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Dendrochronology of Sloane House, Wooster, Ohio

Report submitted to Forest Muir
Sampled: September 12th 2011

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Objective:

To determine a calendar date for when the timber, from which Sloane House was built, was cut down. This will give a better approximation for the year the house was built, as well as expand the northeastern Ohio tree-ring chronology database. Tree-ring crossdating dates the cutting of the beams for Sloane House as early in the growing season of 1852.

Methods and Analysis:

Cores taken from beams in the attic of Sloane House were analyzed using standard dendrochronological techniques. The cores were mounted and sanded, and then the rings of each sample were measured to the nearest 0.001 mm. The eight samples taken were crossdated (Fig. 2) against each other to form a "floating" site chronology using the computer program COFECHA (Holmes, 1983). The "floating" chronology was then calendar dated by looking at the highest correlations between the samples. This chronology was crossdated with data from trees on the College of Wooster campus, and then against the northeastern Ohio database (Table 1, Fig. 2). Sloane House data correlates well with both of the two databases.

One sample, SH07, a square piece of a beam, did not correlate with the rest of the data and was therefore taken out of the final Sloane House chronology. The seven samples used date from AD 1727 to 1852, a span of 125 years.

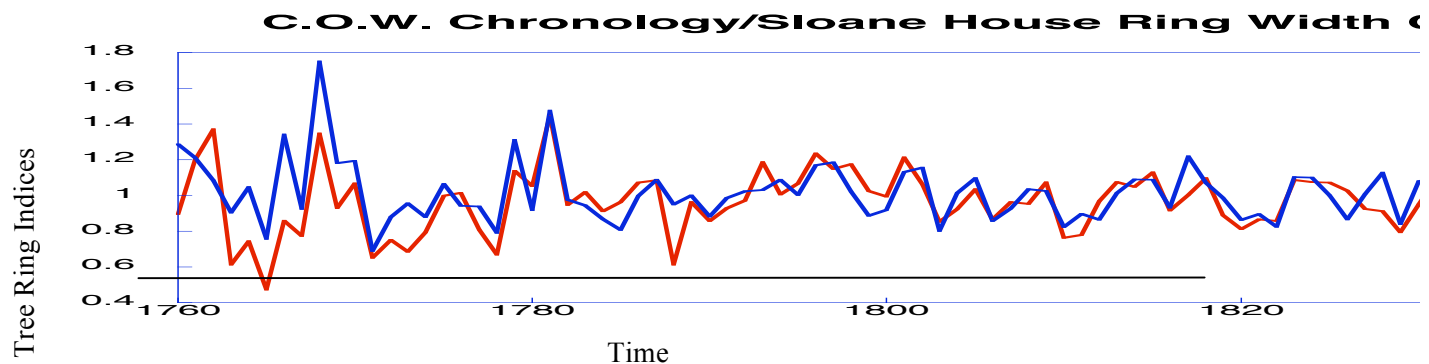


Figure 1: This graph shows the comparison between the Sloane House ring widths (red line) and the College of Wooster tree ring chronology (blue line). The correlation coefficient for the 98 year overlap is 0.52.

| Core | Inner Year | Outer Year | Total Years |
|------|------------|------------|-------------|
| SH01 | 1784 | 1849 | 66 |
| SH02 | 1797 | 1852* | 56 |
| SH03 | 1774 | 1852* | 79 |
| SH04 | 1763 | 1849 | 87 |
| SH05 | 1793 | 1852 | 60 |
| SH06 | 1749 | 1852 | 104 |
| SH07 | Not Used | | |
| SH08 | 1727 | 1839 | 113 |

Table 1: Table of the inner and outer calendar dates of the five cores used for the chronology of Sloane House. The asterisks show cores that had bark. It is probable that SH05 and SH06 sample have the outermost rings, but that the bark is no longer attached. The outer ring of SH02 (figure 3) was just beginning for form early wood in 1852 before the tree was cut down.

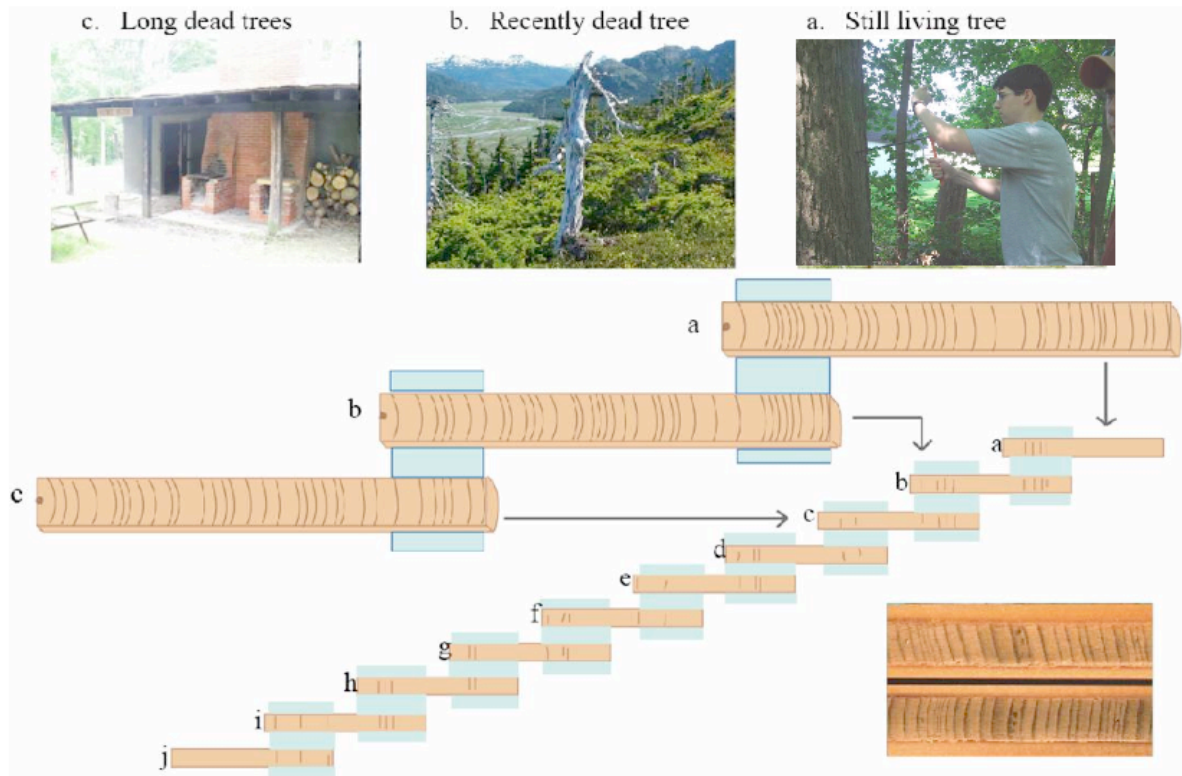


Figure 2: This diagram illustrates the principle of crossdating. Samples are taken from living and recently dead trees, and the ring-width patterns are correlated then matched to long dead trees, forming a chronology.

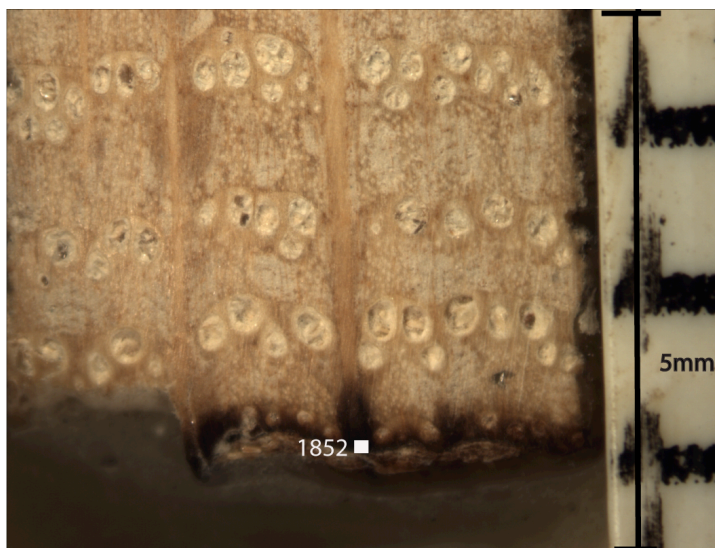


Figure 3: Sample from SH02. When the sample was taken the bark was originally attached but fell off before the core could be mounted. The black dot marks the ring that began to form in 1852, which is shown by the large pores of the early wood.

References:

Holmes, R.L. 1983 Computer-assisted quality control in tree-ring dating and measurement. *Tree Ring Bulletin*, **43** (1), 69-78.