

Dendrochronological research of panel painting '*Stilleven met gesneden ham, een glas bier en een geschilde citroen*' by Gerrit van Vucht (Rijksdienst voor het Cultureel Erfgoed, The Netherlands)

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Summary

The panel painting '*Stilleven met gesneden ham, een glas bier en een geschilde citroen*' by Gerrit van Vucht consists of two boards of oak (*Quercus* sp.) disposed horizontally. The aim of the dendrochronological research was to establish the date of the wood and, if possible, infer a plausible production time. The research was carried out on the transverse edges of the boards and resulted in the dating of bottom one to 1628 (outermost, most recent ring) with a Baltic chronology representing the southeast of Lithuania or its hinterland. The absence of sapwood rings hampers estimating the felling date of the tree. Therefore, it can only be estimated that the tree was cut *after* 1634 C.E.. The top board has only 25 rings and was excluded from the analysis. Considering the transport and seasoning time of the wood in the 17th century, the earliest production time could have been the late 1630s, but a production time in the 1640s is also plausible.

Introduction

The painting on panel '*Stilleven met gesneden ham, een glas bier en een geschilde citroen*' (oil on panel, 40.9 cm wide x 32.4 cm high; Fig. 1), currently at the *Rijksdienst voor het Cultureel Erfgoed* collection in Amersfoort, the Netherlands (CC NL, NK1913), is signed by the Dutch painter Gerrit van Vucht (1610 – Sciedam 1697), but not dated. This panel painting has two marks on the back that have been interpreted as 4MM (placed vertically with the number 4 on top) (Fig. 2). This mark has been identified as that of a panel maker active in the Northern Netherlands in the first quarter of the 17th century (Wadum, 2014). As part of a larger study that aims to shed light on the location of the workshop (and possibly on the identity) of this panel maker, the goal of the dendrochronological research was to determine the date and provenance of the wood, and whether this and/or other panels bearing the same mark share wood obtained from the same tree.



Figure 1. Painting by Gerrit van Vucht '*Stilleven met gesneden ham, een glas bier en een geschilde citroen*' (oil on panel, 40.9 cm wide x 32.4 cm high, NK1913), at the *Rijksdienst voor het Cultureel Erfgoed* collection (source: *Rijksdienst voor het Cultureel Erfgoed*, <https://www.collectienederland.nl/vc/rce-kunstcollectie/search/?q=nk1913>).

¹ Research carried out within the Wood for Goods project (<https://www.nwo.nl/projecten/016veni195502-0>)

Material and Methods

The panel consists of two boards made of oak (*Quercus* sp.) disposed horizontally, and which have been processed semi-tangentially from the stem of the tree (Figs. 2 and 3). The edges of the panel are bevelled on all sides, and strips of oak cover the ends at the top, left and bottom.² The '4MM' marks are engraved on the bottom board: one on the centre-right, and the other one towards the left-end of the board (Fig. 2). The left one is a partial mark (Fig. 4). Regular saw marks, evenly spaced at intervals of 2 mm, are evident on the Board 1 (Fig. 4). Pith and sapwood are absent in the wood.

The dendrochronological research was carried out along the transverse section on the right-hand side, where the oak strip was absent (Fig. 2). To visualise the tree rings, a slight preparation of the wood was carried out by cleaning a shallow and narrow (2-3 mm) line along the transverse surface with sharp blade knives (Fig. 3). Tree rings were photographed with a macro lens, and ring widths were measured on screen with CooRecorder (Cybis). The photographs included a ruler to allow the calibration of the measurements. Therefore, the obtained ring widths represent absolute values. Crossdating was done in PAST4 v. 4.3.102 (SCIEM).

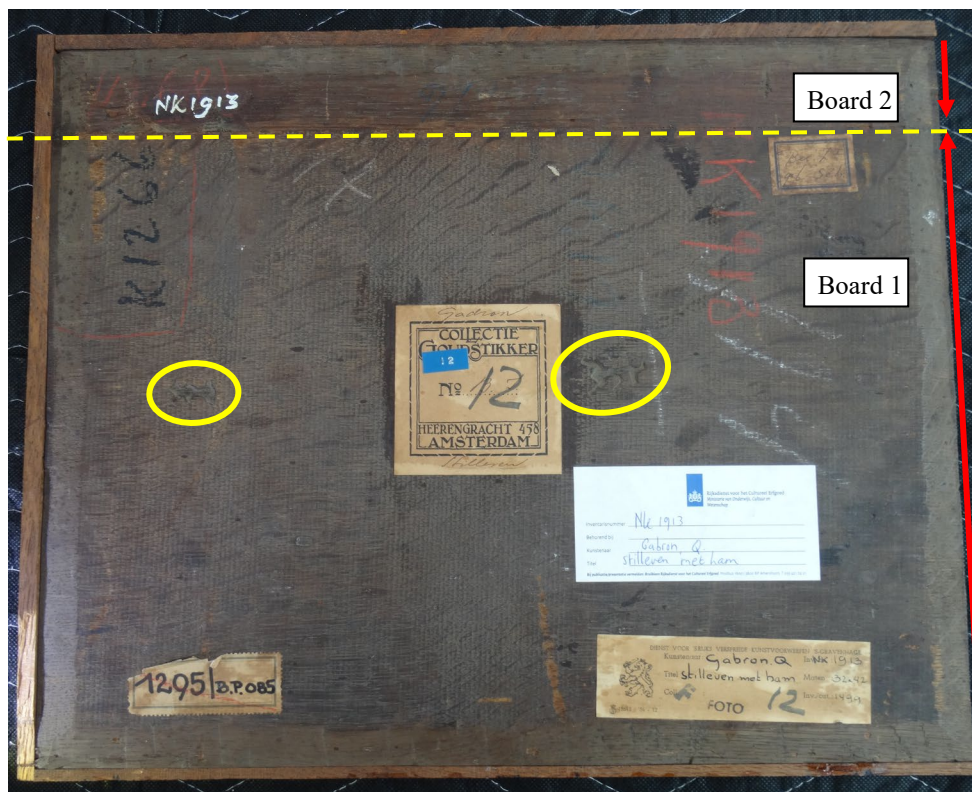


Figure 2. Back of the panel made of two boards (the bottom one is 28.2 cm high, the upper one 4.2 cm). The arrows indicate the growth direction and the portion of the panel researched at the transverse end on the right-hand side (referred to as when looking from the back). The dash line marks the joint between the two boards. The circles enclose the '4MM' marks, the one on the left being a partial mark (photo: M. Domínguez-Delmás).



Figure 3. Detail of the joint between the two boards on the right-hand side of the panel (Board 1 is on the left). The semi-tangential processing, as illustrated in the diagram, can be observed. A 3 mm line was cleaned with scalpel blades to enable the accurate measurement of the tree-ring widths. The arrows indicate the growth direction (photo and diagram: M. Domínguez-Delmás).

² References to sides are done from the perspective of the back of the painting.

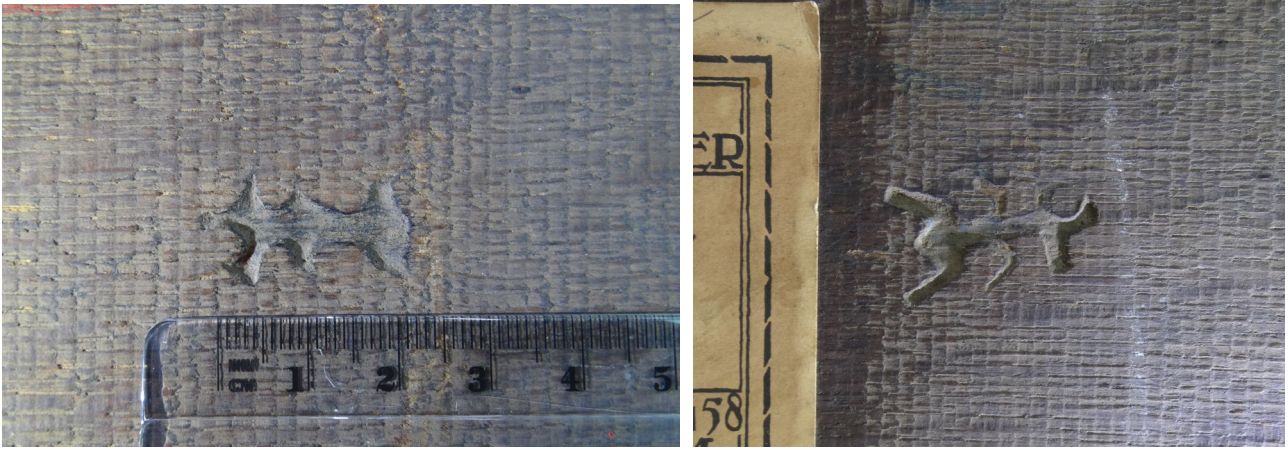


Figure 4. Detail of the '4MM' marks engraved on the Board 1. The left one is a partial mark, while the right one is almost complete. Regular saw marks (evenly spaced 2 mm) are evident (photos: M. Domínguez-Delmás).

Results dendrochronological research

The tree-ring series obtained from the Board 1 has 227 rings. Crossdating with reference chronologies from central, northern and eastern Europe resulted in a very strong match with the 2021BLT3 chronology (Daly and Tyers, 2022) for the year 1628 C.E. (date of the last, most recent ring; Table 1, Fig. 5). The wood is likely originating from southeast of Lithuania or its hinterland (Daly and Tyers, 2022). The absence of sapwood rings in the wood hampers the estimation of the felling date of the tree within a range of years. Therefore, only a *terminus post quem* date can be provided. Considering the sapwood statistics of trees growing in the eastern Baltic (Sohar et al., 2012), it can be estimated within a 95% confidence interval that the tree was cut *after* 1634 (Table 1). The Board 2 only has 25 rings and has been excluded from the analysis.

Table 1. Results dendrochronological research. N: number of measured rings. Pith: estimated nr of rings missing to pith; SW: number of sapwood rings; WK: bark edge: -, absent/number in brackets indicates estimated number of missing rings to bark edge. CC: correlation coefficient; TBP: Student's *t*-value according to Baillie and Pilcher (1973); %PV: percentage parallel variation (Eckstein and Bauch, 1969); ###, significance level of %PV at $p < 0.001$; OI: overlap.

Element	DR Dendrocode	N	Pith	SW	WK*	Begin year	Last year	Estimated felling date*	CC	TBP	%PV	Reference chronology
Board 1	40530011	227	-	0	>6	1402	1628	After 1634	0.46	7.75	66.3###	2021BLT3

*Estimation based on Sohar et al. (2012) within the 95% confidence interval.

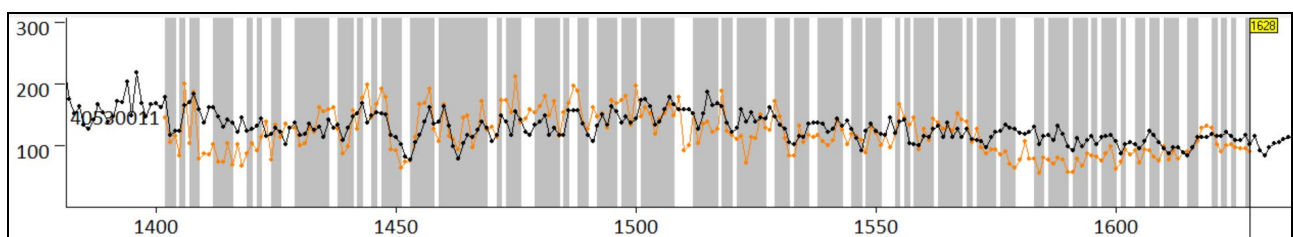


Figure 5. Visual match between the tree-ring series 40530011 (orange) and the reference chronology 2021BLT3 (black). Y-axis: ring-width (1/100 mm); X-axis: calendar years. The shaded area shows the percentage of parallel variation (%PV) between the tree-ring series and the chronology.

Conclusions

The dendrochronological research has provided a date for the wood of the panel (1628 C.E.) and an estimated date of the felling of the tree after 1634 C.E.. In addition to the years still missing until the bark of the tree (consisting of the heartwood rings missing to the sapwood border, and the sapwood rings missing to the bark), some years must be accounted for the transport and seasoning of the wood. From observations of panel paintings signed by the artists and retaining partial sapwood it has been proposed that the seasoning time was about 2 to 5 years in the 17th and 18th centuries (Klein et al., 1987; Wadum, 1998). Those numbers would place the earliest production time in the late 1630s, although a date in the 1640s is plausible when considering that the potential number of missing sapwood rings could be much higher (up to 18 rings, within a 95% confidence interval, according to Sohar et al., 2012).

The double marking is intriguing. It could be the result of a worn-out stamp, a mark stamped by an inexperienced apprentice, or simply an inaccurate blow that required a second attempt. These possibilities are discussed in a forthcoming article by Wadum, Domínguez-Delmás and Jager (Wadum et al., forthcoming).

References

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Appendix A. Glossary and abbreviations

N	Total number of measured rings in the sample;
Pith	Centre of the tree; +1/-, pith present/absent;
SW	Number of sapwood rings present on the board.
Bark edge (WK)	Boundary between the last ring and the bark; WK: bark edge present; when absent, an estimation of the number of rings to the bark edge might be given depending on the wood species;
Begin year	Date of the first ring (closest to the pith of the tree) measured in the sample;
Last year	Date of the last ring (most recent ring, closest to the bark of the tree) measured in the sample;
Estimated felling date	Date of the last ring plus the estimated mean number of rings to the bark edge when the WK is not present;
TBP	Value of the Student <i>t</i> -test according to Baillie and Pilcher (1973); this value is used to identify the match between two tree-ring series for which the correlation reaches its highest value. Student's <i>t</i> values over 5 for an overlap of 100 rings are likely to indicate a match;
%PV	Percentage of parallel variation; this value indicates, for the overlapping period between two tree-ring series, the percentage of years in which the ring-widths increase or decrease similarly. Values higher than 65%, for an overlap of 100 rings are highly significant and indicate a match;
Overlap (OI)	Number of overlapping rings between two curves in their matching position;
Reference chronology	Chronology used to date the sample.