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Crane and Loy: Exploring Middle Woodland Settlement and Hopewell Interaction in a Tributary Valley

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ABSTRACT

Stuart Struever's models of Middle Woodland subsistence-settlement and the Hopewell Interaction Sphere influenced decades of research, both in the lower Illinois Valley and beyond. Intensive investigation of the Middle Woodland occupations of Macoupin Creek explored Struever's hypothesized dynamics of subsistence, settlement, and interaction in a tributary watershed to the Illinois River, where most of the data for Struever's models were generated. Through the early to mid-1970s, excavations in the Macoupin Valley focused on the Middle Woodland settlements at the Crane and Loy sites. While aspects of the sites' assemblages have contributed to numerous studies in the past 50 years, this article provides previously unreported information, including site structure, feature contents, and radiocarbon dates. In discussing the significance of the two sites, we draw from recent scholarship on communities to illustrate many similarities between these sites that were certainly places of regular face-to-face interaction among residents simultaneously connected with wider translocal networks. Differences in how multiscalar community-making played out at each site are evident in the pearl/shell bead production, along with increased reliance on EAC crops, at Crane. These data add to discussions of subsistence-settlement variability and Middle Woodland residential communities, while also engaging with Struever's model of Hopewell production and exchange.

KEYWORDS

Havana Hopewell; communities; craft production; Bayesian radiocarbon analysis

Stuart Struever's lower Illinois Valley (LIV) archeological research program represented a landmark effort to systematically investigate Middle Woodland period (50 BCE–300 CE) regional cultural dynamics through a long-term research initiative. Prior to Struever's program, the area was subjected to numerous investigations largely focused on the bluff-top and floodplain mounds that collectively composed "the most conspicuous built landscapes in the Midcontinent prior to Euro-American settlement" (Buikstra and Charles 1999:212). Small, dispersed settlements, typically located some distance from the burial mounds, generally

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received less attention from archaeologists (see Farnsworth 2004). While Struever was not the first to examine Middle Woodland settlements in the Illinois Valley (e.g., Cole and Deuel 1937; McGregor 1958:187, 1959), his geographically extensive, multiscalar, and multifaceted focus on subsistence-settlement systems proved highly influential (see Buikstra et al. 1998; Farnsworth 1990; Farnsworth and Asch 1986; Farnsworth and Atwell 2015; Farnsworth and Koski 1985; McKinnon et al. 2016; Staab 1984; Stafford and Sant 1985; Wiant and McGimsey 1986). In a foundational paper, Struever (1968:288) outlined the three main changes that characterized the Middle Woodland in the LIV as increased population density, complex mortuary ceremonialism, and an intensification of interregional interaction. These tenets served as the basis for his interpretations of subsistence-settlement systems and the structure of Hopewell interaction in the region (i.e., Struever 1968; Struever and Houart 1972).

Investigations in the Macoupin Creek valley (Figure 1), where the Crane (11GE691) and Loy (11GE692) sites (henceforth, Crane and Loy) are situated, were initiated to explicitly examine Struever's hypotheses on Middle Woodland subsistence-settlement and interaction in a major eastern tributary valley of the LIV (Farnsworth 1973:1). The intent was to complement extensive research from the main trench of the Illinois Valley to illustrate similarities or differences between different environmental settings (Farnsworth 1973:1). While research questions and theoretical perspectives have changed through the decades, Struever's work remains foundational, and this overview of Crane and Loy is presented in the spirit of his settlement and interaction models. We also find Struever's (1968:298) discussion of the "Apple Creek community" intriguing, if also only coincidental, given shifts in scholarly focus from settlement patterns and site typology to the nature of Middle Woodland communities (Buikstra and Charles 1999; Charles and Buikstra 2002; McKinnon et al. 2016; Ruby et al. 2005; Smith 1992). Our focus is on understanding how the process of Middle Woodland community formation unfolded at the two sites. Particular emphasis is paid to illuminating variation that may have materialized across the relatively restricted range of space and time represented by Middle Woodland occupations at Crane and Loy.

Broader perspectives on the archaeological scholarship of communities highlight how "communities are created through shared bodily experiences informed by landscapes, and collectively lived relationships are constructed through these material arrangements" (Watts Malouchos and Betzenhauser 2021:147). This relational perspective illustrates how things, including but not limited to domestic architecture and mounds, were not just background settings for community formation but active participants in the process (Harris 2014; King et al. 2024). Community formation was a process situated in places but also including other community members, mounds, ancestor burials, and ceremonial sites across the landscape (Buikstra and Charles 1999; Buikstra et al. 1998; Charles and Buikstra 2002; King et al. 2024; Ruby et al. 2005). The recognition of mound groups as important centers of reference and places of physical interaction for individuals

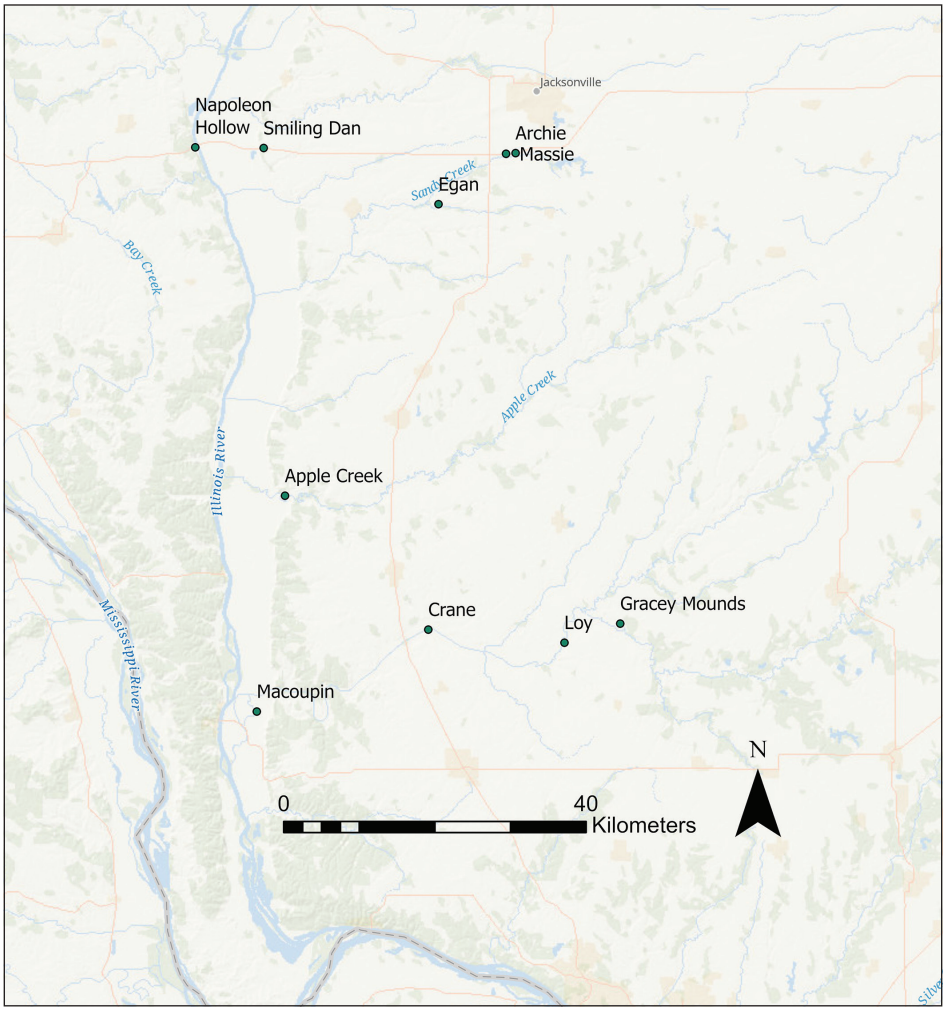


Figure 1. Location of Crane, Loy, and other Middle Woodland sites mentioned in the text.

living in dispersed hamlets illustrates that Middle Woodland peoples were part of translocal communities with "individuals identifying with more than one location simultaneously . . . [and] these communities were constituted through significant flows of people, materials, and symbolic resources, and that they were tied by periodic face-to-face interactions despite the impermanence of" coresidence (Wallis and Pluckhahn 2023:3). Views of communities as necessarily tied to interactions and shared experiences illustrate the importance of practice in community making. As such, communities of practice develop through the engagement of participants in shared practices that simultaneously arise out of specific assemblages of individuals while also producing and reproducing the structure of these interactions (Lave and Wenger 1991). Communities of practice are not static and standardized but continually changing, or reassembled, groups of heterogenous social actors (Lave and Wenger 1991).

In the LIV, Struever's (1968; Struever and Houart 1972) recognition that landscape-level assemblages of settlements, mortuary areas, and ceremonial spaces were interconnected nodes in social interactions foreshadowed scholarship in subsequent decades. For example, Jane Buikstra and Douglas Charles (Buikstra and Charles 1999; Charles and Buikstra 2002) formalized a vision of the importance of dynamic landscapes in the formation and maintenance of Middle Woodland communities that included not only living members but also referenced ancestors and earthen monuments. Ruby and colleagues (2005:122, emphasis in original) further elaborate a model of Middle Woodland communities not as a natural outcome of coresidence but as an "imagined" "*process* of group identity formation wherein individuals actively construct and negotiate group identities and affiliations." Their conceptualization revolved around three types of overlapping communities: residential, symbolic, and sustainable (Ruby et al. 2005). Residential communities are defined by "coresidence or close residence, and regular face-to-face interaction" (Ruby et al. 2005:123). Symbolic communities were maintained by shared symbols that reflect mutual political, economic, social, and/or ideological principles. Finally, sustainable communities represent minimum population sizes to maintain long-term biological viability and prevent incest (Ruby et al. 2005:123). Ultimately, Ruby and colleagues focused on determining the types of communities that may have gathered at different mound centers and comparing Middle Woodland community organization between three different geographic regions. Our examination of Crane and Loy offers an opportunity to build on this by comparing residential communities within a single region.

Crane, Loy, and Stuart Struever

The second author became interested in the Middle Woodland subsistence-settlement dynamics in tributary valleys soon after starting as a field surveyor with Struever's Foundation for Illinois Archeology in the late 1960s. During the summer of 1969, Farnsworth systematically documented Middle Woodland sites in the Macoupin Valley using interviews with artifact collectors and landowners in conjunction with surface surveys (Farnsworth 1973). As stated in the opening, the Macoupin Valley was chosen to test Struever's hypotheses on Middle Woodland subsistence-settlement and interaction in a tributary valley (Farnsworth 1973:1). Crane and Loy were initially recorded at this time (see Figure 1). Following the 1969 survey, Farnsworth conducted more intensive investigations at the two sites to provide further insight into Middle Woodland subsistence-settlement patterns and Hopewell interaction than could be obtained via surface collections. The Foundation for Illinois Archeology operated field schools at the sites from 1971 through 1975 with support from an NSF Doctoral Dissertation Aid Grant awarded to Farnsworth (Farnsworth 1973:ix). These investigations were meant to provide the data for Farnsworth's PhD dissertation at the University of Michigan, but

Struever had other plans. In 1974, during a conversation that took place in Ken's driveway, Struever asked Farnsworth to leave doctoral pursuits behind in order to lead the new highway archaeology program in Kampsville. Farnsworth accepted the opportunity and served as director of the Center for American Archeology's contract archaeology program for the next 25 years.

Plans for analysis and publication of Crane and Loy were therefore changed, though certainly not forgotten. Numerous scholars have reported aspects of the sites' assemblages, including botanical remains (D. Asch and N. Asch 1985; N. Asch and D. Asch 1985; Farnsworth and Asch 1986), dog burials (Cantwell 1980), galena (Walthall 1981), copper (Emerson and Farnsworth 2022; Farnsworth and Atwell 2015:Figure 4.18; Winters 1981), stone pipes (Farnsworth et al. 2004), ocher (Pierce and Popelka-Filcoff 2023), soil resistivity (Carr 1977, 1982), figurines (Miller 2024), and radiocarbon dates (Conard et al. 1984; Farnsworth and Asch 1986; King et al. 2011), as well as brief discussion of their location and characterization as domestic settlements in other sources (Asch et al. 1979; Calentine and Simon 2006; Farnsworth 1973, 1990:15–16; Farnsworth and Atwell 2015:185; Mueller 2013:34; Smith 1992:228–229).

To supplement previous and ongoing research from each site, we provide overviews of Crane and Loy through a presentation of previously unpublished excavation plans, feature morphology, feature content, and radiocarbon dates. Given the size of the sites and the vast amount of archaeological material recovered, we have chosen to focus on features and their "diagnostic" contents. A concurrent research project in conjunction with the data presented here focuses on use-wear analysis of lamellar blades, drills, and other chipped-stone tools (Miller 2025; Miller et al. 2022). As the Crane and Loy assemblages are permanently curated in the public trust at the Illinois State Museum, we hope that this article will also stimulate further analyses.

Chronology and Components at Crane and Loy

Temporally diagnostic materials and radiocarbon dates affirm major Middle Woodland components at each site (Table 1 and Supplemental Tables 1–12). However, ceramic, lithic, and radiocarbon evidence point to minor early Late Woodland components at both, along with a Late Woodland Jersey Bluff component at the Loy site. Given the apparent temporal distinction between radiocarbon assays associated with different ceramic types, it is reasonable to discuss these as separate periods of occupation. For example, uncalibrated radiocarbon intercepts for dates associated with Middle Woodland period Havana, Hopewell, Pike, and Baehr series ceramics at each site span about 200 years (1960 BP to 1710 BP at Crane and 2130 BP to 1920 BP at Loy) with gaps that are no larger than 50 years, and usually less, from the intercept of one sequential date to the next (Supplemental Tables 4 and 8). Two radiocarbon dates from each site were processed from pits with early Late Woodland Chesterfield series ceramics (Farnsworth et al. 2016:340–343). As

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Table 1. Results of OxCal Bayesian Model of Calibrated Radiocarbon Dates from Crane and Loy.

	Havana/Hopewell				Chesterfield				Jersey Bluff			
	Start		End		Start		End		Start		End	
	68%	95%	68%	95%	68%	95%	68%	95%	68%	95%	68%	95%
Crane	115–225 CE	25–260 CE	220–335 CE	175–420 CE	485–690 CE	320–756 CE	640–850 CE	590–1210 CE	—	—	—	—
Loy	70 BCE–30 CE	150 BCE–80 CE	5–115 CE	30 BCE–185 CE	170–415 CE	60–510 CE	420–685 CE	265–1070 CE	985–1135 CE	835–1200 CE	1085–1245 CE	1040–1375 CE

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expected from these ceramic data, the four assays returned early Late Woodland dates (Farnsworth et al. 2016:343). At Crane, there is a 300-radiocarbon-year hiatus between the uncalibrated intercepts for the most recent Havana/Hopewell date and the earliest Chesterfield series date. At Loy, the gap is 200 years (Supplemental Tables 4 and 8). At Loy, four radiocarbon dates from features with Late Woodland Jersey Bluff ceramics returned dates consistent with other Jersey Bluff sites in the region (Farnsworth et al. 1991:89).

Bayesian modeling was utilized to help further refine the chronology for each site. Ceramic evidence discussed above led us to model each site as potentially overlapping phases since there is no reason to assume that Crane and Loy represent sequentially occupied settlements by the same residents. Sequential phases were assumed within each site based on the ceramic data. These included Havana/Hopewell to Chesterfield phases at Crane and Havana/Hopewell, Chesterfield, and Jersey Bluff phases at Loy. Data was modeled using OxCal v. 4.4, the IntCal20 calibration curve, and a charcoal outlier model (Bronk Ramsey 2009; Reimer et al. 2020). Modeled results returned strong agreement indices (A_{model} = 111.3, $A_{overall}$ = 108.4). These results indicate the Middle Woodland occupation at Loy is likely earlier than Crane, with no overlap between Middle Woodland phases at 68% probability (see Table 1). The Span command estimates the Middle Woodland occupation at Crane about 0–150 (68%) or 250 years (95%) and Loy at 0–100 (68%) or 200 years (95%).

Modeled results also indicate that the Chesterfield series Late Woodland dates fit well as separate phases from Havana/Hopewell at both sites. Since fewer dates are available for the Chesterfield phases at both sites, the model produced wide ranges (see Table 1), but they are consistent with Farnsworth and colleagues' (2016:340–343) estimate of the Chesterfield series sequence in the Macoupin Valley to 300–350 AD based on the association of Chesterfield ceramics and a late Middle Woodland ceramic platform pipe type Hopewell-17 at the nearby Gracey Mound 4 (Farnsworth 1973:40; Farnsworth et al. 2016:340–343). Similarly, the Jersey Bluff series dates from Loy fall securely within the accepted Jersey Bluff sequence for the lower Illinois Valley and its tributaries (e.g., Farnsworth et al. 1991; Studenmund 2008).

Site Setting, Excavation Plan, and Feature Data

The Crane Site (11GE691)

The Crane site is located on a rise in the floodplain south of Macoupin Creek, approximately 16 km east of the Illinois Valley, and covers an area of about 2.5 ha (see Figure 1; Figure 2). The Macoupin Valley is nearly 2 km wide at this point, and a backwater lake existed directly to the east of Crane prior to channelization of Macoupin Creek in the early twentieth century (e.g., Andreas, Lyter and Company 1873:16). Methods of investigation included gridded surface collection and excavation of random test units followed by larger excavation blocks, as well as limited

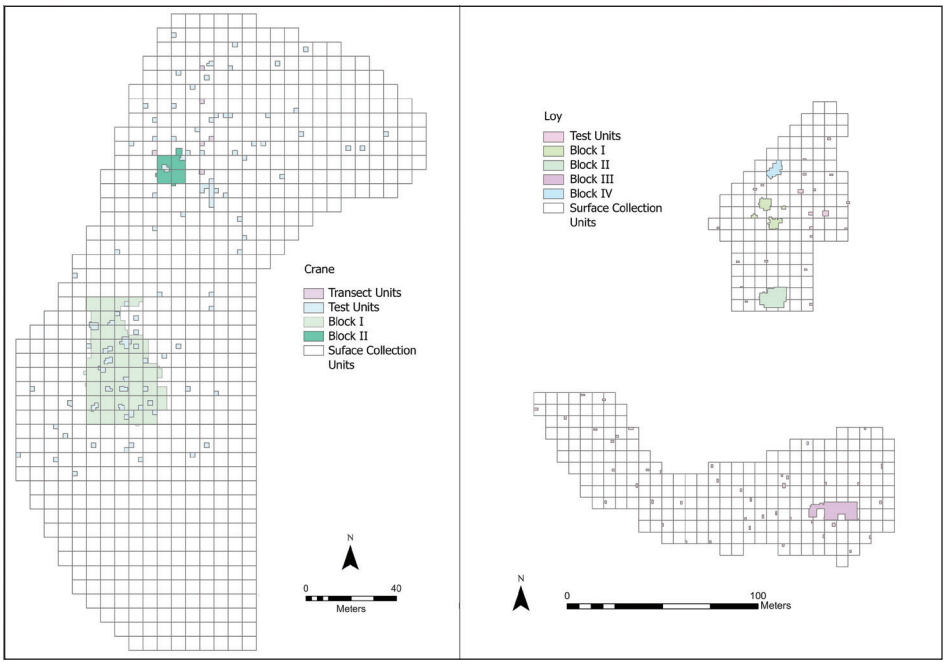


Figure 2. Surface collection and excavation units at Crane and Loy. See Supplemental Figures 1 and 2 for test unit numbers.

geophysical survey and ground truthing of identified anomalies (see Carr 1982). All excavated soil was screened through ¼-inch mesh except samples taken for flotation (D. Asch and N. Asch 1985).

Excavations investigated approximately 10% of the site, based on site size estimated from the total surface pickup. These excavations identified 233 pit features (Figure 3). Over 95% of temporally diagnostic ceramics and lithics recovered from features at the Crane site are Middle Woodland. One hundred eighty-three pit features contained solely Middle Woodland diagnostic materials. One pit (TI-4F1) with mixed Middle and Late Woodland materials contained over 99% Middle Woodland materials and a Middle Woodland radiocarbon date (see also Farnsworth and Atwell 2015:79, 83). Thus, the Middle Woodland component is assumed to be composed of 184 pit features.

All feature plan and profile shapes along with length, width, depth, and any primary functional indicators are listed in Supplemental Table 4, while feature profiles are presented in Supplemental Figures 4–10. Feature profile shape categories were based on the types applied to other Middle Woodland sites in the region (i.e., Stafford 1985). At Crane, slightly more than half the Middle Woodland features (51%) were basin shaped in profile (Supplemental Table 4). In-slanted, flat-bottomed pits (27%) and vertical-sided, flat-bottomed pits (13%) were the next most numerous types. Bell-shaped and irregular pits were relatively infrequent, at less than 5% each.

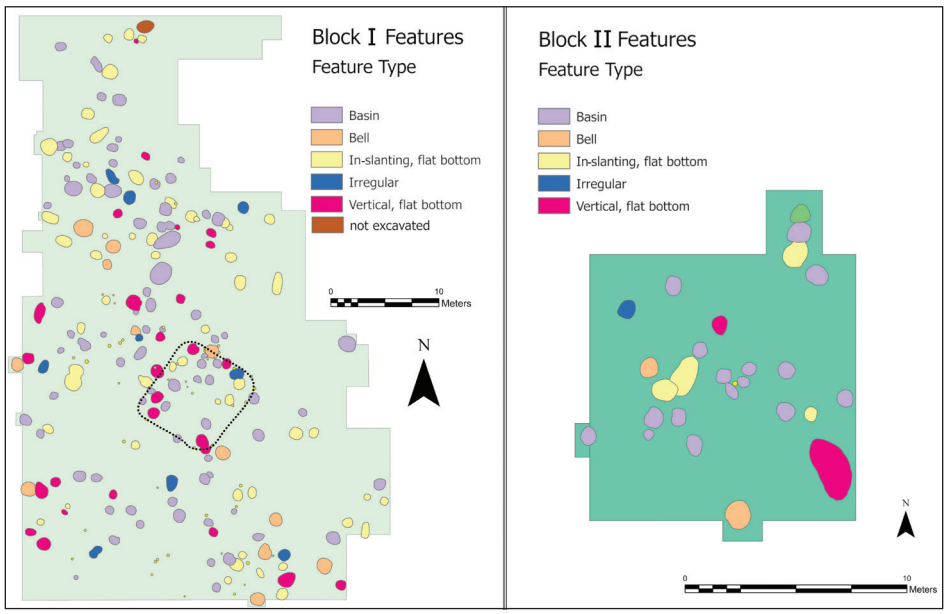


Figure 3. Plan view of features in excavation Blocks I and II at Crane, with generalized structure outline in Block I. See Supplemental Figure 3 for plan maps that include feature numbers.

A probable Middle Woodland structure was identified during excavations in Block I at Crane (see Figure 3; see also Asch et al. 1979:83; Carr 1982:374). The structure is roughly square and measures approximately 8.5 m in length and width; it is similar in size to other domestic structures in the LIV (Farnsworth and Koski 1985; Smith 1992). The structure at Crane is reminiscent of the "hypothetical structure outlines" documented at Massey (Farnsworth and Koski 1985:46, Figure 3.5) and not as complete as structure outlines identified at Apple Creek or Smiling Dan (Smith 1992:9.26). It may include over 20 posts, nearly all which would have been exterior. Pit features also tend to cluster along the exterior, helping define the square structure outline where posts were not identified and indicating that the center of the structure would have been largely open floor space. Six of the pits have evidence of thermal activity and therefore may have served as hearths or areas where hearth debris from nearby was discarded. The proposed structure outline overlaps with 25 pit features. The artifact assemblages from 20 of these pits contain solely Middle Woodland diagnostic ceramic and lithic items. Five pits, all located in the NW or SW corners of the proposed structure, contain a mixture of Middle and Late Woodland diagnostics.

The dozens of additional post molds in Block I at Crane, all but two of which are in the southern half of the block, may indicate the presence of additional structures. Of course, some of the posts may represent screens, drying racks, or similar features (Smith 1992:Figure 9.9). Additionally, given the intercutting of features and the span of radiocarbon dates, some seemingly patterned arrangements of pits may represent fortuitous relationships of features used years apart.

The recovery of numerous mud-dauber nests in Block I provides further evidence for the presence of roofed structures at Crane (i.e., Krakker 2012). Mud-dauber nests were recovered from four features with only Middle Woodland diagnostics including I26–6F1 within the proposed structure outline as well as 171F1, I45–1F1, and I24–4F2 (n = 2). Mud-dauber nests were also recovered from three additional features with mixed Middle and Late Woodland material, including I32–3F1 in the structure area and two pits over 10 m to the north (I10–7F1 and I15–5F1; Supplemental Table 1). That only one post was identified in Block II at Crane and no mud-dauber nests were recovered from this block make it unlikely that any structural remains are present in this area (see Figure 3).

Most pits at Crane appear to have been used secondarily for refuse disposal, making primary use interpretations difficult. Further functional information can be gleaned from a handful of pits at each site. For example, three dog burials were recovered from the excavations at Crane (Cantwell 1980:Table 1). One partially articulated dog was recovered in I10–4F2, possibly as an intrusive burial after the main use of the feature. Another dog was buried in a middle layer of I40–9F1, with refuse-rich feature fill above and below the dog. 151E1F1 contains a dog burial whose caudal vertebrae, pelvis, and femur were disturbed as this portion of the pit was intruded by 151E1F2. Among other pits of note is TI4-F1, which contained copious amounts of mussel shells, ceramics, chipped-stone tools, and a bear mandible without teeth (Farnsworth and Atwell 2015:Figure 4.11). This may indicate feasting, possibly in association with ceremonial craft production involving bear teeth. Finally, a lens of carbonized acorn shells in 104F4 represents "thousands of acorn shell fragments . . . [representing] a boom-or-bust" pattern of acorn procurement (N. Asch and D. Asch 1985:134).

Late Woodland Component

At Crane, all features with temporally diagnostic ceramics included Middle Woodland sherds, yet several contained Late Woodland sherds or arrow points (Supplemental Tables 1 and 2; Supplemental Figure 11). Only one feature (61F1) was dominated by Late Woodland ceramics. This feature, located several meters west of EBI, was a relatively large pit with vertical sides and a flat bottom. Radiocarbon dates from this feature and another large bell-shaped pit (I38–4F1), located nearby on the western edge of EBI, returned early Late Woodland dates. The assemblage from I38–4F1 contained mostly Havana series ceramics along with three dozen Late Woodland sherds and two arrow points.

Five additional features contained two dozen or more Late Woodland sherds, occasionally associated with temporally diagnostic arrow points. These features were all relatively large (i.e., greater than 1 m in length) and located in EBI (I28–3F1 and I15–5F1) as well as in the northern section of the site closer to EBII (i.e., 147F1, TIV17E1F1, TIV18F2). Thirty-one additional features contained 10 or fewer Late Woodland diagnostics (i.e., ceramics or arrow points). These features were

seemingly randomly scattered across EBI with only five features in or near Block II in the northern portion of the site, mirroring the distribution of Late Woodland materials from surface collections (Carr 1982:189). Feature profile shapes include basins (31%); in-slanting, flat bottomed (27%); vertical, flat bottomed (20%); and bell (16%), as well as a handful of irregular-shaped profiles. The mean length, width, and depth of Late Woodland pits at Crane are larger than Middle Woodland pits at Crane (Supplemental Table 4).

It is difficult to characterize the Late Woodland component at Crane due to the dispersed patterning of features and lack of identifiable structures. Based on the early Late Woodland radiocarbon dates and the dearth of Jersey Bluff ceramics (n = 16 from the feature assemblage), the Late Woodland occupation at Crane appears to be relatively early.

The Loy Site (11GE692)

The Loy site is located upstream from Crane, about 30 km east of the Illinois Valley, on a terrace overlooking Macoupin Creek to the west (see Figure 1). The Macoupin Valley is approximately 1.5 km wide here, while a small lake (Round Lake, today a seasonally inundated wetland) is present across the Macoupin about 1 km from Loy. Loy consists of north and south spatial components that are separated by a small drainage gulley (see Figure 2).

Methods of investigation included gridded surface collecting and excavating random test units followed by larger excavation blocks (see Figure 2). All excavated soil was screened through ¼-inch mesh except samples taken for flotation (D. Asch and N. Asch 1985). Excavations covered approximately 3% of the site and identified 137 features.

Feature plan and profile shape, along with length, width, and depth and any primary functional indicators for each feature, are listed in Supplemental Table 8, while feature profiles are presented in Supplemental Figures 12–16. Of 137 features at Loy, 104 pits contained solely Middle Woodland diagnostic artifacts (Supplemental Tables 5–7). Forty-nine percent of these Middle Woodland pits were basin shaped in profile, followed by vertical sided flat-bottomed (18%), in-slanting flat bottom (17%), irregular (8%), and bell-shaped pits (6%). The mean lengths, widths, and depths of Middle Woodland pits at Loy were less than corresponding measurements for Middle Woodland pits at Crane (Supplemental Tables 4 and 8).

As at Crane, most pits at Loy appear to have been used secondarily for refuse disposal, making primary functional interpretations difficult. Cantwell (1980:484) reports a dog burial (F. 173) in a probable Middle Woodland structure in Block I at Loy. Two radiocarbon dates place F. 173 in the Middle Woodland. Yet the associated structure (F. 28) returned a Jersey Bluff–age radiocarbon date, and most features in this block contain a mixture of Middle and Late Woodland diagnostic artifacts. If this is a structure, portions of the north and west sides were unexcavated but

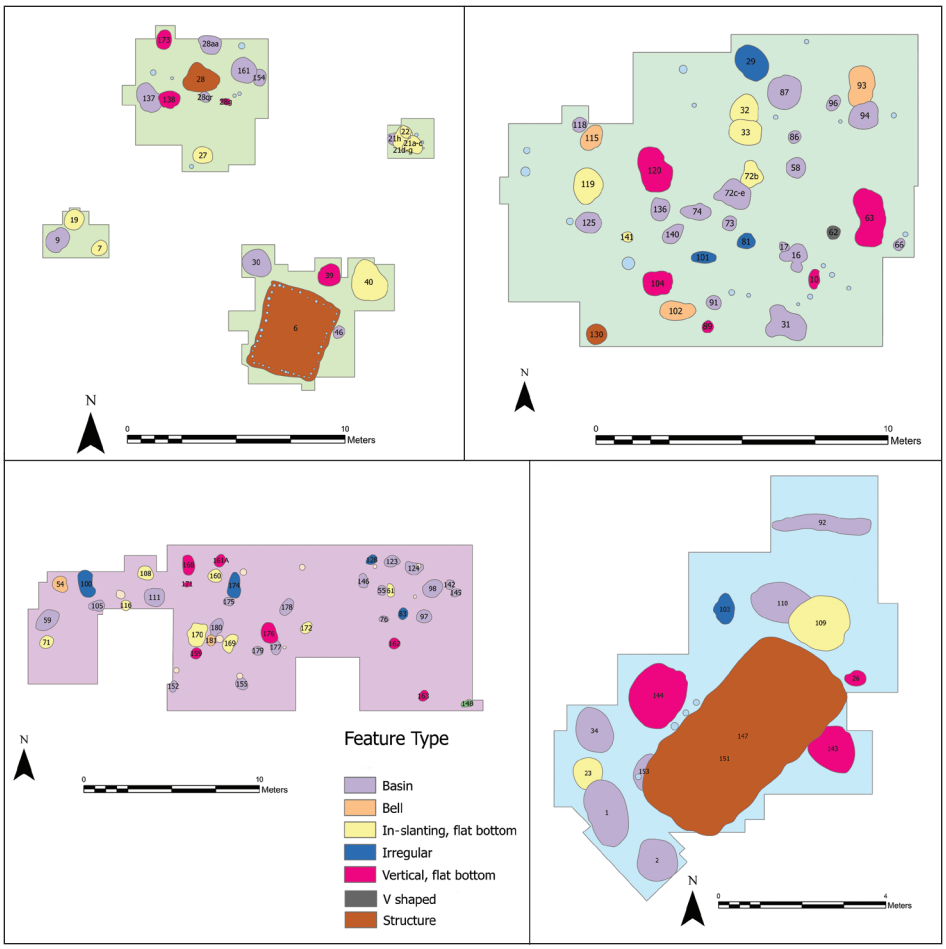


Figure 4. Plan view of features in excavation Blocks I, II (*top row, from left*), III, and IV (*bottom row from left*) at Loy.

indicative of an oval outline 3 m wide and more than 5 m in length associated with five posts (see Figure 3). If it is Middle Woodland, given the incomplete excavation, this feature cluster may also fit Smith's (1992:Figure 9.9) "open ended shelter" category as well. According to Smith (1992:213), these "open ended arc or C-shaped post hole patterns . . . likely functioned as warm season open-sided shelters." Another possible Middle Woodland structure may be traced in Block II associated with an approximately 9 m diameter ring of pits and 18 posts (Figure 4). All dates and pottery types from nearly all features from Block II are Middle Woodland.

Late Woodland

The Late Woodland component at Loy is more pronounced than at Crane (see Table 1; Supplemental Tables 5–8; Supplemental Figure 17). Nevertheless, all features

with diagnostic ceramics at Loy contained Middle Woodland sherds. Thirty-three pit features contained Late Woodland ceramics or arrow points in their assemblages. Many of these pits are basins (42%), while in-slanting flat bottom (27%), vertical flat bottom (18%), bell-shaped (6%), and irregular-shaped (6%) pits are also present. The pits with Late Woodland materials were, on average, larger in length, width, and depth than Middle Woodland pits at Loy. There is a strong spatial patterning, with the majority of pit features in the southern excavation blocks (I and III) containing solely Middle Woodland diagnostic artifacts; the majority of features in the northern excavation blocks (I and IV) contained a mixture of Middle and Late Woodland ceramics, a pattern mirrored by the surface collection data from the site (Loy Site Total Surface Pickup Distribution Maps, Illinois State Museum [ISM] Acc #2010–238, Springfield).

The assemblages from 14 of the pit features with Late Woodland diagnostic artifacts contained Chesterfield ceramics but no Jersey Bluff sherds. Seven pit features contained Jersey Bluff but not Chesterfield sherds, while 12 feature assemblages contained both series, with Jersey Bluff nearly always outnumbering Chesterfield ceramics in these cases (Supplemental Table 5). Four features with Jersey Bluff sherds also contained shell-tempered Mississippian sherds.

Two of the features with Chesterfield but not Jersey Bluff ceramics (F. 40 in Block I and F. 110 in Block IV) returned Chesterfield age radiocarbon dates (Supplemental Table 8). Radiocarbon dates from four features (Features 9, 19, 28, and 64) with Jersey Bluff sherds returned correspondingly late dates, with Features 9 and 28 containing shell-tempered Mississippian sherds as well. Three Jersey Bluff age radiocarbon dates came from features in Block I. The other date was in the south-central portion of the site (TU85) west of Block III, indicating later use of that landform, even though the majority of features in the excavation blocks there are Middle Woodland.

Several Late Woodland structures were identified at Loy (see Figure 4). While no dates were obtained from the Late Woodland structures, they appear to be Jersey Bluff associated based on pottery-sherd ratios (see also Farnsworth et al. 1991:86). A complete outline of posts in Feature 6 at Loy clearly indicates a structure, but no internal features were present. The relatively high percentage of Late Woodland Jersey Bluff sherds in the Feature 6 assemblage, along with the presence of a shallow but distinctive structure basin with single-post walls, is consistent with other Late Woodland Jersey Bluff structures (e.g., Studenmund 2008:326). While fewer posts were identified, Feature 147's similar makeup, along with dozens of Jersey Bluff sherds, a spindle whorl, and a Jersey Bluff ear spool, as well as two shell-tempered Mississippian sherds, indicates this is a later Late Woodland structure.

The six mud-dauber nests from Loy were recovered about 9 m west of Feature 6, a Late Woodland structure, in Feature 19. Feature 19 was a pit that contained twice as many Jersey Bluff sherds as Middle Woodland sherds, while returning both Middle Woodland and Late Woodland radiocarbon dates (Supplemental Tables 5 and 8).

Feature Artifact Assemblage Overviews

Tallies of general artifact types from each feature are presented in the supplemental tables. This information was extracted from artifact tabulation sheets curated with the Crane and Loy materials at the Illinois State Museum. While we have no reason to question their accuracy, tabulations and IDs have not been rechecked as part of this analysis. Thus, these are meant to give a general picture of feature contents at Crane and Loy, while also stimulating additional analysis.

Ceramics

Griffin's (1952) typology remains foundational for classifying Middle Woodland ceramics in the Illinois Valley and associated region (for thorough historical reviews, see Farnsworth and Atwell 2015:2–3; Morgan 1985:183–189). Middle Woodland pottery sherds are typically sorted into dichotomized categories of utilitarian, grit- and/or sand-tempered Havana series jars and small, thin-walled, typically limestone-tempered, often elaborately decorated Hopewell series jars and bowls (Figures 5 and 6). Other limestone-tempered series ceramics include relatively thicker-walled combed or rocker-stamped jars known as "Pike" and thinner-walled varieties referred to as "Baehr" (Farnsworth and Koski 1985:124; Griffin 1952; Morgan 1985).

A preliminary overview of sherd counts and a tabulation of minimum vessel count on Havana and Hopewell series sherds from features at Crane and Loy are presented here as a precursor to future, more complete ceramics reporting (see Supplemental Tables 9–12). One or more Havana series sherds were recovered from 219 features at Crane compared to 99 features with Hopewell sherds and 103 with Pike/Baehr sherds. Only one feature at Crane contained a majority of Pike/Baehr sherds (II4–7F1). At Loy, 107 features contained Havana series sherds, 56 features contained Hopewell series sherds, and 49 contained Pike/Baehr sherds. The relative frequencies of sherds of Havana, Hopewell, Pike, and Baehr series pottery are similar between Crane and Loy (Table 2; Supplemental Tables 10 and 12). The high proportion of Havana series ceramics and concomitantly low occurrence of Hopewell series sherds are consistent with a domestic assemblage as opposed to mound center or ceremonial contexts, such as those found at Peisker and Napoleon Hollow (Farnsworth 1990:113; Farnsworth and Koski 1985:Table 5.1; Morgan 1985; Staab 1984; Struever 1968:301; Wiant and McGimsey 1985).

The minimum vessel count replicated Morgan's (1985:190) methods of identifying separate vessels using lip-rim sherds (>1.5 cm), with multiple refit sherds or those with shared characteristics of paste, temper, form, and surface treatment from each feature assigned to one vessel (Supplemental Tables 9 and 11). At Crane, 162 Havana series vessels along with 23 Hopewell series vessels were identified in features (Supplemental Table 9). At Loy, 119 Havana series and 40 Hopewell series vessels were identified (Supplemental Table 11). Thus, proportionally more Hopewell series vessels were recovered from Loy than from Crane. Hopewell series vessels also account for a higher proportion of ceramics at each site than indicated



Figure 5. Examples of Havana (*top row*), Hopewell (*bottom left*), and Baehr (*bottom right*) series pottery from Crane. Images are not to scale. (Photos by Ken Farnsworth.)

by the sherd-count tallies. This trend has been noted elsewhere, such as at Smiling Dan and Napoleon Hollow, where identified Hopewell series vessels outnumber Havana series vessels (Morgan 1985:Tables 12.3, 12.23) and may relate to the generally larger size of Havana vessels producing greater numbers of broken sherds.

The most common surface treatment for Havana series vessels at both Crane (38% of Havana vessels) and Loy (43%) was exterior cordmarking or cord-wrapped-stick (CWS) impressions (Supplemental Tables 9 and 11). Havana straight dentate-stamped vessels, such as that associated with Naples-stamped variety, were more common at Loy (28%) than at Crane (15%). Ovoid-stamped vessels were substantially more common at Crane (32%) than at Loy (1%). Crescent-stamped vessels,



Figure 6. Examples of variation in Havana stamped sherds including straight dentate (*top row*) and ovoid stamped (*bottom row*). (Photos by Ken Farnsworth.)

such as Neteler and Hummel, were relatively uncommon at each site but somewhat more frequent at Crane (5%) than at Loy (1%; Supplemental Tables 9 and 11).

Hopewell series vessels with crosshatched rims were most frequent at Crane (56% of Hopewell vessels) and Loy (70%). Montezuma punctate vessels were somewhat more common at Crane (21%) than at Loy (15%), while relatively few vessels were classified into other Hopewell types, such as Brangenburg rims, bowls, or zoned dentate-stamped jars (Supplemental Tables 9 and 11).

The above overview of the Crane and Loy ceramic assemblages offers the opportunity for a preliminary comparative analysis with other published Middle Woodland assemblages from the LIV. The high proportion of Havana series

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Table 2. Frequencies of Ceramic Sherds at Middle Woodland Sites in the Lower Illinois Valley.

Ceramic Type	Crane Features	Crane Total*	Loy Features	Loy Total*	Macoupin*	Smiling Dan*	Napoleon Hollow*	Peisker*
Havana	89%	91%	86%	88%	77%	23%	54%	70%
Hopewell	3%	2%	4%	3%	1%	9%	21%	14%
Pike-Baehr	4%	4%	5%	4%	18%	40%	7%	3%
Middle Woodland Type Indeterminate	4%	3%	5%	5%	4%	28%	18%	2%

*Adapted from Farnsworth and Koski (1985:Table 5.1).

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ceramics from Crane and Loy are more similar to Middle Woodland assemblages from sites in the lower Illinois Valley, specifically Macoupin, than to excavated Middle Woodland settlements in other tributary valleys such as Massey, Archie, and Egan, where Crab Orchard–related ceramics dominate the assemblages (see Table 2; Farnsworth and Koski 1985; Fortier 2013; Morgan 1985). The proportion of Hopewell series sherds is substantially lower at Crane and Loy than at Smiling Dan and more similar to that at Macoupin, perhaps not surprising given the geographic proximity of Macoupin to the mouth of the Macoupin Valley (Farnsworth and Koski 1985:Table 5.1). The proportion of Hopewell series pottery in the Crane and Loy assemblages rises substantially when viewed from the perspective of minimum vessel count, but unlike at Smiling Dan and Napoleon Hollow (Morgan 1985), Havana series vessels still outnumber Hopewell series vessels at Crane and Loy. Pike and Baehr sherds are also fewer at Crane and Loy than at other Middle Woodland settlements in the region (Farnsworth and Koski 1985:Table 5.1).

For vessels with Havana series surface treatments, others have included Naples dentate stamped as a common Middle Woodland decorative type in the LIV (e.g., Farnsworth and Atwell 2015:2; Griffin 1952:110; Morgan 1985:198). Based on the minimum vessel count, dentate stamping at Crane and Loy appears to be less frequent than at the Smiling Dan and Napoleon Hollow sites (Morgan 1985:Tables 12.3, 12.23). Cordmarked and CWS vessels are more common at Crane and Loy than at Smiling Dan and Napoleon Hollow. While ovoid-stamped sherds occur in small quantities at Crane and Loy, they are seemingly absent from Smiling Dan (Morgan 1985). Griffin (1952:112) postulated that ovoid stamping is characteristic of "early and middle Hopewell in Illinois and disappears during late Hopewell," perhaps providing a clue to explore future avenues elucidating chronological relationships between sites. Crescent-stamped varieties are similarly infrequent in Morgan's (1985: Tables 12.3, 12.23) tabulations for Smiling Dan and Napoleon Hollow, while these are present on small numbers of vessels at Loy and Crane. Others have noted a temporal transition from crescent to straight stamping with crescent stamping (i.e., Neteler) more common at early Middle Woodland (ca. pre-50 BCE) sites in the central Illinois Valley and straight dentate stamping (i.e., Naples) appearing later in the Middle Woodland period in the Illinois Valley (Cantwell 1980:111–115; Farnsworth and Atwell 2015:2; Griffin 1952:104). The paucity of crescent stamping at sites in the lower Illinois Valley, such as at Crane, Loy, Smiling Dan, and Napoleon Hollow, fits this scenario as the region is postulated to have been settled by Middle Woodland groups after 50 BCE (Farnsworth and Atwell 2015:2–3). The most common decorative types of Hopewell series vessels at Crane and Loy are also the most common types at Smiling Dan and Napoleon Hollow—crosshatched rims, Montezuma Punctate, and zoned dentate—though the relative percentages of sherds vary slightly between the sites (Morgan 1985:Table 12.23).

At Crane, early Late Woodland Chesterfield sherds and Late Woodland Jersey Bluff sherds are present but exceedingly rare. These types are 30 times more frequent at Loy than at Crane. The presence of another Chesterfield site (Maizie

11JY87) a few hundred meters northeast of Loy, and Chesterfield ceramics from the Gracey Mound group (11MP1), approximately 6 km straight-line distance east of Loy, indicate a wider pattern of similar early Late Woodland temporal activity in this area of the Macoupin Valley (Farnsworth et al. 2016:343). Numerous sites with Jersey Bluff pottery have been documented in the Macoupin Valley (e.g., Farnsworth et al. 1991:Table 5.8), with Starr (11MP3) village and mounds (17 km straight-line distance east of Loy) as the most widely reported.

Lithics

Lamellar blades were the most numerous chipped-stone tools from features at both Crane and Loy (Supplemental Tables 2 and 6). The relative frequency of blades at each site was similar as the Crane feature assemblage has a 1.5 blade-to-biface ratio, while the ratio at Loy was 1.6. Eight blade cores were recovered from Crane features, while only one was recovered from features at Loy (Supplemental Tables 2 and 6).

As part of the ongoing analysis of the chipped-stone tool assemblage from Crane and Loy, we recognized a relatively high ratio of chipped-stone drills to lamellar blades in the overall assemblages (i.e., surface collection, test unit, and feature assemblage). Full details on the use wear will be presented in a forthcoming article, but results indicate that drills and lamellar blades were multipurpose processing and manufacturing tools used on a wide range of materials at each site (Miller and Farnsworth 2023; Miller et al. 2022). This is consistent with other use-wear studies of Middle Woodland lamellar blades (e.g., Miller 2014, 2015, 2018, 2020; Odell 1994; Yerkes 1990, 1994). A major difference between the two sites is the focus on drilling pearl/shell at Crane. Use-wear results indicate that 40% of drills from Crane were used in drilling pearl/shell, a pattern not observed at Loy. Drills used on pearl/shell at Crane were spatially dispersed with no obvious concentrations. Likewise, drills were not specialized tools as some were used to drill bone/antler/tooth, stone, and wood and to perforate hides. Since perforated pearl/shell beads have been recovered from numerous Middle Woodland mounds, it is reasonable to assume that these drills were used in the manufacture of beads, especially since the tip measurements of the Crane drills (mean = 2.5 mm; range = 1.1–4.7 mm) fall within the range of variation for the diameters of drilled pearl/shell beads (1–5 mm; Farnsworth and Atwell 2015:64–67).

Other general aspects of the chipped-stone assemblages include the recovery of chipped-stone bifaces with use-related polish from Crane features but not from Loy; polished flakes were more common in features at Crane than at Loy (Supplemental Tables 2 and 6). Recent use-wear analysis indicates that most, but not all, of these polished tools were utilized in heavy-duty woodworking activities and can therefore be better classified as adzes than as hoes (Miller 2025). Over 150 projectile points and point fragments (n = 163) were recovered from features at Crane, while just under 100 were recovered from Loy. Seventy-five of the Crane

projectile points and 30 of the Loy bifaces could be confidently assigned to Middle Woodland projectile point types, including Snyders, Norton, Belknap, Gibson, and Steuben. At Crane, two-thirds of the projectile points were assigned to the Snyders type, while Norton accounted for an additional 21%. The picture is nearly reversed at Loy, with 57% Norton points and 20% of the projectiles assigned to the Snyders type. Whether this difference relates to temporal or functional variation between the point types remains to be determined.

Overall, the chipped-stone tool assemblages from Crane and Loy seem to reflect the wide range of procurement, processing, and manufacturing tasks expected of diverse activities associated with base settlements. The relatively high number of bifacial tools at Crane and Loy is consistent with patterns observed at other hamlets, such as Massie, Archie, and Smiling Dan, and distinct from the ubiquity of lamellar blade tools at ritual camps, such as Napoleon Hollow (Farnsworth and Atwell 2015:199; Farnsworth and Koski 1985; Stafford and Sant 1985; Wiant and McGimsey 1986). The higher ratio of drills in the Crane and Loy assemblages, especially drills used to perforate pearl/shell at Crane, suggests a different manufacturing emphasis than has been documented at other Middle Woodland hamlets.

Botanical Remains

David Asch and Nancy Asch's (1985:Table 6.15) botanical analysis of Crane and Loy documented similar ratios of nutshell to wood charcoal fragments (1.9 and 1.7, respectively) and proportions of hazelnut in the nutshell assemblage (23% vs. 22%, respectively). Squash rind was present in over twice as many samples at Crane (45%) than at Loy (20%). Similarly, the ratio of seeds per gram of charcoal was substantially higher at Crane (3.2) than at Loy (0.6), as was the percentage of cultivated seeds in the sample (83% vs. 46%, respectively). Thus, while nut utilization was quite similar between Crane and Loy, the residents of Crane utilized substantially more cultivated crops. Further comparison with other Middle Woodland botanical assemblages will be presented below.

Other Material Culture Studies

As mentioned in the introduction, many previously published studies have utilized materials from Crane and Loy. We present a brief summary of these here in order to supplement data on each site with the caveat that the objects utilized in the following studies were not restricted to feature contexts at either site. Walthall's (1981:53) galena-sourcing study associated the majority of galena from Crane (n = 7) with the southeastern Missouri Potosi Formation, while fewer samples came from central Missouri (n = 2) and the upper Mississippi Valley (n = 2). In contrast, all five galena samples from Loy were consistent with the southeastern Missouri Potosi Formation. Small numbers of obsidian blades and mica scraps are also present at each site (Supplemental Tables 3 and 7). Shaped copper objects and scrap

occur in the feature assemblage at Crane but not at Loy. Formed copper items at Crane include small celts, awls, and beads. Overall, copper assemblages from each site essentially replicated this pattern as 12 copper artifacts were recovered from the surface and plow-zone units at Crane and 2 from Loy. Metal-detector surveys at each site resulted in the recovery of 4 additional fragments of worked copper and 2 awls/flakers from Crane; no additional copper items were recovered from Loy (Emerson and Farnsworth 2022). Emerson and Farnsworth (2022) have recently argued that most copper from Middle Woodland habitations in the Illinois Valley is local glacial float copper, a large deposit of which may be identified as a "copper mine" on a 1733 map of the region (Emerson and Farnsworth 2022: Figure 1). Anthropomorphic clay figurine fragments occur in similar frequencies at each site (Miller 2024). Most are roughly formed with little detail of appendages or other features in what is usually called the "Casper the ghost" style and characteristic of many figurine assemblages from habitation sites in the region (Miller 2024). Nonetheless, their abundance and their diversity in the presence or absence of anatomical details suggest that figurines played an integral part in multiscalar practices of community construction and maintenance at Crane and Loy (Miller 2024).

Discussion

Middle Woodland communities must be understood in terms of daily experience because the ongoing process of community making largely unfolded in the activities of quotidian life (Ruby et al. 2005; Watts Malouchos and Betzenhauser 2021:147). There are certainly many similarities in the community-making process at Crane and Loy, as both may have fit into previous settlement schemes as examples of hamlets whose residents were involved in Hopewell ceremonialism (Farnsworth and Koski 1985; Ruby et al. 2005; Smith 1992; Stafford and Sant 1985; Struever 1968). The case for domestic activity at each site is bolstered by the number and range of pit features, as well as the wide range of utilitarian artifacts. The frequency of sherds from various Middle Woodland ceramic types is also similar between the two sites. Additionally, the ceramic assemblages from Crane and Loy have strong similarities to reported assemblages from other sites in the lower Illinois Valley (e.g., Morgan 1985). This might signal more of a connection with potting communities along the main branch of the Illinois River at Crane and Loy than to documented ceramic assemblages at other excavated tributary valley sites, such as Massey, Archie, or Egan (Farnsworth and Koski 1985; Fortier 2013). Perhaps some of these connections were maintained through gatherings associated with mound ceremonialism at bluff-top or floodplain mound groups in the Illinois Valley. Undoubtedly, further analysis of the ceramic assemblages from Crane and Loy will also highlight additional differences between and within the assemblages.

Typical of Middle Woodland sites in the region, both Crane and Loy reflect a reliance on EAC crops (D. Asch and N. Asch 1985; Asch et al. 1979). Gathered nuts

also played a similar subsistence role at Crane and Loy, although residents focused substantially less on hazelnuts than did the inhabitants of other reported Middle Woodland sites in the lower Illinois Valley region (D. Asch and N. Asch 1985:Table 6.15). Residents of both sites were clearly associated with multiscalar communities as evidenced by the presence of materials from outside the Macoupin Valley, such as galena, obsidian, mica, and exotic cherts.

There are, however, key differences between the two that illustrate important variation in residential communities within the Middle Woodland period. Given that the occupation at Loy is likely earlier than that at Crane, there are intriguing temporal implications for the notable differences between the two sites. While the proportion of pit-feature profile shapes were similar across the two sites, Middle Woodland pits at Crane tended to be larger on average than those at Loy. Small variations in the ceramic assemblages between the sites may prove to reflect broader temporal trends in the region, while they most certainly relate to differing communities of practice between and within the sites. Crane demonstrates an increased reliance on cultivated seeds (D. Asch and N. Asch 1985:Table 6.15) in addition to more and a wider variety of copper, mica, galena, and other materials typically called "Hopewell Interaction Sphere" objects (Struever and Houart 1972). Multiscalar interactions with people and things across the landscape were certainly part of community at Crane and Loy, yet they materialized in different ways at each site. For example, galena from Crane can be tied to a wider variety of sources, mica was recovered from Crane but not Loy, and obsidian was recovered from Loy but not Crane. The inhabitants of Crane were also involved in the production of pearl/shell beads, while those at Loy utilized chipped-stone drills for other activities. None of the drilled pearl/shell beads seem to have been deposited at Crane or at any other documented Middle Woodland settlement. Instead, these were likely transported and deposited at other community hubs, such as mounds (e.g., Farnsworth and Atwell 2015:62–69). Whether these were mounds in the Macoupin Valley or farther afield remains an open question. While numerous probable Woodland period mounds have been recorded in the Macoupin Valley, the paucity of further investigation into the mounds precludes analysis of their contents and even chronological assignment to the Middle or Late Woodland periods (Charles 1985:93–94).

Recognizing that communities are dynamic, heterogenous, and historically situated, the same processes observed at Crane and Loy would not be expected to occur at all hamlets in the region. For example, the relative abundance of cultivated crops at Crane is nearly identical to that at Massie and Archie, yet there is no evidence for the production of pearl/shell beads or for an increased Hopewell material connection at Massie or Archie (D. Asch and N. Asch 1985:Table 6.15; Farnsworth and Koski 1985).

As another comparative example, there are relatively more cultivated seeds at Smiling Dan than at Crane, Massie, Archie, or, certainly, Loy (D. Asch and N. Asch 1985:Table 6.15). Numerous Hopewell ceremonial materials were recovered from

Smiling Dan, including galena, obsidian, mica, ceramic ear spools, and drilled bear canines. Numerous drills were also recovered from Smiling Dan, although they are proportionately less common than at Crane and the exact materials on which they were used remain unclear (Odell 1994). As one final example on the topic of domestic production, Struever (1968:298) surmised that sheets of mica were "cut and shaped" by occupants of Apple Creek. Since radiocarbon dates place Crane, Smiling Dan, and Apple Creek in the latter portion of the Middle Woodland period (Farnsworth and Asch 1986; Farnsworth et al. 2016:343; King et al. 2011; Mueller 2018:Table 3), it is possible that these data signal a wider trend of increasing focus on domestic crafting as important aspects of community making by residents with community connections in the lower Illinois Valley. Regardless of whether this pattern holds through additional research, investigations of Middle Woodland settlements and residential communities will surely remain central to understanding the "complex mosaic of regional developments" (Struever 1968:311) in the Middle Woodland period.

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Supplementary materials for this article can be found at https://www.midwestarchaeology.org/mcja/supplemental-materials.

Supplemental Tables 1–12
Supplemental Figures 1– 17

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