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Dendrochronological Analysis of the Barr House

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Dendrochronological dating of the Barr House, Lancaster Ohio

Sampled: April 26, 2016

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Objective:

To provide a calendar date using dendrochronology for the felling of timber used to build the Barr house in Lancaster, Ohio. Core samples and tree-ring data is archived at the Wooster Tree Ring Lab, housed in the Department of Geology, The College of Wooster.

Methods:

Seven core samples were taken from beams throughout the Barr house using an electric drill with a specialized core drill bit. Additionally three wood cross-sections were taken with a handsaw to supplement the cores and because of the degraded outer rings on samples from the basement. The cores were then glued to wooden sticks and all samples were sanded so that the rings could be viewed clearly. Using a microscope, the rings of the cores were counted and measured to the nearest 0.001 mm. The ring series were then cross-dated with each other to create a "floating" ring-width chronology. This chronology is initially floating in time with each series internally cross-dated with one another. Using the computer program COFECHA, the floating ring-width chronology was then compared to a calendar-dated master ring-width chronology from southeast Ohio (SEO). This regional master series allowed us to obtain calendar dates for the Barr house ring-width chronology. Outer ring dates were assigned to each ring and the felling dates of the timbers were determined (Fig. 1).

Results and Analysis:

The cross-dating of the Barr house cores and section samples with the SEO master series allowed calendar dates to be assigned to each ring and the analysis determined that eight of the ten samples were from trees cut in 1846 (Table 1). In these samples, the outer ring dates indicated that a fully formed outer ring was present (latewood transitions to a darker brown). This indicates that the trees were felled after the growing season of that year. Quite often trees were harvested during the winter months when the ground was hard and outside temperatures were more conducive to hewing and converting trees to timber. Core sample Barr05 had begun to grow a faint row of earlywood pores which suggests that it was cut in the beginning of the growing season of 1847. Core sample Barr01 was taken from an ash joist with bark still intact and appeared to be newer

than the other joists but was ax cut in a similar fashion with an outer ring date of 1912 showing that this beam was added in as a repair at a later date and most likely before the northern addition was added onto the main portion of the house. Timber was much more difficult to work and assemble once it began to dry and the need for an immediate structure would lead us to say with confidence that the Barr house was built in 1847.

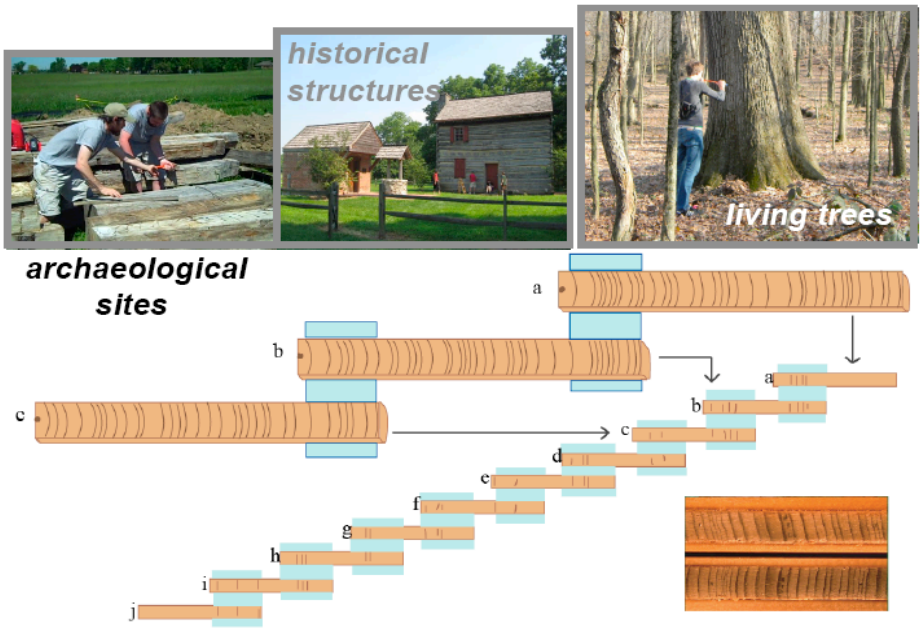

Figure 1. Diagram illustrating tree-ring cross-dating. Patterns in ring widths from archaeological and historic structures are compared to living tree ring chronologies in order to assign calendar dates to each ring.

Core	Inner-ring Year	Outer-ring Year	Species	Beam Description
Barr01	1850	1912	White Ash	replacement joist
Barr02	1743	1846	White Oak	hewn south sill
Barr03	1816	1846	Chestnut	first floor joist
Barr 04	1734	1846	Slippery Elm	first floor joist
Barr05	1757	1847	Red Oak	sawn south wall stud
Barr06	1766	1846	White Oak	sawn east wall brace
Barr07	1741	1846	White Oak	second floor joist
Section				
Barr08	1707	1846	White Oak	hewn north sill
Barr09	1733	1846	White Oak	sawn east wall stud
Barr10	1781	1846	White Oak	sawn east wall stud

Table 1. Tree-ring data from the Barr house.