
Splash whittling is a technique whereby an axe is used to form flat surfaces on logs and floorboards in a decorative way with a dense fish-bone pattern of marks on the surface. Several building techniques changed after the Black Death and splash whittling has been used as a criterion to identify pre-1350 buildings, but dendrochronological dating has revealed a few instances of its use on material felled in the early-1400s. These include Seljord Church, whose original roof trusses were damaged by a fire and were probably replaced in 1403, and a storehouse at Nordre Sandnes in Numedal, probably built in 1430, where logs had been hewn to make floorboards. Most of the timber for the roof construction over the chancel in Trondenes Church was felled in 1400 and the oldest timber over the nave about 1430, but no signs of splash whittling have been found in this church. As the technique of properly executing splash whittling had been forgotten, later attempts were unsuccessful. The technique was re-discovered in the early 1990s.

Key words: Splash whittling, dendrochronology, building history, building technique

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Introduction
The bubonic plague epidemic, normally referred to as the Black Death, is probably one of the most dramatic events in European history. According to written sources in Iceland, it came to Norway in the late summer of 1349 with a boat from England to Bergen. The extent of the damage is difficult to say since exact population figures are not available from so far back in time, but uncertain estimates based on documentary sources indicate that more than half the Norwegian population perished (Benedictow 2004:383). Only the northernmost part of the country seems to have escaped the plague (Benedictow 2004:156).

When the population began to increase in the 16th century and many new buildings began to be built some of the former building techniques were no longer used, probably because they had been forgotten as they had not been passed down to new generations. One example is splash whittling, a technique of using an axe to create a dense, fishbone-like pattern of decorative stripes and to form a flat surface (Fig. 1).

This characteristic pattern is a result of the way the axe was handled and its blade sharpened. In Norwegian, the pattern is called “spret telgjing”. It is visible on floorboards and beams where flat surfaces were needed. It also appears on various parts of roof constructions that used trusses.

The water-powered saw was introduced into Norway in the 16th century. It enabled boards to be sawn flat easily instead of employing the time-consuming technique of hewing a surface flat with an axe. Axes were still used for beams. Carpenters without access
to a watermill still had no alternative than to use an axe, even for flattening boards. However, buildings dated to post-1350 mostly show only a decadent form of splash whittling, if any at all (Fig. 2). The marks are irregularly spaced and do not form an exact pattern.

The splash whittling technique was apparently forgotten for a long time. Berg (1989:23) suggested that the pattern originated because a rope was used to drag the axe along the surface. Splash whittling is also known from Russia and the way it was produced was solved about 1990 by a Moscow architect and woodworker, Alexander Popov, who is also a very able smith. He realised that the combination of a particular way of handling an axe that was sharpened in a special way would give this result.

Splash whittling clearly belongs to the oldest buildings in Norway (Berg 1989:21−25) and, in common with the characteristic log-building technique (“Findalslaft”), using cog jointing, Berg used it as a criterion to identify wooden buildings in Norway from the period before the Black Death in 1350. When dendrochronology began to be regularly used in Norway about 1990, the results in general confirmed this hypothesis. However, like all simple rules, this too must be treated with care. Some examples are mentioned below (Fig. 3).

**Seljord Church**

One exception is the medieval stone church at Seljord in the county of Telemark in the inner part of southern Norway (Fig. 4), and such churches in this part of the country are usually dated to the 12th or 13th centuries.

In 1991, the roof was examined as part of an investigation of the roof construction in all medieval stone churches in Norway (Storsletten 1992a). The roof above the nave in Seljord Church is constructed exactly like others in this part of the country and like those it is also made of pine. Good splash whittling was also found (Fig. 5), but some elements of the construction were thicker than usual. The rafters and tie beams
were up to 17 cm broad, whereas the usual breadth in medieval constructions is 10 to 12 cm. In addition, a scaffolding beam in the eastern gable had clearly been burnt (Fig. 6) and soot marks on the stones seemed to indicate great heat. However, according to Tschudi Madsen (1972:26), there is no indication of when this fire happened. The observations suggested that the building history in this case differed from the medieval churches where the original roof constructions are preserved.

As part of the investigation in 1991, core samples for dendrochronology were taken from the construction, but because the timber had grown rapidly and had few tree-rings, and these were broad, it was not possible to obtain a dendrochronological date. More samples were cored in the following years (Thun 1996, Storsletten 2000). In 2001, additional samples were taken from the roof above the nave (Storsletten 2001). Altogether 22 samples have now been taken for dendrochronological dating and it has been possible to date 11 of them (Thun 2001). Eight of the samples had an outermost tree-ring from the period 1373 to 1401, but the other three were from logs with intact bark and this made it possible to date the felling year to the winter of 1402–1403; hence, the new roof was most likely built in the summer of 1403. Nothing indicates that the church had been without a roof for long, so the fire probably occurred shortly before the new roof was built.

The core samples also indicate that young trees with broad tree-rings were used in the roof construction in Seljord Church. Only one log had more than 100 tree-rings, and the innermost tree-ring in most of the samples dated from the 1320s or 1330s. The trees were
probably growing in an open landscape. If they grew on abandoned farmland (Thun 2002:277), this must have been abandoned before the Black Death in 1350.

All the timber in the roof construction in Seljord Church probably came from trees felled during the same winter and the carpenters obviously used the previous roof as a model. The dimensions of the building materials reflect the younger age of the roof, but the knowledge of how to perform splash whittling was apparently still alive in this part of the country. Could one of the carpenters have seen and learned the technique in his youth and subsequently survived the Black Death?

The church itself may well have been built in the 12th or 13th centuries, as most scholars believe, and this was also confirmed by a $^{14}$C date of AD 1040–1165 (TRa-1086) of part of a charred scaffolding beam bricked into the eastern gable of the nave and therefore in its original position. As the beam had been burnt, the outermost tree-rings may not have survived and the tree could have been felled some years later. The wall also contained much soot that confirmed a fire.
The dendrochronological results confirm that the present roof is a secondary construction. Some irregularities in the building techniques in Seljord Church showed that the fabric had a lengthy history. However, even when there are no irregularities, it is easy to draw the wrong conclusion. Sometimes even a seemingly familiar situation can hide a puzzle, like the next example below.

The storehouse at Nordre Sandnes in Numedal

The only known example of dendrochronologically dated post-1350 splash whittling in a profane timber building is in the ground floor of the storehouse at Nordre Sandnes in Numedal in the county of Buskerud in the inner part of southern Norway (Fig. 7). The house was described by Berg (1990:195–201) in his monumental work on Norwegian medieval log houses. The presence of Findal corner-timbering (cog jointing) and splash whittling were criteria which made it natural to date the building to pre-1350 (Berg 1989:6, 36).

In 1997, samples were cored from 14 logs in the storehouse by Jan M. Stornes, Norwegian Institute for Cultural Heritage Research (NIKU) and the dendrochronological date (Thun 2002) showed that the original timber was felled in the winters of 1428–1429 and 1429–1430, suggesting that the building dates from 1430, approximately 100 years later than expected. However, closer study of the corner-timbering has subsequently revealed that the technique is not genuine Findal corner-timbering, but a kind of imitation (Berg 1998:268). The splash whittling, too, was not executed as well as is normally found in pre-1350 buildings (Fig. 8). One possibility is that the carpenter had not fully grasped how to hew in the appropriate manner. Another is that he lacked the precise kind of axe needed to achieve a fishbone pattern. In this case, too, the knowledge of how to perform splash whittling was apparently about to be forgotten.

Trondenes Church

As mentioned before, the Black Death apparently did not reach northern Norway. Some historians have thought that life must have gone on more or less as usual in this part of the country (Lysaker 1976:390). Trondenes Church (Fig. 9) is the northernmost medieval church in Norway. It is the last of a long, but widely scattered, series of medieval stone churches along the western coast of Norway. The nearest is Steigen Church in Nordland (Fig. 3). Parts of the stonework have Gothic details and most scholars have dated the church to about 1250 (Gjone 1951:29). The interior has many beautiful decorations, but all seem to be from the 15th and 16th centuries (Engelstad 1936:295). The original roof construction is apparently preserved in both the nave and the chancel, but it has been altered slightly in the east end of the nave (Gjone 1981:107).

In 1990, the roof in Trondenes Church (Fig. 10) was studied as part of the investigation of all medieval roof constructions in Norway. It differs in various ways from the other medieval stone churches (Storsletten 1998:8). There is no sign of splash whittling in the church. Notches were used to connect the various parts of the roof construction whereas simple scarfs were used in all the other medieval stone churches in Norway. In addition, various parts are marked with rune-like symbols (Fig. 11) for identification to ensure that the building materials would be placed in the right positions. No such symbols are known from timber in the other medieval churches, including the stave churches.

In Trondenes Church, there are no signs of any fire or of a previous roof construction, but the roof above the nave has clearly been extended at its eastern end.

In 1992, samples were cored in Trondenes Church for dendrochronological dating (Storsletten 1992b) and they were analysed the same year (Bartholin 1993). Most of the timber in the roof above the chancel was felled in the winter of 1399–1400 while that in the oldest part of the roof above the nave was felled about.

Fig. 8. Splash whittling on a beam from the storehouse at Nordre Sandnes. Photo: Jan M. Stornes, NIKU.

Fig. 9. Trondenes Church. Photo: Tone Olstad, NIKU.
1430. The timber in the eastern extension of the roof above the nave was felled in the winter of 1504–1505. As Trondenes is the northernmost of the Norwegian medieval stone churches, the carpenters who made the roof construction may have been local workers, which would help to explain why it differs considerably from that of corresponding buildings further south in Norway.

Conclusion
Like other sciences, the history of building construction contains certain traps that can catch even the most experienced practitioner. Indicators sometimes give a clear warning about irregularities in the story. In other cases, one only gets the unpleasant feeling that something is “wrong” but without being able to prove that it really is so. The result is often that one fails to report the observation. In yet other cases, some hypotheses are repeated so often that it is almost impossible to see them as anything other than solid truths. In all instances, dendrochronology can be of great help for the investigation.

In the case of Seljord Church, the dendrochronological results gave an opportunity to test the suspicion about the anomalies in the roof construction and the observations in one of the gables of what seemed to be signs of a fire. Even though splash whittling would normally be out of fashion as a building technique after 1350, it could possibly have survived for a time as a sort of technical relic in this remote area. No such warnings are given in the storehouse in Numedal. Without dendrochronology, it would still have been regarded as a pre-1350 building. The dating in Trondenes Church gave an important fixed point in the history of the building. It also made it possible to view the previously proposed date of the church with fresh eyes and understand that considerable building activity actually took place in this part of the country shortly after 1350. The discrepancy between the dendrochronological dates from the roof construction and the stylistic features found in the masonry of the walls can be explained by an unusually long building period (Eide 2005:20). However, without the dendrochronological results it would have been hard to imagine that the church had stood for such a long period in an unfinished state.

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References


