have in common is that they are built from lying timber notched together in six joints – the four corners and the two joints for the partition wall. They are all equipped with wooden floors and an open hearth in the corner of the main room against

the partition wall. Worth mentioning is that one house was found where the entrance-room was further divided into two rooms, like the later known three-roomed timber-houses – consisting of a hall, a living room and a sleeping room. This type of dwelling become common on farms all over Norway during the medieval age and later.

Some years later an excavation took place in Oslogate 6, 150 m away from the above mentioned sites. The house-remnants were very well preserved and the finds could be an excellent source of new knowledge, but the results from this excavation are not yet systematised so unfortunately they have not been fully available for this paper. From the few preliminary publications from this excavation I can see that we find the same building structure that was previously found, and also a great number of the same kind of two-room houses. From the last thirty years of archaeological excavation in old Oslo we have learned that the common and almost totally preferred type of dwellings from the mid 11th to 14th century, was a single-storied, two-roomed cross-timbered house with wooden flooring board and an open hearth in the corner.

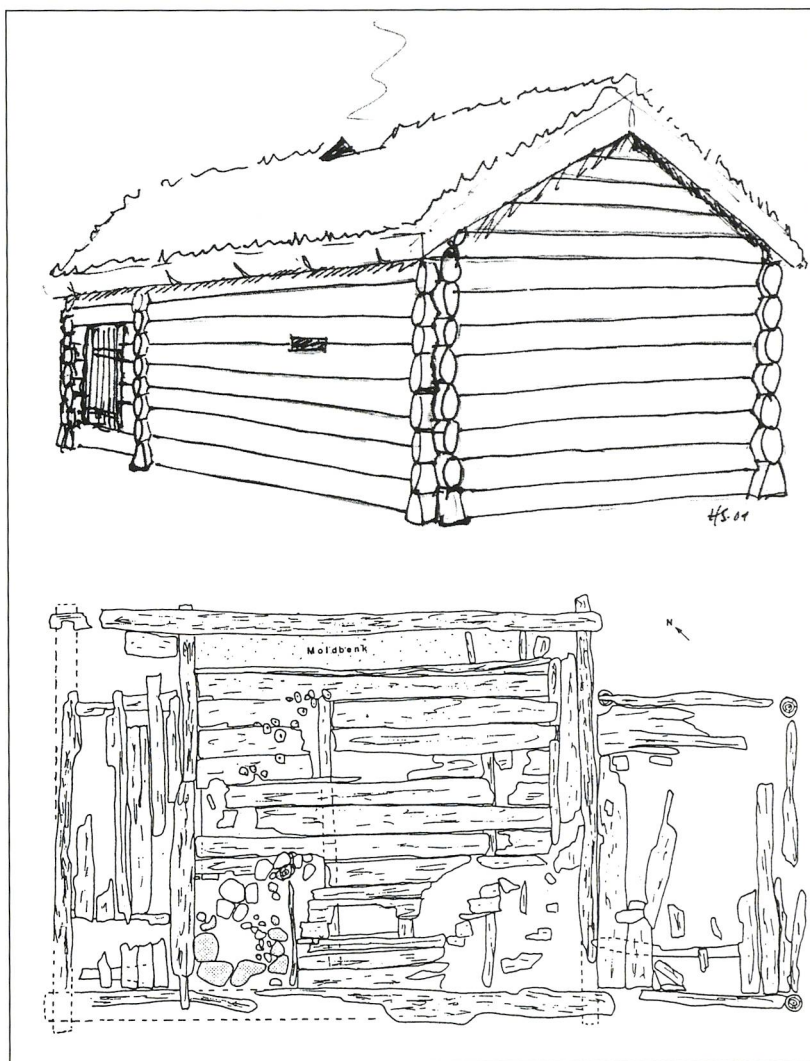
We shall now see what new archaeological finds from the other medieval towns in Norway can tell us about the dwelling-houses.

Tønsberg

The finds from medieval Tønsberg look similar to the finds from Oslo. But here a supposed 12–14 m long oval shaped house of prehistoric type, with a hearth in the centre, also was found. It is not properly dated but cannot be younger than from 1100 AD (Eriksson 1986, 76–77, Brendalmo 1994, 77–79). This is the only example of a prehistoric type of house found, as far as I know, at the site of a medieval town in Norway. Also in Tønsberg, one example of a timber-house with a central placed hearth was found in the bottom layers from the late 11th century. But the rest of the dwelling-houses had two rooms and a corner-hearth as in Oslo. (Lind 1992, 48; Haugli 1980, 158–159; Brendalmo 1986, 36; 44).

Skien

The houses found in the lower and oldest phases, from the second half of the 10th century, at



the rather limited excavations in Skien, are made of wattle constructions. The younger phases 5–7, with constructions dating back to the late 10th or early 11th century until the mid 12th century (Myrvoll 1992, 251) are, however, described as 'timber phases' (Myrvoll 1992, 211). Three similar buildings to those found in Oslo were also partly dug out here. They all have a minimum size of 5.5 x 4–4.5 m, and at least two of them have a corner fireplace.

Bergen

Extensive excavations have been carried out at Bryggen in Bergen since the 1950s. Strangely enough, very few dwelling-houses have been found. This can be explained by the fact that most of the finds from the excavations in the harbour area were long rows of warehouses that were built on foundations into the harbour. The town also grew so fast, that very

Fig. 2: Plan of a typical cross timbered, two-room building K195 found in Oslo, with an appendix, K121, built in frame-construction with raised posts in the corners. Observe the different building techniques.

Top: A reconstruction of a two-room house based on this and other finds plus details from standing medieval buildings.

soon there must have been a lack of available building sites. I therefore suppose that the dwelling room with the fireplace was found upstairs in houses with two or more floors, impossible for the archaeologists to find. The finds from Bergen are also somewhat younger than elsewhere. If simple single storied houses have been built, they cannot have been used for a very long time in this area. Strangely enough, dwelling-houses are not found elsewhere in the town (personal information R. Dunlop).

The few examples of dwelling-houses I can refer to here are some cross-timbered one-room houses with a corner fireplace, and a house with two rooms of the same size, also equipped with a corner fireplace. They date back to the 12th and 13th century.

Borgund

Borgund was a small market and fishing town near Ålesund. The finds date back to the second half of the 11th century. Many dwellings have been found behind rows of 30 m long warehouses stretching up from the harbour. From the oldest layers some wattle-houses were found. These can be remnants of the first pioneer settlement, from temporary fishing- or market-huts on the site. Several two-room houses, like the ones found in Oslo, have been excavated. As an example I can refer to a logged building of 6.6 x 5.1 m, with two rooms – a small entrance room and a square main-room equipped with a wooden floor, benches along the walls and an open hearth in the corner.

Close to this, a very peculiar building, the 'Årestuen' (timbered house with an open hearth in the middle of the floor) was found. This was rather large, 11 x 5 m, inside. The floor was divided into two parts. The 1/3 in the western part had a floor 20–28 cm higher than in the main part. As no traces of a partition wall were found, the excavator, Asbjørn E. Herteig, interpreted this as a 'pall' – a bench or raised floor for the high seat, like king Olav Kyrre built in his hall in Bergen (Herteig 1957, 427). Looking at the later found two-roomed buildings, an alternative explanation can be, that the house did in fact after all have two rooms. The difference in the height of the floors can be explained from the fact that the house was built on a downgrade. The shape of the wooden floor was excellent. The crosswise

floorboards were precisely fitted into a T-formed sleeper along the middle of the main-room. Upon the floor, traces of broad benches, a 'pall', were found on each side. In the middle a stone-built, wooden framed open hearth was found. The walls were built by cross-timbered logs. Outside the walls however, heaps of stones were found that had been laid up against the outside wall. This is a most peculiar feature in medieval houses, but has often been found in prehistoric long-houses in Norway. As one of the first medieval dwelling-houses excavated in Norway, this house, the 'Årestuen', has played an important role in architectural history. At the Norwegian folk museum in Oslo, they had to reconstruct one of their medieval houses because of new information from this find. The quality of the woodwork of this house told us that the post-Vikings were capable of raising excellent wooden floored houses. But why should they not, thinking of the excellent ships and stave-churches built at this time?

This building is 'modern' in its use of cross-timbering and excellent woodwork, but it is 'relict' in the central placed open hearth and the stone walls on the outside. Dating back to the late 11th century, it must have been a house built in the transition from the prehistoric Viking period to the medieval time. The find is outstanding and the building must have been special. I therefore agree with the interpretation of Asbjørn Herteig, that 'Årestuen' must have been more than an ordinary dwelling house, more likely a feast hall or maybe a court house (Herteig 1957, 437).

Trondheim

From the medieval urban centre of Trondheim (old name: Nidaros) the results from the extensive excavation of the 'Library site' are available for this examination. Most of the buildings were cross-timbered. The excavation covers the oldest found town remnants of Norway, dating back to the second half of the 10th century. Fifty-four of the 97 complete house-grounds recorded had two rooms. From the bottom layer two one-room houses with a corner-hearth were found. These represent the earliest examples of the classical dwelling, the 'stove', in this excavation area (Christophersen/Nordeide 1994, 179).

Two-roomed dwellings, mostly of the Oslo type, were the most common. Twenty-two

house-remains of this type were found. These were built from ca. 1025 AD until 1500, most frequently between 1175–1225. The size varies from 17 square metres to 84 square metres (ibid., 35).

The Urban ‘Stove’ – Conclusion

This summary shows that the universality of the type of dwellings first observed in Oslo also was common in the other medieval towns, except Bergen for reasons mentioned. After a very short introduction period using one-room houses, often with clay-floor and central hearth, we can hereby define a preferred type of dwelling, the ‘stove’, as:

A one storied cross-timbered house with a small hall or entrance-room and a square main-room where the open hearth was found in the corner against the partition wall.

The floor was made of split logs resting on top of “sleepers” not connected to the walls. The main rooms were often equipped with earth- or clay-filled benches along one or more walls. The smoke must have been ventilated through an opening, ‘ljore’, in the roof. The sill logs on the ground rested on stones, sometimes on short vertical wooden stumps, or directly on the earth depending on the condition of the substratum (Fig. 3).

The History of the “Laft” (corner-timbering)

The simple technique of corner-timbering (to build from horizontal timbers or logs, carefully cut for a close fit at the corners, capable to bear the roof without inside posts and supports) must have been invented and used in several places in the world. The main area of extent has been most of Russia, Finland and the Baltic lands to Poland and south to the countries along the Carpathian Mountains, Austria and Switzerland and mountains area of Spain. From Finland and Russia it spread westwards to the Scandinavian peninsula supposedly as late as about, or shortly before 1000 AD. This is mainly the same area as the extent of the large pine forests of Northern Europe. The technique is also known from China and Japan. When and how the transition from building in raised framework constructions to

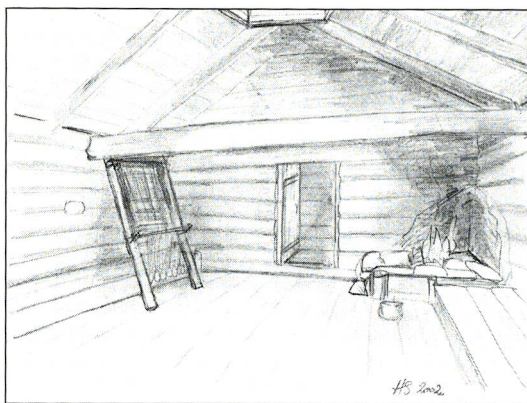


Fig. 3: Reconstructed interior of a two-room house. The roof-construction is uncertain.

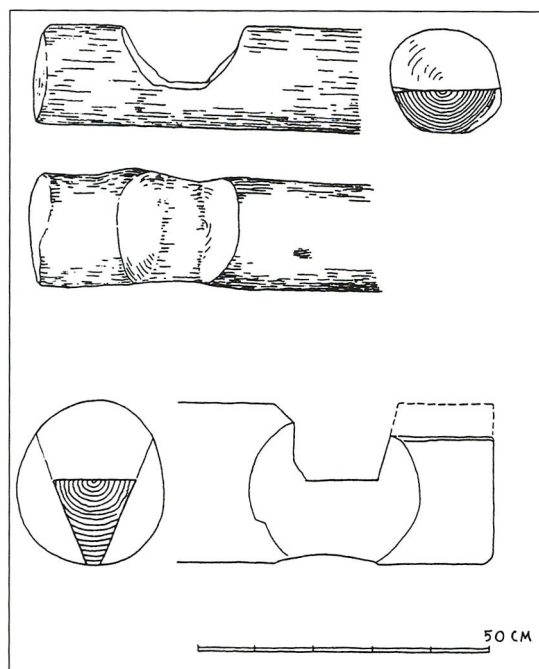
cross-timbering took place is one of the main questions in Nordic and European architectural history (Hauglid 1989, 233–24).

The oldest known ‘laft’ in Norway has recently been found in a well in the Viking village of Kaupang at the Oslo fjord. It is dendrochronologically dated to 808 AD (personal information Dagfinn Skre, University of Oslo). This does not mean that log houses have been built in Norway in the Viking period. There are numerous examples of logged framework used in wells or fortifications in Europe where the houses still were in raised framework constructions.

I have also examined Norwegian reports and publications from house excavations from the Viking and early medieval sites outside the new towns, but so far I have not found traces of cross timbering used for house building older than the ones found in the towns. We have not, however, found many houses dating back to the Viking period, and we must be careful not to interpret lack of finds as non-existence. The few houses found dating to the first centuries, up to the time of our town houses are however, all of the prehistoric long house type with raised wood carrying the roof, and with wattle, raised wood, stone and turf used for the wall.

In Tønsberg we saw an example of a small long house with curved walls previous to the timbered houses. The oldest log houses of Oslo were simply built with an earth floor and central hearth, what I believe to be a relict phenomena in this connection. In Oslo, Skien and Borgund we also found simple wattle houses in the bottom layer. The big ‘Årestue’ in Borgund has relict and ‘modern’ construction details that evidence a change in building knowledge and method of construction. The

Fig. 4: Upper: "vagenov" from Gamlebyen, Oslo. Mid. 11th. century. Lower: From Trondheim. One of the oldest notches known in Norway. This is a "findalslaft" (form old Norwegian fyrndar old-fashioned) with the neck in the lower half of the log. Previously used in a house-foundation ca. 900–1000 A.D. (from Berg 1989, 19; 25).



oldest notches from Oslo are of the simplest form where the upper log is laid without any notches directly into a half through cut notch in the under log (Norw.: 'Vagenov', Fig. 4). In the opinion of the excavator, Trygve Fett, this tells us that the technique of notching therefore cannot have been known for a very long time in Oslo (Fett 1989, 52). Rather soon, however, the more sophisticated notches 'Finndalslaft' came into use. In Trondheim the 'Findalslaft' was used from ca. 1000 AD onwards (Fig. 4). Professor Axel Christophersen has drawn the conclusion, based on the historical close connections eastwards between Trondheim and northern Sweden and Finland, that this confirms the old hypothesis that the log timbering methods were learned from the eastern countries. He also refers to some details in the notching not normally used in Norway but frequently found in Sweden (Christophersen/Nordeide 1994, 163).

As far as I can see from our present day knowledge, the cross timbering technique was first used for house building in the new Norwegian towns growing up from the very end of the Viking period about 1000 AD. This was a time of major changes: new, gathered nations and order of laws, new religion, new commercial activities with the first growth of towns etc. etc. New building types were necessary in these towns. The new townsmen were not as conservative in the way of house construction as the old farmers were. They could easily adopt

new ideas and these ideas were easily spread because of the growing trade and contact abroad.

I therefore, on the basis of new archaeological finds, agree with the conclusions of Roar Hauglid which states, that the cross-timbered dwelling house, the 'stove', must be seen in connection with the structure of the town. And that in this connection there is no problem finding comparable examples in the older log houses of eastern Europe. He points to the Russian towns where the logged houses are found in the same way as in Oslo and Trondheim. There is no doubt, he says, that the Nordic 'stove' and the Russian 'izba' are related. We find the same plan, same technique of foundation, the same notches and the same fireplace in the corner at the door (Hauglid 1980, 300).

From the town excavations we can also see that the framed houses were renewed, but for dwellings the cross timbered house was preferred. Very soon a preferred type of logged building, the two-roomed, was developed. The cross timbered houses, if properly made, are draught-free and warm. The notches become more advanced and a special tool 'med-drag' was used for adapting the logs to avoid spaces between them in the wall. Moss or cloth was used for tightening, not clay as can be seen in later log houses in Central Europe and North America.

The New Houses and the Shape of the Farms

The cross timbered log house seems to have been spread from the towns into the countryside. The two-roomed house was further developed. The hall or entrance room was divided into a hall and a sleeping chamber, like we saw in an example from Oslo. This three-roomed house, which is still preserved, became the most common dwelling throughout south and middle Norway in the medieval age.

The prehistoric farmhouse used from Neolithic times through the Iron Age was a long building like the 'German hall', containing all the functions that had to be housed on a farm. The dwelling and the room for animals and storage was gathered under one roof. Using standing posts in a framework, the house can be built as long as desired. The longest house of this kind

found in Norway is, for instance, the 83 m long 8–9th century hall found at the Viking chieftains' seat Borg in Lofoten. Using vertical logs, building big houses is more complicated. Building longer walls, longer than the length of the log, you have to join the logs. The cross-timbering, it is said, made the long houses disappear. The different functions were split up into several houses: for living, for the sheep, cows and horses, for storing, for different kinds of work, cooking etc.

This theory has recently been re-examined on the basis of excavations from south-western Norway. As early as in the Migration period we can sometimes find small houses in addition to the long house (Myhre 1982, 200). It is also a fact, that according to finds made at excavations in medieval farm sites in the mountains area, the long houses still are used rather late in the medieval period. I agree that there has been small variations both geographically and throughout time, but I do not see that this changes the old theory. Attention has also been drawn to the fact that as late as in the 18th century houses containing different functions under the

same roof are still raised (Christensen 1995, 80–81). These are, however, unlike the prehistoric long houses, small individual buildings raised in different building techniques (timber, framework stones etc.) linked together under the same roof. The different functions of the farm are gathered as in the long houses, but the methods of building are in this case different.

My conclusion is that the introduction of the cross-timbered building technique about 1000 AD, gave us new types of buildings, first and foremost the dwellings. This also led to the fact that the topographical structure of the farm, and consequently the daily life both concerning work and social conditions, was changed. This paper, examining new archaeological finds from the transition between Viking period and medieval times, confirms the old hypothesis, that cross-timbered houses were first introduced in the new towns where the two-roomed dwelling very soon was adopted and developed as the preferred. This type was spread in a further divided and developed type, the three-roomed 'stove' into most of Norway.

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