

About the Introduction of Joint Timber Building in
Scandinavia

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About the Introduction of Joint Timber Building in Scandinavia

The issue of the introduction of joint timber building is old in both Norway and Sweden. Former Swedish researchers, such as Boëthius, Erixon, and Lundberg, have been very uncertain about this, and Lundberg believed it was introduced as early as during the Vendel Period, i. e. 550-800 AD.¹ A few decades later, Hauglid in Norway assumed, with some caution, that it was introduced by king Harald Hårdråde in the middle of the 11th century.²

First we have to put a couple of questions:

- 1) Why is joint timber building interesting?
- 2) What do we mean by joint timber building?

The answer to the first question is that joint timber construction has been dominating in Norwegian as well as a great deal of Swedish building from an unknown date far back in the Middle Ages until and including at least the 19th century. The joint timber construction has very good heat qualities, which is a blessing in the Scandinavian climate, and the necessary building materials, coniferous forests, are abundantly available. Both Norwegian and Swedish joint timber building has reached a high level, perhaps especially the Norwegian.

To answer the second question one must bear in mind that logs can be laid across each other, forming a rectangle, with more or less tight joints, and that the technique can be used for wells, jetties, sepulchral chambers, and fortifications, as well as for houses. Here, the houses are what we are interested in. Of course, the development of the ability of building houses co-operates with the ability of building the other constructions, but the housing also has some special demands: you have to handle rather big dimensions, and, at least for dwellings, it must give a good shelter from climate.

In Scandinavia, very tight ways of making the joints were developed within the Middle Ages (in Scandinavia dating from ca. 1050 to ca. 1520), making the necessary heat and stability qualities, and coevally high-level aesthetics developed. And the history of that technique is what we are interested in.

The Roman architect Vitruvius tells about building houses with cross-laid logs in a region east of the Black Sea in the time when he lived, i. e. the last century BC. But the joints were not made tight; there was a space between the logs that was filled with wooden shavings and clay.³

The oldest Norwegian and Swedish joint timber buildings that are still standing are from the 13th century and show a well-developed building work.⁴ So the introduction was earlier. That means that the discussion is totally dependent on archaeology, and that is the main reason for the uncertainty about the early joint timber building and its introduction. Archaeological remains, when they are at all encountered, mostly show what has been in and near the earth—if we are lucky—and very seldom anything higher up in the building. Even the existing remains can often be interpreted in different ways. There have been several excavations

in the last decades of the 20th century, which have brought some more information to the issue.

The oldest certain joint timber building remains in Scandinavia are from ca. 1000 AD. There are some statements of block building in some Swedish places a few centuries BC and in the Migration Period, but they are very uncertain.⁵ And in addition, they are largely based on the presence of clay remains with a shape corresponding to the space between or adjacent to wooden constructions. These can belong to other constructions than walls, and, if they belong to walls, it would be quite another building tradition than the one that took root and was richly developed in Scandinavia. The joint timber building remains from the Viking Age and further on never have any parts of clay in their walls. Unlike that, clay has been used in Eastern Europe in later time, for hundreds of years.

In the Scandinavian tradition, there is no need for clay, because the houses are built with a procedure in which every log is related to the underlying log by a longitudinal carving, which makes the wall both tight and accurately vertical, and the carved groove is filled with moss or oakum.

So the questions that follow are: When did joint timber building appear in Scandinavia? What places or regions were the first builders influenced by? Why did it appear at the time it did?

We now pass on to look at the earliest finds of joint timber built houses in Scandinavia. I am going to compare their characteristics to buildings in other regions in order to see where we can find resemblances and where we do not, and make some conclusions from that. I take into account material from both newer and older excavations.

The timber technique

The earliest certain finds are in Trondheim a little before and about 1000 AD.⁶ The technique of crossing logs with tight joints seems to develop at the same time in both housing and quay constructions. The houses that were built in Trondheim before this point of time were framework buildings. This is no evidence for joint timber houses not being built in the region earlier. Possibly, there can have been joint timber houses in the countryside, but we do not know.

The joints in Trondheim are made with both an upper and a lower notch, and with a bevel on both sides of the lower notch. The upper notch is shaped to fit to the overlying crossing log with its bevels. This is a fairly advanced form of joint for the time and an argument for the technique perhaps having been developed in the countryside before.

In Sigtuna, founded at ca. 980 AD, there were only framework houses for a couple of decades, and the first joint timber built houses appear a little after 1000 AD.⁷ The joints are simpler than those in Trondheim. There is only an upper notch, and it is semi-circular in principle, just to fit to the crossing overlying round log. Like in Trondheim, we can not certainly tell if there had been joint timber houses built in the countryside earlier. The notches of Sigtuna are not well-made, and seem to be made by unpractised hands.⁸ So at least, there seems not to be any broad tradition arisen.

Both Trondheim and Sigtuna have round logs, similar to what has been found in Staraya Ladoga and Novgorod in the old Russian kingdom.⁹ The notches of Sigtuna are also similar to the Russian notches but are less skilfully made. Trondheim has more developed notches, which seem to be a Scandinavian, or Norwegian, innovation.

Staraya Ladoga and Novgorod have grooves carved along the upper side of the logs. In none of the Scandinavian places it has been possible to observe longitudinal grooves in the oldest finds, because the remains are not so well preserved. However, such grooves have been found from a little later in time, like those in old Russia, but the Scandinavian ones are always on the lower side of the log and have a different section. Again, this seems to be a Scandinavian innovation.

The Russian houses, like the Scandinavian ones, never have any parts of clay in the walls.

There were constructions of lying and crossing logs in the fortification rampart of Danevirke in most southern Jutland, built in the 8th and 9th centuries. The logs here had a rectangular section, and the joints had both an upper and a lower notch that were rectangular.¹⁰ A similar technique has been found in a few houses in Haithabu near Danevirke in the 9th century and in a well in Kaupang in Norway in the beginning of the 9th century.¹¹ This is another tradition than the one of Trondheim and Sigtuna. In Danevirke and Haithabu, oak has been used, which was cut lengthwise to get appropriate dimensions. On the other hand, in Trondheim, Sigtuna, Staraya Ladoga, and Novgorod, pine wood was used, and pine trunks have appropriate thickness for house-building just as they are. Therefore, there are round logs in these regions, and the notches of the joints are semi-circular, if there are not more advanced constructions (like Trondheim). The reason for using pine wood was, of course, the big pine forests in those regions, whereas further westwards there are no such forests, but oak and other broad-leaf trees. Pine trees also have the advantage of having tall and straight trunks, just appropriate for house building.

In Wollin and Gdansk, there were also joint timber houses, mostly built of round logs, but occasionally also of rectangular ones.¹²

Looking again at Scandinavia, there were also joint timber houses built in Oslo a few decades after 1000 AD, when the town was founded. In the beginning, the technique was similar to that of Sigtuna, Staraya Ladoga, and Novgorod, but a little later it altered towards the technique of Trondheim. The oldest houses appear to be made by unpractised carpenters, which is interpreted as though the technique was newly introduced at the place.¹³

House plans and some other features

It has often been said that the introduction of joint timber building was due to economic changes of farming, in which few and big houses were replaced by many and small houses, and that early block houses were one-room buildings and accordingly were appropriate for this purpose. Firstly, this economic change occurred earlier than the joint timber house introduction and was quite well supplied by framework buildings. Secondly, the oldest joint timber buildings were very often two-room buildings, especially in Trondheim and after a short time also in Oslo. Two-room buildings were also common in Staraya Ladoga and Novgorod, in joint timber technique, and in Haithabu and Birka, in framework technique. The very oldest joint timber house at Trondheim is supposed to have a room plan similar to houses in e.g. Dublin and York, with the entrance at the short end.¹⁴

Accordingly, the joint timber technique can be combined with several house plans, and house plans can be combined with several building techniques. Especially, there were models to both one-room, two-room, and three-room joint timber buildings in the Russian towns. It seems that the Scandinavian builders chose plan and technique just as they wanted, to suit their purposes.

Likewise, there is no clear pattern to be found concerning floors, hearths, benches and foundations. In Trondheim there are wooden floors from the beginning, and in Oslo almost from the beginning, whereas Sigtuna has earth floors and clay floors. Looking at possible models, the Russian towns always have wooden floors, and Birka, older than Sigtuna, has it sometimes. Thus, despite the fact that Sigtuna is situated nearer to Russia than the Norwegian towns, it is not influenced by Russian floors. On the other hand, western towns, such as Haithabu and Dublin—situated nearer to the Norwegian towns—have earth floors.

In the Norwegian towns, the houses have benches along the walls, like other western European towns and unlike the Russian towns. Sigtuna seldom has benches and never in the beginning.

Hearths are centrally placed in the houses of western Europe, like in the traditional Scandinavian long houses. In the Russian towns, the older houses have a central hearth, but in course of time there are more and more corner hearths, which eventually dominate. This has no connection with the choice of building technique, as has sometimes been said. In the Scandinavian towns, there are both central and corner hearths, and they are respectively used for different purposes: the corner hearth is for work—cooking or craft—and the central hearth is for social life and entertainment. This is particularly evident in Sigtuna.

Foundations with stone sills are sometimes said to indicate joint timber building, when no wooden remains are preserved. But there is no such evidence. In Russia there are no stone sills, but foundations with wood pieces, if there are any foundations at all. And in Sigtuna there are generally stone sills, whether the building technique is joint timber construction or framework, like the tradition in that whole region. In the Norwegian towns there are various foundations.

My conclusion is that the Scandinavians have mixed influences from several of their neighbourhood regions. The technique of joining logs is apparently influenced by eastern, especially Russian, house building. During all the Viking Age, i.e. from 800 AD, they had travelled a lot far and wide, both westwards and eastwards. They travelled to Staraya Ladoga and further from the 9th century, possibly even earlier. There were also Scandinavian colonies in the Russian towns. So the Scandinavians had rich opportunities of seeing and visiting block dwellings for about 200 years before they put it into practice themselves.

Why did the Scandinavians adopt joint timber building so late?

As I said before, joint timber building has very good heat qualities, which is needed in the Scandinavian climate. Accordingly, one would expect the Scandinavians to be quick to adopt a solid building technique which would also save much work with wood cutting for heating. And they did so at last, and the heat qualities were certainly an essential reason for joint timber building dominating in Scandinavia for about 900 years. But they did not adopt it until such a long time had passed as 200 years. Why?

As joint timber building demands more timber than framework building, there is more work with cutting trees and transporting logs. This can make an initial resistance, but still, later people considered the benefits well worth the costs. Possible variation of supply of pine trees was probably not determining, and was certainly not during all the following centuries. The people e.g. in Birka had to fetch their wood for housing, heating and ship building from places over the water, but water transports are no greater problem than land transports, rather the opposite.

Also the tools available for framework building were efficient enough for the simple joint timber building first practiced.

Making stability with lying timber is quite another type of knowledge than making stability with upright posts, so there might have been some cognitive resistance. But still, 200 years are a long time.

I suggest the reason for the delay was cultural. The Scandinavians readily adopted foreign dress fashion and consumer goods, but not so readily foreign housing. They probably had much of their identity in the houses, especially in their dwellings. The dwelling house shows who is the owner, and for the Vikings an old family was important. So a traditional house could be associated with an old and impressing family. In addition, the dwelling house had a religious dimension and had often sacrifices under the posts. Such things made the housing more conservative than other cultural features.

There are theories, expressed by Rapoport, about socio-cultural factors having a considerable impact on house form, and about house form having a considerable degree of constancy due to culturally linked aspects.¹⁵ These theories point in the same direction as my suggestion.

Towards the end of the 10th century, the cultural difference between the Scandinavian and Slavic peoples decreased. They both—or at least parts of them—converted to Christianity, they made political pacts, and the royal families married into each other. All this probably made the Scandinavians more ready to adopt the building tradition from the east.

And when they did at last, they made important innovations, and in course of time time they developed a very high-level house building tradition. So the meeting of the cultures was indeed most stimulating.

Notes

- 1 Boëthius 1927
Erixon 1947, 1953
Lundberg 1940, 1942, 1971
- 2 Hauglid 1980
- 3 Vitruvius 1989
- 4 Sjömar 1988
- 5 Andersson 1989, 1994
- 6 Christophersen-Nordeide 1994
Reed 1991
- 7 Bäck-Carlsson 1994
Petterson 1991
Petterson 1995
Svensson 1987
Tesch 1998
Tesch 2001
- 8 Observations of preserved remains made by the author in May, 2003, at the Sigtuna museum

- 9 Korosjev-Sorokin 1992
Sedov 1985
Thompson 1967
- 10 Hauglid 1980
- 11 www.kaupang.uio.no, read in March, 2003
Schietzel 1981
- 12 Filipowiak 1986
Hauglid 1980
Wilde 1941
- 13 Fett 1989
Lidén 1977
Schia 1987
- 14 Reed 1991
- 15 Rapoport 1969

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