Native American Student Awards

The Plains Anthropological Society's Board of Directors selected two Native American Student Award winners for 2001. Each will receive $1000.00 to be administered by their respective departments to defray their school costs. The Plains Board and membership extend our congratulations to these two deserving individuals.

Laura Cocker

Laura Cocker is an enrolled member of the Manitoba Métis Federation and an honors student at the University of Winnipeg majoring in Anthropology. Her main research interest focuses on the study of ancient Mayan cosmology and ideology as a means of understanding how the Mayan belief system influenced their social organization. This research interest has led her to participate in fieldwork in Belize, such as the 2001 excavations at the site of Baking Pot. This coming summer she will return to Belize, where she will work with the Belize Valley Archaeological Reconnaissance Project. Through these experiences, she has developed an interest in working with people of different cultural and ideology backgrounds in order to bridge the cultural gaps caused by bigotry and bias. She feels strongly that archaeology should be conducted ethically by involving the people that will be affected by the scientific research, and she hopes to create respectful relationships with the people that her own research involves. Cocker plans to continue her research in graduate school, where she would like to expand her focus on ancient Mayan culture to include the present Mayan culture as well.

In addition to her research, Cocker is a self-employed computer network consultant at the Workers Compensation Board of Manitoba. She is active in boxing, running and holds a green belt in Kung Fu.

Jana Vee Corenlius-Baird

Jana Vee Cornelius-Baird is an enrolled member of the Seminole-Creek Tribe of Oklahoma. She received her bachelor's degree in Anthropology in 1995 from the University of Oklahoma, as well as a minor in Native American Studies. She graduated with a Cum laude degree from the OU Honor's Program and was a 1996 initiate into Phi Beta Kappa. She is currently working towards a master's degree in anthropology at the University of Oklahoma.

Ms. Cornelius-Baird is very interested in pursuing a career in a museum, preferably in an academic or tribal setting. In 1994, after completing an undergraduate class in museum studies, she worked as a summer intern at the Gilcrease Museum. She assisted in compiling a NAGPRA database of part of the archaeological collection. After graduation, she spent over two years at the Oklahoma Museum of Natural History as one of four people who organized, packed, and moved the collections to the Sam Noble Oklahoma Museum of Natural History. As a graduate assistant, she spent one year working with the Community Assistance Program at the Oklahoma Archeological Survey. While in that position, she assisted in the Section 106 process, including preliminary cartographic surveys and pedestrian surveys when necessary. With completion of her master's degree she looks forward to a career in a museum, particularly one emphasizing Native Americans and NAGPRA coordination between tribes and the museum communities.

Ms. Cornelius-Baird is pursuing a thesis topic that looks at the importance of historic post-removal Creek pottery design elements and symbolism. She will be comparing ceramic decorations from several Creek towns in order to discover whether potters in each town concentrated more heavily on certain design elements over others. She plans on investigating this topic through a lens of information exchange by comparing design elements with the function of certain vessels to determine whether certain situations called more heavily for certain decorations.

The "Big House" At Whistling Elk Village (39HU242): Geophysical Findings and Archaeological Truths

Dennis L. Toom and Kenneth L. Kvamme

ABSTRACT

Magnetic gradiometry and electrical resistivity surveys carried out at the site of Whistling Elk (39HU242), a fortified earthlodge settlement of the Plains Village tradition, Initial Coalescent variant (ca AD 1300), unambiguously defined numerous features including fortification ditches, bastion loops, and houses. One anomaly group was particularly noteworthy because it suggested an unusually large house measuring approximately 100 m², 3-4 times larger than houses known through excavation or other ones apparent in the geophysical evidence at the site. Its shape and interior features were uncharacteristically well defined, despite nearly a meter of overburden. Test excavations were conducted to verify the nature of the anomalies and to acquire evidence about the function of this structure. Three hypotheses are examined concerning this "Big House": it was a ceremonial lodge, a communal lodge, or a high-status dwelling. Owing to the discovery of numerous domestic artifacts and food remains on its floor, the last two hypotheses gain favor.

Keywords: Initial Coalescent Variant; Ceremonial House; Communal House; Geophysical Methods

In July 1998 the archaeological field school of the Department of Anthropology, University of North Dakota (UND), Grand Forks, conducted ground-truthing excavations at Whistling Elk Village (39HU242) on the Missouri River in the Lake Sharpe Project Area, adjacent to Lake Sharpe, in Hughes County, South Dakota. Whistling Elk is a fortified earthlodge settlement of the Plains Village tradition, Initial Coalescent variant (Steinacher 1984). Occupation of the site has been radiocarbon dated at ca. A.D. 1300 (Toom 1992:214-217), at the beginning of the variant spanning ca. A.D. 1300-1500.

The excavations conducted in the summer of 1998 were supervised by Toom as a ground truthing exercise in support of archaeo-geophysical mapping of subsurface archaeological features directed by Kvamme. The results of the geophysical work at Whistling Elk have been presented elsewhere (Kvamme 1999, 2001). This paper focuses on one particularly significant finding: a "Big House" in the northern part of the village designated House 98, from the year of its detection and initial excavation. It also emphasizes two growing truths in Plains archaeology: (1) geophysical survey results can provide an efficient and cost-effective means for placing excavations at the exact locus of significant archaeological features, and (2) geophysical imagery can yield detailed primary information about a settlement's internal structure and organization.

Whistling Elk is an ideal candidate for archaeo-geophysical mapping because its village features are rather deeply buried, at surface depths of anywhere from about 70-100 cm, well below the depth of plowing, and because no indications of the village are visible on the surface owing to past cultivation. Essentially, we knew there was a large fortified earthlodge village at this location but, aside from some indications of the fortification line and

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a few other curious anomalies in aerial photographs, we had little idea as to its internal makeup because any surface expression it may once have had has been completely obliterated. Archaeo-geophysical mapping is, therefore, the best way to obtain information on the layout, or plan, of the site.

RESEARCH OBJECTIVES

The primary objective of the work reported here was the ground truthing, by excavation, of suspected subsurface archaeological features whose signatures were detected by archaeo-geophysical survey techniques. The methods applied at the site by Kvamme in 1998 included (1) electrical resistivity, (2) magnetic gradiometry, and (3) electromagnetic conductivity. Ground penetrating radar was used at the site in 1999, but in areas not relevant to this report. All techniques yielded positive results and produced interpretable site maps showing the locations of major archaeological features (Kvamme 2001), but the conductivity and the radar data are not considered here. Rather, this paper presents the resistivity and the magnetic data that best illustrate a most prominent, singular anomaly recorded at the site—an atypically large structure designated House 98.

GEOPHYSICAL BACKGROUND

Geophysical surveys sample physical properties of the earth by taking measurements systematically through an area (e.g., every meter). Archaeologically useful results derive from contrasts between measurements. In a homogeneous soil the measurements of physical properties will tend to be uniform. If some buried entity intrudes within that unit, such as a pit or house feature, a stone wall, a foundation, or hearth, its different physical properties will cause changes in the geophysical measurements recorded at the surface, or a contrast with the surrounding matrix of measurements. These contrasts are referred to as anomalies until their sources can be identified, which often requires archaeological excavation. Anomalies may sometimes be identified with high accuracy simply by mapping their shape over an area, a frequent occurrence at Whistling Elk. A house feature may be easily recognized by its size and form, for example.

Magnetic surveys quantify changes in magnetic properties between cultural and non-cultural soil units and features. These differences are usually very subtle owing to the typically minute traces of iron compounds in most soils. Fired materials, such as baked clays around hearths or burned houses, however, tend to possess enhanced magnetic properties, and historic iron-bearing artifacts are highly magnetic and readily sensed. Strongly magnetic artifacts or features tend to yield dipole results, which are expressed as paired positive and negative measurements of extreme value, much like the north and south poles of a magnet (Weymouth 1986; Clark 1990).

Electrical resistivity methods inject an electrical current into the earth and record resistance to that current stemming from changes in subsurface deposits. These methods are very sensitive to contrasts stemming from buried rock or stone (e.g., foundations or floors which tend to be highly resistant) or even more subtle soil changes (e.g., filled-in ditch, pit, house, or privy features which may be more or less resistant depending on the fill). Variations in ground moisture are known to affect soil resistivity characteristics, and these changes also can correlate with buried archaeological features (Clark 1990). *Soil conductivity* is the theoretical inverse of resistivity and is measured by electromagnetic conductivity (EM) instruments. The same electrical principals apply, however (Bevan 1983). Although excellent results were generally obtained at Whistling Elk by EM methods, findings in the area of House 98, the focus of this paper, did not offer significant new information over the resistivity data. Consequently, the EM results are not presented here (see Kvamme 2001 for a discussion of these findings).

Instrumentation

FM-36 Advanced Fluxgate Magnetic Gradiometer. The FM-36, by Geoscan Research, is designed for the rapid capture of magnetic information over broad areas. As a gradiometer, it does not measure the total magnetic field strength of the earth below it; rather, it records differences between measurements made by the top and bottom sensors vertically separated by 50 cm within the instrument. The twin readings yield a gradient measurement that reveals changes in the magnetic field and their magnitude. The FM-36 is very sensitive,

capable of less than 0.1 nT (nanoTesla = 10^{-9} Tesla) resolution (about one part in one-half million of the earth's magnetic field, which is about 50,000 nT). In magnetic surveys the great majority of the measured response is from the uppermost meter; more deeply buried archaeological features must be highly magnetic to be detected. Although the FM-36 is capable of recording data very rapidly (up to about eight measurements per second), the depth of the cultural features at Whistling Elk (approaching the far end of magnetic sensing) demanded slow and careful use of the instrument. The FM-36 is capable of storing 16,000 measurements for later downloading to a computer for processing.

RM-15 Advanced Electrical Resistance Meter. This instrument, also by Geoscan Research, is designed for the rapid capture of soil resistance data at archaeological sites. The RM-15 is attached to a frame that holds one current and one potential probe (large spikes) linked through a cable to two remote probes. One probe on the frame and one remote probe form a circuit in which the current is measured; the remaining probes measure voltage, and resistance in ohms is determined by the ratio of voltage to current (Ohm's Law). Since resistance will vary according to soil conditions, the remote and mobile probe spacings, and their configuration, soil resistivity in *ohm-meters* is commonly computed, which quantifies a bulk property of soil independent of probe configuration. Depth of prospection is controlled by the separation between the probes, which was set at one meter at Whistling Elk, the approximate depth to cultural features. The RM-15 acquires measurements as fast as the frame can be lifted and moved to the next recording station. It is fully computerized and capable of storing 30,000 measurements.

Field and Data Processing Methods

The geophysical surveys at Whistling Elk were conducted in 20-x-20-m grids that controlled the placement of the instruments over the landscape. Each grid was physically established by staking 20 m ropes parallel to each other on the ground, typically two meters apart. The instruments were then moved along and between each rope, which were marked in half-meter increments, allowing the measurements to be accurately located. Upon completion of a grid another was established where survey commenced again. As many as 47 complete or partial grids were employed at Whistling Elk, within a total area of survey of about 1.7 ha. The electrical resistivity data were sampled every 50 cm along lines separated by 100 cm (two measurements per m^2) for 800 measurements per grid. The magnetic data were sampled across the site every 25 cm along lines separated by 100 cm (four measurements per m^2) for 1600 measurements per grid. Owing to the interesting results initially obtained in the area of House 98, however, a grid centered over the house was resurveyed magnetically with a measurement taken every 12.5 cm along lines separated by 50 cm (16 measurements per m^2), for a total of 6400 measurements and much improved detail in the data.

The derivation of a useful graphic or map of the geophysical data is achieved by downloading of the field-gathered information to a computer. The processing of the data includes the following steps: 1) *concatenation* of the data from individual survey grids into a single composite; 2) *despiking* of unusually high or low values (outliers) that may result from rodent holes (resistivity) or historic iron debris (magnetometry); 3) *filtering* to reduce noise or remove broad, geologically caused trends; 4) *image creation* through assignment of gray or color scales to the image matrices; 5) *interpolation* to estimate additional values for improved image continuity and interpretation; 6) *contrast enhancement* through clipping of extreme values or histogram modification. Afterwards, the graphical results must be interpreted using knowledge of typical geophysical responses and the nature of the kinds of archaeological deposits and features to be expected: Further details about the computer processing of geophysical data may be found in Scollar et al. (1990) and Kvamme (2001).

GEOPHYSICAL RESULTS AT WHISTLING ELK

The resistivity results for the entire site of Whistling Elk Village offer a clear view of the structure and layout of this Initial Coalescent settlement (Figure 1a). A fortification ditch with five uniformly spaced bastion loops is seen encircling the village, encompassing approximately 1.45 ha. Within are numerous indications of prehistoric

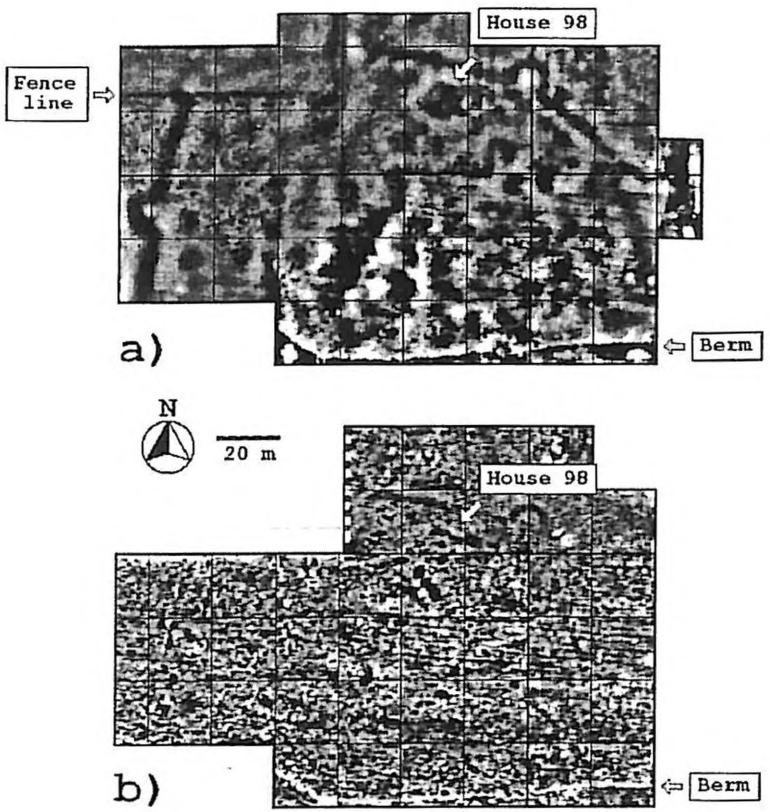


Figure 1. a) Electrical resistivity results and b) magnetic gradiometry results from Whistling Elk Village (39HU242).

houses, including House 98. Elsewhere, based on these and other data not reported here, evidence exists for as many as 33-67 possible houses within the present village area, depending on interpretations of the various geophysical data sets (see Kvamme 2001). Also apparent in the resistivity image is the locus of a fence line (giving a resistivity response due to dense vegetation along its course) and the line of a berm adjacent to the Missouri River to the south, constructed as part of a bank stabilization program carried out by the U.S. Army Corps of Engineers in 1987. If one considers that as much as 45 m of the southern portion of this site has been lost to erosion caused by Lake Sharpe's wave action prior to the embankment stabilization (as revealed by historic aerial photography), a truly large settlement is indicated. The prehistoric cultural features seen in the resistivity data uniformly exhibit high resistivity in comparison to the background deposits (resistivity ranged from about 20-43 ohm-meters at the site). Quite likely, after the village was abandoned, former houses formed shallow depressions on the surface as the earth-covered lodges eroded away, a common ex-

pression seen even today at other, less deeply buried sites. These depressions, together with those of the fortification ditches, were probably later filled in with more resistant wind-blown sediments.

The magnetic data (Figure 1b) appear noisy at a global scale, but are actually rich in detail, particularly concerning the distribution of hearths, burned areas, and within-house features, as is illustrated below. Part of the apparent noise is due to an historic plow mark response (also seen in the resistivity data) and probable historic iron-bearing debris (an historic farmstead was formerly located southwest of the village). Despite the many interesting anomalies and readily interpretable features in the geophysical data, which we were able to observe in the field thanks to portable computers, we chose to focus our limited ground truthing excavation work of 1998 on what appeared to be a particularly large and distinctive house floor signature just inside the northern fortification line, House 98.

The House 98 Anomaly Group

The large-scale, detailed resistivity map of House 98 shows a highly patterned, square-shaped house outline that measures approximately 10 m on a side (Figure 2a). A 1-2 m wide entranceway is clearly seen projecting from the southeast wall of the house for a distance of about 4 m. Finding the location of the house entrance is important because it tells us that the house is aligned on a northwest-to-southeast axis, with the front of the house facing to the southeast. Knowing the alignment of the house is of considerable help in interpreting internal archaeo-geophysical anomalies. Three areas of high resistance, indicated by the darkest shading, are visible in the house, one to the northeast of the center of the house, one to the southwest, and another near the entranceway. These areas of high resistance could be locations of large subfloor cache pits, which are known to occur within the houses at the site, as indicated in the 1979 excavations reported by Steinacher (1984). They may also simply reflect the pattern of collapse and subsequent weathering of the earth-covered superstructure that once stood over this lodge.

While the resistivity map gives us the best overall impression of the shape of House 98, the magnetic map provides greater detail of some of its internal features (Figure 2b). Of particular interest is what appears to be an oval-shaped central hearth surrounded by center support posts. While the typical Initial Coalescent pattern of construction dictated four primary support posts, one in each quadrant of the house, only three are suggested magnetically, with the fourth one ambiguous (labeled "P" in Figure 2b). The perimeter of the house is indicated magnetically, with large magnitude measurements particularly toward the front, near the entranceway. These data suggest intensive burning of the house, which in all probability was destroyed by fire, especially near the entranceway, the principal source of fresh air. The two partial houses excavated in 1979 were also destroyed by fire (Steinacher 1984). Several large-magnitude magnetic peaks may be seen in other areas of the house perimeter. They may indicate localized zones of more intensive burning, or they may point to the loci of sub-floor storage pits that are often expressed by elevated magnetic levels due to their in-filling with more magnetic A-horizon or burned soils. The negative magnetic areas within the house are merely parts of dipole features associated with large magnetic measurements.

The form of House 98, a square house body with a narrow projecting entranceway, is as expected based on the 1979 excavation work at the site (Steinacher 1984). House 98, however, measures approximately 10 m on a side, which is unusually large for an Initial Coalescent house floor, and nearly two times as large as the two other, partial house floors excavated at the site in 1979, which were about 6 m and 5.5 m on a side (Figure 3). It was because of its unusually large size and exceptionally clear geophysical signatures that it was decided to expend all of the limited time available for ground truthing excavations at the site on the House 98 anomaly group.

In addition to ground truthing, or verifying, that the House 98 anomaly group did, in fact, represent the remains of an Initial Coalescent earthlodge, it was also important to verify the presence of suspected internal features seen in the imagery. A secondary objective of the excavation work was to obtain information on the function of this atypically large structure. To the best of our knowledge, such large structures are unknown at other Initial Coalescent villages. Its large size may

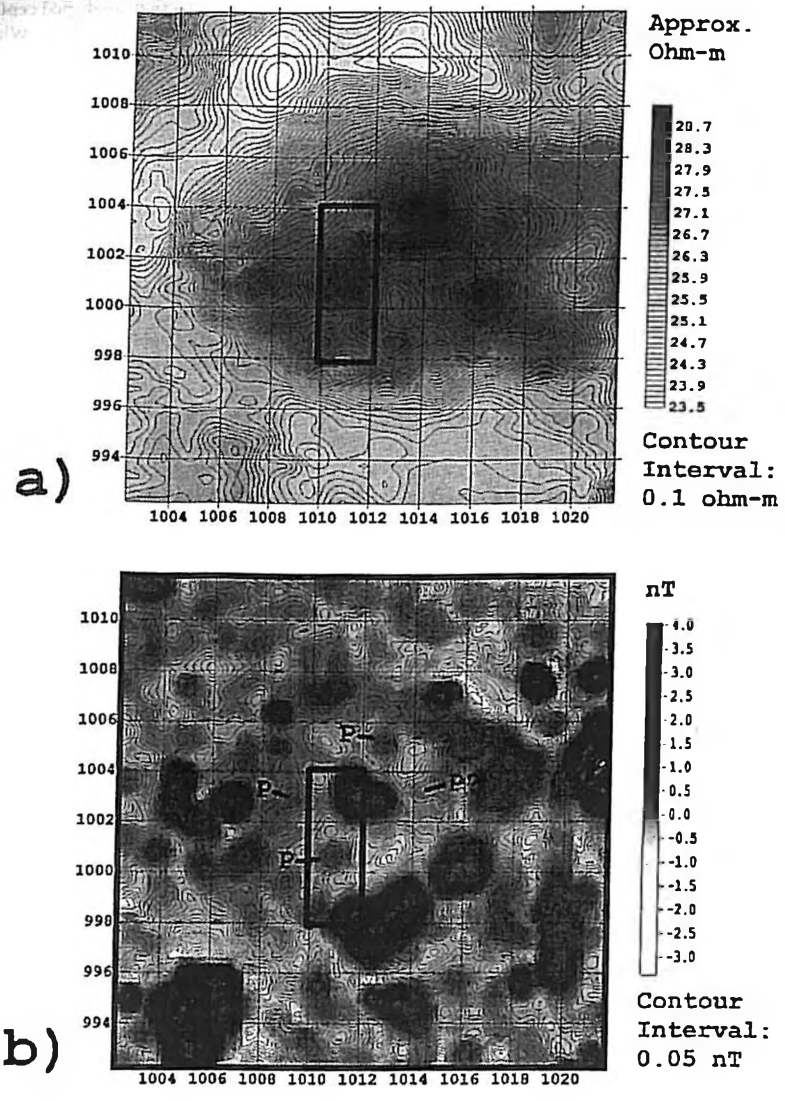


Figure 2. Detail of geophysical results at House 98, Whistling Elk Village: a) electrical resistivity, b) magnetic gradiometry. The locus of the 2 x 6 m excavation trench is indicated, as are possible post hole anomalies (P).

suggest a specialized function, such as a communal house or ceremonial lodge, where larger numbers of people could gather indoors than would have been possible in the smaller domestic structures typically found at such sites. Consequently, the many intriguing aspects of House 98 made it the logical choice for our exploratory excavations.

TEST EXCAVATIONS

In order to confirm that the House 98 anomalies did, indeed, represent the remains of an Initial Coalescent earthlodge, a 2-x-6-m excavation was placed in the feature beginning near its estimated southwest wall line and extending to the vicinity of the central hearth, with the long axis of the unit oriented on grid north (Figure 2). It is emphasized that the placement of this unit on the featureless landscape was accomplished entirely through the geophysical mapping. Kvamme placed corner stakes and indicated the likely position of the central hearth, house wall, and a probable support post nearly a meter below the surface. The position of this excavation was therefore designed to include a part of the southwest wall of the house, one of the central support posts, a portion of the central hearth and, of course, the house floor itself. The uncovering of such internal structural features by excavation would confirm that the ruins of an earthlodge were detected, its features accurately located, and mapped by the archaeogeophysics. In addition, by opening up a relatively large area of floor space within the house, we hoped to collect sufficient artifactual information to make at least a preliminary functional interpretation of the structure possible.

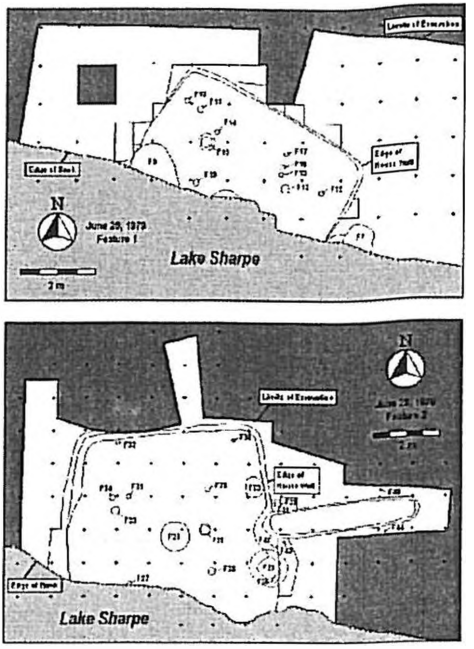


Figure 3. Plan of house floors excavated at Whistling Elk in 1979 (after Steinacher 1984:Figures A-3,4).

The top-most 50 cm of soil overlying the House 98 excavation was stripped by hand and discarded without screening because small-diameter hand coring indicated that the house floor was present at a depth of about 95 cm below surface, and the roof-fall layer, above the house floor, did not begin until around 70 cm below surface. The top 20 cm of this upper unit was the historic plow zone.

Controlled hand excavation in 1-x-1-m squares began at a uniform depth of 50 cm below surface, extending down to the level of the floor (Figure 4). Vertical control was maintained in four basic archaeological-stratigraphic units: (1) *fill*, consisting of the remaining overburden above the house deposit; (2) *roof-fall*, the largely unburned, outer portion of the fallen roof; (3) *roof-fall / floor*, the mainly burned, inner portion of the fallen roof to where it contacts the house floor; and (4) *floor*, objects found lying directly on or in the house floor.

Ground Truthing Results

Roof-fall, the remains of the collapsed roof of House 98, was first encountered in the excavation at a depth of about 70 cm below surface. This layer of outer roof-fall, which did not exhibit extensive or intensive burning, was about 20 cm thick, extending down to about 90 cm below surface. At this depth, rather intensively burned, inner roof-fall was encountered down to the level of the floor, found at an average depth of about 95 cm below surface (Figures 5, 6). The depths of these stratigraphic units showed remarkable uniformity across



Figure 4. Excavation of a 2-x-6-m unit into the House 98 feature at the Whistling Elk Village.

the excavation, except in the southwest corner, which came down on the base of the wall of the house pit. House floors at Whistling Elk are known to have been dug into shallow pits, about 30 to 40 cm deep, based on previous excavation and cutbank profiling work at the site (Steinacher 1984; Toom 1992). Because the southwest corner of the House 98 excavation was on the edge of the house pit, the roof-fall here sloped up abruptly as the base of the house pit wall curved upward (Figure 5).

Lying directly atop the floor of House 98 was a layer of burned inner roof-fall approximately 5 cm thick. This material was composed principally of burned earth and daub, but it also included considerable quantities of charcoal and, in some instances, remnants of burned roof supports. This burned earth caused some of the magnetic signal seen in Figure 2b. The layer of burned inner roof-fall cleaned off the house floor very nicely, leaving behind it a compacted earthen floor formed directly atop a natural subsurface soil horizon, most likely a Bw horizon (Figure 6). Artifacts and artifactual debris, including a complete, but broken, pot, two bison bone concentrations, two large anvil stones, three hammerstones, and some chipped stone tools, were found lying directly on the cleared house floor. The chipped stone tools consisted of two end scrapers and three retouched flakes. The two large anvils appear to have been used mainly for crushing but possibly also for grinding. Two of the three hammerstones look as though they may also have been used as hand-held grinding tools (manos). Crushed bone was particularly abundant among the general artifactual debris at the floor level, in addition to the presence of two bone concentrations, suggesting that bone grease production (see Vehik 1977) may have been an important, ongoing activity at the time the house was abandoned and burned. Pottery sherds were also relatively abundant, particularly in the vicinity of the broken pot. Fire-cracked rock was fairly common, but chipped stone flaking debris was not. Many of the floor artifacts were found concentrated around the broken pot, with this aggregation of material designated Feature 98-8 (Figure 7).

The broken pot is classified as Grey Cloud Horizontal Incised, a type of common utilitarian pottery associated with the Coalescent tradition (Smith 1977:62-63). Grey Cloud Horizontal Incised has not been assigned to a specific ware because it co-occurs with so many different wares, such as Campbell Creek, Iona, Talking Crow, and Stanley wares, spanning the Initial, Extended, and Post-Contact Coalescent variants. At the Talking Crow site (39BF3), some 35 miles downstream from Whistling Elk, Grey Cloud Horizontal Incised was most prevalent in the Campbell Creek phase (Initial Coalescent) assemblage, in association with Campbell Creek ware (Smith 1977:62). Campbell Creek ware was the predominant ware in the 1979 ceramic sample from Whistling Elk, which also included one Grey Cloud Horizontal Incised vessel (Steinacher 1984). Only the single Grey Cloud

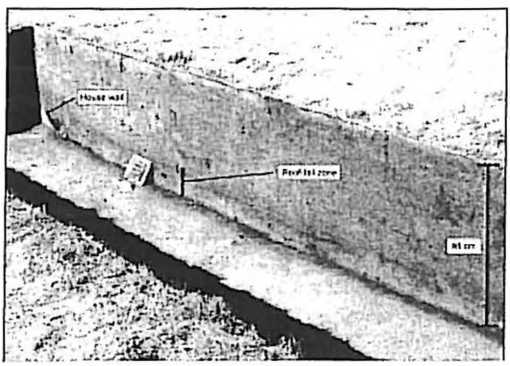


Figure 5. The roof-fall layer, lower wall, and floor of the house pit in the southwest corner of the House 98 excavation at the Whistling Elk Village.

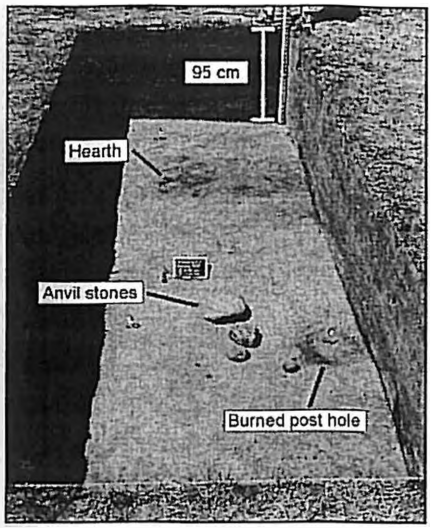


Figure 6. The central hearth, anvil stones, and a large central support post hole in the House 98 excavation at the Whistling Elk Village.

vessel was recovered from the House 98 excavation.

Several structural features were found in the exposed floor area of House 98, including the central hearth, the post hole for the southern central support post, two smaller post holes, and the lower portion of the southwest wall of the house pit (Figures 6, 7). The main structural features encountered in the excavation—the central hearth, the southern central support post, and the southwest wall of the house pit—were all precisely where we expected them to be based on the interpretation of the archaeo-geophysical data. Additionally, evidence of intensive burning of the structure was plentiful, especially in the southern portion of the house. Clearly and unambiguously, the ground truthing excavations into House 98 have confirmed these findings of the archaeo-geophysical survey.

Large resistivity and magnetic anomalies are apparent in the vicinity of the southern central support post of House 98 (compare Figures2 and 7). The magnetic anomaly is probably due, in part, to the presence of burned earth around the post, but also to the two large granitic anvil stones lying directly to the west (Figures 6, 7), because igneous rocks typically yield a large magnetic response. Rocks also tend to exhibit very high electrical resistivities. Given their size and proximity it is quite possible that the resistivity anomaly seen at this locus in Figure 2a is an indication of these rocks. It is emphasized that had these stones *not* been present near the post hole it is still likely that it would have been detected due to the firing of the soil, as apparently were the other center support posts. Its signature would not have been as strong, however.

SPECULATIONS ON THE FUNCTION OF HOUSE 98

The unusually large size of House 98, in comparison to the typical Initial Coalescent domicile, suggests a special function or status. Three possibilities can be suggested at this juncture for what will be called for the present the "Big House" at Whistling Elk: (1) a ceremonial lodge, (2) a communal lodge, or (3) a high-status dwelling. In regard to the first possibility, a connection may be made to the ceremonial lodges of the Post-Contact Coalescent variant, which is more or less directly linked to the historically known Arikara tribe in South Dakota. Large, specialized ceremonial lodges are well documented for Post-Contact Coalescent variant sites in South Dakota according to Lehmer (1971:139), but no mention is made of such structures for the preceding Initial and Extended Coalescent variants. However, House 3 at Over's La Roche site (39ST9), an Extended Coalescent variant village, was interpreted as a ceremonial lodge mainly on the basis of its large size and general paucity of associated artifacts (Hoffman 1968:8-11). Because the Post-Contact variant in South Dakota is descended from the Initial variant through the Extended variant, it logically follows that the Big House at Whistling Elk may be the forerunner of the Arikara ceremonial lodge. On the other hand, the Big House at Whistling Elk may have had more of a secular, rather than a sacred, function, perhaps serving as some sort of communal house for governing or defending the village. It also could have served both functions because it is frequently difficult to separate the sacred from the secular in such tribal-level cultures. Alternatively, the Big House may have belonged to a high-status family, with its larger size denoting an el-

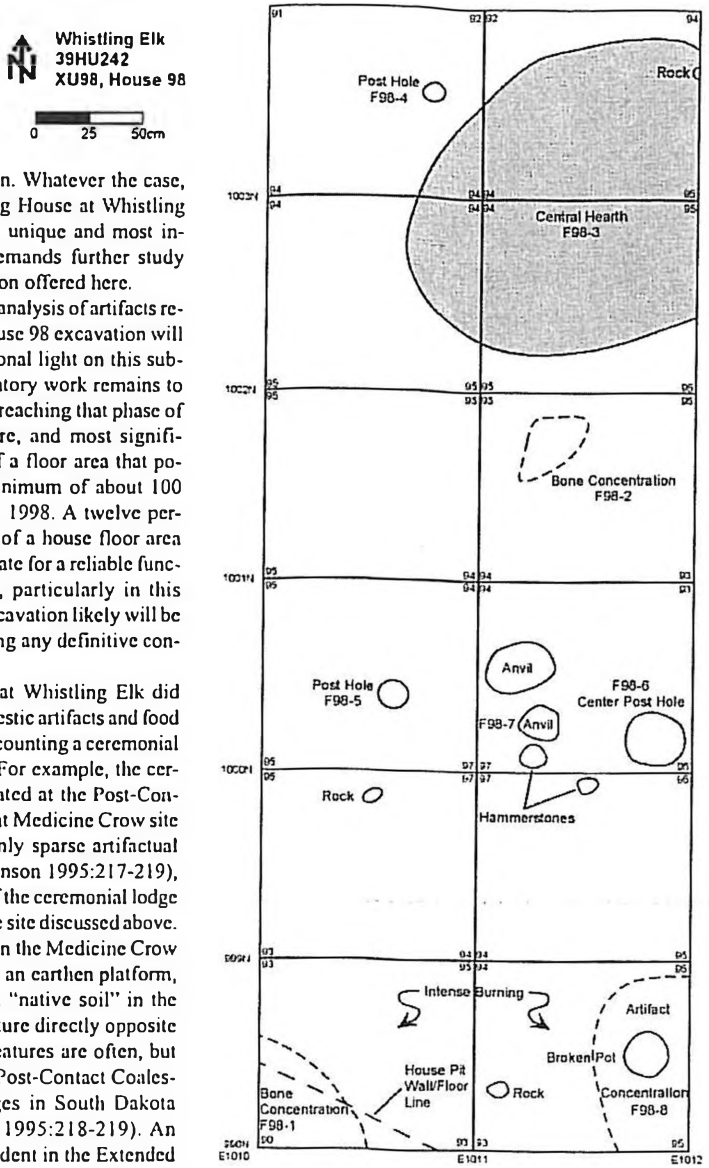


Figure 7. Plan map of the 2-x-6-m House 98 excavation at floor level, Whistling Elk Village.

evated social position. Whatever the case, the presence of a Big House at Whistling Elk is an apparently unique and most intriguing find that demands further study beyond the speculation offered here.

A more detailed analysis of artifacts recovered from the House 98 excavation will certainly shed additional light on this subject, but much laboratory work remains to be completed before reaching that phase of research. Furthermore, and most significantly, only 12 m^2 of a floor area that potentially covers a minimum of about 100 m^2 was excavated in 1998. A twelve percent transect sample of a house floor area is probably not adequate for a reliable functional interpretation, particularly in this case, so additional excavation likely will be needed before reaching any definitive conclusions.

The Big House at Whistling Elk did contain common domestic artifacts and food debris, seemingly discounting a ceremonial lodge interpretation. For example, the ceremonial lodge excavated at the Post-Contact Coalescent variant Medicine Crow site (39BF2) contained only sparse artifactual debris (Toom and Johnson 1995:217-219), which was also true of the ceremonial lodge at the Over's La Roche site discussed above. Of particular interest in the Medicine Crow ceremonial lodge was an earthen platform, or altar, formed from "native soil" in the back wall of the structure directly opposite the entryway. Such features are often, but not always, found in Post-Contact Coalescent ceremonial lodges in South Dakota (Toom and Johnson 1995:218-219). An earth altar was not evident in the Extended Coalescent ceremonial lodge at Over's La Roche.

Conceding for the moment the unlike-

lihood of a specialized ceremonial lodge function for the Big House at Whistling Elk, because of the presence of common domestic implements and debris, the alternative functions of a secular communal lodge or a high-status dwelling would seem to be more plausible. Whether or not a clear distinction can be made between these two alternatives is open to question, but it would seem to minimally require more complete excavation and analysis of the structure.

POSTSCRIPT

In our evidence from the Big House at Whistling Elk we note that the presence of domestic artifacts, including a complete pot, in a burned house structure suggests a hasty abandonment. These findings are consistent with those reported by Steinacher (1984). Both of the houses excavated at the site in 1979 (Figure 3) were destroyed by fire, and both contained unusually large numbers of *in situ* functional artifacts, including whole ceramic vessels, a variety of fully functional tools in various stages of use and manufacture, cached tools and tool raw materials, and concentrations of processed food stuffs like maize and beans. The presence of such valuable items in an archaeological context suggests that Whistling Elk was hurriedly abandoned, perhaps during a successful enemy attack, which would have left little time for removal of usable items to another location, as would almost certainly occur under circumstances of a more leisurely, or normal, village abandonment (Toom 1992). While there are numerous examples of burned houses at many villages in the Middle Missouri subarea, it is rare to find houses containing the quantity and quality of artifacts as those at Whistling Elk. With the massacre of nearly 500 men, women, and children associated with the Initial Coalescent component of Crow Creek Village (39BF11) (Willey 1990; Zimmerman and Bradley 1993), only 40 miles downstream from Whistling Elk, there can be little doubt that these people lived under the very real threat of warfare and annihilation.

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The human eye can distinguish millions of colors, but only a few hundred grays. Although much of the original imagery developed in this study is in color, nearly all have been converted to gray scales for this report. Some of the original color images may be seen on the project's web site at: http://www.east.uark.edu/~kkvamme/Whistle/Whistle.htm.

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The Marion Great Bend Aspect Sites: Floodplain Settlement on the Plains

Donna C. Roper

ABSTRACT

The settlement pattern of the Great Bend aspect site group at Marion, Kansas includes both floodplain and upland sites and has always been considered something of an enigma. Recent studies show that sites are linearly arranged and are strung along a natural levee and bluff edge where the bluff is near the river. Access to large expanses of soil suitable for cultivation with a bone hoe technology is the key to understanding the settlement pattern, however. The Marion group settlement pattern is similar to that of the Lower Walnut focus sites and both are reminiscent of Mississippian settlement patterns in the Southeast. The settlement pattern of the Little River focus sites is somewhat different and it is this group that poses the real Great Bend aspect settlement pattern enigma.

Keywords: Central Plains, Great Bend aspect, settlement patterns

The site group in and around the city of Marion is the least-studied of the three major groups of Great Bend aspect sites in central and south central Kansas (Figure 1). Many research problems must still be addressed to even bring the level of knowledge to a par with that of the other two site groups (the Lower Walnut focus sites of Cowley County and the Little River focus sites of Rice and northwest McPherson counties). The settlement pattern is one problem that is pertinent to the Marion group and, to an extent, to the other site groups as well. It is the problem considered in this paper.

LOCATION AND SETTING

The Marion group includes at least twenty-nine Great Bend aspect sites (Rohn and Emerson 1984:54) in a ten-section area of central Marion County. This central Kansas county lies on the western flank of the Flint Hills. Most of it is drained by the Cottonwood River, which rises as two separate streams near the western edge of adjacent McPherson County and flows diagonally across Marion County on its way to a confluence with the Neosho River in Lyon County, east of Emporia. The highest major stream confluence area in the Cottonwood River system lies northwest of the city of Marion. Here, the North Cottonwood and South Cottonwood rivers join to form the Cottonwood River proper, which about three miles downstream receives the Mud Creek–Clear Creek drainage from northern Marion County. The Great Bend sites are located in the confluence area, along the Cotton-

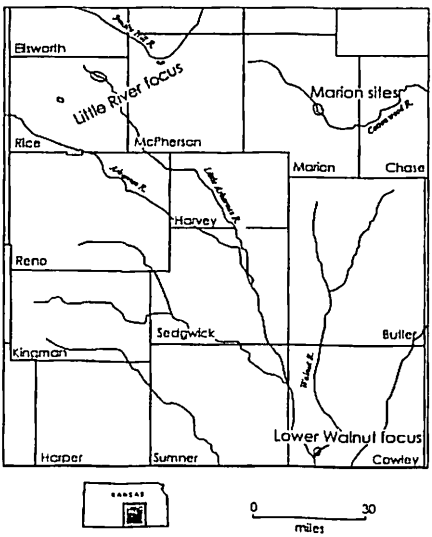


Figure 1. The Great Bend Aspect Site Groups

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