

# The oldest known roof construction in Ghent (Belgium) sheds new light on medieval building history



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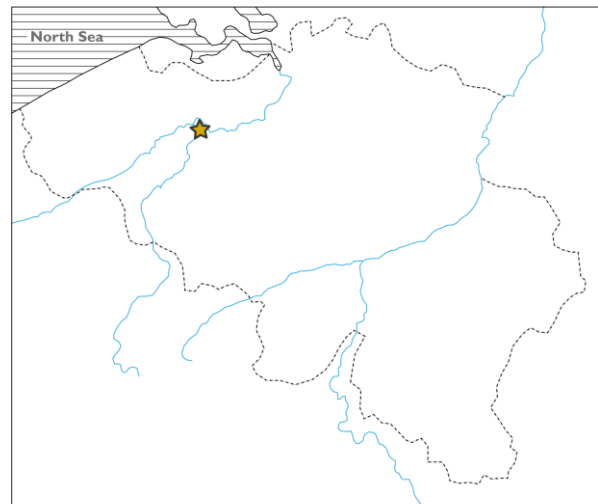
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## HISTORIC ROOF CONSTRUCTIONS IN GHENT

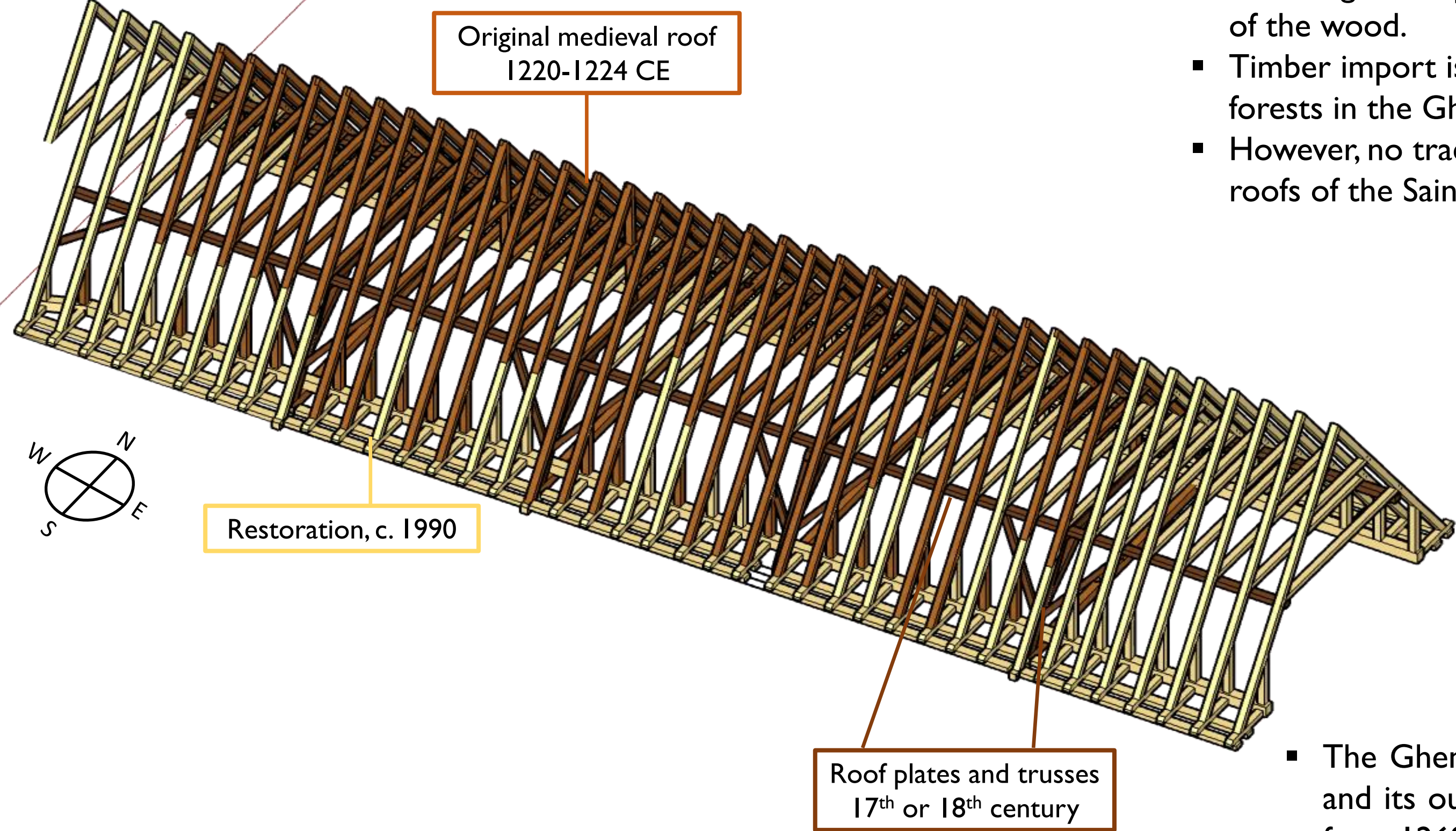
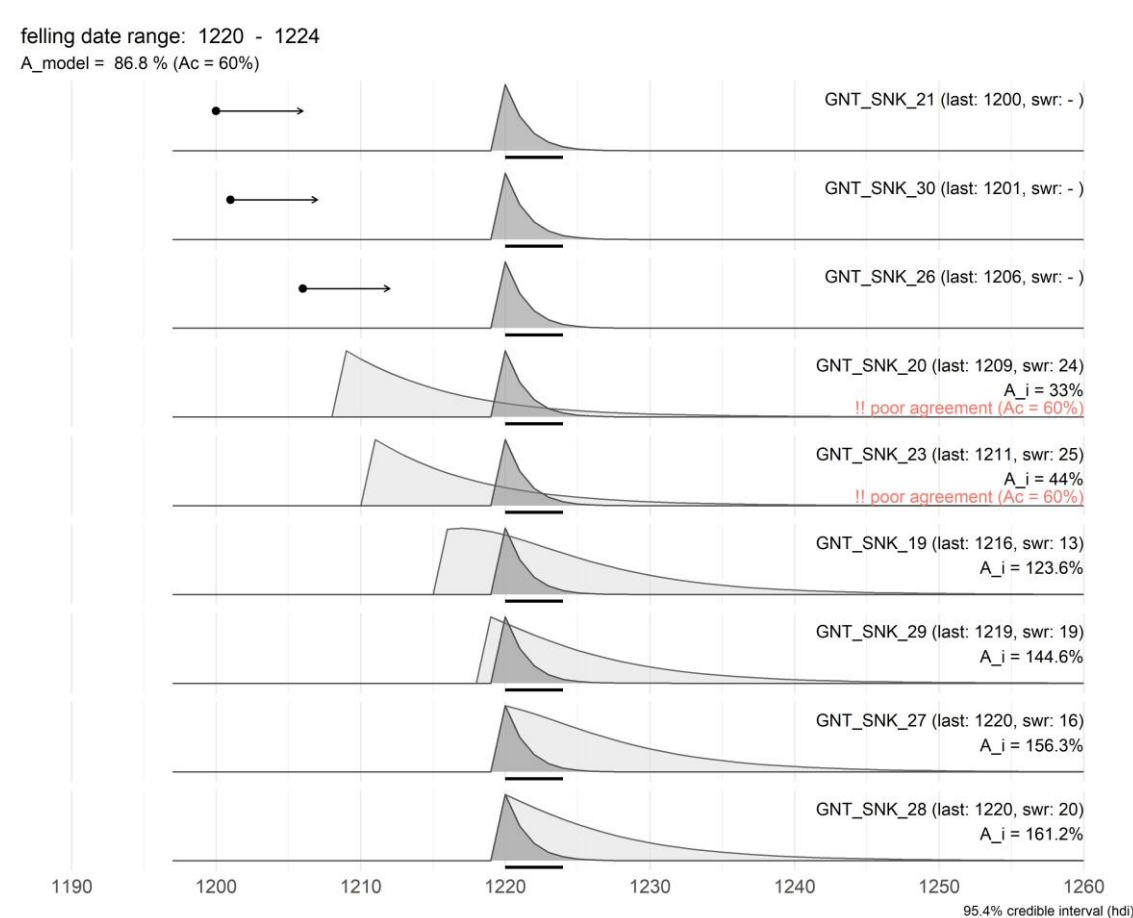
- Roof constructions are key elements to document and study building traditions in historic towns.
- In the city centre of Ghent, numerous roof constructions from the pre-industrial era are still in place, in large monuments (churches, merchants' halls, ...) but also in historic houses.
- Tree-ring research on some remaining roof constructions has been carried out since the 1990s (Université de Liège; Van Daalen Dendrochronologie; Flanders Heritage Agency; KIK-IRPA). The dated roofs range from the middle of the 13th century to the 17th century.
- These and new dating results for the Ghent region allow to **develop a typology** for (late)medieval and early modern **roof constructions** and a better understanding of the **procurement, trade and transport of building timber**, from the early 13th century up to the Early Modern era.

## ST. NICHOLAS' CHURCH

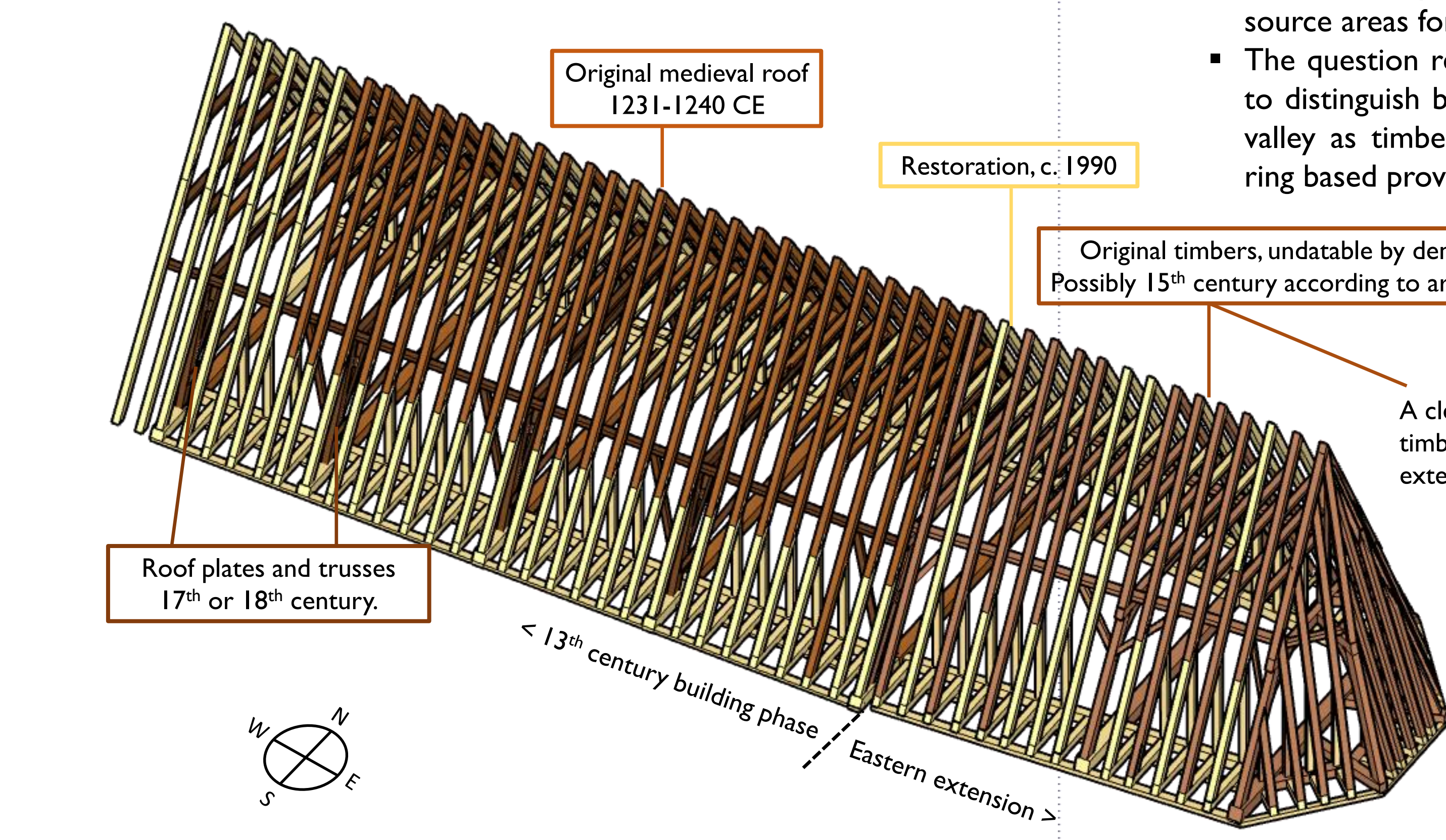
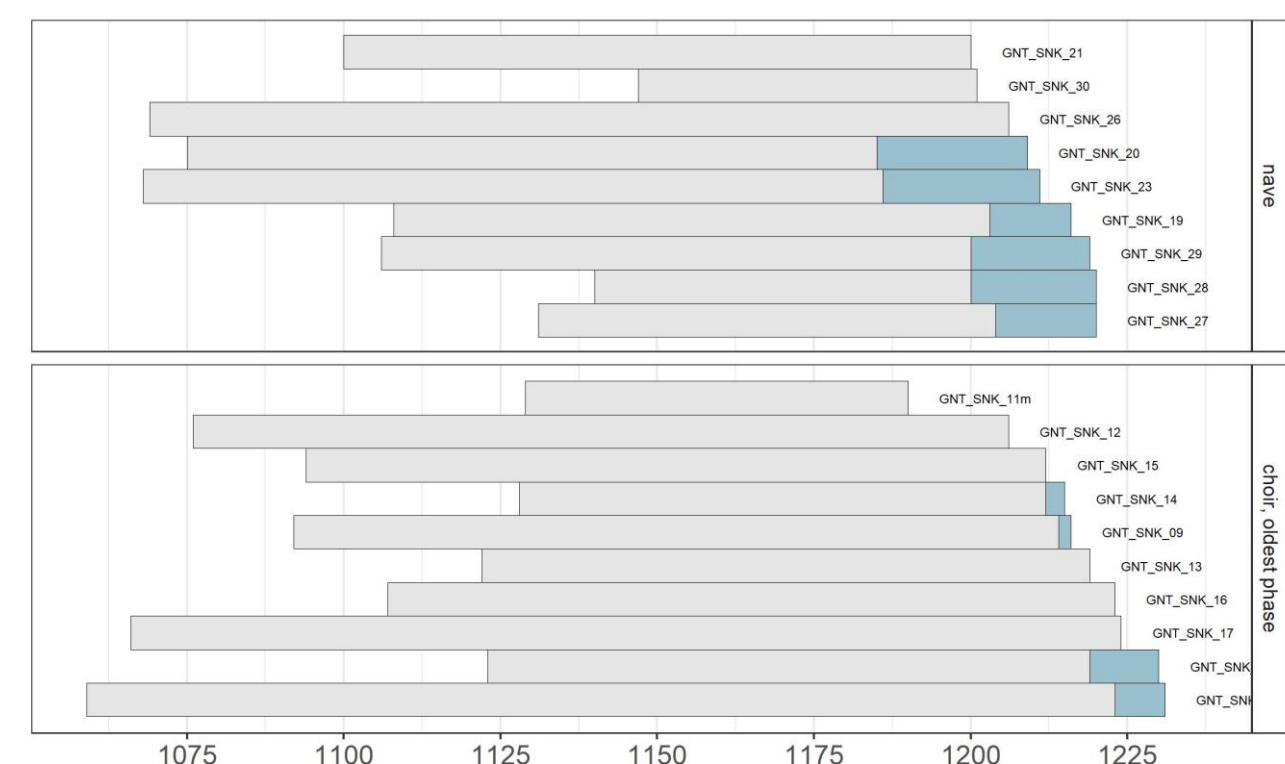
- One of the four main parish churches of medieval Ghent.
- Restoration began in 1912 and continuing (with interruptions) until today.
- All of the roofs of the side-aisles have been reconstructed in concrete.
- Only the roofs of the main nave and choir remain of the medieval fabric.



- The nave of the St. Nicholas' church contains the oldest roof in the city of Ghent.
- The felling date is situated between 1220 and 1224 CE.

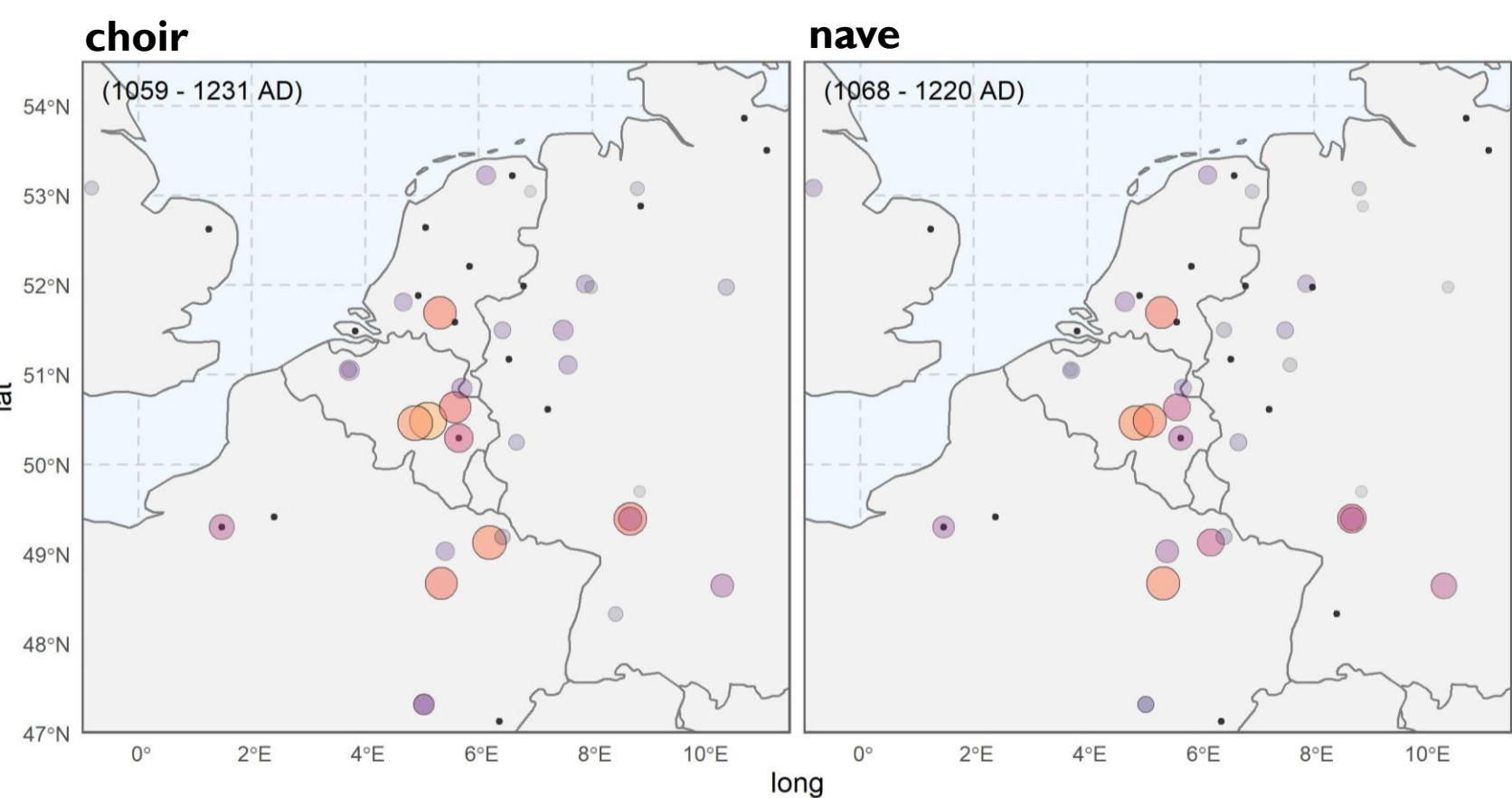


- Soon after, the roof above the choir was constructed: felling date between 1231 and 1240 CE.
- Both nave and choir roof are common rafter roofs with headers at the base as the only means of longitudinal bracing.
- A common felling date for both roofs is not possible.
- The felling date range is based on the 95.4% combined probability of sapwood counts.

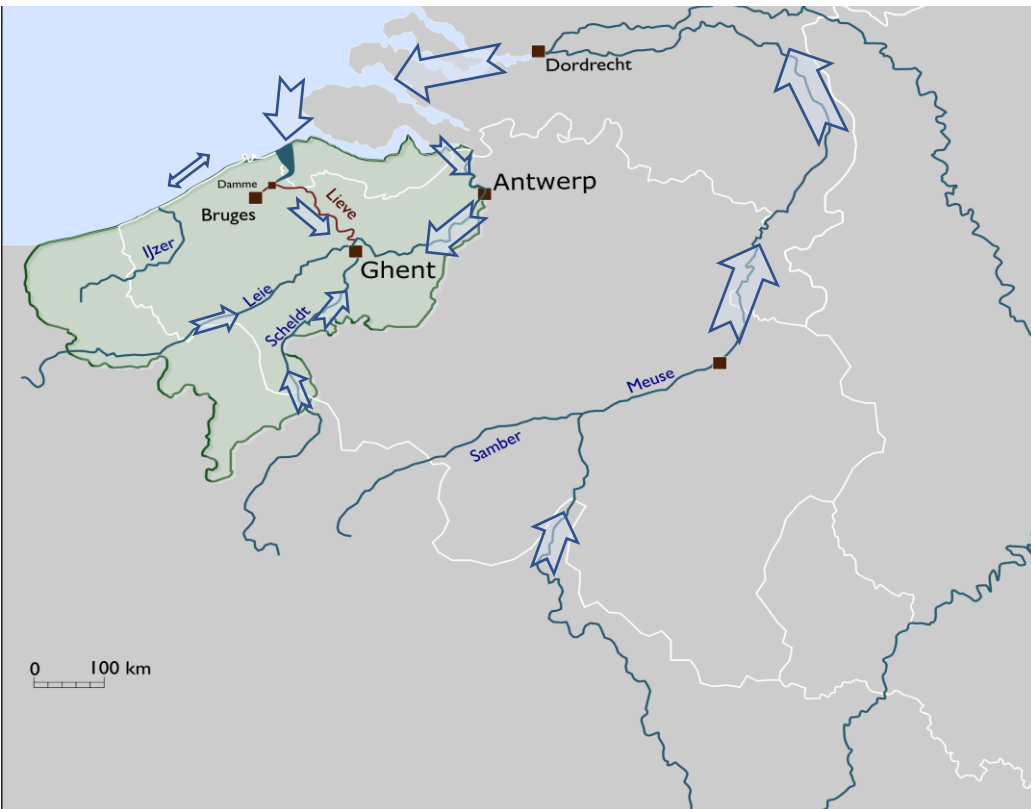


## Provenance analysis

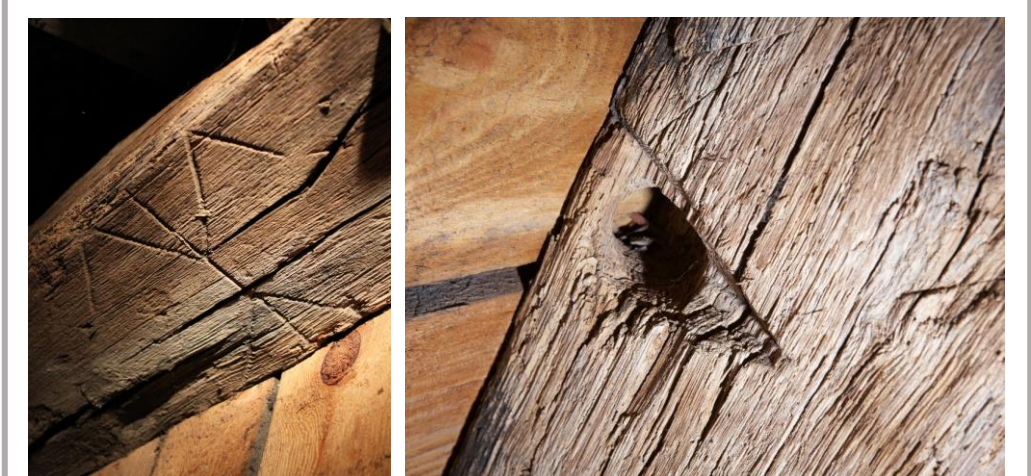
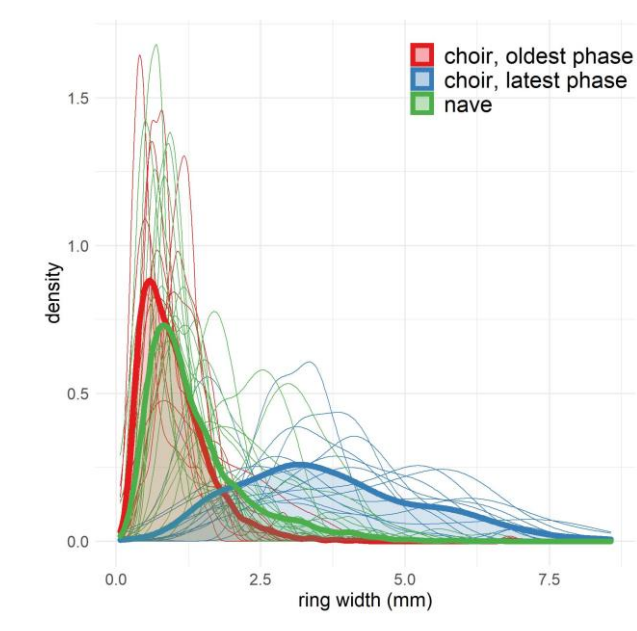
- Tree-ring based provenance analysis points towards the Meuse valley as the source area of the wood.
- Timber import is plausible given the deforestation and overexploitation of oak dominated forests in the Ghent region, already attested in the 12th century (see Deforce 2016).
- However, no traces of timber transport were observed on the wooden elements in the roofs of the Saint Nicholas' church.



- The Ghent area was connected to Bruges and its outports via a channel - the Lieve - from 1269 CE onwards.
- But Ghent, at the confluence of the rivers Scheldt and Lys, was connected to multiple source areas for timber.
- The question remains if we are really able to distinguish between Meuse and Scheldt valley as timber sources, relying on tree-ring based provenancing?



A clearly different type of oak timber grade was used in the extension of the choir (fast growth)

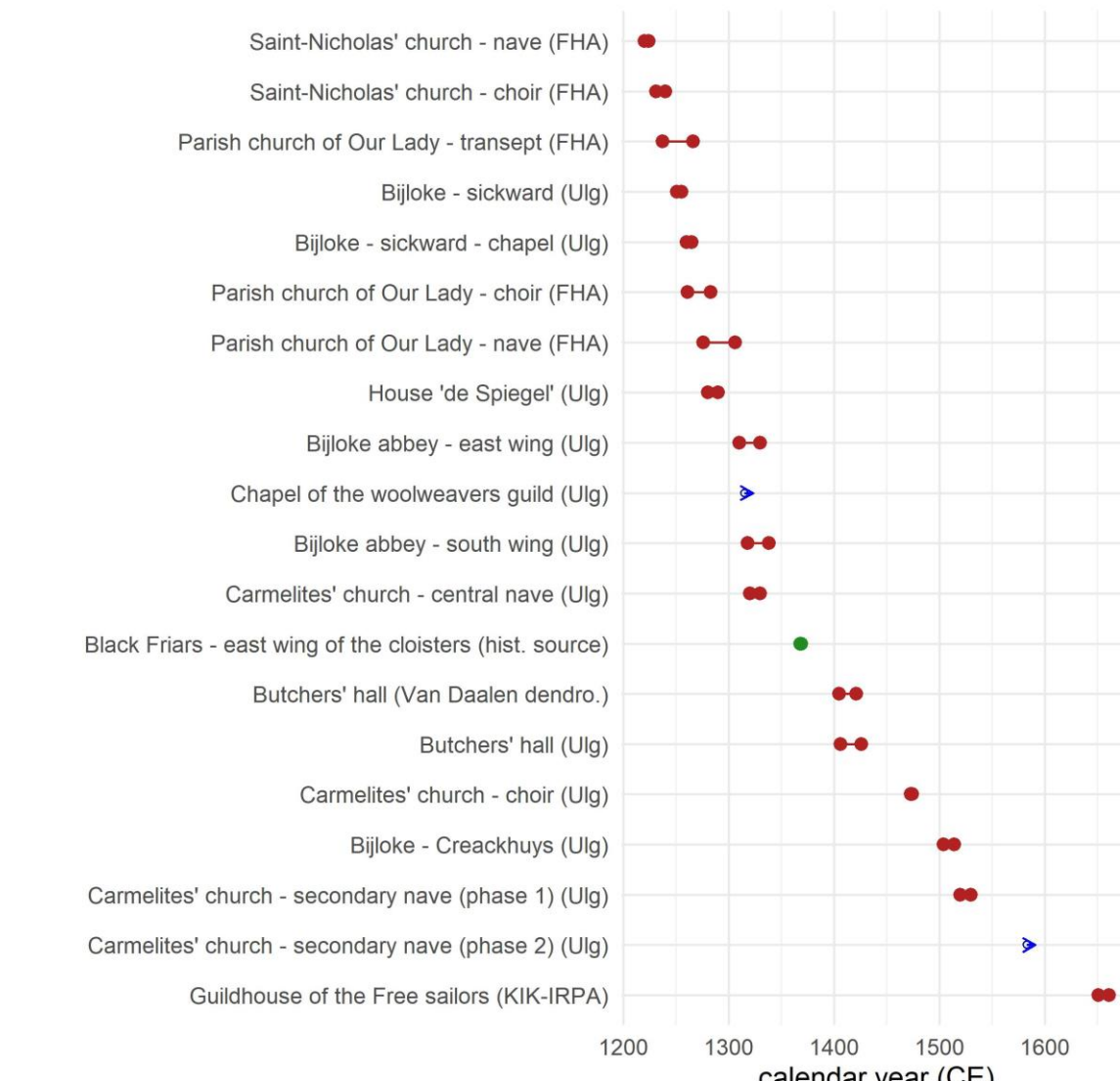


Rafting joints and trade marks are evidence of transport of timber via waterways (here: examples from the parish church of Our Lady in Mariakerke, 1261-1283). These rafting joints support the tree-ring based provenance analysis that identifies the Meuse-valley as the most likely source area.

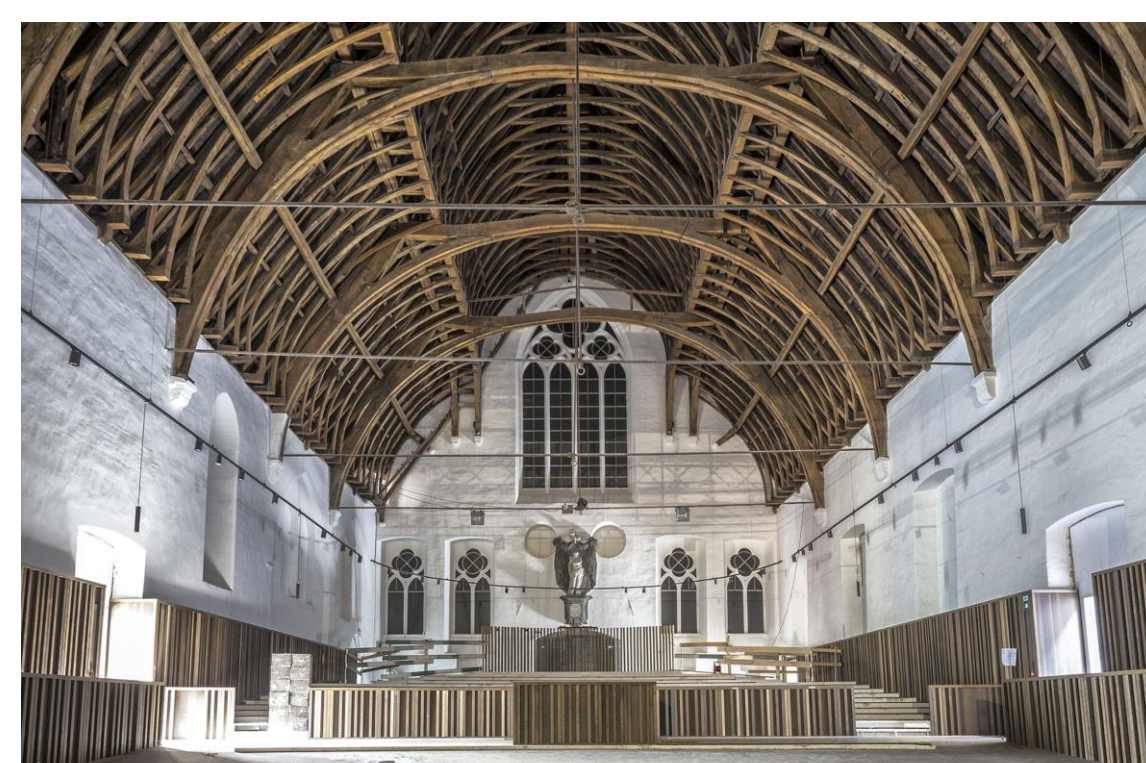


## Overview of all dated historic roof constructions in Ghent

The combined efforts of multiple dendro-labs now allow to build a chrono-typology of historic roof constructions in the wider region of Ghent.



- Bijloke sick ward (1251-1255)**
  - Second oldest common rafter roof.
  - with roof plates in the Low Countries
  - Curved ashlar pieces and corbels form a trefoil barrel vault.



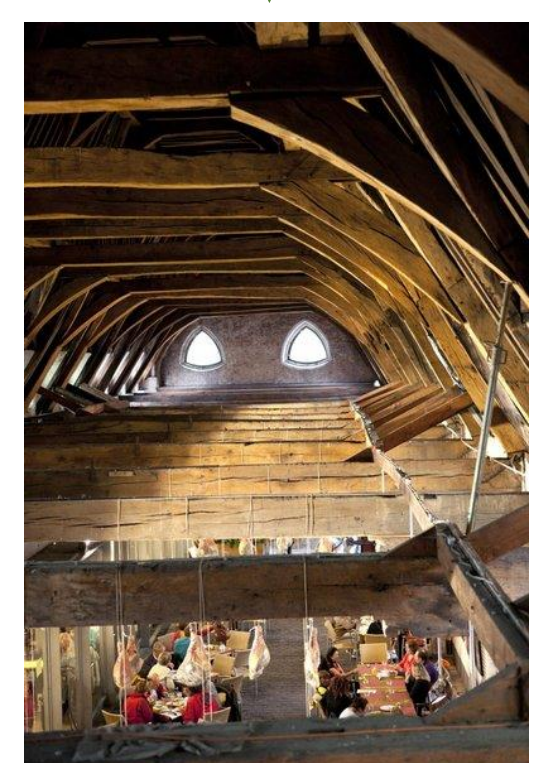
- Chapel of the woolweavers' guild (after 1315)**
  - Pointed barrel vault with wooden ribs and (disappeared) boarding.



- Black friars' cloister, east wing (1368-1369)**
  - Common rafter roof with collarpurlin and strutted king posts.



- Butchers' hall (1405-1421)**
  - Multiple superimposed principal trusses carry the rafters and roof plates.
  - This type of roof became standard in the Low Countries throughout the 15th, 16th and 17th centuries.



- Guildhouse of the Free sailors (1651-1661)**
  - Guildhall with late Gothic façade overlooking the river harbour of Ghent.
  - Roof combines roof plates and side purlins.

