Darganfod Hen Dai Cymreig
Discovering Old Welsh Houses

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Discovering Old Welsh Houses studies and celebrates the traditional houses of North Wales and the lives of the people who lived in them.

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Please note that these reports are being updated as part of an ongoing programme of revision. Older reports sometimes refer to the old names of the Group. Between 2005 and 2012 also known as The Snowdonia Dendrochronology Project, then the N W Wales Dendrochronology Project and then the Dating Old Welsh Houses Group.

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Discovering Old Welsh Houses

Oxford Dendrochronology Laboratory

VAYNOL OLD HALL,

Pentir, near Bangor, Gwynedd (formerly Caernarfonshire)

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A report commissioned by The North West Wales Dendrochronology Project in partnership with The Royal Commission on the Ancient and Historical Monuments in Wales (RCAHMW).

Rhif Elusen Gofrestredig: Registered charity No: 1131782

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NORTH WEST WALES DENDROCHRONOLOGY PROJECT

DATING OLD WELSH HOUSES

VAYNOL OLD HALL,

Pentir, near Bangor, Gwynedd (formerly Caernarfonshire)

Parish: Pentir. NGR: SH 5384 6953

HOUSE DETAILS:

An 'important sub-medieval house which appears to be constructed in at least three or four phases, beginning in the early-mid C16 as a 2-unit house with lateral chimney, consisting of the ground floor of hall, passage and small outer room. It reached the present E-shaped plan in the early-mid C17, with the addition of a storeyed porch over the entrance, and a similar oriel bay at the E end: rear stair wing dated on close-studding, 1638. The E-plan was completed towards the end of the C17 with the addition of a larger N wing on the W side [...]. Outbuildings attached to the W end are later, mostly C19.' (CADW listing description). 'Lavish version of Snowdonia plan-type with projecting oriel, porch and later kitchen (?1660s) giving a busy front elevation. House has a contemporary rear parlour wing. Service rooms were in basement under the hall. Hall has a lateral chimney, framed ceiling, 16 panels; broad chamfered beams with curved stops with a torus' (Richard Suggett, RCAHMW). Description in RCAHMW *Caernarvonshire* Vol. II, no. 1387a.

Cantref: Arfon. **Commote**: Maenol Bangor (*Atlas of Caernarvonshire* p 71).

Dendrochronology results: (a) Hall Range – *felling dates:* **Winter 1557/8 and Summer 1562**. Lower purlin 1561 (30½C); Principal rafters (3/4) 1557(52C), 1551(19+8C NM); 1536(17¼C NM); Tiebeams (0/2); Strut (0/1); Collar (0/1); (b, c) Middle Range and Rear Range – *felling date:* **Winter 1628/9.** (b) Collar 1628 (39C); Principal rafters (2/3) 1595(h/s+30C NM), 1585 (h/s); (c) Collars 1593(3+30C NM); Principal rafter 1587(h/s); Lower purlin 1601(1). *Site Master* 1448-1628 GWYNEDD2 (t = 10.3 PLASMWR1; 8.3 BDGLERT17; 9.4 BRONFOEL) (Oxford Dendrochronology Laboratory).

Spelling: The spelling of names was very variable. Variants include Gruffydd/Griffith, Ellen/Elin/Elinor/Eleanor, Katerine/Katherine/Katharine/Catherine, Dafydd/David, and so on. The spelling used in any source is generally followed here, particularly in quotations; otherwise, 'Vaynol' is used for Vaenol, Faenol and Vaynoll; 'Caernarfon' for Carnarvon and Caernarvon.

A report commissioned by The North West Wales Dendrochronology Project in partnership with The Royal Commission on the Ancient and Historical Monuments in Wales (RCAHMW).

BACKGROUND TO DENDROCHRONOLOGY

The basis of dendrochronological dating is that trees of the same species, growing at the same time, in similar habitats, produce similar ring-width patterns. These patterns of varying ring-widths are unique to The period of growth. Each tree naturally has its own pattern superimposed on the basic 'signal', resulting from genetic variations in the response to external stimuli, the changing competitive regime between trees, damage, disease, management etc.

In much of Britain the major influence on the growth of a species like oak is, however, the weather conditions experienced from season to season. By taking several contemporaneous samples from a building or other timber structure, it is often possible to cross-match the ring-width patterns, and by Averaging the values for these sequences,maximise the common signal between trees .The resulting 'site Chronology' may then be compared with existing 'master' or'reference'chronologies.

This process can be done by a trained dendrochronologist using plots of the ring-widths and comparing them visually, which also serves as a check on measuring procedures. It is essentially a statistical process, and therefore requires sufficiently long sequences for one to be confident in the results. There is no defined minimum length of a tree-ring series that can be confidently cross-matched, but as a working hypothesis most dendrochronologists use series longer than at least fifty years.

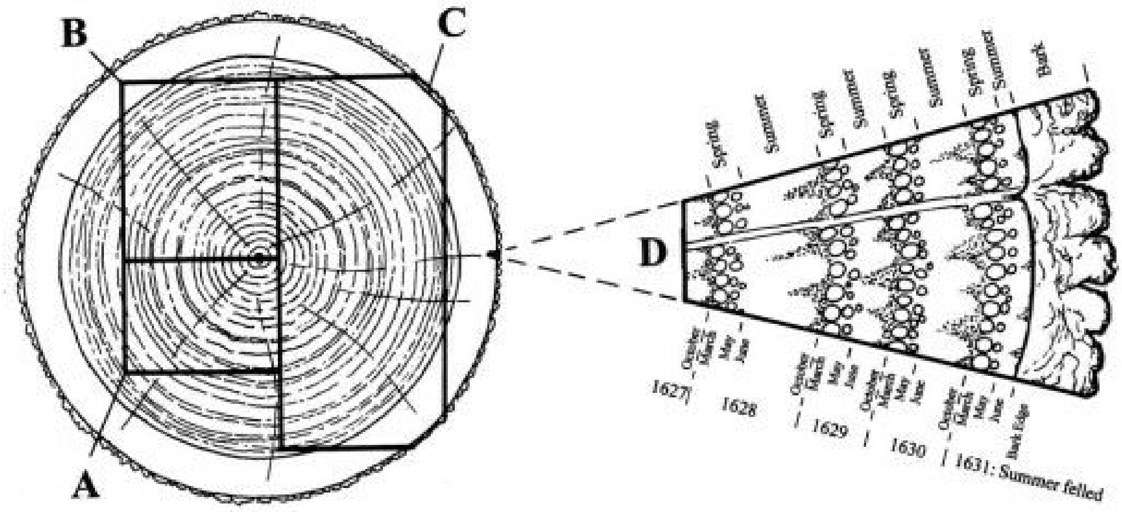
The dendrochronologist also uses objective statistical comparison techniques, these having the same constraints. The statistical comparison is based on programs by Baillie & Pilcher (1973, 1984) and uses the Student's t-test. The t-test compares the actual difference between two means in relation to the variation in the data, and is an established statistical technique for looking at the significance of Matching between two data sets that has been adopted by dendrochronologists.The values of't'which give an acceptable match have been the subject of some debate; originally values above 3.5 being regarded as acceptable (given at least 100 years of overlapping rings) but now 4.0 is often taken as the base value. It is possible for a random set of numbers to give an apparently acceptable statistical match against a single reference curve – although the visual analysis of plots of the two series usually shows the trained eye the reality of this match. When a series of ring-widths gives strong statistical matches in the same position against a number of independent chronologies the series becomes dated with an extremely high level of confidence.

One can develop long reference chronologies by cross-matching the innermost rings of modern timbers with the outermost rings of older timbers successively back in time, adding data from numerous sites. Data now exist covering many thousands of years and it is, in theory, possible to match a sequence of unknown date to this reference material.

It follows from what has been stated above that the chances of matching a single sequence are not as great as for matching a tree-ring series derived from many individuals, since the process of aggregating individual series will remove variation unique to an individual tree, and reinforce the common signal resulting from widespread influences such as the weather. However, a single sequence can be successfully dated, particularly if it has a long ring sequence.

Growth characteristics vary over space and time, trees in south-eastern England generally growing comparatively quickly and with less year-to-year variation than in many other regions (Bridge, 1988). This means that even comparatively large timbers in this region often exhibit few annual rings and are less useful for dating by this technique.

When interpreting the information derived from the dating exercise it is important to take into account such factors as the presence or absence of sapwood on the sample(s), which indicates the outer margins of the tree. Where no sapwood is present it may not be possible to determine how much wood has been removed, and one can therefore only give a date after which the original tree must have been felled. Where the bark is still present on the timber, the year, and even the time of year of felling can be determined. In the case of incomplete sapwood, one can estimate the number of rings likely to have been on the timber by relating it to populations of living and historical timbers to give a statistically valid range of years within which the tree was felled. For this region the estimate used is that 95% of oaks will have a sapwood ring number in the range 11 – 41 (Miles 1997a).



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