

Ancient Monuments Laboratory
Report 102/97

WOOD IDENTIFICATION AND TREE-
RING ASSESSMENT OF TIMBERS
FROM AN EARLY SASH WINDOW AT
PALACE HOUSE MANSION,
NEWMARKET, SUFFOLK

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Summary

Dendrochronological analysis of timbers from a recently discovered and apparently early example of a sash window was commissioned by English Heritage. Assessment of the window showed that no suitable samples could be obtained from the frame that could assist with dating the item by reliable dendrochronological techniques. A series of wood identification analyses were undertaken on the frame and some of the later timbers used to cover the frame.

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Introduction

This document is a technical archive report on the tree-ring assessment and wood identification analysis of timbers from an apparently early example of a sash window (see Baggs 1997) discovered at Palace House Mansion, Palace Street, Newmarket, Suffolk (NGR TL643635). It is beyond the brief of this analysis to describe the window in detail or to undertake the production of detailed drawings. As part of a multifaceted and multidisciplinary study of the window, elements of this report may be combined with detailed descriptions, drawings, and other technical reports at some point in the future to form either a comprehensive publication or an archive deposition on the window. The conclusions presented here may therefore have to be modified in the light of subsequent work.

Palace House Mansion is the surviving fragment of a large summer palace built for Charles II between AD 1668 and 1671. The building is currently undergoing extensive restoration following a period of dereliction. During the stripping out work for the restoration a number of bricked-up or otherwise filled in apertures were discovered in the walls and in one of these the surviving fragments of an early form of sash window was present. A number of technical analyses have been, or are about to be, undertaken on parts of this window which include the glass panes, the paint work, and the lead counter-balances. This report covers both the timber types used to construct the frame and its subsequent covering boards, and the assessment of the potential of the frame timbers to provide an independent dendrochronological date for the construction of the frame. The analyses were undertaken at the request of Ian Harper from English Heritage and are intended to inform subsequent restoration and display decisions.

The Timbers

The frame is currently stored at Palace House Mansion in a purpose built wooden box. A visit to the site was arranged, the box was opened and using plans and descriptions prepared by Andy Wittrick of English Heritage's Historical Analysis and Research Team the timbers were carefully examined in an attempt to identify whether any component timbers were suitable for tree-ring analysis. Those timbers of oak, or other dendrochronologically viable species, with more than 50 annual rings, and with some survival of the original sapwood and bark-edge were sought. This report follows Wittrick's nomenclature for the frame elements. The frame alignment used is the external view (Fig 1).

The frame timbers.

The frame's two side transoms are composed of two quarter parts of an oak (*Quercus* spp.) tree. The left transom is in two parts, with the cut clearly revealing the ring sequence of the tree. Although the right transom is less easily assessed it seems highly probable both transoms are derived from the same tree. In both timbers the sapwood and bark-edge are present at similar positions, both have a similar twist to the grain, and both reveal similar growth anomalies within the visible parts of the cross-sections. In both timbers the ring pattern

shows an initially very fast-growing oak tree with a subsequent very slow-growing band followed by a recovery ending with a further very slow-growing band. Although a precise count of the rings was impossible neither transom had more than 50 rings, and the slow-growing bands prevent their use for a reliable dendrochronological analysis. The central mullion also appears to be an oak timber, but no clearly visible end grain was present. The surviving paint layers prevent a clear view of this timber's microscopic features and ring pattern. It was not felt appropriate to remove fragments to confirm its identification nor to compare the pattern with the transoms. The same problem occurs with each of the smaller vertical elements in the moving parts. It is impossible to clearly identify these timbers without more serious intervention which I felt inappropriate, although visually they appear to be oak. Except for the cill the same applies to all the transverse elements. The limited end-grain that is visible on these elements suggests they are oak and all the smaller fragments appear to be oak as well. The cill has also been cut, the end-grain visible here reveals the timber to be oak and to have no potential utility for dendrochronological analysis.

The covering boards

The situation is very different with the covering boards. Laying on the frame as it lies in its box are a number of planks and boards that were originally discovered apparently used as framework during the infilling operation (David Escott pers comm). On the day I saw the frame there were two radially split or sawn softwood planks covering the left hand frame, whilst another board of very different type covered the right-hand frame. These timbers have suffered from extensive woodworm and other damage. As a result the timbers are extremely friable and several sections had detached during their storage. Since visual inspection made it clear they were not made from oak timber, nor did they appear to one of several other readily identifiable species, several of the detached fragments was sampled for timber identification purposes.

In the laboratory a series of microscope slides were prepared with thin slices removed from the fragments in transverse, tangential and radial sections. These were examined using high power microscopes at 200x- and 400x-magnifications in order to determine the microscopic characteristics of the wood. Using reference identification keys (eg Schweingruber 1978; 1990; Wheeler *et al* 1986; Wilson and White 1986) and reference slides it was clear that the left-hand pair of narrow softwood planks are *Larix* spp., probably European Larch, whilst the right-hand broader, tangential board lies within the botanical Salicaceae family or willow/poplar family. Even under high magnification these genera are rarely reliably distinguished, although with this specimen the size of one of the features appears to indicate a Willow or *Salix* timber. Please note that the hybridisation and diversity of willow types is not entirely understood and it remains possible that either willow or poplar types may be involved. The *Salix* board has no potential use for dendrochronological analysis since it is not thought to be a viable species, and there is no appropriate reference data (Grissino-Mayer 1993; Schweingruber 1993). The *Larix* board doesn't appear to have enough rings in to consider analysis, the minimum requirements are greater due to the huge geographical range of the genera and its early introduction as a commercial timber tree in the UK. It is thought a single piece of local or imported *Larix* probably needs in

excess of 100 rings before it could even begin to be suitable for analysis (Cathy Groves and Gretel Boswijk pers comm). These two boards each appear to have less than 50 and to be derived from the same tree. Larch timbers of European origin and locally grown stock were widely available in England from the seventeenth century onwards, the identified timber type cannot therefore help with the dating of the construction and the boarding up of this window.

Conclusion

No reliable dendrochronological analysis can be undertaken on the oak frame timbers. Although the secondary boards are quite different they also have no interpretative value. Indeed it is probably easiest to assume these were simply scrap pieces of timbers that were available during the infilling work. The same activities go on at construction sites to this day for concrete shuttering or other formwork.

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Figure 1

Palace House Mansion, Newmarket. Window external elevation (after Baggs pers comm. scale approx 1:20)

