

# Historic building activity in Europe mirrors times of prosperity and crisis

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Using almost 50,000 precisely dated pieces of construction timber, the variations in intensity of building activity in Europe from the thirteenth to the seventeenth century have been reconstructed for the first time. A comparison of the variations in historical building activity with data of plague epidemics, food prices, warfare, and climate reveals that decreases in building activity coincide with large societal crisis.

## RECONSTRUCTING PAST BUILDING ACTIVITY VARIATIONS

Variations in building activity reflect demographic, economic and social change during history, but are poorly documented prior to the modern period. However, by studying close to 50,000 precisely dated construction timbers originating from old buildings, we have found a way to reconstruct changes in building activity. The precise felling year of the used trees has been determined using dendrochronological methods enabling us to establish a new detailed history of building activity in Europe from the thirteenth to the seventeenth century.



A core being taken from a medieval building (Ribeauvillé, France) for dating purposes. The precise year that the trees were felled can be determined using a technique known as dendrochronology.

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## VARIATIONS IN EUROPEAN BUILDING ACTIVITY BETWEEN 1250 AND 1699 AD

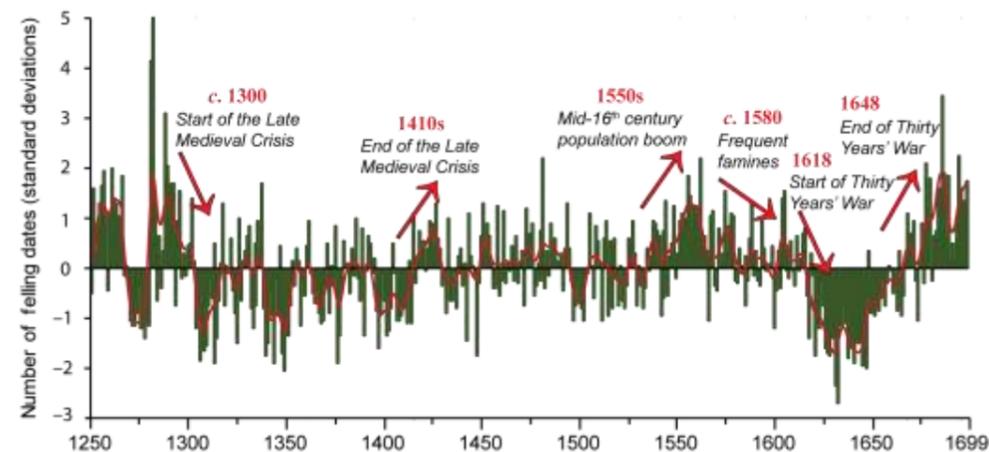
The entire new reconstruction of European building history covers the period 1250–1699. Periods of high and low building activity closely follow times of known prosperity and hardships, respectively, but the reconstruction reveals some surprises. A sharp decline in building activity was identified at around 1300, strongly suggesting that the so-called Late Medieval Crisis had already started by then. This provides new important evidence that the crisis preceded not only the Black Death (1346–1353), but also the catastrophe known as the Great Famine (1315–1322). We also identified an unprecedented decline in building activity during the devastating Thirty Years' War (1618–1648). As the most devastating war in European history, in per capita casualties, this is hardly surprising, but it is the first time the effect of the war on building activity has been demonstrated on a large scale.

## PLAGUE OUTBREAKS AND HIGH FOOD PRICES COINCIDE WITH DECREASES IN BUILDING ACTIVITY

We investigated the driving forces behind the changes in building activity over the whole period 1250–1699, and found that the number of plague outbreaks and food prices had the largest effect. Building activity was lower when plague was widespread or food prices higher, whereas during periods with no plague, or low food prices, building activity tended to be higher. The largest drop in building activities occurred four to five years after the start of the larger plague epidemics, but just one year later (i.e. within six years of the epidemic outbreak), building activity had already returned to normal.

## WIDER IMPORTANCE OF THE FINDINGS

The new study provides insights into times of crisis and prosperity in the past from another perspective than written sources. More importantly, our study essentially introduces the use of large collections of felling dates as a new historic source material for studying European history, and we are able to demonstrate that reconstructed building activity reflects demographic, economic and social change. For example, the decrease in building activity in Central Europe, coinciding with the Thirty Years' War, started exactly 1617/1618 when the war began and building activity abruptly increased exactly 1648 when the war ended.



European building activity changes reconstructed by compiling almost 50,000 felling dates of construction timbers from the thirteenth to the seventeenth century. The graph shows standardised annual values in green and 10-year averages as a red line. The major identified trend breaks of decreases or increases in building activity are shown by the red arrows.

### KEY REFERENCE:

Ljungqvist, F.C., et al., 2018: Linking European building activity with plague history. *Journal of Archaeological Science*, 98: 81–92.