MIDDLE WOODLAND DOMESTIC ARCHITECTURE AND THE ISSUE OF SEDENTISM: EVIDENCE FROM THE PATTON SITE (33AT990), HOCKING VALLEY, OHIO

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Abstract

Architectural data from the Patton site (33AT990), a Middle Woodland habitation site in the Hocking River drainage, southeastern Ohio, are described. Horizontal excavation of this unplowed terrace site revealed one of the most complete houses for this time period. Features associated with this house also are described as they relate to storage, food preparation, and tool manufacturing. The house was rebuilt in three consecutive episodes spanning 23 years on average before it was abandoned. The presence of a wattle and daub house suggests that a strong commitment to fixed spaces was made by the domestic community, supporting the model of a relatively sedentary society.

During the Middle Woodland period (A.D. 1 to A.D. 400), indigenous societies of the Ohio River drainage lived in small residential communities (Ruby et al. 2005: 123) of about 15 to 20 people who occupied three or four houses (Abrams 2009; Smith 2006). Members of each household were bound to those in other residential communities through formal lineal ties, shared religious beliefs, and economic reciprocity. Each distinct set of lineages within a region periodically met in ceremonial precincts that served as the center of each "peer polity" (Braun 1986) or small tribal unit (Abrams 2009; Carr 2008; Pacheco and Dancey 2006).

While significant amounts of archaeological research have been devoted to understanding the range of architectural structures from the ceremonial centers of these Middle Woodland, or Hopewellian, societies, less effort has been directed towards elucidating the range of domestic architecture built within habitation sites. Of the domestic sites in Ohio that have been archaeologically investigated from this time period, very few have yielded solid data concerning the physical nature of domestic architecture (Dancey and Pacheco 1997). Plowing and other ground disturbing activities have severely compromised the integrity of housing at many sites. Recent data are just beginning to clarify the various forms of housing among these societies (Cowan 2006; Greber 2009; Pacheco et al. 2006, 2009a, 2009b; Weller 2005; Zink 2009).

The degree of commitment to a specific territory or parcel of land is one of the many aspects of a past society reflected in part by the domestic architecture. Despite a divergence of interpretation concerning the degree of sedentism by various scholars (Cowan 2006; Pacheco and Dancey 2006; Weller 2005; Yerkes 2006), all researchers agree that one of the primary archaeological signatures of sedentism is an increased commitment to stronger and more durable houses. As Yerkes (2006:56) stated, "If sedentary sites are stable, formally organized, year-round settlements..., then excavations at such sites should reveal substantial domestic dwellings (which may have evidence of rebuilding) and numerous storage pits."

Here we present architectural and feature data from the Patton site (33AT990), a domestic site along Snow Fork Creek, a small tributary within the drainage basin of the Hocking River, southeastern Ohio. Unlike all other known Ohio Middle Woodland domestic sites, the Patton site has never been plowed. As a result, the architectural remains and associated features of a house lot are evident. The architectural data relating to a house, the associated domestic features and artifacts, and the evidence of three recurrent episodes of rebuilding support the archaeological inference of a residential community committed to a

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Journal of Ohio Archaeology 1:22-40, 2011
An electronic publication of the Ohio Archaeological Council
http://www.ohioarchaeology.org/joomla/index.php?option=com_content&task=section&id=10&Itemid=54

fixed parcel of land over several generations.

The Site Setting

The Patton site is located along Snow Fork Creek, a tributary of Monday Creek, within the unglaciated Hocking River drainage system of southeastern Ohio (Figure 1). The natural resources and stream-terraced landscape available at the site were sufficient to support long-term occupation; terraces were the landform of choice during the Middle Woodland period in the Hocking Valley. A southern high stream terrace, High Terrace 1, and a northern high stream terrace, High Terrace 2, are separated by an abandoned river bed, approximately 70 m wide, and a seasonal creek (Figure 2). A bog some 100 m northeast of High Terrace 1 feeds the seasonal creek and provided an on-site clay resource for ceramics (Patton et al. 2009).

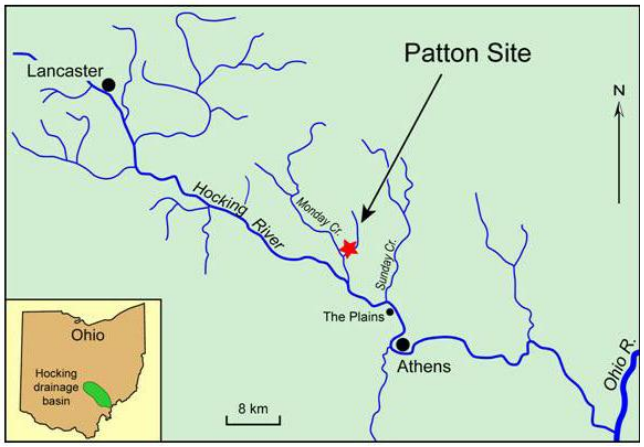

Figure 1. The Hocking River Valley, with the location of the Patton site (modified from Abrams and Freter 2005a).

Stream terraces were a highly valued but limited resource within the Hocking Valley, constituting only about 5 percent of the southern Hocking Valley (Abrams & Freter 2005a). Occupation of a high terrace allowed populations access to fresh water resources, such as drinking water and aquatic flora and fauna, with a lower risk of flooding than on lower terrain. The Patton site terraces are surrounded by fertile floodplains and slopes advantageous for gardening or agriculture due to flood waters that saturate and replenish the soil with nutrients. To the west is a low stream terrace – a small rise of land in the floodplain – between Snow Fork Creek and High Terrace 1 that floods seasonally (Figure 2). Surrounding the stream terraces and floodplains are the Appalachian foothills, which afforded a variety of resources such as timber, white-tailed deer, several nut species, and small game (Abrams & Freter 2005a). The landforms and resources available to those living at this domestic site provided an ideal location for long-term continuous occupation. The one serious limitation was consistency of water flow from the small Snow Fork Creek. During the driest days of the summer, water availability may have been an issue.

The Patton site has been minimally disturbed by modern construction and land use. Three modern structures are present – a house (with backyard garden) and two barns –although only the house and garden have directly impacted the site (Figure 3). Extensive surveys and excavations were conducted just north of the modern house on High Terrace 1, and this area yielded the highest concentration of artifacts and features. This terrace -- the main area of excavation -- was covered by a layer of fill, a distinct yellow clay soil, from the construction of the modern house's subsurface foundation. This fill yielded prehistoric artifacts, indicating that the construction of the modern house disturbed part of the original Middle Woodland habitation site. On the other hand, the construction fill that was added adjacent to the house and spread towards the northern slope of the terrace actually preserved and insulated some of the extant site. The architecture and features from High Terrace 1 are the focus of the present research.

According to David and Marlene Patton, the current land owners, the site and surrounding lands have never been plowed; prior to their ownership, this land was used as pasture for cattle. Excavation and soil stratigraphy confirmed that the site was never plowed, a rare depositional situation for archaeological sites in southeastern Ohio. However, the lack of plowing did not eliminate all cultural disturbances. Evidence of backhoe intrusion 1.5 m north of the modern house and extending the width of the house was revealed through excavations. This ultimately impacted the southern wall of the Middle Woodland house. Thus, while we refer to the Patton site as unplowed, we also recognize the effects of other site formation processes that negatively impacted the site.

Methods

The terrace just north of the modern house was identified as a potential archaeological site by Paul Patton, an archaeologist currently at the Ohio State University. An analysis of the surface collection in

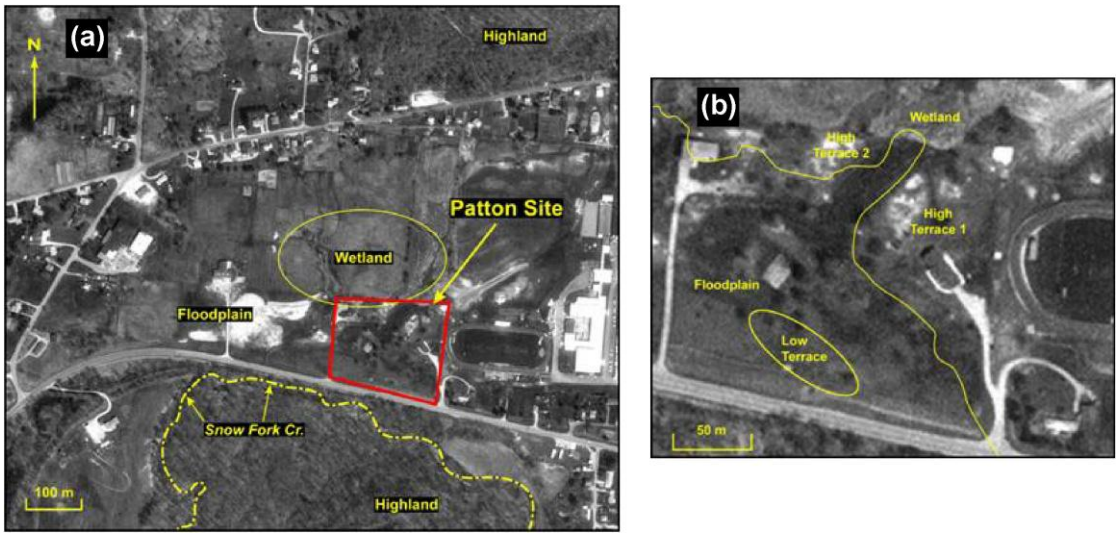

Figure 2. The Patton site (red box) and the surrounding landscape (a), and (b) the Patton site landforms, including High Terrace 1, the area of major excavation in the present research.

2006 by Tracy Formica and Paul Patton, both graduate students at the time in Ohio University's graduate program in environmental archaeology, and a magnetic gradient survey conducted by Jarrod Burks in 2006 provided possible locations of cultural materials and features. Both surveys identified High Terrace 1 as the most probable site center. Given that this terrace was unplowed and had identified features through

Figure 3. The modern Patton family house in relation to the main terrace excavations.

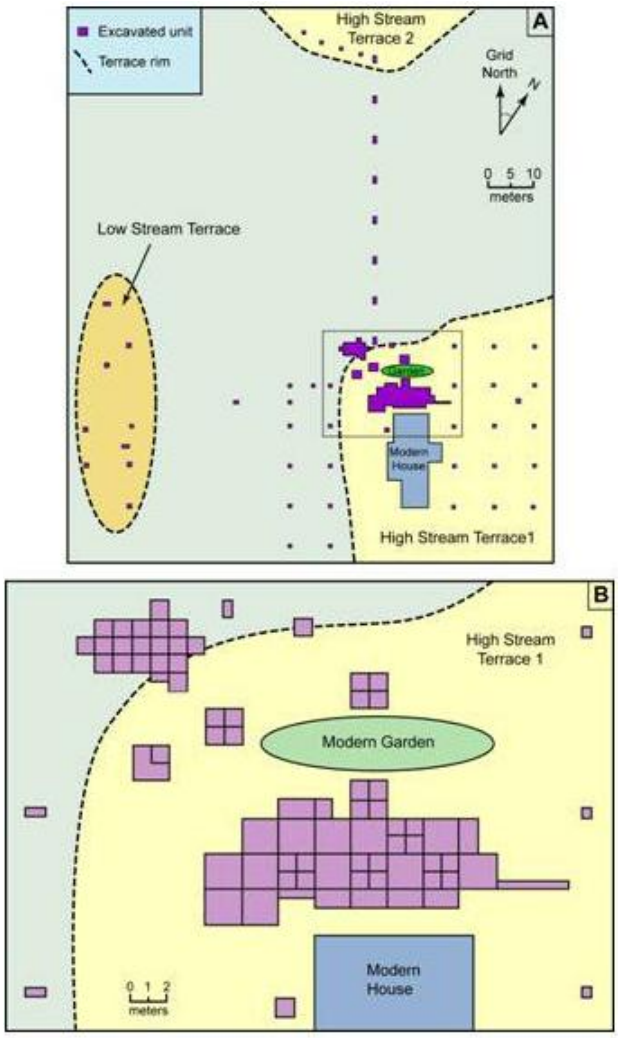

Figure 4. Survey units (A) and excavation units (b).

these two survey methods, archaeological field schools from Ohio University, directed by Elliot Abrams, were conducted in 2006 and 2008. Although the entire Patton land was surveyed through shovel testing (Figure 4), the primary focus of excavation, especially in 2008, was High Terrace 1 or simply "the terrace" (Figure 5). Sarah Weaver, a veteran of the 2006 field season, co-directed the 2008 field excavations.

Excavation of the terrace was guided by two sampling approaches: (1) complete excavation of those units affiliated with the archaeological house, and (2) test excavation of those terrace units away from the archaeological house. Excluding the modern house, the terrace itself covers 308 m^2, of which 262 m^2 was available for excavation (subtracting the garden and a few other obstructed spaces). Of the 262 m^2, 95.5 m^2 (36.5 percent) was excavated. However, of those units directly affiliated with the archaeological house and house lot area, a full 100 percent were excavated.

Units were dug in various sizes but especially in 1 x 1 m and 2 x 2 m sized units. Because there was no plow zone, all units were excavated by shovel-shaving and troweling, with artifacts recovered using ¼ inch screen mesh. Cultural floors, features, in situ artifacts, and profiles were recorded, described, photographed, and mapped. Intact site stratigraphy aided in understanding site chronology and especially architectural sequences. Diagnostic artifacts helped establish the relative chronology for the Patton site. Charcoal samples were collected from features at the site and analyzed by Beta Analytic for radiocarbon dates (Table 1).

Results

Fifty-three Middle Woodland features were uncovered on the terrace, defining the three episodes of occupation of a house (Structure 1) and associated features of a house lot. An array of artifact types, including chipped stone tools and reduction debitage, ceramics, and ground stones, indicated clearly that the terrace was occupied by a small community of Middle Woodland Native Americans (Weaver 2009). The domestic nature of the site is strengthened by the identification of adjacent areas probably devoted to growing a range of plants by the residential community (Weaver 2009), a topic currently under analysis. Although construction of the modern house possibly destroyed two or three of the houses from the past residential community, one house and its associated domestic features were spared.

Chronology of the Terrace

Two prehistoric temporal components were identified at the Patton site through radiometric and relative dating techniques: Early Woodland (1500 B.C to A.D. 1) and Middle Woodland (A.D. 1 to 400; Abrams and Freter 2005a). These independent methods defined at least two distinct prehistoric periods of occupation on the Patton terrace.

The Patton site's Early Woodland component was confirmed by a charcoal sample obtained from Feature 1 dated to roughly 1130 B.C (Table 1). This hearth was located on the edge of the main terrace

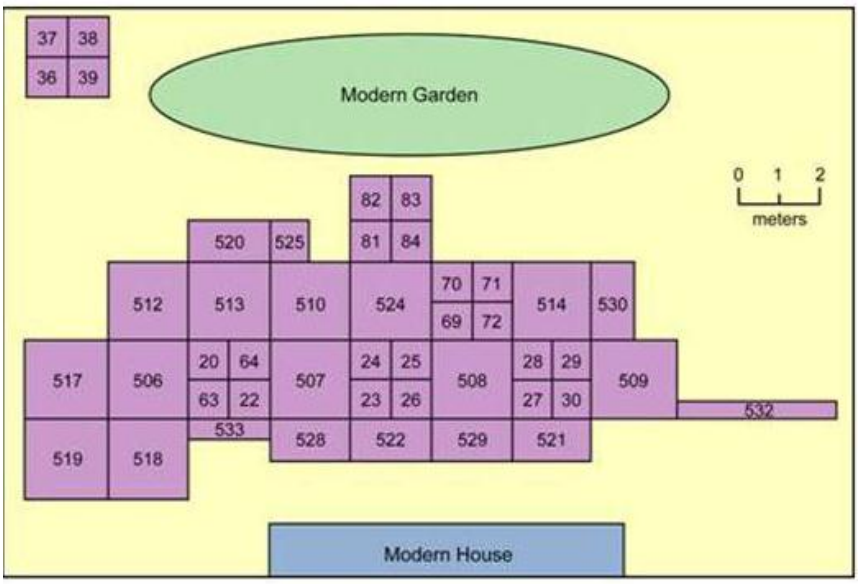

Figure 5. Numbered excavation units on high terrace.

(Figures 6 and 7). Thick-type ceramics, associated with the Hocking Valley's Early Woodland period, were excavated from Feature 1 and the surrounding cultural surface (Patton et al. 2009).

The Middle Woodland component of the Patton terrace yielded the highest concentration of artifacts and features. Charcoal from two hearths (Features 4 and 32) yielded radiocarbon dates from this period (Table 1; Figure 8). Plain-type pottery sherds (Patton et al. 2009) associated with the Middle Woodland period in the Hocking Valley were recovered from within Features 4 and 60, the latter a refuse pit, and both were adjacent to Structure 1, the Middle Woodland house. All of the projectile points (Baker's Creek, Snyder, and Chesser Notched) collected during the excavation of the High Terrace 1 were associated with the Middle Woodland period.

It is possible but unlikely that a Late Prehistoric component existed at the site. One post mold (Feature 39) intruded into the western portion of the Middle Woodland deposit. A radiocarbon date of A.D. 1460 (Table 1) was obtained from a charred piece of wood from this feature. However, this was an area of considerable Historic Era disturbance, and the absence of Late Prehistoric artifacts strongly argues against such occupation.

Chronologically, then, use of the site first occurred ca. 1100 B.C., perhaps with the main domestic structures now destroyed beneath the modern Patton house. Only a cooking feature (Feature. 1) and associated posts (Features 3 and 11) were archaeologically recovered. After some centuries of non-use, a more sedentary Middle Woodland community established itself at the site ca. A.D. 100. Again, the majority of domestic data may have been lost to the modern construction, with one well-preserved house and house lot remaining.

Terrace Features

The primary focus of this paper is the various features that constituted the Middle Woodland house and house lot. Fifty-three features, including 43 post molds, were associated with the Middle Woodland house —Structure 1— and associated activity areas (Table 2). Structure 1 excavation revealed three episodes of construction and yielded three overlapping structures (Structures 1A, 1B, and 1C). The spatial layout of artifacts and features of the house lot indicated functional areas including the house itself, food preparation and cooking, external food storage, and refuse disposal (Figures 9-11).

Table 1. Radiocarbon dates from the Patton site (calibrated from Stuiver et al. 1998).

Beta Lab #	Feature	Feature Type	RCYBP	Cal. Date 2σ	Cal. Intercept
218736	1	hearth	2970+/- 40	1280 B.C. - 1010 B.C.	B.C. 1130
218883	4	hearth	1940+/- 40	A.D. 50 - A.D. 230	A.D. 120
249733	32	hearth	1870+/- 40	A.D. 60 - A.D. 240	A.D. 130
252232	39	post	380+/- 40	A.D. 1440 - A.D. 1540	A.D. 1460

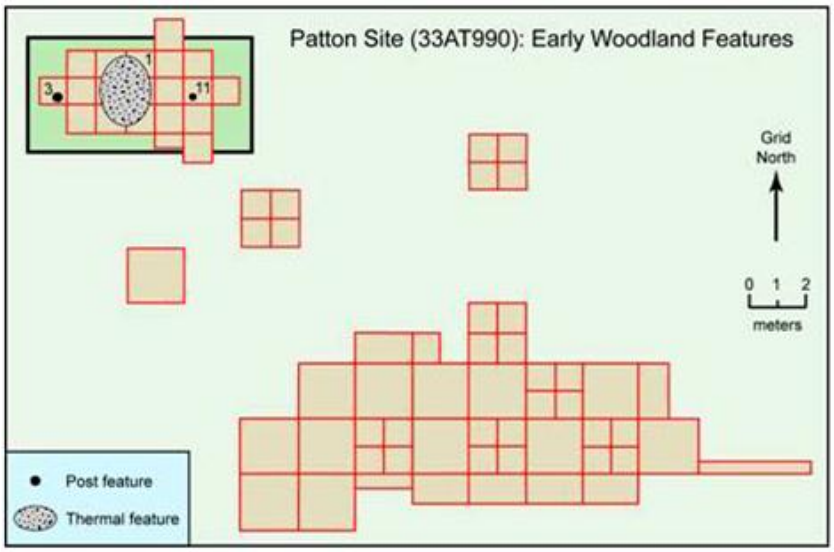

Figure 6. The Early Woodland features on High Terrace 1.

The Middle Woodland House

Structure 1 is an unusual archaeological discovery. Typically, Woodland domestic structures in Ohio are identified through posthole alignments and possibly their association with interior or exterior hearths. Floor and wall remains are rarely if ever defined. Structure 1, in contrast, was identified by the presence of three superimposed floors, the uppermost floor surface being conspicuously burnt and hardened (Figure 12). An interior hearth (Feature 32) with three distinct building episodes was evident (Figure 13). The northern wall of the house was defined by a clear daub line that edged the floor (Figures 14 - 16) and pieces of daub —portions of the wall— were recovered. Darkened soil composed of charred daub and burnt earth, inside the wall line, contrasted with the lighter non-fire-damaged soil outside the wall line. A line of smaller interior posts paralleled the west and north walls, indicating bench spaces within the house. Finally, main posts were identified at three of the corners, defining the house as a 6 m x 3 m structure.

The typical linear alignment of wall posts that ideally should have existed between main posts was not found. In the final episode of construction (Structure 1A), only four wall posts supplementing the three main posts were recovered. Notwithstanding, when all of these data are considered against all possible architectural options, it was concluded that this was in fact a wattle and daub house.

The undisturbed stratigraphy of construction indicated three episodes of rebuilding and re-use of Structure 1 (Figures 9 -11). The tops of several superimposed posts were separated by 15-20 cm of soil, indicating that soil had been brought in after the abandonment of a floor level (Figure 17). The posts averaged 19.3 cm long, 17.0 cm wide, and 11.7 cm deep (excluding the outlier [Feature 68]; Table 2).

The first episode of construction, that is, the lowest level of the Middle Woodland house lot, yielded the fewest post features (n = 10) due to subsequent destruction and rebuilding (Figure 9). Only two posts were associated with Structure 1C, while five were located in the food preparation and cooking activi-

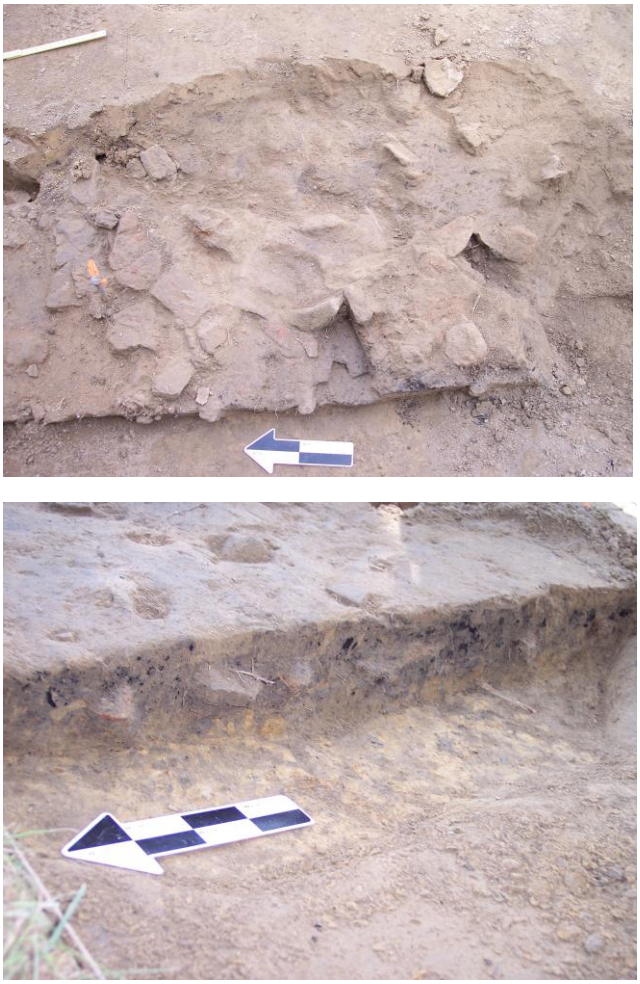

Figure 7. Feature 1: plan view (top) and profile (bottom).

ty area in front of the house and three were located behind the house.

Eighteen posts were recorded from the second episode of construction (Figure 10), eleven of which were directly associated with Structure 1B. Several of the architectural posts were directly under those from the above Structure 1A. Feature 34 of Structure 1B, for example, was located directly below Feature 31 of Structure 1A, both being large corner posts. Medium-size interior posts (Features 29 and 30) and small-size interior posts (Features 23 and 24) overlapped each other as well. These may have served as supports for interior benches or, if taller, for roof support. The remaining seven small exterior posts from the second episode of construction are interpreted as support posts for drying racks, spits, or windbreaks in the food preparation and cooking activity area.

The third episode of construction contained the most post features (n = 15) and provided the most intact outline of a house, Structure 1A (Figure 11). Three large posts were located at corners. Four others were found along walls and served as support posts for the house. Six posts were oriented parallel to the north and back wall, most likely defining interior storage areas or benches. Two small posts were located exterior to the house structure.

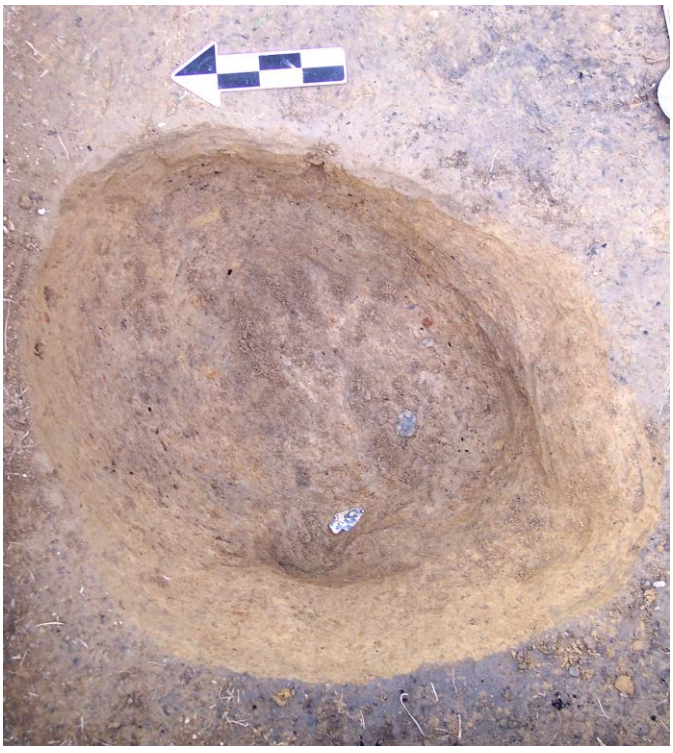

Figure 8. Feature 4, with in situ Middle Woodland point.

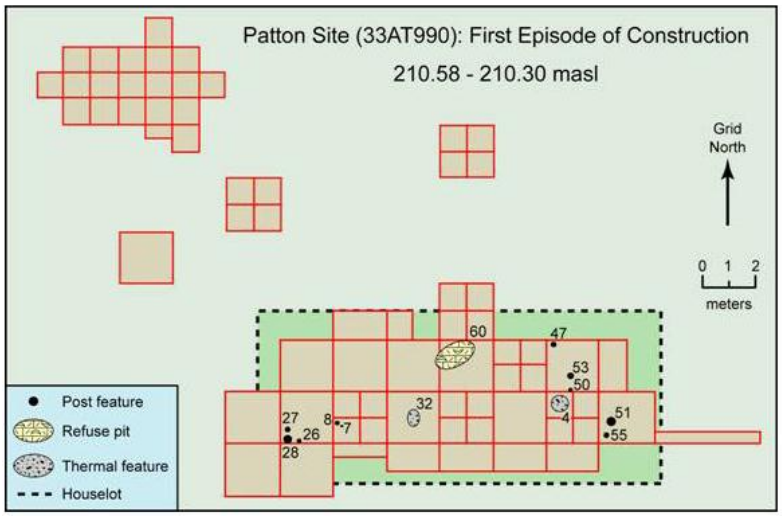

Figure 9. The first Middle Woodland construction episode (Structure 1C).

Daub

Excavation of the terrace revealed pieces and embedded lines of daub (1342.5 g) that connected the architectural posts. Daub, that is, tempered mud used to cover the lattice of wooden lath (wattle) connecting vertical posts, was found in units on the terrace that formed the edge of the house (Table 3). No other terrace units yielded daub. Some daub fragments had pole impressions (Figure 18**)**. Charred and crumbled daub mixed with burnt earth formed a purplish-brown/dark gray-brown/reddish-gray (Munsell Colors: 7.5R 4/3, 7.5R 5/4, 5R 4/3, 10YR 4/2, & 7.5R 4/1) layer of soil that was seen in wall profiles and the plan view. Daub flecking found outside the edges of Structure 1 were pinkish (Munsell Colors: 7.5R 4/8, 7.5R 6/8, and 7.5R 6/6).

Middle Woodland Hearths (n = 2)

Two Middle Woodland hearths (Features 4 and 32) were located on the terrace. Both of these intact and undisturbed hearths indicate three continuous episodes of construction and occupation during the Middle Woodland (Figures 9-11). Diagnostic pottery and projectile points corroborated the two radiometric dates obtained from charcoal samples taken from each hearth, placing their construction during the Middle Woodland period (Table 1). These hearths consisted

Table 2. Patton Site Middle Woodland Postholes.

Feature	House Lot Level	Max. Length (cm)	Max. Width (cm)	Depth (cm)
2	2	16	18	13
6	2	26	26	18
7	3	10	10	20
8	3	20	20	20
12	2	9	9	9
20	1	25	25	15
22	1	9	9	4
23	2	9	9	11
24	1	9	9	8
25	1	20	22	9
26	3	15	16	7
27	3	16	17	4
28	3	28	28	4
29	1	36	14	17
30	2	30	20	4
31	1	34	41	9
33	1	21	14	8
34	2	19	17	8
35	2	7	7	10
36	2	17	22	21
37	2	24	23	30
38	2	18	13	6
43	2	22	20	14
44	2	16	15	9
45	1	16	16	9
46	2	29	15	26
47	3	17	17	16
48	1	38	36	7
50	3	17	14	13
51	3	25	21	15
52	1	16	19	8
53	3	14	15	21
55	3	19	20	13
56	1	18	16	7
59	1	11	11	3
61	1	24	20	8
62	1	33	30	8
63	2	20	20	29
64	2	15	13	--
66	2	19	19	11
67	2	10	9	3
68	2	18	18	73
69	1	15	15	5

of three overlapping platforms made of fire-cracked rock with charcoal and ashy soil below them. The absence of culturally sterile soil between these levels and their superpositioning indicates uninterrupted use of the site.

Feature 4, located approximately 3 m outside of the front entrance of Structure 1, was an integral part of the house lot food preparation area. It was an elliptical hearth measuring 71 cm x 62 cm and 48 cm deep (Figure 19). Feature 4 contained burnt nutshell, bone fragments, hematite, chipped stone debitage, ten Middle Woodland pottery sherds, and a Robbins projectile point and point fragment, the Robbins point being defined by Justice (1987:188) as extending into the Middle Woodland period.

The second hearth, Feature 32, was located within Structure 1 and spanned all three construction episodes. It was 60 cm in diameter at the bottom platform level, 40 cm in diameter at the middle and top platform levels, and was 44 cm deep (Figures 12 and 13). Burnt nutshell, chipped stone debitage, ground stone fragments, and hematite artifacts were recovered from this feature. Feature 32 probably served as the structure's central heating and indoor cooking facility.

Other Associated Pit Features (n = 4)

Four pit features in the area surrounding Structure 1 were identified. All were circular in plan, conical in profile, and contained prehistoric cultural materials (Table 4). Features 40 and 54 functioned as storage pits, based on their diameter and depth and the small number of artifacts that they contained. The largest pit feature, Feature 60, was identified as a primary refuse pit because it contained a large number of artifacts, many of which were found in clusters indicative of discrete discard events throughout the entire feature (Figure 20). Feature 49 could not be assigned a specific functional type due to its shallow depth and the low artifact density.

The refuse pit, Feature 60, was a significant discovery at the Patton site because of its high density of artifacts, the implications of sedentism attributed to this type of refuse disposal (Kozarek 1997), and its utilization during two of the three episodes of house construction. Feature 60 contained 37 percent of all chipped stone debitage collected from the site by both count (n = 1192) and weight (1637 g), two projectile points and one preform (20 percent), two (13 percent) expedient tools, and 39 percent (n = 11) and 51 percent (39.9 g) of all ceramic material. The levels above and immediately surrounding Feature 60 provided 10 percent (n = 321) and 7 percent (322.4 g) of total chipped stone debitage, one (7 percent) projectile point, and three (19 percent) informal tools. There-

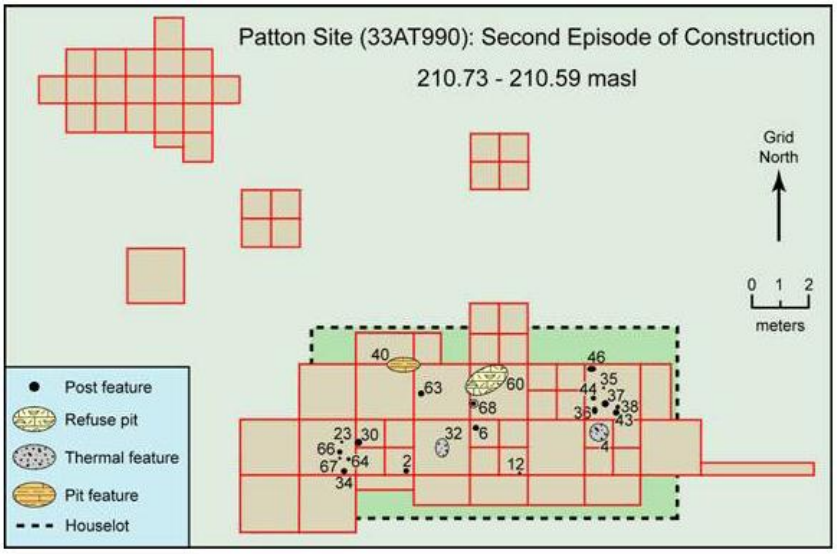

Figure 10. The second Middle Woodland construction episode (Structure 1B).

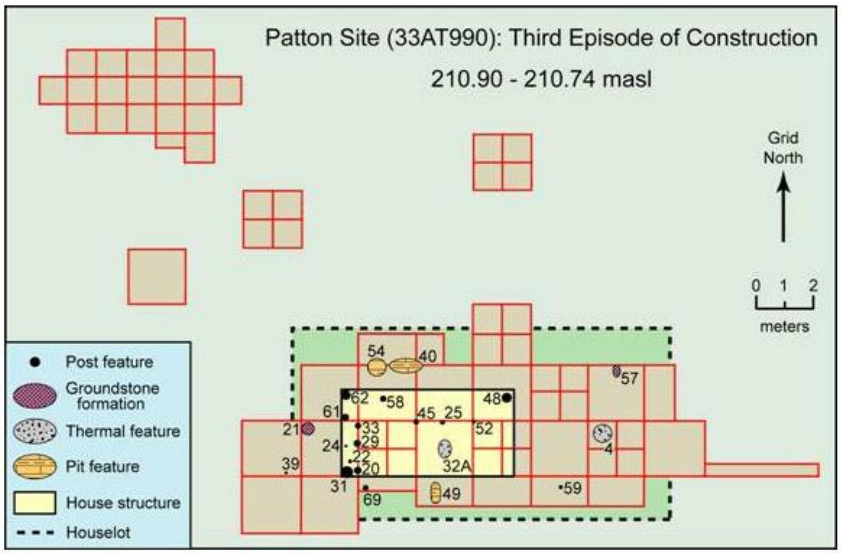

Figure 11. The third Middle Woodland construction episode (Structure 1A).

fore, Feature 60 and the surrounding area contained 47 percent (n = 1532) and 44 percent (2201.3 g) of all chipped stone debitage, formal and informal tools, and ceramic artifacts recovered from the entire site.

The two storage pits, Features 40 and 54, were located along the northwestern side of Structure 1. Feature 40, the larger of the two pits, was utilized during the second and third episodes of construction and occupation and Feature 54 was used during the third episode. Both of these pits were emptied before the site was abandoned and in-filled with ash, burnt earth, and burnt daub during the final episode of burning. The presence of storage pits used to collect and preserve resources for periods or seasons of low food productivity or shortages is indicative of extended and continuous occupation at the Patton site (Gremillion 2004).

Work Areas (n = 2)

Features 21 and 57 were stone working areas used during the last, or third, episode of occupation. These features were constructed of stones that likely formed work platforms (Figure 21a and b). No charred material or evidence of burning was present within the features, so they were not used for cooking or other heat-related activities. Some stones show evidence of pitting, grinding, battering, and shaping, apparently functioning as tools for food processing and/or tool manufacture. Feature 57 was located in the food preparation and cooking activity area of the Middle Woodland house lot. The second and larger stone formation, Feature 21, was located behind the house near the storage pits.

Discussion

Based on the above data, a reconstruction of Structure 1 can be offered (Figure 22). The house was rectilinear, measuring 6 m x 3 m, and providing 18 m^2 of interior space. Location of the entrance was determined based on an absence of posts along part of the east wall compared to post spacing along the back or west wall. The wall outlines were defined by both posts and daub, although the southern walls were not clear due to construction of the modern house. The daub may have reached the roofline, although this is uncertain. Along the north wall, the daub line was quite evident, as were the two corner posts. However, there was a scarcity of postholes. Instead, there were pockets of wider daub along the daub line, possibly indicating that some wall posts were not dug into the ground but were secured by the daub.

It is architecturally possible for some posts to not be dug into the ground if they are held in place or if

Table 3. Patton site daub samples.

Unit	Excavation Level	Feature	Count	Weight (G)
506	4	--	5	10.8
506	7	--	1	20.0
506	4	--	20	100.0
510	8	65	3	16.9
510	8	--	3	15.9
510	5	--	51	103.5
513	--	40	2	4.8
513	3	--	3	2.0
513	--	--	1	5.6
517	2	--	6	13.7
518	7	58	15	117.7
518	3	42	12	34.4
518	2	--	1	6.1
518	3	--	5	35.8
518	3	--	24	251.7
519	2	--	3	6.6
519	2	--	1	2.2
519	2	--	--	277.2
522	2	--	2	1.4
524	6	60	4	60.2
524	2	--	1	0.3
533	2	--	1	4.5
533	2	--	19	178.2
513 B	8	--	5	49.1
513 B	6	--	16	35.3
Anomaly 3	--	--	3	4.3
Anomaly 4	3	--	16	16.5
TOTAL			223	1374.7

wall sections are built off-structure (Wauchope 1938: 28). Interestingly, even where wall posts were sunk into the ground for support, they were only extended into the ground an average of 12 cm (Table 2). The main posts of Structure 1A were among the thickest posts at the site, measuring an average of 37 cm (maximum diameter) whereas the average maximum diameter was 19 cm. However, these main posts were sunk only 8 cm into the ground. Clearly, the stability of the house was strongly supplemented by the thick daub walls as well as crossbeams and wall plates linking the tops of the main posts.

This building practice may help explain the scarcity of wall posts at other Middle Woodland sites (Church and Ericksen 1997; Dancey 1991; Kozarek 1997). Despite the presence of hearths at the Middle Woodland habitation sites of Murphy, Jennison Guard, and Wade, fewer than expected architectural posts were found. Stratigraphically, posts should have been evident had they been deep posts. Our reconstruction of building techniques for Structure 1 indicates that some houses were built with posts that either did not penetrate the ground surface or only modestly penetrated the surface; this is possible if they were supported by abundant daub. This appears to be the case at Jennison Guard, as Kozarek (1997: 137) stated, "Although no structural remains have been recovered from Jennison Guard, indirect evidence of a structure does exist in the form of more than 80 g of twig-impressed daub."

The absence of an interior central post suggests a low roof —either pitched or curved. Grass, hides, or bark would have served as a roofing material, with a coverable smoke hole.

Building the House

The architectural data collected from the Patton site terrace represent one of the more complete data sets from which to reconstruct this form of Middle Woodland housing. A level surface was prepared by clearing foliage. Earth was brought in as a flooring material and tamped, a hearth being placed relatively central to the planned outline. Four thick main posts were embedded into the surface, supported in part by daub placed around each base. Smaller posts were held in place by the lattice of wattle that connected the posts. Daub was then placed on and through the wattle and smoothed. Once dried, this surface was further hardened through burnishing. Horizontal posts then connected the vertical posts of the house. A low curved roof was likely built, covered with thatch or hides, with a small exit hole created to vent the smoke generated while cooking. Although no architectural energetic studies specific to housing in this area have been conducted, this type of house typically required 50+ person-days to build, or roughly five people working ten days (Abrams 1989).

After five to ten years of use, following Milner's (1999) estimates of occupation duration, the house was burned. Fresh soil was brought in to build a new 15-20 cm thick floor, covering the old floor, and a new set of walls was built over the previous structure outline. The hearth was re-excavated and some posts from the prior structure may have been re-used. The

Figure 12. Terrace stratigraphy showing dark Middle Woodland stratum. Modern yellow fill caps this stratum; Feature 32 is in foreground.

presence of burnt daub evenly distributed throughout the perimeter of the house may indicate that its burning was intentional (Shaffer 1993), perhaps due to rotting wood frames, damaged walls, or pest infestation (Smith 2006). After another episode of occupation, the structure experienced a third and final phase of re-building and occupation. Thus, adding the three occupations together, the Middle Woodland house stood on this spot between 15 and 30 (average 23) years, over which time it was continuously occupied. After this period, the house and presumably the other structures at the Patton site were abandoned. This time span of occupation is consistent with those reconstructed for other comparable Hopewellian sites (Carr 2008; Prufer 1965; Ruby et al. 2005).

The type of architecture found at the Patton site is similar to Late Woodland/Late Prehistoric housing in the area. For instance, the remains of a house struc-

Table 4. Patton site pit features.

Feature	Feature Type	Unit	Max. L (cm)	Max. W (cm)	Max. D (cm)
40	Storage pit	510/525/513/520	45	125	30
54	Storage pit	513	66	50	17
60	Refuse pit	524	146	104	30
49	Generic pit	528	84	72	6

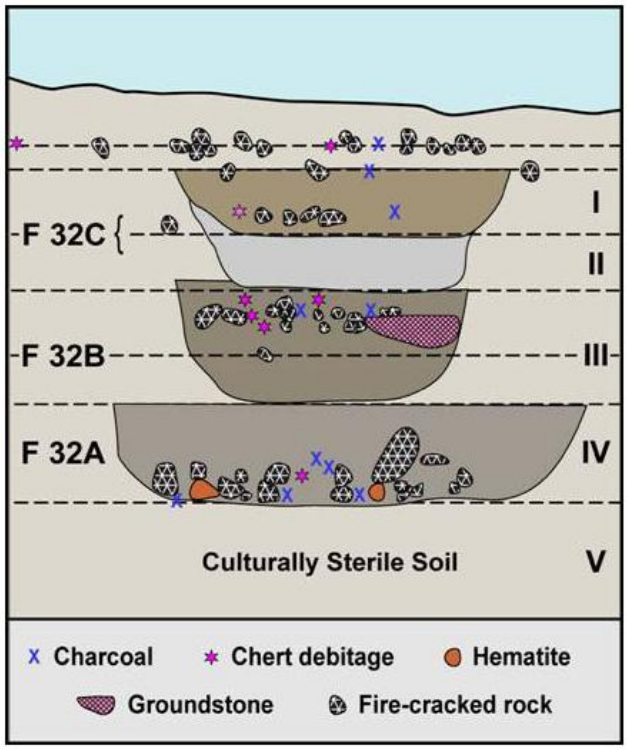

Figure 13. Feature 32 profile. Feature 32C is represented by level I, which contains baked earth, charcoal, and FCR, and level II, ashy soil. Feature 32B is represented by level III and Feature 32A by level IV.

Figure 14. Northern half of Structure 1 highlighted by daub and charred floor.

ture comparable to the Patton house was excavated at the Late Prehistoric Allen 2 site in the Hocking Valley. The Allen 2 house was a 5 m x 3 m, rectilinear wattle and daub house whose posts overlapped those from a previous structure (Formica et al. 2009). Once a fuller description of Early Woodland houses is available, it may be shown that the Middle Woodland houses were similar to later forms built by members of sedentary agricultural communities.

Throughout its history of occupation, Structure 1's dimensions remained consistent: 6 m x 3 m with an interior of 18 m^2. Based on the formula of 3.4 m^2 of living space per individual (Carskadden & Morton 2000:173), Structure 1 had sufficient floor space for five people. Sleeping occurred on benches or mats on floors. Cookware and other domestic utensils may have lined the floor or been placed on benches and/or suspended from the roof rafters. Based on the size of Structure 1 relative to the terrace area, two or three other houses may have completed the full residential community, but were destroyed by construction of the modern house. If so, then 15 to 20 people could have occupied the Patton site at one time during the Middle Woodland period.

The House Lot

No posts were found on the eastern edge of Structure 1. Since this section of the house faced Feature 4 and its associated postholes, we suggest that this was the doorway of Structure 1. While cooking could have been performed in the interior using Feature 32, Feature 4 was used on those days when outdoor cooking was preferred. Spits were used to roast meats in this cooking area. Prepared surfaces were found in this cooking area and some of the areas around the house. This indicates that some portions of the house lot — not simply the interior floor of the house— included tamped soil surfaces produced either intentionally or through use. None of these surfaces, however, yielded evidence of burning as did the floor of Structure 1. This indicates that they were either not roofed spaces or were roofed for shade and not burned prior to a rebuilding episode. An abundance of domestic artifacts, as well as the full reduction sequence for

Figure 15. Structure 1 floor, showing pockets of daub.

chipped stone tools, was associated with these work areas; future analyses will provide insights into the domestic economy of this community.

The Issue of Sedentism

There has been considerable debate concerning the degree of sedentism among Middle Woodland (Hopewellian) societies in the Ohio Valley. Some scholars interpret the archaeological data from sites such as Brown's Bottom #1, Lady's Run, Murphy, and Jennison Guard as sufficient to infer stable and fixed communities (Dancey 1991; Dancey and Pacheco 1997; Kozarek 1997; Pacheco 1997; Pacheco and Dancey 2006; Pacheco et al. 2006, 2009a, 2009b). Others (e.g., Yerkes 2006) view the architectural data from these sites as too limited to infer sedentism. Still others (e.g., Weller 2005) infer seasonal movement from rather solid architectural remains.

Despite the disagreement over data interpretation, most scholars have agreed on the measures of sedentism. Those specific to architecture and site use involve (1) a transition from curvilinear to rectilinear form (Abrams 1989; Gilman 1987), (2) substantial wall construction, (3) recurrent and continuous occupation, and (4) the presence and recurrent use of activity areas and middens. All of these criteria are met by the data from the Patton site and specifically from the house lot on the High Terrace 1.

A transition from curvilinear to rectilinear house form is indicative of a move from temporary seasonal structures to more substantial ones associated with long-term occupation, as this form facilitates house expansion and internal division. The Patton Structure 1 was clearly rectilinear, meeting this criterion.

Figure 16. Charred floor of Structure 1.

Temporary housing adjacent to the Stubbs Earthwork (33WA1) in the Miami Valley of southwestern Ohio has been uncovered. Cowan (2006:44) defined these wooden structures as "houselike" and not "places of everyday domestic abode." Nonetheless, even if temporarily occupied during aggregate ceremonies, they

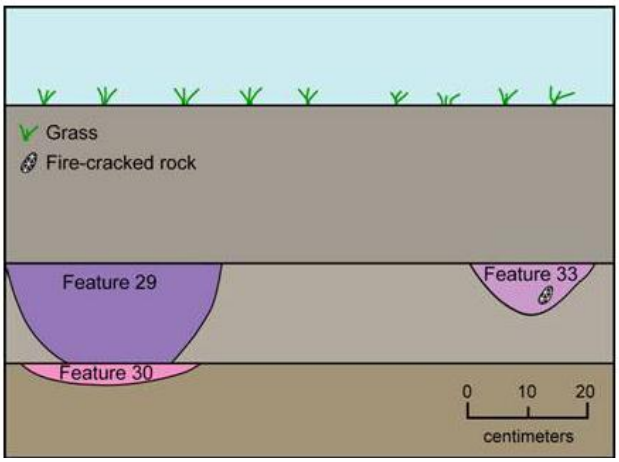

Figure 17. Profile of superimposed posts.

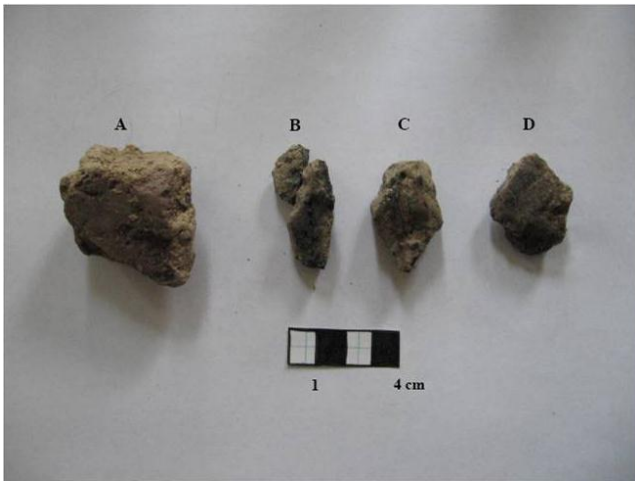

Figure 18. Daub Samples. a) Fragment of floor with daub and burnt earth; b-d) Pole-impressed burnt daub fragments.

conform to the Middle Woodland template of rectilinear form, in contrast to the curvilinear structures dated to the Early Woodland period. The Haven site (33DL1448), along the Olentangy River, also yielded rectilinear structures dating to the Middle Woodland period (Weller 2005). Large rectilinear structures were excavated at Brown's Bottom #1 site (33RO1104) and Lady's Run site (33RO1105) located in the Scioto Valley of central Ohio approximately 1.2 km northwest of the Liberty Earthworks (Pacheco et al. 2006, 2009a, 2009b). Additionally, a large rectilinear corner from the Madeira-Brown site supports this pattern (Ruby et al. 2005:150). Finally, a broad summary of Woodland house forms further confirms this trend (Zink 2009).

A second measure of sedentism is architectural durability and its correlate, energy investment. The thick wattle and daub wall construction of the Patton Structure 1 reflects this relative durability. The suggested 50+ person-days of labor expenditure surpass many of the architectural types associated with nomadic groups (Abrams 1989). This durability of housing is reflected elsewhere as well. The main structure at the Brown's Bottom #1 site measured 13.7 m x 13.7 m and was framed by thick wall posts placed in rock-filled post holes (Pacheco et al. 2006). Similarly, the large structure at Lady's Run site measured 11.8 m x 11.8 m and was also framed by thick wall posts placed in rock-filled post holes (Pacheco et al. 2009b).

Figure 19. Feature 4 during excavation.

Figure 20. Feature 60 profile.

Figure 21. Work area features: Feature 57 (left) and Feature 21 (right).

Third, the Patton house was occupied in three successive episodes. The outline of the first structure was re-used as a template for the subsequent rebuilding effort. Postholes were also re-used. Each building was intentionally burned, evidenced by the daub (Shaffer 1993), and soil was brought in to cover the burnt floor. The interior and exterior hearths were re-used three times, stratigraphically matching the construction episodes of the house.

Finally, a fourth measure of sedentism is the presence and re-use of activity areas and middens (Church and Ericksen 1997; Dancey 1991; Kozarek 1997). Distinct activity areas were identified through the presence of features and these areas were re-used on a recurrent basis. There was a clear spatial redundancy of use in terms of cooking, storage, and other domestic activities. Further, Feature 60, an artifact-rich midden-filled pit on the north side of the house, was used during two episodes of occupation, indicating a spatial redundancy to household discard patterns.

In sum, the architectural data necessary to logically infer a sedentary community are present at the Patton site. In this regard, it is critical to consider the impact of plowing at other sites compared to its absence at the Patton site. Had the Patton site been plowed, non-architectural features would have been evident, but architectural posts would have been scarce if at all present. Thus, the lack of any architectural posts at Jennison Guard (Kozarek 1997), the one architectural post at the Wade site (Church and Ericksen 1997), or the scattered posts at the Murphy site (Dancey 1991) should not be evaluated too strongly in assessing the issue of sedentism.

In addition, the Patton site is located some 3 km (ca. 2 miles) from the Hocking River in an area of relatively low pre-contact population density. The implication is that, if these areas were occupied by sedentary communities building substantial wattle and daub houses, then riverine areas of higher population density most likely also saw sedentary communities.

The sedentary community of 15 to 20 people at the Patton site possessed a territorial affiliation to a fixed residential area, or homestead (Abrams and Freter 2005b). In other words, there was no comparable coeval site elsewhere on the Middle Woodland landscape that equaled the Patton site in terms of residential time and commitment by this community. However, being sedentary did not require these people to live at the Patton site for 365 days per year, year after year (see also Pacheco 2010). The entire community could have opted for movement to a short-term camp site along the Hocking River during the driest weeks of August for greater access to water. Presumably all members of the Patton community stayed in the vicinity of the sacred center of The Plains during times of lineal ceremonies, perhaps living in "mortuary camps" spatially associated with the Middle Woodland earthworks there (Blazier et al. 2005). In addition, individuals certainly visited and

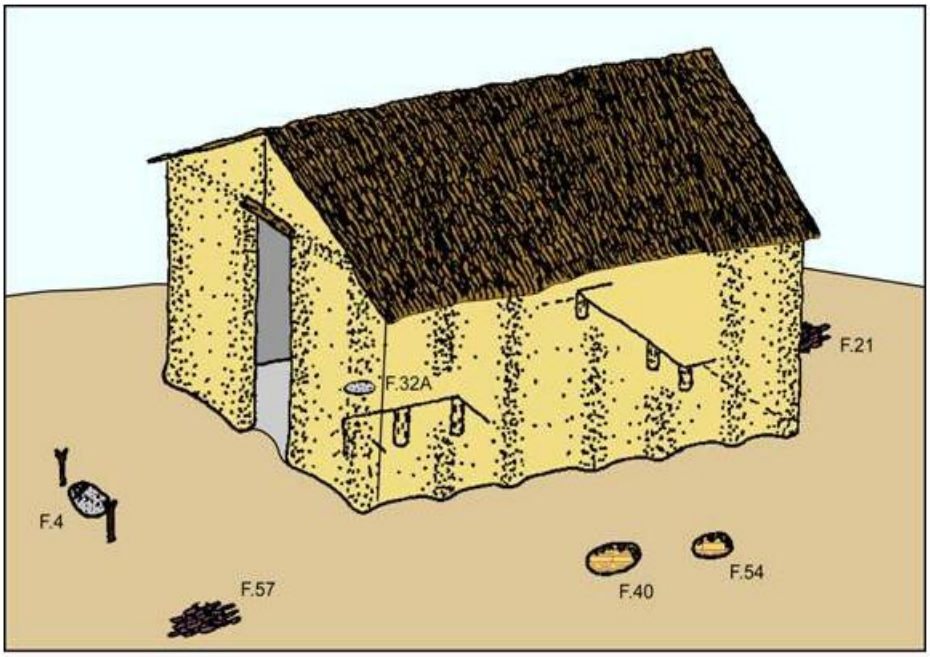

Figure 22. Reconstruction of Structure 1 (drawing by E. Abrams).

stayed with relatives and friends across the region, and particularly along Monday Creek, just as hunting parties went on trekking expeditions in pursuit of large game. The central point, however, remains –the Patton site was the recurrently and continuously occupied home to this particular community.

Conclusion

This paper describes a Middle Woodland domestic structure from the unplowed Patton site (33AT990), southeastern Ohio. Excavations revealed a 6 m x 3 m wattle and daub house with associated features collectively forming a house lot. The evidence contradicts the archaeological expectation that all Middle Woodland houses were built with deeply embedded posts. Instead, we found shallow main posts and a majority of wall posts that did not penetrate the building surface, but were supported instead by a thick daub foundation. This unplowed house, therefore, yielded few postholes and suggests that the scarcity of Middle Woodland houses (Griffin 1996) may simply be a matter of limited research and false expectations.

The durability of the Patton structure suggests a relative permanence of place along the continuum of sedentism. Year-round occupation was possible and likely, and the three episodes of continuous house occupation suggest a use-life of approximately 23 years. Once further analyses of site data are conducted, especially involving ecofactual data, more details concerning seasonal occupation can be inferred.

Acknowledgments. This research is a collaborative effort whose final result was assisted by many individuals. Without the tireless efforts of the Ohio University field school students, who dedicated their 2006 and 2008 summers to excavations at the site, none of this would have been possible. Very special thanks go to David and Marlene Patton for generously permitting excavations around their house, and whose kindness, support and insights contributed significantly to this research. Jarrod Burks conducted the geomagnetic survey that greatly assisted with the excavation research design, while Paul Patton and Tracy Formica contributed their skills in paleobotanical analysis and lithic analysis, respectively. The manuscript was greatly improved by the thoughtful, constructive comments offered by two anonymous reviewers, as well as Brian Redmond's editorial skills. This research was funded in part by the David Hudnell Fund for Archaeological Research at Ohio University and the Ohio Archaeological Council. As always, any errors in fact or logic are the sole responsibility of the authors.

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