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NOTES

WARFARE AMONG THE *KIRIKIR'I-S*:¹ ARCHEOLOGY, ETHNOGRAPHY, AND ETHNOHISTORY

TIMOTHY G. BAUGH
Chickasaw Nation

Anthropologists have studied Plains warfare for more than seven decades and have presented a number of reasons for institutionalized violence. Most of the ethnological inquiries, however, have been limited to synchronic studies (occurring at a single point in time) of nineteenth-century conflict, while archeologists and ethnohistorians have undertaken diachronic studies (observing changes through time). The intent of this paper is to present evidence for Plains warfare through time and to evaluate its relationship to social prestige and exchange. Using the Kirikir'i-s as an example, Vehik (2002a) postulated that Plains warfare correlated with increased social stratification and the development of regional exchange systems. Despite the significance of conflict in her model, she neither examined its causes nor its temporal changes within the Plains. To initiate the present study, a review of the causes of Plains warfare is followed by a detailed study of violence among the Kirikir'i-s on the southern and central Plains using primarily human biological data and, when present, fortifications, defensive locations, and burned structures. The question remains: Is conflict responsible for the development of trade and social stratification in the central and southern Plains?

Robert Lowie (1935), who conducted one of the earliest anthropological studies of Plains warfare, maintained that conflict was little more than a contest. He noted that, even though "the desire for horses was the most 'economical' motive of Plains Indian warfare . . . the idea was not primarily to reduce a hostile force but to execute a 'stunt,' to play a game according to whimsical rules" (Lowie 1935:218). In other words, the contest was played to gain honor and prestige. Ralph Linton (1936:463) and Clark Wissler (1940:178) generally agreed with Lowie and viewed Plains warriors as fixated on militaristic deeds and exploits and not as concerned with competition over scarce resources. While John Ewers (1975:397-398) considered status acquisition to be an important component of Plains conflict, he equally advocated a psychological component, the socialization of fear toward outsiders.

Beginning with William Newcomb (1950), Plains warfare has been studied in relation to ecological or scarcity factors, including (1) competition

for horses and maintenance of bison hunting ranges, (2) tribal displacements from traditional lands, and (3) the need for Plains peoples to maintain their populations through the taking of captives (compare Ewers 1955; Secoy 1953). In this vein Thomas Biolsi (1984:162) emphasized "the role of cultural factors in determining the ecological niche of Great Plains mounted hunters," while Douglas Bamforth (1994) argued that the scale and intensity of Plains warfare occurred long before colonial contact. Based on these studies and after reviewing the available archeological literature, Clayton Robarchek (1994) called for a closer examination of Plains conflict to better understand the causes of warfare generally.

In contrast to this line of thought, Susan Vehik (2002a) recently resurrected the conflict and prestige models of Lowie and his colleagues to explain the development of exchange and status acquisition among the *Kirikir'i-s* of central Kansas during the Protohistoric period. In her words,

As an alternative I propose that increasing conflict and spatial rearrangement of population provides political leaders with opportunities to increase wealth, power, and prestige. Trade is one mechanism by which that can be accomplished (Vehik 2002a:41).

Lowie (1935) maintained that wealth might be obtained through the acquisition of spoils during a raid, such as highly trained buffalo horses that could be used to accumulate more wealth from hunting. Bison hides, meat, and tallow might be traded for more celebrated goods. From this perspective warfare was an indirect means of achieving prestige through trade. The precise mechanism noted by Vehik, however, remains unclear.

Considering the course of Plains trade, Vehik (2002a:44, 58) saw central and southern Plains trade as being significant during the Plains Woodland period and reviving around A.D. 900. By the Proto-historic period this trade was fully operationalized at a continental level. As a result by A.D. 1450, conflict, population aggregation, and trade led to social differentiation, ranking, and complexity within a restricted area of the central Plains. Using agency theory, Vehik (2002a:43; compare Vehik 2002b:40) suggested, "The comparatively rapid formation of larger populations, along with the greater uncertainty about life, provides an opportunity for political leaders to intensify control over access to power, wealth, and prestige."

The perspective of this paper differs from agency theory in that less emphasis is placed on an individual's behavioral quest for prestige and status. Rather, this study focuses on group decisions and interactions. By this means some of Vehik's (2002a, 2002b) key statements may be evaluated using available *Kirikir'i-s* data from the southern and central Plains. To accomplish this a comparative approach, examining *Kirikir'i-s* group behavior is utilized, and thereby a different perspective on such topics as "council circles" becomes more transparent or easily recognizable.

EVALUATION OF VEHIK'S STATEMENTS

Vehik's statements are outlined as follows. First, she noted that "conflict is evident in human skeletal

material" (Vehik 2002a:42) and "... was part of Southern Plains life at least as early as A.D. 300. After A.D. 1200, and particularly after A.D. 1400-1450, conflict increased" (Vehik 2002a:43). Accordingly, this author begins with a review of the human biological data for evidence of violence and, where available, with corroboration by other direct means, such as fortifications and defensive site placement, and indirect information that may be less telling of warfare. These indirect data include burned human remains and structures, site clustering, and the presence of empty spaces around aggregated populations. Empty spaces are open areas around site clusters that might be freely utilized by groups of different affiliations and alliances. (Such areas may include sacred places and resource use areas, such as the Salt Plains of northwestern Oklahoma where individuals were free to collect this necessity without fear of attack).

Second, Vehik (2002a:47-50) argued that incipient social differentiation was seen at several Late period (A.D. 1200-1450) sites in Oklahoma. In this regard Vehik (2002a:50) wrote, "Certain households within a community appear to have had greater access to nonlocal resources. Possibly these households were also differentially engaged in ceremonial/ritual activity." While the overall significance remains unclear, Vehik (2002a:47) commented that non-local resources occurred in selected burials of women and infants associated with the Turkey Creek and Antelope Creek phases (A.D. 1200-1450), arguing for inherited or acquired status. Therefore,

The emulation of Caddoan tradition practices such as cranial modification and the procurement or copying of Caddoan items appear to have been a feature of the pursuit of power, wealth, and prestige in at least some Washita River phase contexts (Vehik 2002a:51).

These processes came together during the Little River phase (A.D. 1450-1700) when warfare and trade increased, leading to the concentration of political power within one individual, all of which according to Vehik (2002a:51-58, 2002b:40) was visible in the archeological record.

Vehik's (2002a:43, 58, 2002b:40) generalist approach used an idealist orientation within the framework of agency theory. Such an orientation

required the reconstruction of detailed reasons for the acquisition of power, wealth, and prestige by individual *Kirikir'i-s* leaders. On the other hand, the current author's aim is to examine relationships among groups, in this case the different composite clusters of the *Kirikir'i-s*. While contrasting, such viewpoints are not necessarily exclusive. In his resolution of dissimilar explanations for the causes of warfare in the northern Southwest, Stephen Lekson (2002:622) linked materialist and idealist methods of study for ancient Pueblo conflict that "suggests the utility of both: resource unpredictability is external and materialist, while socialization for fear is internal and nonmaterialist."

To accomplish this resolution, Lekson (2002: 613-615) made minor revisions to Steven LeBlanc's (1999) periods of Southwestern warfare and presented the following chronology: (1) Initial period, 0-A.D. 775; (2) Early period, A.D. 775-900; (3) Middle period, A.D. 900-1250; and (4) Late period, A.D. 1250-1600 (see Table 1). His chronology of conflict ended generally around A.D. 1600 and did not take into account alien European intrusions into and colonization of the region.

By and large, low-level raiding and feuding characterized Lekson's first period (0-A.D. 775). Violence occurred at irregular intervals but persisted through time. During the late A.D. 700s, however, violence generally increased, leading to the second period (A.D. 775-900), demarcated by escalating raiding and feuding (compare LeBlanc 1999:151-152). By the third or Middle period (A.D.

900-1250), the rise of the Chaco polity brought about "an abrupt and dramatic end to Early period raiding" throughout the northern Southwest (Lekson 2002:613). The Middle period was more peaceful with a decline in raiding and hostile actions. Still, this peaceful period was punctuated with "extreme processing" in the form of individual or family executions that enforced social control by elites. Southwestern archeologists asserted that these executions represented intimidation or even political terror for the punishment of witchcraft and other deviant behavior (Lekson 2002:613-614). LeBlanc (1999) referred to this period as Pax with a Twist, in that political leaders associated with the Chaco phenomenon were clearly in control of the northern Southwest. Finally, the Late period (A.D. 1250-1600) consisted of village or alliance warfare, where large-scale warfare pitted entire pueblos against one another and "even multiple-village alliances against single villages or enemy alliances . . ." (Lekson 2002:615). According to Lekson's analysis, the last period represented the most dramatic one in terms of large-scale violence.

A cursory examination of the southern and central Plains (i.e., Kansas, Oklahoma, and Texas) shows a related but somewhat different pattern. The overall number of dated burials during any one period is extremely small, and the subset of burials exhibiting violence is even smaller (Table 2). Consequently, the data's reliability remains low in a statistical sense, and the findings must be considered preliminary. When coupled with data related

Table 1. A Comparison of Southwest and Plains Levels of Violence.

Southwest ¹	Levels of Violence ²	Southern Plains	Levels of Violence
Late Period (A.D. 1250-1600)	Crisis and Catastrophe	Protohistoric Period (A.D. 1450-1750)	Expanding Warfare
		Late Plains Period (A.D. 1200-1450)	Confined Warfare
Middle Period (A.D. 900-1250)	Pax with a Twist	Middle Plains Period (A.D. 775-1200)	Peaceful Adjustment
Early Period (A.D. 775-900)	Endemic Raiding and Feuding		
Initial Period (A.D. 0-775)		Early Plains Period (A.D. 1-775)	Intensive Warfare

¹Based on Lekson 2002.

²Terminology used by LeBlanc 1999.

Table 2. Comparative Violence during the Two Temporal Divisions of the Early Period.¹

Site	Number of Individuals	Chronology	References
Sullivan-Carpenter (34RM668)	3 from Burial 2	middle Early 1690±90 B.P. (Beta-57085) (A.D. 380-564)	Boyd (1996:3) Gettys (1991:2) Oklahoma Archeological Survey records
41CC237	1 from a bundle burial	middle Early 1525±145 B.P. (A.D. 280-570)	Boyd (1996:28)
Subtotal	4		
Lake Altus (34GR5)	5 from Burial 5b	late Early 1270±90 B.P. (Beta-17823) (A.D. 590-770)	Boyd (1996:4) Button and Agogino (1987:19, 30- 31)
Kent Creek (41HL66)	1 from Structure 1	late Early 1256±120 B.P. (TX5323) (A.D. 656-893)	Boyd (1996:325-326) Cruse (1992:55, 57)
Double Burial Donley County, TX	2 from a cairn-covered pit	late Early Scallorn and Deadman-like point associations	Boyd (1996:11)
Subtotal	8		

¹The Early period has a total of 81 individuals from 44 burials at 21 sites. Not all of these individuals can be placed within the two temporal divisions noted in this table.

to burned structures, fortifications, and settlement patterns, including site clustering and empty spaces around these clusters, a more complete, though still sketchy, picture of violence and warfare on the southern and central Plains begins to emerge.

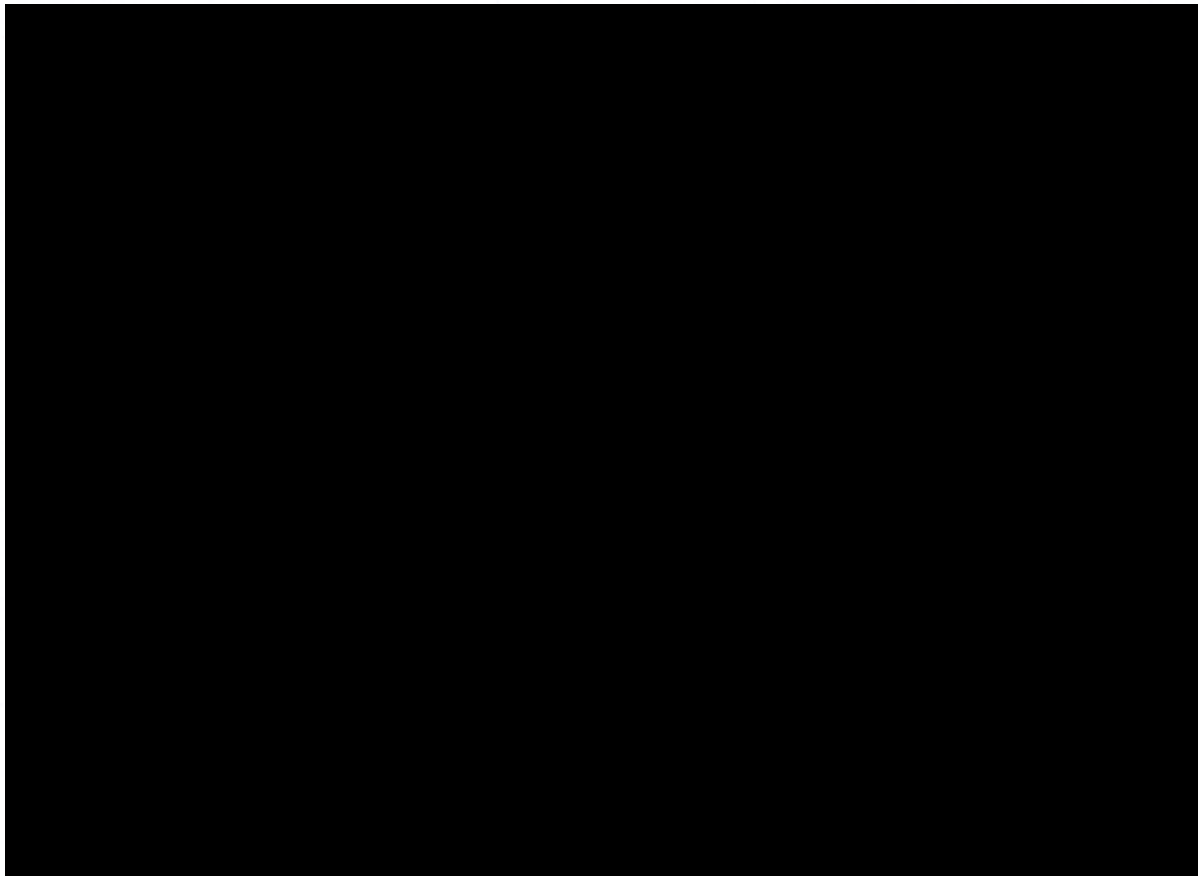
For present purposes a chronology approximating Lekson's will be employed: the Early Plains period (A.D. 1 to 775), the Middle Plains period (A.D. 775 to 1200), the Late Plains period (A.D. 1200-1450), and the Protohistoric period (A.D. 1450 to 1750), consisting of multiethnic composite villages. While these cultural divisions only roughly parallel Lekson's classification, they facilitate comparisons between the ancestral Pueblo area and the southern and central Plains.

Early Plains Period (A.D. 1-775)

On the southern Plains the Early Plains period appears to represent an era of intensive warfare, which is different from the Pueblo area with low intensity raiding (Lekson 2002). This warfare primarily occurred

between the people of the Plains Woodland Lake Creek complex and the Palo Duro complex (Figure 1), but to some extent included the Blow Out Mountain phase, all of which were along the eastern margins of the Llano Estacado (Boyd 1995:501-503, 2004:324-329). Warfare between these disparate peoples might have been conducted to establish and maintain territorial boundaries as Boyd (2004) suggested, but other factors, such as shrinking bison herd sizes, the acquisition of mates, and/or the control of specific resources, among other reasons, might account for this violence as well. Trade and exchange occurred throughout this period, but only small quantities of trade goods were involved, indicating a minimal level of friendly interaction.

Ninety-four individuals from Early Plains period contexts have been recovered in the entire region. These included 13 individuals with no visible signs of violence from the north-central Texas sites of Bird Point Island and Adams Ranch (Bruseh and Martin 1987:65-77, 215-219). Using only those people who experienced violence and whose contexts were



- ◆ Early Plains period: 1. Lake Creek (PPHM A48); 2. Sullivan-Carpenter (34RM668); 3. Kent Creek (41HL66); 4. Double Burial (no site number); 5. Lake Altus (34GR5); 6. 41CC237.
- * Middle Plains period: 7. Mouse (34CU1); 8. Goodman I (34CU25).
- Late Plains period: 9. Congdon Butte (LA 1994); 10. Landegrin Mesa (41OL2); 11. Saddleback Ruin (41OL1); 12. Mesa Alamosa (41OL8); 13. Lookout Ruin (PPHM A776); 14. Footprint (41PT25); 15. Arrowhead Peak (41HC19); 16. Antelope Creek (41HC23); 17. Handley Ruins (41OC1); 18. Hedding (34WD2); 19. Uncas (34KA172); 20. Wickham #3 (34RM29); 21. Heerwald (34CU27); 22. McLemore (34WA5); 23. Nagle (34OK4); 24. Zickefoose (34PW54); 25. Arthur (34GV32); 26. Grant (34GV2); 27. Dillard (41CO174); 28. Treasure Island (34MA150); 29. Harrell (41YN1).
- ★ Protohistoric period: 30. Bridwell (41CB27); 31. Edwards I (34BK2); 32. Duncan (34WA5); 33. Tobias (14RC8); 34. Paul Thompson (14RC12) and Kermit Hayes (14RC13); 35. Sharps Creek (14MP301); 36. Paint Creek (14MP1); 37. Deer Creek (34KA3) and Bryson-Paddock (34KA5); 38. Longest (34JF1).

Figure 1. Map of sites in the central and southern Plains according to cultural divisions utilized in the text.

radiocarbon dated, four violent deaths occurred between A.D. 1 and 575 (Table 2). This number increased with rising violence between A.D. 575 and 775, with eight brutal deaths (Boyd 1996; Button and Agogino 1987; Cruse 1992; Gettys 1991). An additional seven individuals without radiocarbon dates from two sites (Roberts Covered Mound No. 3 in Taylor County, Texas, and an unnamed site in Shackelford County, Texas) showed signs of violent

death (Boyd 1996:16-17, 25-26). Thus, a total of 19 individuals or 20.2 percent of the population from the central and southern Plains experienced violent death. Such a high rate of loss in human lives is not sustainable among any population in the long run, but the reader should note that warfare might not be the only cause of aggressive deaths. Members of small-scale societies suffered from feuds, homicides, and other intravillage disputes.

Azar Gat (1999:575) noted “. . . that average human violent mortality rates among adults in simple societies may have been in the order of 15 percent . . .” Whether the numbers in Early Plains period societies reflected a short period of warfare or other violence is uncertain (Table 2). To better refine the study of warfare, human remains should be carefully studied to separate antemortem, perimortem, and postmortem injuries before final conclusions can be reached (Walker 2001).

Middle Plains Period (A.D. 775-1200)

Peaceful relations apparently developed during the Middle Plains period, as represented by late Woodland and early Plains Village adaptations, such as the Central Plains tradition (CPt) in Kansas and the Custer and Paoli phases in Oklahoma. This conclusion, however, rests more on an absence of data for violence than on demonstrable evidence. In Oklahoma only three sites (Goodman I [34CU1], Mouse [34CU25] and Sullivan-Carpenter [34RM668]) had burials, but the individuals associated with these six burials showed no evidence of violence (Boyd 1996:3; Hofman 1978:9, Table 2, 1984:299). A similar situation prevailed in the Texas panhandle and central Plains during the late Woodland (Bozell 2006:101). These data, however, are based on an extremely small statistical sample.

For the Late Woodland in Kansas, Owsley and Bruwelheide (1996:Table 34) list 209 individuals, 193 of whom were studied. No discussion of warfare was provided, however. The CPt is even more difficult to evaluate from overview articles. Most burials were represented by ossuaries, but there was evidence for cannibalism and scalping in the Nebraska phase (Steinacher and Carlson 1998:254). In addition, Donna Roper (2006:123) described the presence of informal burials in the more western sites of the CPt. Such burials might be an indication of violence. Obviously, more detailed analyses need to be conducted for this period.

The poorly defined Wylie focus in north-central Texas falls within both the Middle and Late Plains periods.² Remains of 38 people from a series of sites along the East Fork of the Trinity River were examined, and of these 2 (5.3 percent) exhibited potential evidence for violent deaths. One individual

had several points contained within its rib cage, and the other had a projectile lodged in the seventh cervical vertebrae (Bruseth and Martin 1987:65-77, 215-219; Lynott 1975:33, 102). Because of the wide temporal span of this culture, it is difficult to determine if these individuals should be counted within one or both of these periods.

If the Middle Plains period in Kansas and Oklahoma were relatively peaceful, this situation cannot be attributed to an overarching political system, such as occurred among the Chacoan polities of the Southwest. Rather, it likely resulted from well-defined territories and cultural boundaries established during the previous Early Plains period, reducing competition over resources and separating potentially hostile factions. Significantly, the absence of political elites led to the maintenance of social order, rather than the imposition of peace by high-ranking elites as in the Southwest.

Exchange during the Late Woodland might have been limited in terms of interaction but was extensive, with indirect ties to the Gulf Coast evidenced by numerous shell beads (Hofman, Logan, and Adair 1996:215). Interaction increased during the CPt, with established trade networks being expanded and new ones added to the system (Roper 2006:128). Social differentiation apparently was not predominant in these egalitarian societies, however.

Late Plains Period (A.D. 1200-1450)

By the Late Plains period violence increased along the western and southern margins of the study area. The examined evidence for this period covers a broad area and includes the Antelope Creek phase in the Texas panhandle, the Zimms complex and Turkey Creek phase in western Oklahoma, the Washita River phase in south-central Oklahoma, and the Henrietta phase in north-central Texas and southern Oklahoma.

The Antelope Creek phase has 13 people who experienced violent deaths: 2 from the Antelope Creek site (41HC23), 1 at Handley Ruins (41OC1), and 10 potential “trophy skulls” (possibly associated with the Turkey Creek phase in western Oklahoma) at the Footprint site (41PT25) (Bovee and Owsley 1994:360; Brooks 1994a; Green 1986; Lintz 1986:164-170; Patterson 1974). The trophy

skulls apparently were taken in retaliation for a raid on the Footprint site. Room I contained three burial pits with seven individuals and associated grave offerings in each. Dismembered and butchered human limbs were found on the floor of Room I, which was then burned. A layer of sand was added to the floor and may have been used to extinguish the fire. A pit was dug into the sand layer, and the pile of trophy skulls placed inside, attesting to the retaliatory nature of these remains (Green 1986:75-82; Lintz, personal communication 2007).

In addition, Antelope Creek phase people tended to chose defensive positions for their sites, especially along the western margins of this area. These sites are Congdon Butte (LA1994), Landegrin Mesa (41OL2), Mesa Alamosa (41OL8), Saddleback Mesa (41OL1), and Antelope Creek 22 and 22A (41HC23) (Holden 1930, 1933; Lintz 1984:330, 1996; Marmaduke and Whitsett 1975; Studer 1931; Texas Historical Commission 1984). Only two sites on the east, both located in the Lake Meredith (formerly Sanford) Reservoir area, have fortified positions: Lookout Ruin (A776) and Arrowhead Peak (41HC19).

The Zimms complex in western Oklahoma has one site with potential evidence of violence. This site, Wickham #3, had two individuals with projectile wounds and cut marks indicative of scalping (Bovee and Owsley 1994:360; Wallis 1984). According to Bovee and Owsley, the adult male from Burial 1 might represent a person put to death for purposes of social control or, because he was an outsider, he experienced a ritual death and was eaten by his hosts.

Two sites (Heerwald [34CU27] and McLemore [34WA5]), associated with the Turkey Creek phase (Drass 1997), had interments of interest to this discussion. One female with three possible projectile wounds was recovered from Burial 1 at Heerwald (Bovee and Owsley 1994:356-357, 359, Table 1). In addition, she had damage to a rib and the left scapula. Cut marks on her cranium indicated scalping. An unspecified number of other individuals were found in the same burial pit, leading Bovee and Owsley (1994:357) to conclude that these people also met violent deaths. The McLemore site, with 48 burials and 59 individuals (Brooks 1994b:45), had only one person who died from violence. She

was a young adult with a projectile point embedded in her upper thoracic vertebra (Bovee and Owsley 1994:359).

One site in central Oklahoma, Nagle (34OK4), also merits some discussion because one person from Burial 10, containing three males, exhibited signs of aggression. This individual had cut marks that indicated scalping. In addition, four Harrell points were found in his thoracic cavity, and a fifth point was recovered against his left leg (Bovee and Owsley 1994:359-360). This high number of projectile points might indicate violence used for social control or might represent torture of an outsider and ritual cannibalism, as indicated by the cut marks. In contrast, Bovee and Owsley (1994:360) noted, "On the basis of osteological evidence provided by Brues and point-type identification, Shaeffer (1957:99) suggested that the culturally Southeast-affiliated Nagle site people were in conflict with a Washita River focus (phase) group to the west."

Farther south is the Henrietta phase in north-central Texas. Violent deaths were present in at least three sites of this poorly known archeological culture. The Harrell (41YN1), Dillard (41CO174), and Treasure Island (34MA150) sites had mass burials, with several individuals being decapitated or otherwise dismembered (Albrecht 1994; Krieger 1946; Martin 1994). To the north the Washita River phase had little evidence of violence (Bell 1984a). An adult male, who might have died from combat-inflicted wounds, was recovered from the Grant site (34GV2) (Vehik 2002a:42). Overall, Bell (1984a:311) commented that violence did not appear to be a major contributing factor in the early deaths recorded for this population.

To summarize, the Late Plains period saw an increase in violence, with fortifications and defensive locations being utilized, as well as trophy skulls and decapitations present. This indicated that alliances were formed to the west and south. For example, at the McLemore site, a Turkey Creek phase site located in western Oklahoma, 59 individuals were recovered, but only one person (or about 2 percent of the total burial population) exhibited signs of violence. If, as has been argued, the 10 "trophy skulls" from the Footprint site were added to this total, the proportion jumps to 18 percent. Such a high rate of violent death, however, would argue

for non-sustainable social conditions and abandonment of this area. Overall conflict may be the result of competing *Kirikir'i-s* villages (as represented by archeological cultures), whose inhabitants were contesting for the control of southern Plains bison herds and/or trade.

During this period of social disruption in the Southwest, the Katsina Cult became an important integrative mechanism, allowing for the development of multiethnic, composite, ancestral Puebloan communities in certain areas (Adams 1991; LeBlanc 2000). As Ford (1972) discussed, exchange in the Southwest was facilitated by the Kiva chapters, under whose umbrella trade in both religious and secular items commenced. Meanwhile on the Plains, the Calumet ceremony was initiated to serve as a means of establishing fictive kin ties and trading partners through gift giving and feasting (Blakeslee 1975, 1981).

Protohistoric Period (A.D. 1450-1750)

Evidence for protohistoric warfare occurs in the form of human remains, fortifications, and defensive placements. Although the biological data is exceedingly small for the Protohistoric period, the generalized violence noted in the Late Plains period might have expanded eastward with the demise of the Mississippian Spiro polity. This does not imply, however, that elites from Spiro phase sites imposed social order on the inhabitants of Washita River phase villages. Rather, Robert Brooks (1994a:320) argued that the densely clustered settlements of this area protected these people from attacks.

Unlike the preceding period, the antagonists during the Protohistoric period were unrelated linguistically (Owsley, Mann, and Baugh 1994). Southern Plains rivals like the *Kirikir'i-s*, Apache, and later the Comanche vied for control of trade with the eastern frontier Pueblo and later the *Kirikir'i-s* and Osage, for access to French colonial trade. The Protohistoric period is represented by the Tierra Blanca phase and Garza complex in the Texas panhandle; the Wheeler phase in western Oklahoma and extending into the Texas panhandle; and the Great Bend aspect, consisting of the Little River and Lower Walnut phases, in Kansas and related sites in northern Oklahoma.

No recorded human remains exhibiting violence

in either the Tierra Blanca or Garza complexes are known to this writer. In contrast, one Wheeler phase site has yielded human remains. Edwards I (34BK2) had a minimum of two young to middle-aged women, represented by two right femurs, a portion of the right frontal bone, and a right ulna (Owsley, Mann, and Baugh 1994). The femurs have deep cuts and grooved notches, one of which was used as a musical rasp (Owsley, Mann, and Baugh 1994:365-366). The frontal bone exhibits several cut marks, indicating dismemberment and defleshing. Baugh (Owsley, Mann, and Baugh 1994:371-372) discussed the probability that the *Kirikir'i-s* (possibly the Taovaya) processed these remains, potentially for ritual cannibalism. The ethnic identity of the two victims is undetermined and may only be resolved through DNA testing. The 34BK2 remains were recovered from a circular entrenchment, about 50 m in diameter, surrounding a fortified redoubt, which also indicates extensive warfare.

Among the Little River phase sites in Kansas, human remains were recorded for Tobias (14RC8), but these were not submitted for forensic studies. Waldo Wedel recovered an unspecified number of individuals from 14RC8, and his description of those individuals in Basin 1, a semisubterranean compartment, was poignant:

Mostly, they were the bones of children and adolescents, but with occasional badly broken adult skulls and other elements; excepting those of small children, many were charred and fire-blackened. Partially articulated limbs occurred in two or three instances, and the otherwise unburned incomplete skeleton of a child, lying horizontally 13 in. above the floor, had its feet in a mass of burned wood with the bones calcined (Wedel 1967:59).

Wedel maintained that these remains represented secondary burials and were not the result of violence. There is, however, no archeological, ethnographical, or ethnohistorical evidence that *Kirikir'i-s* burial practices involved cremation, the placing of the deceased on scaffolds, or other procedures that would allow defleshing in preparation for reburial (Dorsey 1995:12-13). Wedel (1967:59, 62, 1968:380-381, 383) provided several causes of death for these residents who might have died from ritual sacrifice, from an enemy attack, or possibly

from smallpox. Vehik (2002b:39) rejected these possibilities, "Most likely, the skeletons are of nonlocals subjected to ritual death of some kind" because "Some of the associated artifacts are of types not otherwise encountered in Little River focus sites." Among these implements are large, side-notched points and ovate bifaces (Vehik 2002a:54, Figure 4). This author tends to agree with Wedel on one point: in all likelihood the remains at 14RC8 represented further evidence for violence in the form of a massive attack on this village. Based upon the described positions of these victims, the children were being protected by adults or adolescents, who threw themselves over the bodies of their offspring or siblings. This evidence will be discussed at length in a later section of this paper.

Furthermore, Wedel (1959:573) noted the difficulties of finding cemeteries with protohistoric Great Bend sites. He did not consider the rapid spread of alien epidemics, which might have discouraged the treatment of the dead for burial. In this manner further exposure of the resident population to disease was minimized.³ Although evidence for early epidemics spreading throughout *Kirikir'i-s* populations is almost nonexistent, the possibility that alien infections moved along trade routes from Mexico onto the Plains prior to Coronado is under debate (Riley 1995:222-223). Such epidemics might explain the consolidation of *Kirikir'i-s* peoples into the large composite villages of central Kansas, demarcated on a 1703 map as the "2 Grands Villages" or by members of Oñate's expedition as the Great Settlement (Delisle 1703; Hammond and Rey 1953:621).

The protohistoric information derived from the extremely small skeletal sample is enhanced to some degree by the presence of probable evidence for burning at the Bryson-Paddock site (34KA5) (Bell 2004:87). Although archeological testing indicated the presence of a fortification at Bryson-Paddock, its extent is still under investigation. Yet in the absence of an association with fortifications or evidence of violent deaths, burned structures represent relatively weak confirmation for warfare.

Farther west, the Wheeler phase sites are fortified. These villages include Edwards I and Duncan (34WA2) sites in western Oklahoma, as well as the Bridwell site (41CB27) in west Texas (Baugh 1982, 1986, 1992; Parker 1982). The construction of these

fortifications or redoubts tends to support the overall premise concerning an increase in Plains warfare between A.D. 1450 and 1700. Although writing about the northern Plains, Ewers (1975:399) comments seem appropriate: "Surely the prehistoric villagers would not have taken elaborate steps to fortify their settlements had they not been endangered by enemies." This practice by the *Kirikir'i-s* continues into the eighteenth century at the Deer Creek (34KA3), Bryson-Paddock, and Longest (34JF1) sites (Bell 1984b; Bell and Bastion 1967; Hartley and Miller 1977). The latter fortification was tested and is included in the later discussion of redoubts. Similar fortifications might have protected the *Kirikir'i-s* at the Little River phase sites (Tobias [14RC8], Paul Thompson [14RC12], Kermit Hayes No. 2 [14RC13], Paint Creek [14MP1], and Sharps Creek [14MP301]) as well (Wedel 1959, 1967).

DISCUSSION

To summarize the conflict data, Vehik's (2002a) premise that warfare increased through time on the southern Plains is generally valid. Warfare during the Protohistoric period might have been more extensive, but the scale remained the same. Although difficult to measure archeologically, warfare might have even been more intensive in certain new locations. Yet, from an examination of the data presented above, warfare did not occur uniformly across time and space. For example, during the Early Plains period, hostilities apparently were rampant among the cultures of the Texas panhandle, while other regions were much quieter. In other words, local circumstances were more important for determining the presence or absence of warfare on a smaller scale, and, therefore, broad regional characterizations, as in Vehik's (2002a) article, tend to obscure the spatial and temporal variability evident in the archeological record. In short, to best determine the culture-historical circumstances relevant to the Little River phase, a more detailed temporal study focused on central Kansas sites and spatiotemporal units is needed. The remainder of Vehik's argument may be broken into four parts:

1. "Trade is proposed to develop within a context of social disruption and upheaval that resulted from increased conflict" (Vehik 2002a:41, 2002b:40). In other words, warfare often was correlated with, if not

responsible for, an increase in trade that in turn was associated with prestige and social differentiation.

2. Evidence for increased trade on the Plains began during the Middle Plains period around A.D. 900, as proposed in Table 1 above for the southern Plains (compare Vehik 2002a:44).

3. The earliest evidence for the concentration of political power and social differentiation was recognized in the Washita River phase (A.D. 1200-1450) and at a series of sites in north-central Oklahoma (Vehik 2002a:50). However, this differentiation was based on objects interpreted as having religious, social, and political meaning. Because the ethnographic evidence indicated that *Kirikir'i-s* headmen attained and maintained their status by redistributing their personal wealth, these leaders tended to be the poorest members of the community. Such leveling mechanisms were common throughout the Plains region.

4. The concentration of political power was enhanced along with social differentiation and ranking during the Little River phase (A.D. 1450-1700) in central Kansas (Vehik 2002a:51-52, 2002b:38-39). While discussing the Direct Historical Approach, Vehik (2002b) noted, "Many precontact ancestors of historic Plains societies were viewed as much simpler societies than they actually were. This problem is reflected in the difficulties Waldo Wedel had in explaining the council circles: they did not fit conceptually with historic tribal societies."

The first two points, dealing with the correlation between warfare and trade, as well as increased interaction at about A.D. 900, may be combined. What has been documented for the A.D. 900-1200 era differs from Vehik's prediction. Based on the biological evidence presented above, peaceful relations, or at least no observable violent episodes, existed throughout the southern Plains at this time. For example, in the Middle Plains period CPT people lived in relatively peaceful times, and exchange apparently flourished. Thus, increased trade did not necessarily correlate with warfare. Indeed, just the opposite position might be more valid. As Marshall Sahlins (1972:221; compare Mauss 1954) has written, "Both interpersonal and collective hostilities may be thus quieted by exchange."

Furthermore, trade often involves interaction between non-related or distant groups in social terms, and often requires the establishment of pseudo or

fictive kin relationships in terms of trading partners and intermarriage. Once again, "These are interpersonal compacts of solidarity, pledges of brotherhood in some cases, friendship in others" (Sahlins 1972:221). Such relationships tend to occur after the establishment of contact between two socially distant groups. The question remains as to how this contact and the relationships among strangers can be channeled in a manner consistent with the kin mode of production in traditional societies.

The *Kirikir'i-s* solved this problem by developing the Calumet ceremony through which the giving of gifts and feasting turned strangers into symbolic kinsmen. Thus, "... the calumet was part of a more overtly political and ceremonial way of achieving peace" and a means of initiating social and trade relationships (White 1991:20).

Vehik's third point asserted a correlation between religious differentiation and political influence. To substantiate this point, she (Vehik 2002a:50) cited evidence from three sites: Arthur (34GV32), Uncas (34KA172), and Zickefoose (34PW54). These sites, however, occur outside of the conflict zone apparent along the Plains/Southwest margins and the Red River during the Late Plains period. The evidence from these sites seems to indicate the development of sacred and secular differentiation in areas that are in less turmoil. At just one of these sites—for example, Arthur—the excavations yielded 2,347 artifacts. Of these, 32 or 1.4 percent of the total may represent trade items (compiled from Brooks 1987). Of the 32 exotic artifacts, only four or .2 percent represent possible ritual items, although they do occur within a single house, indicating potential social differentiation.

Following from this, the type of political power, noted by Vehik, is one commonly found among egalitarian societies. For example, the Spanish Indian agent for north Texas, Athanase de Mézières, discussed the late eighteenth-century *Kirikir'i-s* headman's position in the following manner:

The chiefs pride themselves on owning nothing, and, as they are not recognized as chiefs except in recognition of their deeds, the most able and successful warrior is the one who commands, authority falling to him who best uses it in the defense of his compatriots (Bolton 1914[I]:295).

Note that the more influential leaders are the poorest of their people since their accumulated wealth is not for themselves, but serves as gifts for their followers. Distributed wealth frequently constitutes one pillar of any headman's influence used to persuade his followers. Moreover, "sumptuary" objects by definition rarely, if ever, exist in egalitarian societies. Finally, future headmen frequently gain prestige while they are young and during periods of conflict. Over time, through battle and other social deeds they prove their valor and refine their judgment, and only then do their communities come to respect them enough to listen and accept their opinions. Thus, headmen obtain their positions through achievement and not through inheritance.

An overall increase in trade is apparent during the Late Plains period when compared to the Middle era (A.D. 900-1200). Because of leveling mechanisms within this society, however, increased trade does not necessarily correlate with increased prestige and status within an egalitarian society. Additionally, peaceful areas may spatially coexist with other areas experiencing intensive warfare. Finally, prestige and power may not always be expressed in terms of objects and material wealth.

In considering Vehik's final point, the data indicate that violence during the Protohistoric period did not change in terms of scale; however, warfare spread to the east and north, based on such evidence as burned structures, defensively placed and/or fortified sites, scalping, defleshing, and development of new weapons and materials. *Kirikir'i:s* and Pueblo oral history also support the continuance of warfare during this period with the Teya attacks on the Galisteo Basin pueblos and Pecos (Haas and Creamer 1997).

Such widespread conflict during the Protohistoric leads one to more closely examine Vehik's fourth statement concerning the Little River phase in which she postulated an enhancement and concentration of political power, along with social differentiation and ranking, within the *Kirikir'i:s* society between A.D. 1450 and 1700. Vehik (2002a:52) based her assumption on five central Kansas sites: Tobias, Paul Thompson, Kermit Hayes No. 2, Paint Creek, and Sharps Creek.

These sites contain "council circles," thought to represent "residences of priests and/or political leaders" (Wedel 1967:59, 1977:142; compare

Loosle 1991:137) and/or ceremonial structures based on astronomical alignments (Wedel 1977). Furthermore, these features were considered unique in the annals of Plains archeology (Wedel 1967:54). Vehik's belief was further reinforced by Wedel's (1959:573) statement that he knew "of no evidence of fortifications, stockades, or ditches at any of the Great Bend sites . . ." These "council circles" consisted of an interior patio, four semisubterranean structures or houses surrounding the patio, and an outer ring, possibly representing additional structures (Vehik 2002a:52). Although "council circle" sites had the largest number of marine shell, copper, metal, glass beads, red pipestone pipes, azurite, and turquoise, as well as specialized bifaces, they did not always yield the largest number of exotic pottery sherds or lithics (Vehik 2002a:53-54; compare Vehik 2002b:39). In considering these statements, Lawrence Keeley, Marisa Fontana, and Russell Quick (2007:56; compare Lambert 2002:208-209) pointed out a tendency among post World War II archeologists to "pacify the past" and to interpret potential evidence for warfare, such as enclosures with defensive ditches and parapets, as structures revealing religious or ceremonial activities or ascribing status. Perhaps another perspective is needed.

A close examination of the Little River sites reveals everyday residences consisting of circular houses outside of the "council circles." These ranged from about 3 to 8 m in diameter or 7 to 50 m² in area (Blakeslee and Hawley 2006:Table 10.1). Yet, the "council circle" houses were long and narrow with lengths from 8.8 to 17.4 m and widths from 3 to 4.6 m. These structures ranged roughly from a minimum of 26.4 m² to a maximum of 80 m² in area. Thus, they were smaller than the largest circular grass lodges in some cases and up to 1.6 times bigger than the largest circular houses in other cases. The question arises, why would the residence and/or ceremonial structures of a political and/or religious leader differ from those of commoners? This author would argue that they did not and that the shape of these structures was determined by the nature and function of the "council circle" itself.

The larger size of the "council circle" compartments is explained by the fact that substantial numbers of people would be contained in these structures during a time of crisis. Vehik (2002a:55; compare Vehik 2002b:39) noted that "many nonlocal items

occurred exclusively or primarily in council circle sites and principally in council-circle houses.” In reply, the author cites the following passage from Keeley, Fontana, and Quick (2007:81-82):

Fortifications protect what is most valuable to the defenders: their persons, homes, stored food and property, their livestock and other wealth, trade and administrative centers, and very commonly their ritual loci Yet some archaeologists have argued that many prehistoric fortifications could have had no military function because ritual, trade, manufacturing, or administrative activity can be documented within them To be consistent, these archaeologists also would have to claim the many thousands of worldwide, purposefully built, and often attacked fortifications were *never intended to be or ever were* fortifications because they encompassed a temple or church, manufacturing district, trading post, administrative building, storehouse, or treasury (original authors’ emphasis).

In other words, “The military functions of fortifications are and were practically and logically independent of what they surrounded” (Keeley, Fontana, and Quick 2007:82) and, in the case of the “council circles,” what they contained.

Nevertheless, comparative ethnohistorical and archeological evidence from Oklahoma sites (Baugh 1986; Bell 1984b; Bell and Bastian 1967; Newcomb and Field 1967) strongly suggests that the Little River “council circles” actually may have been fortifications (Table 3). For example, Vehik (2002a:52; compare Wedel 1967:58) noted the presence of outer rings at the “council circle” sites. Test excavations at Wheeler phase sites in Oklahoma have demonstrated similar entrenchments at the Edwards I and Duncan sites. Furthermore, Antonio Treviño, who was held captive for about six months in 1765 at the Longest site (a Taovaya village on the Red River), provided the following description of a *Kirikir’i-s* fortification:

It is made of split logs, which the Indians have placed separate one from the other in order to make use of muskets, the weapons they use, through them.

Said fortress is completely surrounded on the outside by an *earthen rampart*, close to more than a vara and a third [ca. 1.1 m] in height, which

serves them as an intrenchment [sic], and about four paces to the east and west, a very *deep trench* made so that no one can come close to the [fortress] on horseback. Inside there are *four subterranean apartments* occupying all of its circumference, into which all of the people who cannot help with the defense of the said settlement retreat in time of invasion (emphasis added, Newcomb and Field 1967:270).

Treviño noted that horseback riders created great danger to the defenders, who were worried that fire would burn the palisade walls that functioned as a curtain or shield from which they could launch projectiles in the form of musket balls and arrows at the opposing force. Unfortunately, Treviño gave little information on entryways into the fortification, the width and depth of the entrenchment, defensive strategies, or how many people might occupy such a structure during a crisis situation.

Fortified Wheeler phase sites, dating to the sixteenth through seventeenth centuries, substantiate Treviño’s description in a number of ways. Excavations at the Edwards I and Duncan sites demonstrated the presence of circular or ring ditches that were circa 2 m across at the surface, tapering to 1 m below the surface where the trench was 1 m wide (Baugh 1986). These U-sectioned ditches may have been a source of sediment for a parapet or daub for fireproofing a palisade (Keeley, Fontana, and Quick 2007:60). John Weymouth’s (1981) remote sensing work at the Edwards I site validated the idea that top soil was removed from these ditches and thrown to the inside of the ring to form a parapet into which the split logs were placed to form a palisade. No interior structures or entryways were detected inside of these redoubts by the magnetometer, however.

There are striking parallels among the descriptions of the eighteenth-century Red River fortification by Treviño, the fortified Wheeler phase sites, and the late seventeenth- to early eighteenth-century structures at the Tobias, Paint Creek, and Sharps Creek sites. For example, at the Little River sites the four semi-subterranean compartments were delineated, along with a circular trench that surrounded these “apartments.” Comparison of the ring structure dimensions in terms of diameter, trench surface width, trench depth, and probable parapet height, reveals a striking similarity among

Table 3. Comparison of Ring Structure Sites in Kansas, Oklahoma, and Texas.

Site	Ring Shape and Diameter	Trench Surface Width	Trench Depth	Parapet Height
Kansas				
Tobias ¹ (14RC8)	Circular 65 m	3.2-5.7 m	0.9 m	0.6 m
Paul Thompson ¹ 14RC12)	Circular . ⁴	. ⁴	. ⁴	0.9 m
Kermit-Hayes ¹ 14RC13)	Elliptical -	4.5-6.0 m	-	0.6 m
Sharps Creek ¹ (14MP301)	Circular 61.0 m	-	-	1.2-1.5 m
Paint Creek ¹ (14MP1)	Elliptical 39.6 x 56.4 m	-	-	. ⁴
Oklahoma				
Edwards I ² (34BK2)	Circular 50 m	2.0	1.0 m	-
Duncan ² (34WA2)	Circular 50 m	2.0	1.0 m	-
Longest ³ (34JF1)	Elliptical 80 x 120 m	3.8 m	1.2 m	-
Texas				
Bridwell ² (41CB27)	Circular 50 m	-	-	0.6 m

¹Wedel 1967:Figure 4²Baugh 1986³Bell and Bastion 1967⁴Minus (-) symbol indicates no data.

these structures throughout the central and southern Plains (Table 3). Six sites had circular rings with diameters ranging from 50 to 65 m. Two rings were elliptical, with the second largest occurring at the Longest site in south-central Oklahoma and the largest at the Tobias site in central Kansas. During the construction of these rings, the sediments from the trenches were thrown to the inside, forming parapets. Five of the sites listed in Table 3 apparently have not been plowed and have estimated parapet heights ranging from 0.6 m to 1.5 m. These piled sediments or parapets supported the upright logs that were the fortification foundation (Keeley, Fontana, and Quick 2007:57).

The assumption that “council circles” represent fortifications is further corroborated by the location of the sites, which have been mapped, at defensive positions that may have guarded entryways to a

major drainage or spring that provided access to potable water (compare Wedel 1959:213). The protection of such passageways would have been crucial to maintaining the safety of the village inhabitants during difficult periods. Although no data support the idea that a simple baffle entryway may have been used for these fortifications, even this austere type of entrance restricted access and exposed the entering attackers to flanking fire (Keeley, Fontana, and Quick 2007:63-64).

Several of the fortifications at Protohistoric period *Kirikir'i:s* sites in Oklahoma were identified by means of aerial photography. Generally, a circular to oval ring is visible in these images, and excavations yielded a high concentration of animal bone (primarily bison), indigenous and exotic ceramics, lithic tools and flakes, and other refuse and artifacts from the entrenchments (Bell 1984b; Bell

and Bastian 1967). Wedel (1967:56) described a comparable situation at the Paint Creek and Kermit Hayes sites in a similar vein:

The rest of the circle is in cropland; however, its location was clearly traceable from the air last August, when the vegetation in the northwest, north, and northeast sectors was healthy and green, whereas that within the circle was stunted and dying. The response of the crop to the still undetermined subsurface character of the circle complex was curiously reminiscent of the observations at the Kermit Hayes circle in 1940, though at the latter the contrasts were rather less striking.

Figure 2 presents an aerial photograph of the Sharps Creek site circle. Its similarity to the Oklahoma sites is remarkable, as seen in the aerial photograph of the Duncan site (Figure 3).

Furthermore, Wedel (1967) recovered charred human remains, representing several individuals, from within all four of the semisubterranean compartments at the Tobias site, also lending support to the premise that these burned structures represent fortifications. Although the intensity of the assaults in terms of reoccurring attacks or the number of warriors involved may never be determined, a carefully designed remote sensing, testing, and excavation program should be able to more clearly determine the function of the “council circles.” Even though Wedel (1967:57) maintained that no evidence for fortifications existed at the Little River sites, he noted the presence of “borrow pits.” These may have been segments of ring ditches, enhanced in some locations with sandstone boulders to protect the curtain walls. Indeed, those pits at the Tobias site were relatively uniform in their maximum width, ranging from 3.2 to 5.7 m. Thus, this author would argue that the “council circles” are indeed



Figure 2. Aerial photograph of the ring structure at the Sharps Creek site (14MP301) in central Kansas. (Image courtesy of the Kansas State Historical Society.)



Figure 3. Aerial photograph of the ring structure at the Duncan site (34WA2) in southwest Oklahoma. (Image courtesy of the Oklahoma Archeological Survey.)

fortifications with ring ditches, parapets, palisades, and interior compartments for refuge.

From this perspective, the linkage between warfare and prestige or status during the course of *Kirikir'i-s* cultural development and history may be unambiguously defined and understood as prestige gained from successful exploits during combat. Furthermore, the presence of a fortification is a powerful symbol of “possession, exclusion, independence, status, and political power,” but “this symbolism was ultimately secondary to its primary defensive function” (Keeley, Fontana, and Quick 2007:81). The causes of warfare, like enemies, change through time. Indeed, hostilities may be viewed as negative reciprocity or an “attempt to get something for nothing with impunity”; “negative reciprocity ranges through various degrees of cunning, guile, stealth, and violence to the finesses of a well-conducted horse raid” (Sahlins 1972:195). In some cases hostilities might have arisen over a

critical population threshold, technological innovations (such as compound bows), bison hunting territories, revenge, or defending trade relationships or routes (Lambert 2002:239-240); however, such conflict required two participants.

Without written records, determining allies and enemies is a difficult proposition. The earliest records indicated *Kirikir'i-s* enemies were the Apache and even different *Kirikir'i-s* groups (such as the Escanjaque or Tawakoni who fought the people of the Great Settlement). Later the Osage, Comanche, and other migrant “tribes” were hostile toward the *Kirikir'i-s*. Just as the *Kirikir'i-s* were not a single band or village, neither were other groups like the Osage or Comanche, and in the latter case, the *Kirikir'i-s* may have had alliances with one band or village while warring with another. With the arrival of aliens, *Kirikir'i-s* villages allied themselves against common foes. Later alliances were established with the Kitsai, certain Comanche bands, and

the Tonkawa. Just as today, geopolitical relations often fluctuated depending on circumstances and the balance of power.

The correlation of trade and social ranking with warfare is less credible. Not considered by Vehik (2002a) is the development of mechanisms that allow exchange to flourish despite encroaching and expanding conflict. In the Southwest this may have been a role played by the Katsina. To the east the initiation and expansion of the political and ceremonial function of the Calumet perhaps played a similar role in achieving social integration or contracting alliances within and between the developing multiethnic and composite *Kirikir'i-s* villages of this period. The success of the Calumet among prairie peoples allowed alliances to spread to the Southeast (Brown 1989) and the Great Lakes region, forming what Richard White (1991) terms the "Middle Ground." In this "Middle Ground" French traders and soldiers could work along side Algonquian and Iroquoian peoples to forge a common understanding of peaceful relations despite outbreaks of violence. Thus, trade and exchange could indeed flourish in spite of warfare and not because of it.

CONCLUSION

As a preliminary statement, the author should add that this study of the history of Plains warfare is by no means exhaustive; the reader surely may find additional cases of violence not mentioned within these pages. Even without total coverage, several major points may be made. First, and more importantly, comparing the sequence from the northern Southwest with that of the central and southern Plains, reveals that totally different trajectories were in play. In other words, one cannot simply extrapolate from one culture area to the next to determine the temporal ranges or causes for warfare. Warfare was not uniformly occurring in terms of time or space across culture areas.

Second, even though one locality within the central or southern Plains was experiencing intense warfare, a nearby locality might have been relatively peaceful. One of the better examples of this is the contrast between the north-central Texas Henrietta phase, where people experienced a number of brutal deaths, and the southern Oklahoma Washita River phase, where the villagers experienced few violent

fatalities. Such variability indicates that warfare did not occur concurrently or uniformly even within a single culture area.

Third, the Little River phase "council circles" represent fortifications. Because it has been excavated, the most dramatic example is the Tobias site, where evidence of warfare was clearly manifested in the tragic loss of life among the very young and the old. Furthermore, all of the "council circle" sites have the structural features of fortifications. These include ring ditches and parapets upon which palisades were constructed. Within these circular features were the subterranean compartments to which "civilians" retreated during the actual battle. Just as modern armies have religious leaders conduct rites of protection, so too did the *Kirikir'i-s*, which may explain the presence of sacred objects and items of prestige within these fortifications.

During the Protohistoric period, the *Kirikir'i-s* were major players in the pan-continental exchange system that connected villages throughout North America. As competition over resources and trade relationships intensified, warfare may have played a prominent role in establishing and maintaining interactive ties and alliances. The question then becomes: Is warfare institutionalized or deeply embedded enough within *Kirikir'i-s* society at this time, as proposed by Vehik (2002a), to support the development of a prestige and status system among the Little River phase people? Based on the data presented in this paper, the answer appears to be "no." But to truly answer this question a more in-depth study of the archeological data within the Great Bend region is needed to demonstrate the persistence of warfare through time.

Finally, composite villages, consisting of multicultural, ethnic, and religious communities, may have formed on the southern Plains as early as A.D. 1200 or during the Plains Village or Late period, if not earlier. A prime example of this is the Antelope Creek villages that housed members of ethnic groups later known as the Wichita, Pawnee, Taos, and perhaps Picuris, as well as others. These communities call into question the evolutionary schemes presented by Morton Fried (1967) and Julian Steward (1955) because "tribal formation" is often attributed to European contact. Indeed, the very concept of "tribe" should be re-examined in light of composite villages. In reality, the formation of these

communities on the central and southern Plains was much earlier than realized, and they should provide anthropologists with new insights concerning the complexities of social and political organization in North America. The study of composite or multi-ethnic villages is significant for this study of warfare because the formation of composite villages required a mechanism for adjudicating internal and external disputes. The *Kirikir'i-s* and other societies accomplished the settling of challenges through the institution of the Calumet ceremony (Baugh 2008). Generally, this ceremony allowed for peace to be obtained, but the *Kirikir'i-s* were obviously not successful in certain external arenas with groups such as the Osage and Apache with whom they were in a constant state of warfare.

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NOTES

1. The term "Wichita" today refers to the Wichita and Affiliated Tribes. However, because only one village group

was historically known by this name, the author chose to use their own broader name for themselves: *Kirikir'i-s*, meaning raccoon eyes. Referring to their historic practice of tattooing, the term "raccoon eyes" described several lines radiating from a man's eyes toward his temples. The Plains sign for the *Kirikir'i-s* is a circle drawn around the eyes with an extended forefinger indicating tattooing (Newcomb 2001:564). At the time of contact, there were perhaps as many as 10 to 12 divisions of the *Kirikir'i-s*, composed of an estimated 50,000 to 100,000 people in all. These village peoples included Escanjaque, Mento, Ouatchita, Pani, Paniassa, Taba, Teya, Teucara or Tawakoni, Tokane, and Ysconies (Newcomb 2001:563-566). Another group, the Kitsai, was considered independent with a distinct language "intermediate between Pawnee-Arikara and Wichita" (Parks 2001:567). By the late eighteenth century the number of identified village people had been reduced to six groups: Tawakoni, Waco, Iscani, Taovaya, Wichita, and Kitsai (Bolton 1914). In this paper "Wichita" refers only to the original village group identified in Kansas and sometimes termed the "Wichita proper" by modern scholars. Regarding the historic social organization of the *Kirikir'i-s*, each village group is commonly thought to represent a "band." In this author's view, however, their units should be described as villages with horticulture, rather than multiple hunting and gathering bands or local units of one tribe. Moreover, the descriptions of the Teya and Escanjaque, provided by the Coronado and Oñate expeditions, described villagers engaged in seasonal bison hunting (Hammond and Rey 1940, 1953). In other words in this author's understanding, they also conformed to the village pattern (contradicting Vehik 2002a, 2002b, 2006). From this perspective the Garza complex and Wheeler phase represent the same people, the difference being that the former were village people on extended bison hunts. Finally, by the mid-seventeenth century, if not earlier, the *Kirikir'i-s* villages consisted of indigenous residents as well as individuals, more commonly men, who were born in other communities, making the population of any one village a composite or mixed group of people.

2. By using Calib Rev5.02, the author recalibrated the Lake Lavon radiocarbon ages presented in Lynott (1975:69-70). The best fit at 2 sigma for these dates is A.D. 1000-1450.

3. The absence of cemeteries at Protohistoric period and later sites of the *Kirikir'i-s* may be explained as a means of self-preservation, as traditional burial practices may have exposed more people to infection. Those people who did not modify their aboriginal customs often experienced great population loss (Dixon 2007). As Athanase de Mézières, Spanish Indian agent for the north Texas tribes (1769-1779), observed for the Tawakoni, they "do not bury their dead, but take them to the open field. When they are reproved for such neglect, they ask if it makes any difference whether the birds and beasts or the worms eat them" (Bolton 1914[1]:289). By leaving their dead on the prairie, slain warriors go to the Spirit-Land in the east,

where honored men enjoy the pleasures of their new village (Dorsey 1995:14). According to Mézières, the Tawakoni

firmly believe in the reality of another life, in which the good (whose first rank is composed of the warriors) will be rewarded by being removed to a certain country where they will enjoy perpetual youth and strength, crystalline waters, exquisite fruits, savory meats, and other delicacies known to them in this world (Bolton 1914[I]:295).

During the 1690s the indigenous peoples of the Mississippi Valley were affected by the Great Southeastern Smallpox Epidemic (Kelton 2002) that led Galloway (2002:228; compare 2006:394-395) to conclude that archeological data is unreliable for determining population size because "in the grip of wide-spread epidemic disease burials may not have been carried out." Indeed, Johnson, Yearous, and Ross-Stallings (1994) detail secondary burials among the eighteenth-century Chickasaw when burial occurred at all. Maintaining skeletal remains was safer than handling flesh and protected Southeastern peoples from violating traditional care of their ancestors (Kelton 2004).

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RECENT INVESTIGATIONS IN SEARCH OF THE ELUSIVE FORT CAVAGNOLLE, 1744-1764

ROBERT L. THOMPSON

Atchison, Kansas

Fort Cavagnolle, a trading post established by the French, was the first permanent European settlement in what is now Kansas. It was abandoned in the mid-1700s. The earliest reference to it appeared in journals associated with Lewis and Clark and their epic Corps of Discovery and the last reference was from the Missouri Expedition in 1820. This paper describes how the author used these descriptions to locate what he believes are the remains of Fort Cavagnolle. He has discovered a low mound that fits the description of a fortification and post molds that could also be part of the fort. Is the possibility strong enough to warrant further examination of the site?

If, as seems probable, Fort Cavagnolle is to be identified with the “remains of a fortification erected by the French” seen by Long (James 1823, Vol. 1, p. 110) on the west bank of the Missouri some 35 miles above Kansas River, it would appear that the fort stood just above present Fort Leavenworth and a few miles below Cow Island (Wedel 1959:33).

Early in the eighteenth century, France established a vast network of frontier forts in “Illinois country” of Upper Louisiana. These forts served as trading posts with Indian tribes, such as the Missouris, Kansa, and Panis. Good locations for trading posts were near their villages, and in 1744 Fort Cavagnolle (sometimes spelled Cavagnial or Cavagnal) was established within a mile of a Kansa village. This village had recently moved from north of present-day Atchison (Hoffhaus 1962:6; Remsberg 1919; Thompson 1997) down the Missouri River to just a few miles north of present-day Fort Leavenworth. As a trading post, Fort Cavagnolle’s directive was to supervise all trade on the Missouri River and its tributaries beginning January 1, 1745.

During the 1740s and most of the 1750s, the Kansa remained on the Missouri River near the mouth of a major drainage, although “the records hint at occasional absences of the Indians from the vicinity of the post” (Nasatir 1952:1:48; Wedel 1959:51). Some time after 1757 the Kansa moved,

this time to a site farther west and south, to the Kansas River (Wedel 1959:52). Fort Cavagnolle continued in operation until around 1764.

One of the last official references to the fort was on May 22, 1764, when French official Jean Pierre Gerald de Vilemont wrote to Spain, asking that a post be kept among the tribes of the Missouri (Nasatir 1952:60). He referred to the “existing *entrepot*” (i.e., the trading post at Cavagnolle) and urged that it be strengthened and better provided with merchandise (Hoffhaus 1962:23). Charles E. Hoffhaus (1984:452) reported that the last reference to the fort still in use was by Auguste Chouteau, who wrote in his journal “that in 1764 Neyon de Villiers, commandant at the Illinois . . . ‘brought down the little garrison’ of the ‘Fort des Canses’ as well as all the other garrisons from the evacuated French forts. He added that the bulk of them went down river to New Orleans . . .”

A variety of diaries and reports referred to Fort Cavagnolle, but its location has never been found drawn on paper as was Fort Orleans, another French fort located on the Missouri River. Many people have tried to find physical evidence of Fort Cavagnolle. As far back as May 1893, the *Atchison Champion* reported, “H. Huhlenberg, a prominent archeologist of Wisconsin has been exploring Kickapoo and vicinity for several days in search of the remains of an old French fort which dates back to 1804 . . .”

(Witty and Marshall 1968:13). George J. Remsburg (1811:66-67), a newspaper editor from Potter, Kansas, investigated the area in 1911 but stated that he could find no trace of the old French fort aside from a few objects of “probable French origin.” In 1967 Ralph E. Kiene (1967) submitted a manuscript with references to his location of the fort, and Kansas State Historical Society (KSHS) archeologists led surveys looking for the fort intermittently from 1962 until 1964 (Witty and Marshall 1968).

During the 1960s KSHS investigations of the Lower Salt and Plum Creek valley, Tom Witty and James Marshall found many prehistoric Indian sites but no evidence of protohistoric or historic Indian groups. Witty and Marshall (1968:58) wrote, “their [historic Indian groups] presence is suggested by the random finds of glass beads and catlinite specimens which were seen in private collections during the survey. While some might be Kansa in origin the close proximity of the historic Kickapoo reservation could also explain the presence of such artifacts typical of the early historic period.”

Determining the location of Fort Cavagnolle has been a pursuit of this author for several years. He has done extensive research, reading articles, journals, etc., reviewing maps, and walking fields. He recorded and tested a possible location, designated as 14LV424. This article is a culmination of his findings for your consideration.

COMPARING THE EVIDENCE FROM DOCUMENTS AND ARCHEOLOGICAL FIELDWORK

After Chouteau’s mention of the fort closure in 1764, the next reference does not appear until 1804 when Lewis and Clark’s Corps of Discovery viewed the location on the journey to the Pacific Ocean. Captain Clark’s entry in his daily journal of July 2, 1804, stated: “. . . camped after dark on the S. S. above the [“Bear Medesin,” now Kickapoo] Island & opposit the 1st old village of the Kanzas, which was Situated in a valley, between two points of high land, and immediately on the river bank, back of the village and on a riseing ground at about one mile The French had a garrison for some time and made use of water out of a Spring running into Turkey [now Plum] Creek . . .” (Moulton and Dunlay 1986:342; Wedel 1959:39).

In his 1893 edition of the explorers’ original manuscript journals and field notebooks, Elliott Coues (1893:37) quoted Captain Clark: “About a mile in the rear of the village was a small fort, built by the French on an elevation. There are now no traces of the village, but the situation of the fort may be recognized by some remains of chimneys, and the general outline of the fortification, as well as by the fine spring which supplied it with water.”

The author believes that Captain Clark’s description provides enough information to find the location of Fort Cavagnolle, especially when combined with facts provided in other writings. Figure 1 is a topographic map (Missouri 1:50,000 – Leavenworth - 1976) of the area, and the key to the numbered locations is provided below. These seven points then will be discussed in greater detail.

1. There were two high points of land on the Missouri River bank.
2. A major stream drained into the river.
3. On the riverbank at this location was the Kansa Indian village.
4. On a hilltop a mile west of the village was the fort site.
5. At the base of a hill was a creek where the water drained from a spring that the French used.
6. On top of this hill were remnants of the fortification that surrounded the fort.
7. Lewis and Clark saw chimneys 40 years after the French left the fort.

Point 1: Two High Points of Land

When Lewis and Clark first came into sight of the valley where the Kansa village had been located, they would have been looking to the west. Viewed from the Missouri River, the village site was said to be between two high points of land, one on the north and one on the south. On the topographic map the high points are at a 900-foot elevation and one mile apart. The half-mile-wide valley floor between their bases is large enough for a village.

Point 2: Major Stream Draining into the Missouri River

A major drainage empties into the Missouri River at the base of the southern high point of land. This

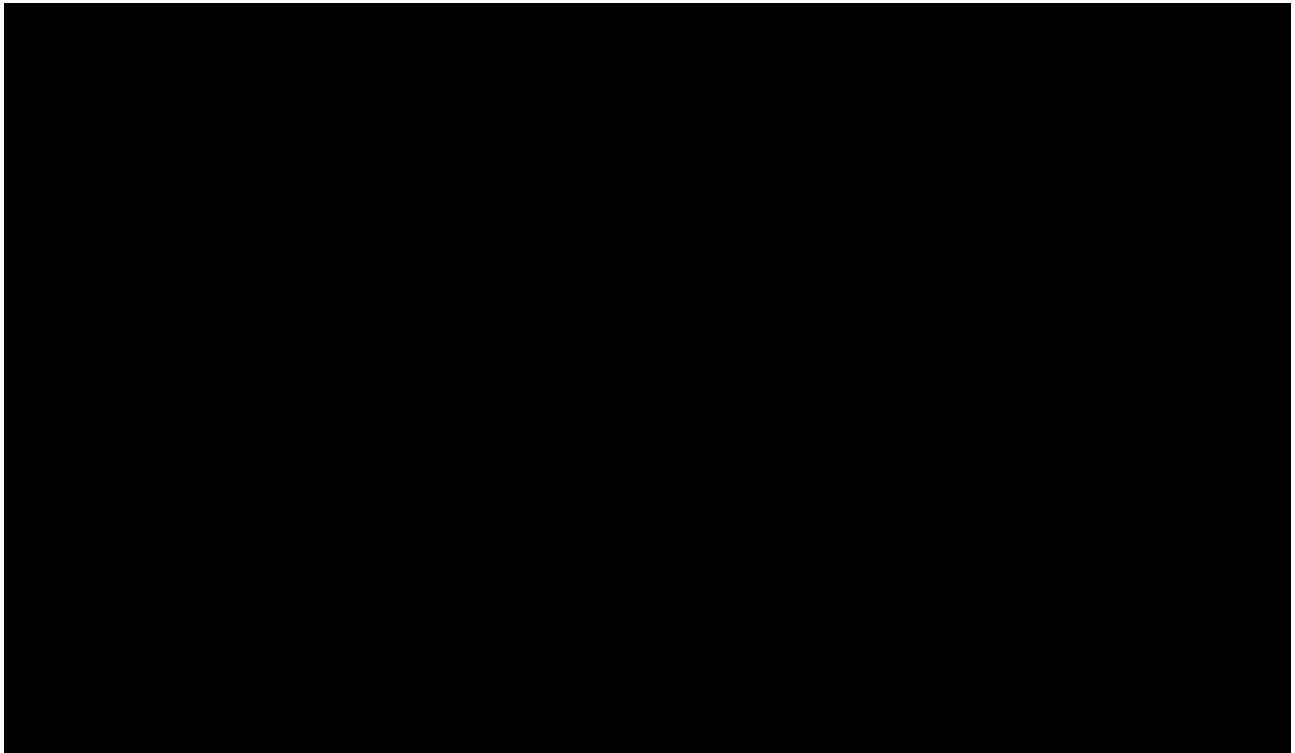


Figure 1. Modern topographic map, showing numbered locations discussed in this paper.

creek drains a large land area southwest of the village, and it leaves a very prominent landmark to locate the village (Remsburg 1919; Wedel 1959:51).

Point 3: Location of Second Kansa Village

The Kansa tribe established its second village at a point on the west bank of the Missouri River, as stated in the Lewis and Clark journal: “the 1st old village of the Kanzas, which was Situated in a valley, between two points of high land and, immediate on the riverbank . . .” (Wedel 1959:39). Lewis and Clark traveled up river from the south and came to this village site first, so they called it “the first old village of the Kanzas.” In fact, the Kansa had lived in a village north of Atchison first before moving to this location (Thompson 1997).

KSHS archeologists investigated this creek valley very thoroughly, beginning in December 1962. Even though they did not find anything that could be tied specifically to the Kansa, they did find and record 11 American Indian sites in the valley, with more sites to the south and to the northwest. One of the sites was identified through artifacts from the

George Remsburg collection, as from the “Kansa Site” that was reported to be at the mouth of a creek. Although the artifacts were not diagnostic, the site name was “most provocative in light of the recent survey” (Witty and Marshall 1968:18).

Point 4: Plan View of Fort Cavagnolle

The size and shape of Fort Cavagnolle was discussed by Abraham P. Nasatir (1952:36-37) in his book *Before Lewis and Clark*.

. . . a fort of eighty feet on each side, surrounded by good posts, made of the best wood found in the place where the fort is located, with two bastions on the front side, and on the back side, according to the plan which has been made, twice as many stakes, and storied bastions.

There shall be in said fort a house for the officer designated as commander; it shall be thirty feet long and twenty feet wide, with rooms distributed, according to the plan, already made, with wooden separation walls and upper and lower floors. It shall be built with posts covered with bark, with a kitchen

contiguous to the building, built as a shed, covered also with bark, with a chimney as on the *boussilage* . . . Also a guard house, twenty feet in length, according to the plan already made, built of posts covered with mud [*boussilage*] the whole structure covered with bark, and a chimney in said building made with mud [*boussilage*] with a high and low floor of split stakes, the upper being well coated with mud on its upper side. A square powder room, ten feet on each side, from post to post, covered with a high and low floor of split stakes. Also a house to lodge the *fermiers* of the post, the size of which shall be determined at their convenience. Another house for their men, a size of which will suit them.

Note that *boussilage* is a mud and animal hair mixture, and *fermiers* are farmers.

As it was from a similar time period (1723-1728), the author took the liberty of using the plan of Fort Orleans, drawn by Dumont de Montigny (Hofhaus 1984:43; *Mid-America* January 1930:259), superimposing the descriptions of Fort Cavagnolle (Figure 2). Fort Orleans was approximately 70 miles downstream on the Missouri River from Fort Cavagnolle in present-day Carroll County, Missouri. It seems logical that the two forts were built on a comparable plan.

Point 5: The Spring

Number five shows the creek that runs along the base of the hill below the proposed fort location. "The French had a garrison for some time and made use of water out of a spring running into Turkey Creek" (Wedel 1959:39). As noted by Wedel, the creek is now known as Plum Creek.

The author has not been able to find the spring mentioned in the Lewis and Clark journal, but the hillside has many features that may have been springs. In the past native grasses may have held more moisture than the plowed hilltop, which would allow rainwater to run off instead of being stored in the hilltop and to be released into the springs more slowly.

Point 6: Fortifications at Fort Cavagnolle

At 14LV424 a 1.5 m-high mound of dirt runs along the north edge of the hilltop for about 46 m (50

yards) to the east edge of the hill and turns south for another 68 m (75 yards) (Figure 3). This long, low mound of dirt is not natural, but manmade. The earthwork encloses a small flat area on the north end, and the rest of the hilltop is comprised of a rolling topography that is under cultivation. Figure 4 shows how it appeared in 2000.

The French could have used such a mound as a breastwork to protect the fort on two sides. *Webster's New Universal Unabridged Dictionary* defines breastwork as "a low quickly constructed barrier to protect gunners." This might be the fortification noted by Lewis and Clark.

When the author first recognized this mound (Figure 5), he expected it to have upright logs planted in it to form a stockade wall. However, a small trench (Trench B, Figure 3) excavated half-way across the mound to determine how it was constructed found no evidence of a stockade, thus keeping with the theory that it was a breastwork of the type still used during the American Civil War.

A test trench, called excavation A-A, was dug half-way across the mound, starting from the south and working north. If completed through the

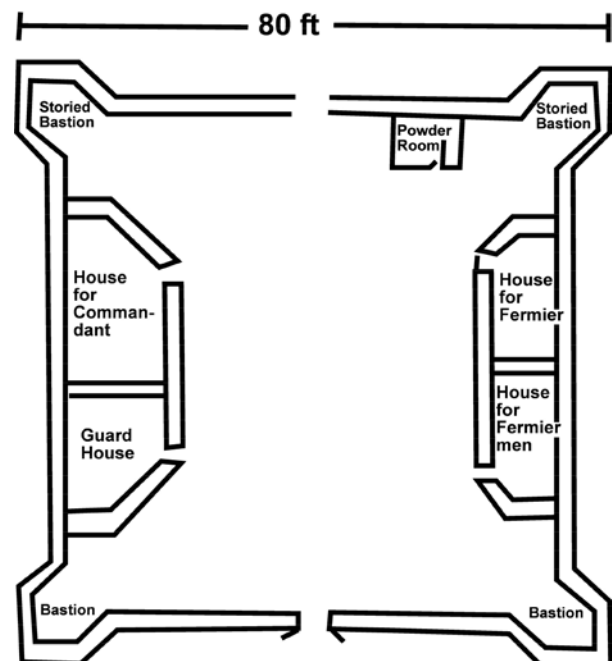


Figure 2. Plan view of Fort Cavagnolle. The author used de Montigny's map of Fort Orleans (*Mid-America* January 1930:259) as a base and overlaid the characteristics of Fort Cavagnolle as described in documentary sources.

mound, the exploratory trench would have been 4.2 m in length; however, 2 m were all that were needed to get a good east wall profile (Figure 6). Starting at ground level on the south, one could see where the mound started. Evidently dirt eroded from the top center and moved down both sides, making the mound wider at the base than when first built more than 250 years before. At 84 cm north of starting point "A" and 38 cm below the level line, there appeared in the wall profile a color change showing where sterile soil had been removed and piled up to

form the breastwork (Figures 7). While this color change cannot show who removed the soil, it does prove that the stratigraphy is not a natural formation created by wind or water, and this has to be accounted for in some manner.

Until it can be proven otherwise, consider the idea that the soil was purposefully built up to form a low mound to be used as a defensive breastwork. This might be the earthwork built by the French to protect the fort in case of attack and the fortification described by Lewis and Clark in 1804.

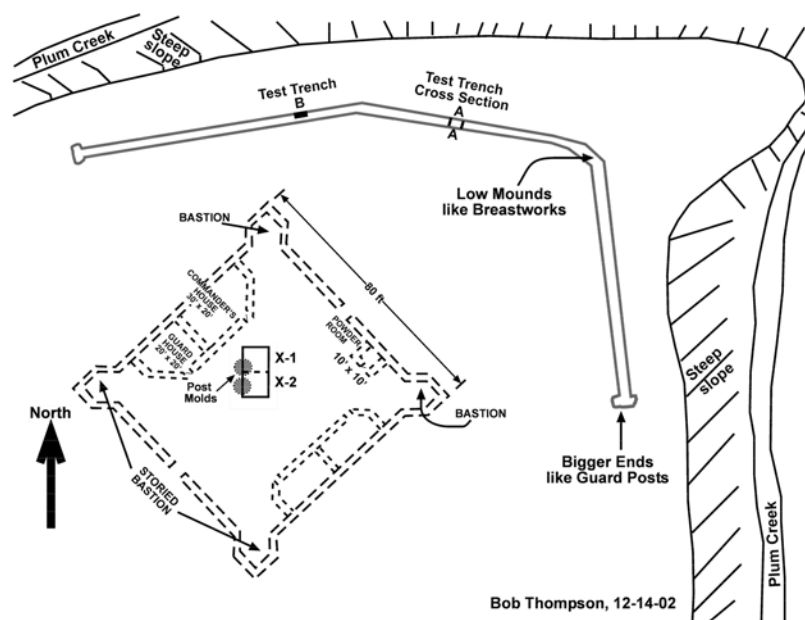


Figure 3. Sketch map of 14LV424, showing topographic features, test trenches, excavation units, and post molds. The author's plan view of Fort Cavagnolle, shown with dotted outline, is superimposed on the site.



Figure 4. Panoramic view of the hilltop in 2000. Chunks of limestone are present in the clump of trees, which the author proposes as the site of Fort Cavagnolle.



Figure 5. Low mound that author believes to be the remains of a breastwork around Fort Cavagnolle. The signboard marks the spot where test Trench A-A was excavated.

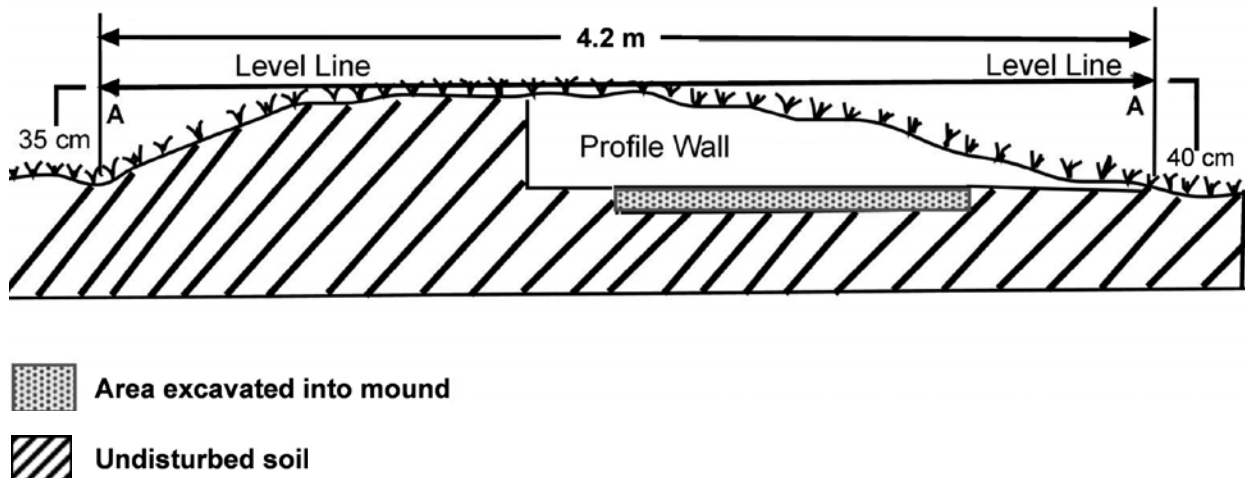


Figure 6. West wall profile drawing of mound cross section.

Point 7: Remains at 14LV424

Agriculture has been practiced in similar settings throughout the area since the Euro-American settlement period, yet at this particular spot, which would appear to be ideal for cultivation, there are large trees, brush, and a few rocks (Figure 8); only

adjacent hills, valleys, and slopes have been tilled. Two spots have limestone blocks that could be left from chimneys that Lewis and Clark saw 40 years after the French left the fort. In addition, the author believes that he has found other physical evidence in the form of post molds.

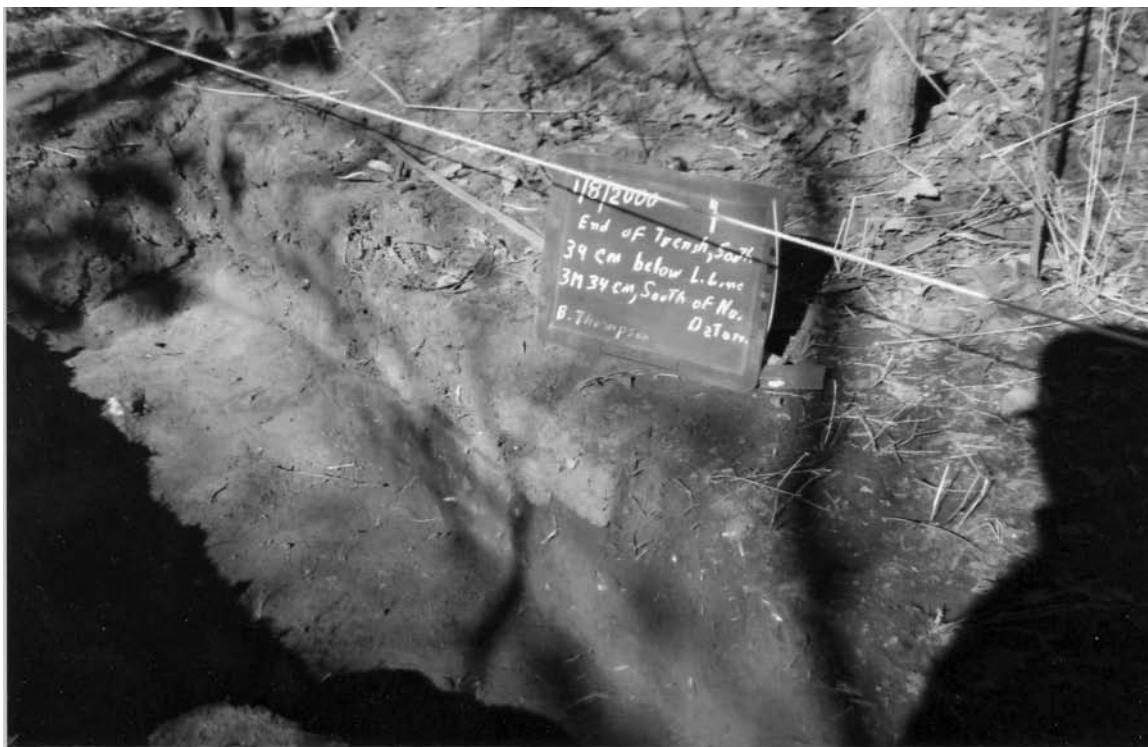


Figure 7. Two views of west wall profile of Test Trench A-A. The dark soil is undisturbed, while the lighter soil is fill, interpreted by the author as the breastwork.



Figure 8. This clump of trees believed by the author to be the site of Fort Cavagnolle.

Over a period of three years, the author conducted a metal detector survey of the hilltop and dug a series of shovel tests on the north end of the hilltop. In addition to the two partial trenches across the mounds, he excavated two 50 x 50-cm test units (X-1 and X-2, Figure 3) in the grassy area just south of the remains of a brush fire shown in Figure 8. Two post molds were discovered (Figures 9 and 10).

If Fort Cavagnolle were constructed similarly to Fort Orleans with an 80-foot stockade having “two bastions on the front side, and on the back side, according to the plan which has been made, twice as many stakes, and storied bastions. . .” (Nasatir, 1952:36-37), then there would have been many post molds. In 1752 Commandant Louis Robineau de Portneuf reported that the fort itself and the barracks were rotten and needed rebuilding (Hoffhaus 1984:441). Furthermore, during that year that the fort suffered damage when “a windstorm had blown down all of the chimneys and damaged the buildings” (Nasatir 1952, vol. 1:48). Portneuf appealed for money to repair the fort, but when none was forthcoming, apparently was forced to salvage what

he could from the stockade to repair the fort. On December 12, 1758, Governor Kerlérec said that Fort Cavagnolle “. . . consists of a circle of piles [un entourage de Pieux (an enclosure of stakes)] which encloses some bad cabins and huts [cabannes en loge] . . .” (Nasatir 1952, vol. 2:52).

The original building of the fort and the later rebuilding of the stockade would require that a number of holes be dug in the ground. These holes would contain soils of different colors caused by rotting or burning wood. Rebuilding would have left even more post molds. The two post molds in Figures 9 and 10 may fit somewhere in the fort structure. It would take an excavation on a grand scale to show where these two post molds fit in the footprint of a structure, but they are evidence that some sort of structure was here at some time.

An Additional Documentary Source

Another significant trip up the Missouri River after Lewis and Clark was the Missouri Expedition of 1818-1820. Surgeon John Gale kept an official journal of the trip. Gale wrote, “October 5, 1818,

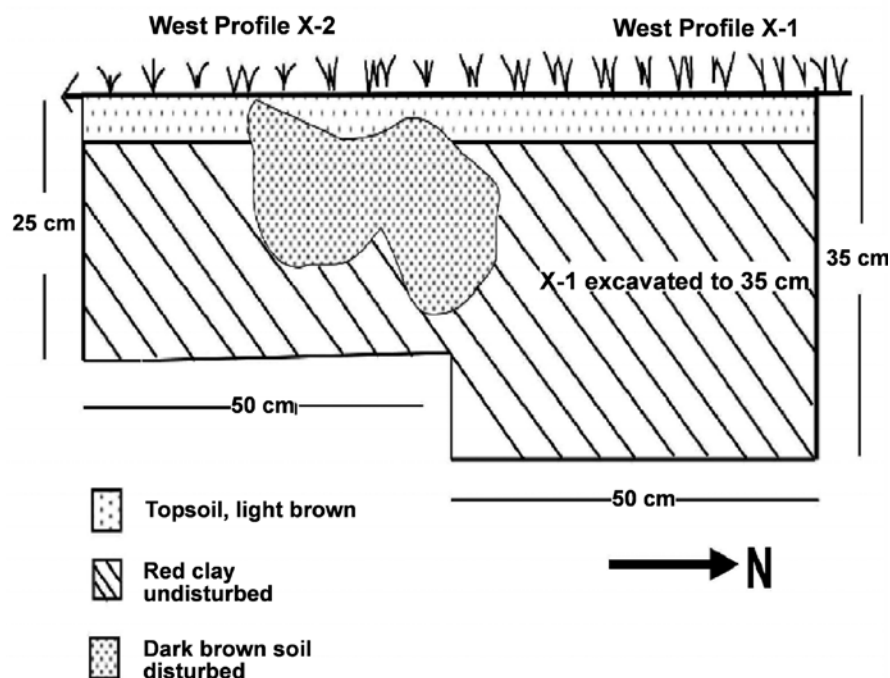


Figure 9. West wall profile drawing of excavation units X-1 and X-2.



Figure 10. Dark stains in west wall profile of excavation units X-1 and X-2, identified by the author as post molds.

Monday: Morning pleasant, Without wind. Passed at three miles distance on the North, fishing creek, and at three miles further distant, Made Fort Osage, situated on an eminence on the South Side of the River, 70 or 80 feet above level of the water . . .”

(Nichols 1969:23). Anyone who has been on the Missouri River bank below Fort Osage can see why Gale used the term “eminence,” which Webster’s Dictionary defines as “a high or lofty place, thing, etc., as a hill.”

At a point about 100 miles up the Missouri River from Fort Osage, just north of Fort Leavenworth, Gale wrote, "October 8, 1818, Thursday: Morning clear and cold. Last night there was a Severe frost and some ice. At a distance of 5 miles passed Turkey Creek on the South, and at a distance of two Miles farther Made Bear Medicine Island, on the North, at the extremity of which we encamped on the South in a Valley where once Stood the ancient Village of the Kansas, a Mile in rear of which is the remains of a French Fort which was Situated on an eminence near a Spring of fine water. The general outline of the works and the remains of chimney are only visible . . ." (Nichols 1969:27-28).

As before, Gale must have been impressed at the height of the hill where the fort was built because he again used the term "eminence" to describe its location. The river's elevation at this point is 237 m (777.36 feet) and the top of the hill, which the author proposes as the location of Fort Cavagnolle, is 302.5 m (992.2 feet) or a difference of 65.5 m (214.84 feet)—certainly high enough to be called an "eminence."

CONCLUSION

This article has sought to detail the ongoing search for the historic Fort Cavagnolle. The fort was an outpost of French colonialism during the eighteenth century, making it the first permanent white settlement in Kansas. The fort operated as a trading post and station of French influence among native populations in the area for 20 years. Literature research into the topic reveals that Fort Cavagnolle and French influence in general frequently was linked to the Kansa occupation of the region.

The location that has been the focus of this investigation was identified on the basis of comparing information available among limited historical accounts with physical features that may correspond to those descriptions. Specifically, a low mound still visible along two edges of a hilltop does not appear to be a natural feature and may represent an earthwork constructed for defensive purposes. Post molds identified in limited test excavations indicate the presence of manmade features at the location. While no artifacts definitely associated with eighteenth-century French occupation of the area have been recovered to date, the author feels that this

location warrants further attention and hopes that the landowner will allow additional investigation of this potentially significant site. Ultimately more extensive survey and excavation will be necessary before this location can be proven with reasonable certainty to be the location of Fort Cavagnolle.

Acknowledgments

First and foremost, I would like to thank the landowner for allowing me to survey on his land; to protect his privacy, I cannot identify him at this time. My thanks to Dr. Raymond Wood of the University of Missouri, who read over the first rough draft of this report and encouraged me to continue with it. Thanks to Anita Frank, Tod Bevitt, Chris Garst, and Virginia Wulfschuhle of the Kansas State Historical Society for contributing substantially to various drafts of the manuscript. Last, but not least, a special thanks to my wife Freda for all her help in getting this down on paper.

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ANALYSIS OF POTTERY DECORATIONS AT THE MILLER SITE (14WY8), A LATE KANSAS CITY HOPEWELL OCCUPATION

JEFFREY SPENCER

Washburn University

The Miller site (14WY8) is a prehistoric archeological site located on Little Turkey Creek, a tributary of the Kansas River, in Wyandotte County, Kansas. The site's location is important for understanding the affiliation among native North American cultures in the transitional area between the Eastern Woodlands and the Great Plains. Amateur archeologists conducted unprovenienced excavations in an effort to salvage information from the site in advance of a construction project in the 1930s. No radiocarbon dates were generated to establish an accurate temporal placement of the occupants.

The current research focuses on analysis of decorative pottery motifs, which has allowed the author to identify stylistic similarities between the Miller site occupants and the Hopewellian cultures of the Kansas City region, as well as the Eastern Woodlands. These pottery decorations suggest a Late Kansas City Hopewell (Edwardsville phase) occupation at the Miller site.

Correspondence in January 1937 between amateur archeologist J. Mett Shippee and Waldo R. Wedel of the United States National Museum resulted in archeological investigations in and around Kansas City during the summers of 1937 and 1938 (Wedel 1943:viii). Those investigations were summarized by Wedel in three articles (1938, 1939, 1940) but not elaborated until the 1943 publication of *Archaeological Investigations of Platte and Clay Counties, Missouri*. One site excavated during those investigations was the Renner site (23PL1), which Wedel (1943:219) described as having “definite relationships to certain northern Elemental Hopewellian manifestations, notably to those of the Illinois River valley and southwestern Wisconsin.” Comparing the Renner site assemblage to surface collections from Harry Trowbridge and others in the Kansas City vicinity, Wedel (1938:106) called this cultural manifestation the “Kansas City focus of an as yet unnamed westerly aspect of the Hopewellian.” Later changes in the taxonomic system led the culture to be designated as the Kansas City Hopewell.

Representing the westernmost variant of the Hopewell complex (Logan 2006a, 2006b),

Kansas City Hopewell peoples, considered by Wedel (1959:542) to be “probably the most advanced and complex of the Woodland manifestations of the Kansas region,” were centered at the confluence of the Kansas and Missouri Rivers. They adapted to the local riverine environment, hunting (deer, turkey, fish) and gathering (nuts, acorns, goosefoot) but also supplementing their diet with the cultivation of plants, such as maize (corn) in the latter part of the occupation. Native domesticates, including marsh elder, pepo squash, and possibly sunflower also were cultivated (Adair 2006:256).

There are two plausible origin scenarios of the Kansas City Hopewell peoples. The first hypothesis proposes an indigenous population establishing cultural connections with neighboring communities associated within the Hopewellian Interaction Sphere (Caldwell and Hall 1964). The second idea supposes a “watered-down version” (Wedel 1961:89) of the Hopewellian cultures migrating from the Illinois River valley up the Missouri River to its confluence with the Kansas River. Whether these peoples represent an in situ development or an emigrant population, the ceramic artifact evidence

suggests these peoples were conforming to established patterns of Hopewellian design, specifically the Havana Hopewell of the Illinois River valley.

CHRONOLOGICAL SEQUENCE

In their 1975 *American Antiquity* article, Alfred E. Johnson and Ann S. Johnson (1975:283-296) provided a chronological sequence of the Kansas City Hopewell occupation by the seriation of rim sherds from four archeological sites: Trowbridge (14WY1), Renner (23PL1), Deister (23PL2), and Aker (23PL43). This seriation was accomplished by the *k*-means clustering technique, along with stratigraphic evidence and a series of radiocarbon dates. Basically, *k*-means is a clustering procedure, in which “the term *k*-means refers to the *k* number of clusters produced by the technique, and to the centroids of the clusters, which are lists of the means of each variable within a cluster” (Johnson and Johnson 1975:286).

Further investigations since that 1975 study have provided temporal placement of the Kansas City Hopewell occupation, based on pottery decorations and projectile point styles. The development has been separated into three phases: Trowbridge phase (A.D. 1-250) characterized by pottery decorated with plain stick impressions, cord-wrapped stick impressions, bosses and dentate stamping, and broad bladed projectile points; Kansas City phase (A.D. 250-500) characterized by pottery decorated with cross-hatching or rocker-stamping, sometimes accompanied by punctuations, and sub-triangular contracting-stemmed or corner-notched projectile points; and Edwardsville phase (A.D. 500-750) characterized by pottery decorated with lip crenulations and corner-notched projectile points. These stylistic changes parallel the Illinois Hopewell pottery (Johnson 1979:90-92; Johnson and Johnson 1975).

Brad Logan (1993, 2006a, 2006b) has suggested that the Kansas City Hopewell occupation is more compressed and proposed the following date ranges: Trowbridge phase (A.D. 1-250), Kansas City phase (A.D. 250-400), and Edwardsville phase (A.D. 400-600). He offered this change in temporal placement on the basis of excavations at the Quarry Creek site (14LV401), which showed nonconcurring ceramic and projectile point typologies for the Kansas

City and Edwardsville phases (Logan 1993:187). Furthermore, Logan (1993:187-188) hypothesized that the Kansas City Hopewell terminal date was more likely around A.D. 600-650. He based this deduction on radiocarbon dates from Late Woodland Grasshopper Falls phase sites (Reynolds 1979) that are contemporaneous with the Edwardsville phase, as conceived by Johnson, and appear to have no Hopewellian influence. Therefore, Logan (1993:188) concluded, “It is rather strange that a Late Hopewell culture could exist in such close proximity to other Woodland cultures without sharing or influencing some material culture traits.”

MILLER SITE

Site 14WY8 (Figure 1) is located within the Kansas Drift Plains division of the Dissected Till Plains section of the Central Lowland province of the Interior Plains division of North America (Schoewe 1949:273-291), also called the Glaciated Region (Mandel 2006:11). It is in the oak-hickory woodland region, known as the Western Loess Bluffs and Tributaries (Logan 2006b:346-347), approximately 5 miles south and west of the Trowbridge site, which is “in a setting identical to that of most of the large, long-occupied, Kansas City Hopewell villages” (Johnson 1983:105).

After viewing collections donated by Terry Martin in 1972, Alfred Johnson recorded the site in 1980 (Roberts 1988). Two subsequent publications (Feagins 1989, Johnson 1983) were generated that suggested long-term occupation, based on material culture indicative of the Nebo Hill phase (Late Archaic), Kansas City Hopewell (Early Ceramic) and the Steed-Kisker phase (Middle Ceramic). However, this paper focuses on the Kansas City Hopewell occupation.

Amateur archeologists, including members of the Kansas City Archaeological Society (KCAS) excavated portions of the site (Feagins 1989:30). The KCAS began systematic excavations on March 7, 1987; however, because the landowner decided to use the soil for construction purposes, emergency excavations were carried out to salvage the material culture (Roberts 1988). Because of the lack of both provenience control and radiocarbon dates from this site, the current research is based solely upon the decorative pottery sherds and the

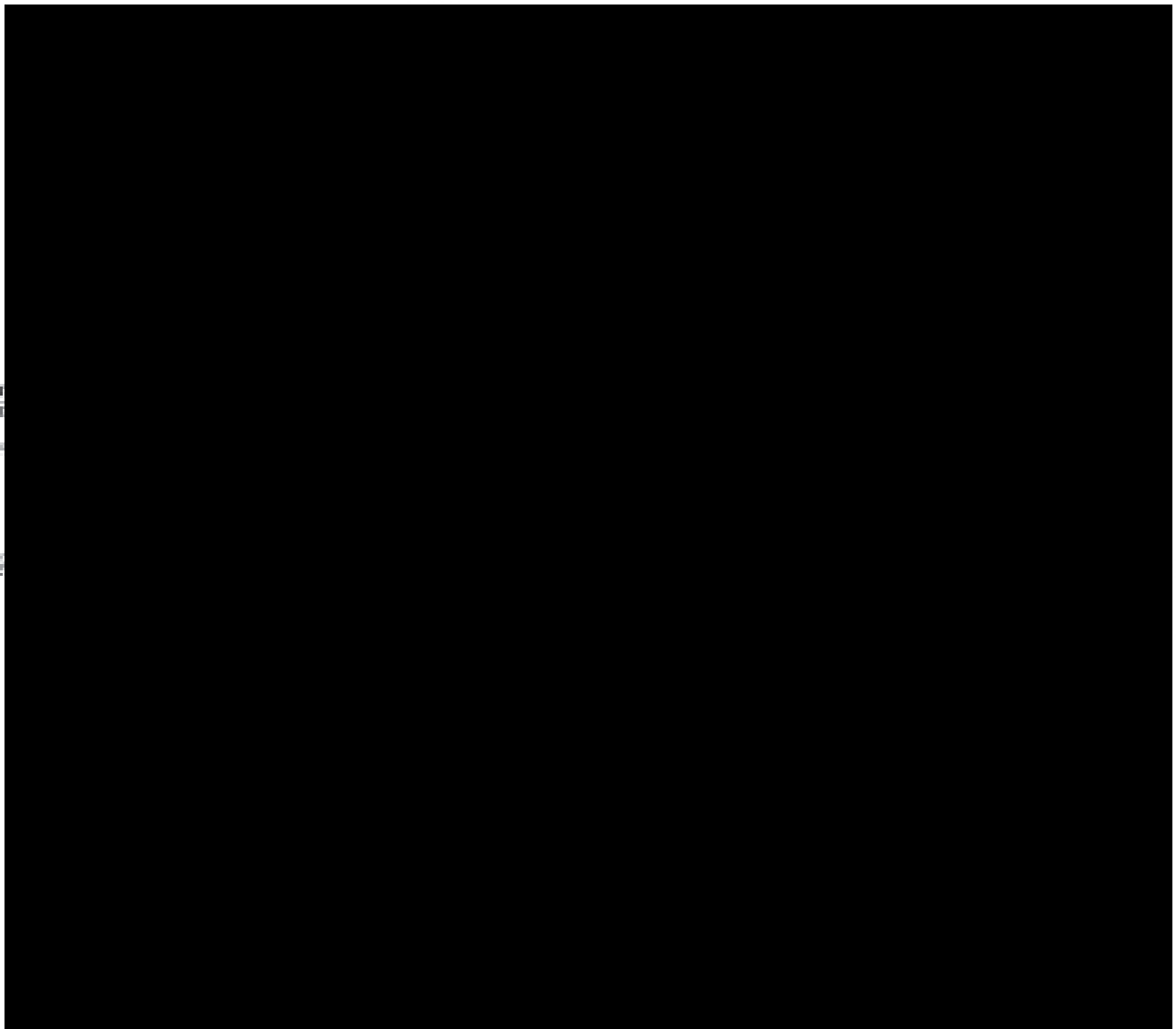


Figure 1. Wyandotte County map, showing general location of 14WY8.

established chronological sequence of the Kansas City Hopewell occupation (Johnson 1976, 1979, 1983, 2001; Johnson and Johnson 1975; Logan 1993, 2006a, 2006b).

METHODS

The author inspected every pottery sherd from 14WY8 to determine if decorative elements were present and photographed each decorated sherd. He measured the thickness and recorded temper type, part of vessel (body or rim), and decoration, entering this data into a database. Each decorated sherd that had a specimen number or any provenience information also was noted.

FINDINGS

Out of the estimated 5,000 pottery sherds, 377 had a decorative element. These were predominantly grit tempered ($n=347$, 92%). One complete miniature vessel with incised lines forming a grid-like pattern was shell tempered, and 35 (8%) were of undetermined temper type.

As noted above, Kansas City Hopewell peoples created specific decorative pottery motifs throughout certain phases of their occupation. During the Trowbridge phase, pottery displayed bosses, dentate stamping, zoning, and plain or cord-wrapped stick impressions. As none of these decorations appear on Miller site sherds, it seems that Kansas

City Hopewell peoples were not living at 14WY8 prior to A.D. 250.

Yet, evidence of the Kansas City and Edwardsville phases does exist (Table 1). Fifteen (4%) sherds were rocker-stamped, and four (1%) were cross-hatched, suggesting Kansas City phase presence. Crenulated rims were a distinctive trait of the Edwardsville phase. Plain crenulated rim sherds numbered 63 (17%), while crenulated rim sherds accompanied by punctates totaled 10 (3%), and 1 (0.3%) had a crenulated rim accompanied by rocker-stamping and punctates (Figure 2). The remaining 284 (75%) decorated sherds had either cord markings, punctates, incised lines, or trailed lines—none of which is temporally diagnostic of the Kansas City Hopewell. For this reason, those non-specific pottery motifs were excluded from this analysis.

CONCLUSION

The pioneering work of Waldo Wedel, Mett Shippee, and Harry Trowbridge (to name a few) led archeologists and enthusiasts to a better understanding of the cultural manifestation in northeastern Kansas and northwestern Missouri known as the Kansas City Hopewell. A sequence of phases, based on artifact styles and supported by radiocarbon assays, have been established (Johnson and Johnson 1975) and refined (Logan 1993): Trowbridge phase (A.D. 1-250), Kansas City phase (A.D. 250-400) and Edwardsville phase (A.D. 400-600).

In the absence of a well provenienced artifact assemblage and radiocarbon dates from 14WY8, this author used stylistic changes during the Kansas City Hopewell tradition to determine that the Miller site was a Late Kansas City Hopewell occupation

Table 1. Pottery Decorations Indicative of Kansas City Hopewell Phases and Relative Frequency of Sherds per Phase at 14WY8.

Phases	Diagnostic Pottery Decorations	14WY8 Sherds and Relative Frequency
Trowbridge	Zoning, dentate stamping, bosses, stick impressions	0
Kansas City	Rocker stamping, cross-hatching	19 (5%)
Edwardsville	Crenulated lips, occasional punctates	74 (20.3%)



Figure 2. Crenulated rim sherd with rocker stamping and punctates from 14WY8 (University of Kansas specimen number WY8092000005).

site. This conclusion is supported by the lack of any decorative elements characteristic of the Trowbridge phase; the small number of pottery sherds typical of the Kansas City phase; and the larger number of pottery sherds indicative of the Edwardsville phase. In addition, the author acknowledges that pottery decorations did not stop at the beginning or end of each phase. Some decorative motifs undoubtedly continued during the introduction of new stylistic elements, as some potters might not conform to changing stylistic patterns.

FUTURE RESEARCH

A better understanding of the Kansas City Hopewell occupation at the Miller site could be established with future research. Beyond the need for radiocarbon dates directly associated with pottery and projectile points, analyses of rim sherds (rim profiles, lip construction, etc.), projectile point styles, and other artifacts would contribute to this goal. Specifically, an analysis of the 39 cord-marked sherds or other diagnostic artifacts might reveal a transition into Grasshopper Falls phase at the Miller site locality. Archeologists should take note of this possible transitional site, which could provide information about the contraction of the Kansas City Hopewell occupation.

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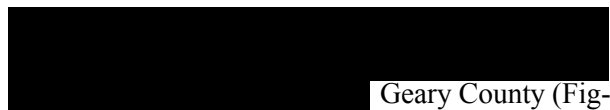
SITE 14GE41 AND THE SCHULTZ PHASE: RE-EXAMINING A KANSAS WOODLAND COMPLEX

PATRICIA J. O'BRIEN
Kansas State University

SHARON G. PARKS-MANDEL
Topeka, Kansas

Eyman (1966) defined the Schultz focus of the Woodland period based on the Floyd Schultz collections of mortuary remains from mounds located in Geary and Clay Counties. Phenice (1969) analyzed the skeletal remains from the mounds, concluding that they mostly resembled Kansas City Hopewell remains in western Missouri. This paper reports on data from habitation site 14GE41, which was probably associated with one of the Berry Mounds (14GE4-1) just southwest of the site, and redefines the Schultz focus as the Schultz phase.

Site 14GE41 is a habitation site located on the



Geary County (Figure 1). Situated directly on the bank of the lake, this site is subject to erosion due to seasonal flooding and wave action.

The site was discovered during a shoreline survey of Lake Milford in 1975, at which time the site covered an area of 15 m² of exposed shoreline and had a midden approximately 50 cm deep. The site was very productive; over 80 potsherds and 23 chipped stone artifacts were found on the surface alone. The cultural affiliation of this site was determined to be Schultz focus (Woodland) on the basis of these artifacts.

This site was important in itself because the depth of the midden gave it potential for materials undisturbed by plowing. Additionally, as the site appeared to be a single component of the Schultz focus, it might be associated with 14GE4-1, a Schultz focus burial mound located about 800 feet (250 m) to the south-southwest (Figure 1). This mound and another (14GE4-2), called the Berry Mounds, were excavated by Floyd Schultz and analyzed by Charles Eyman (1966:35-37), while the osteological remains within them were examined by Terrell Phenice (1969:30-34).

The site was given the highest testing priority (O'Brien 1976:30). Eyman (1966) defined the Schultz focus as a cultural complex using only burial data. Remaining to be completed is the definition based upon cultural materials from habitation sites related to these mounds. The only possible Schultz focus habitation (14GE312) tested to date is a component of the Elliott site cluster (14GE303) on McDowell Creek (O'Brien et al. 1973), which is 20 to 25 miles southeast of the Berry Mounds and others excavated by Schultz.

For all these reasons the site was thought to be potentially significant enough for nomination to the National Register of Historic Places in 1976. The excavations described here are a test of that potential, especially in the light of its continued erosion. The Military Planning Branch, U.S. Army Corps of Engineers, Kansas City District (Contract No. DAC-76-C-0019) sponsored the early 1970s work.

ENVIRONMENTAL SETTING

Milford Lake is located on the western edge of the Central Lowlands on the northwest edge of the Flint Hills. It is also situated in the Republican River drainage. This area is made up mostly of Permian limestones and several varieties of chert or flint (Schoewe 1949:273-285).

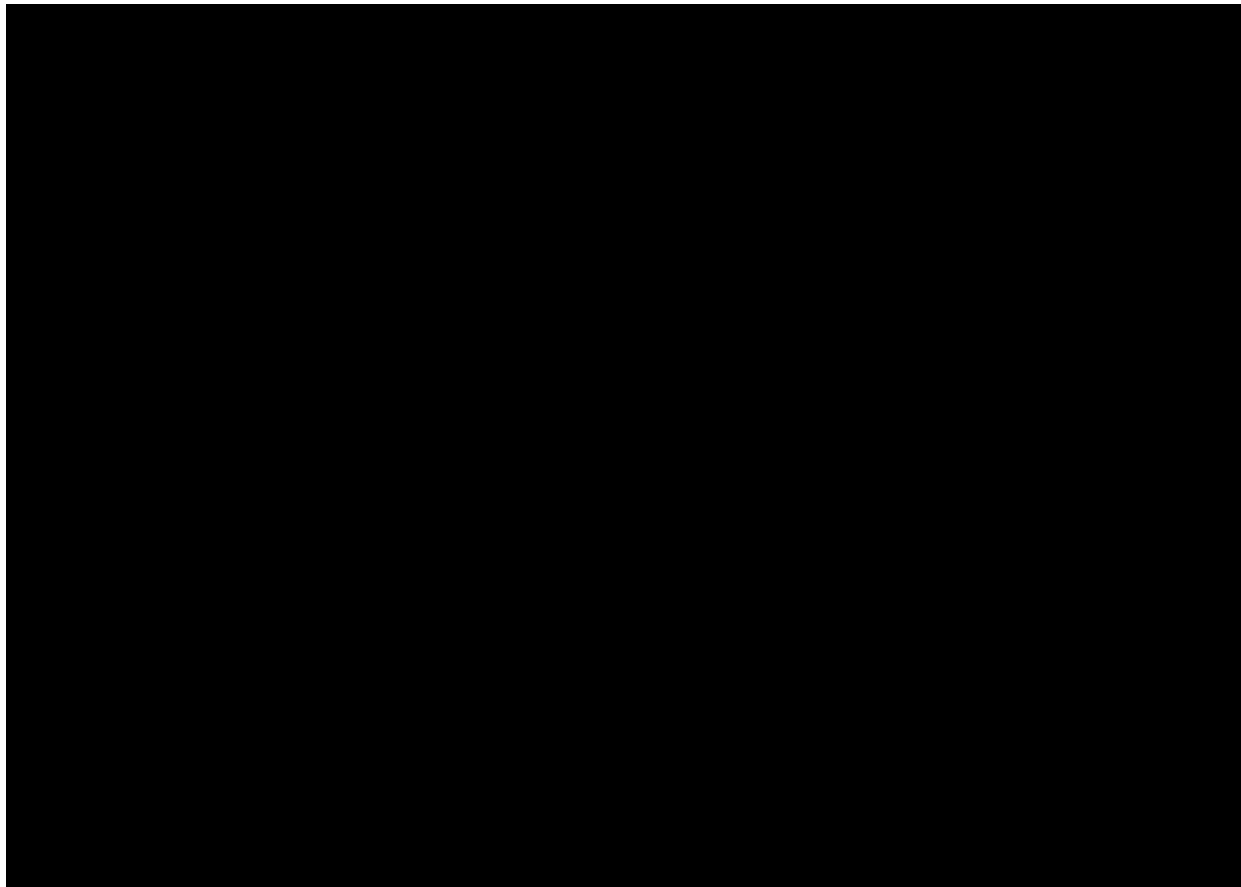


Figure 1. Map showing the location of 14GE41 in relation to the Berry Mounds (14GE4 1-2), Archaic period site 14GE26, and untested burial mound 14GE27.

The major cultural activity in this area today is agriculture. The soils are mostly silty loams and silty clay loams with a good percentage of clay content. This soil is excellent for the growing of most crops common to the Plains: milo, soybeans, wheat, corn, etc. There is also a great deal of cattle grazing in this area, as there is in the Flint Hills to the south and east. The native grasses are bluestems and combinations of the short and tall grammas.

Farming activities are helped by the climatic conditions. The mean annual temperature is 55.5 degrees, with the recorded minimum being -32 degrees and the maximum being 116 degrees (United States Department of Agriculture 1951:2). Mean annual precipitation is 32 inches, with a growing season averaging 187 frost-free days. The last killing frost of spring is around April 25, and the first killing frost of the fall is around October 15.

ARCHEOLOGICAL BACKGROUND

Previous Fieldwork

Archeology in the northern Flint Hills of Kansas began in the nineteenth century. Most of this initial study was performed by amateurs, especially members of the Kansas State Agricultural College (KSAC) Scientific Club; however, some early work was triggered by Major John Wesley Powell's visit to Junction City in September 1879. All early archeological work in the region focused on the Mound Builders.

The earliest work in the Geary County area involved the opening of a burial mound on the land of J. B. Stuart on a high bluff overlooking the Smoky Hill River, 6 miles west of Junction City, which is actually in Dickinson County, just west of the Geary-Dickinson County line. This excavation,

which started on November 28, 1878, was reported in a Junction City newspaper (*Junction City Union*, 7 December 1878:1), as well as the *Kansas City Review of Science and Industry* (Anonymous 1879). The second excavations involved the John Davis Mounds just northwest of the Junction City. Two of the four mounds were opened, and the *Junction City Tribune* published a series of articles through November 1879.

At the end of the nineteenth century, surface surveys were conducted by such amateurs as Jacob V. Brower (1898, 1899) in the area from Wamego to the east, around Manhattan, and south of Junction City. Brower and his associates were interested in confirming Coronado's visit to this part of Kansas. They were wrong, as Coronado got only to Rice County, but their two cultural identifications, Harahey and Quivira, have modern analytical reality. What they called Harahey mostly represents the Smoky Hill phase, while what they called Quivira has many artifacts associated with the Archaic Munkers Creek phase. Associated with both Brower and the KSAC Scientific Club was William J. Griffing. He (Griffing 1904:133-135) also worked for the Kansas State Historical Society (KSHS) and excavated a number of burial mounds in an around Ft. Riley in the early 1900s.

Griffing's work was followed by that of Floyd Schultz, an amateur living in Clay Center who excavated mounds and earthlodges from the 1920s through the 1940s. Schultz (Schultz and Spaulding 1948) conducted excavations on the lower Republican River from Clay Center to Junction City, and his major publication dealt with the James Younkin Mound. Schultz's collections were given to the University of Kansas, where two KU students, Charles Eyman and Terrell Phenice, analyzed and reported those materials from the burial mounds.

In his study Eyman (1966:245-248), an archeologist, placed the James Younkin Mound and Schultz's other Republican River valley burial mounds into what he called the "Schultz Focus." He noted that it seemed to be a mix of some Kansas City Hopewell elements and an undefined later Plains Woodland complex. All of Eyman's work and interpretations were based on burial materials and not linked to the earthlodge habitation sites that Schultz examined.

Phenice (1969:68-69), a physical anthropologist, studied the human remains from Schultz's 17

Republican River burial mounds and concluded that in general the skeletal remains were most like those associated with Kansas City Hopewell burial mounds. Phenice's study of the mounds documented the presence of men, women, children, and infants; thus, all age groups were eligible for mound burial. Whether all members of the community were eligible for mound interment is an unanswered issue.

Waldo R. Wedel (1959) of the Smithsonian Institution conducted investigations from 1939 to 1940. He excavated a prehistoric Smoky Hill lodge site and the Kansa village, both in the Manhattan, Kansas, vicinity. In the 1950s the Smithsonian Institution began survey and salvage work in connection with Milford and Tuttle Creek federal reservoir projects. The Smithsonian River Basin Surveys began work for Milford Reservoir in the 1960s (Muller and Schock 1964). In the 1970s both the National Park Service and the U.S. Army Corps of Engineers initiated shoreline surveys of the lakes (O'Brien and Schwiekhard 1981; Parks 1978). Most of the archeology since that time has been in association with the reservoirs, highway projects, U.S. Army cultural resources management studies, and field methods classes operated by Kansas State University. Enough data has been uncovered from these studies to allow for the development of a cultural sequence for the area.

Cultural Chronology

The earliest period of habitation in this area was the Paleoindian, dating from at least 10,000 to 6,000 B.C. These people were hunters and gatherers and were associated with the hunting of now-extinct megafauna, such as mammoth and early bison. The Archaic period spanned years from 6,000 B.C. to the Christian era. These peoples were also hunters and gatherers, but their prey was modern fauna. The Munkers Creek phase is represented at the William Young site (14MO304) near Council Grove Reservoir, an Archaic site dated from 5,000 to 3,000 years ago. The Coffey site (14PO1) on Tuttle Creek Lake dated to about 3100 B.C.

From the birth of Christ to approximately A.D. 1000, Plains Woodland groups inhabited the area. This period differed greatly from the previous two, primarily because of the use of pottery and domesticated plants. The best published materials for

the northern Flint Hills deal with the Kansas City Hopewell remains excavated around Manhattan. This phase was characterized by grit- and sand-tempered ceramics decorated by rocker-stamping and bossing, scattered habitation sites, and burial mounds. Hopewellian materials are thought to date between A.D. 1 and 500. The Schultz focus proposed by Eyman (1966) is believed to follow Hopewell and date to A.D. 500-1000.

The next major period, dating from A.D. 1000 to 1500, was the Middle Ceramic and contains the Central Plains tradition complexes. The area around Manhattan and Junction City is well represented by what was originally called the Smoky Hill aspect, but is now designated as the Smoky Hill phase of the Central Plains tradition. Extensive excavations of Smoky Hill phase material revealed a sedentary population living in dispersed farmsteads, raising corn, beans, squash, and tobacco and supplementing the diet with semi-annual bison hunts and other hunting and gathering activities (O'Brien 1984; Wedel 1959:558-565).

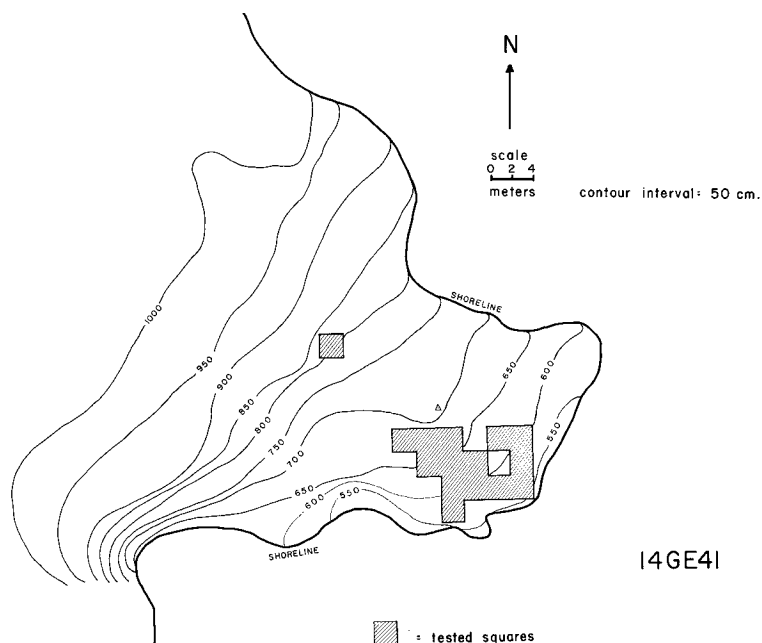
The Protohistoric or Late Ceramic period lasted from A.D. 1500 to the first contact with Euro-Americans. The peoples of this time—the Pawnee on the Republican River and the Kansa on the Kansas River east of Manhattan—lived in large earthlodge villages and engaged in farming, supplemented by hunting and gathering. Importantly, they also were involved in the fur trade.

The Historic period began in A.D.1541 with the intrusion of Coronado and his soldiers into the Great Bend area of the Arkansas River. Protohistoric Great Bend aspect sites show signs of associations with this band of travelers. Within these Great Bend sites have been found chain mail and other remains of Spanish contact. Sites of the White Rock aspect are representative of this period on the upper Republican River in the northern Flint Hills.

Following the Spanish expedition to this area came the French traders on the lower Missouri and more European influence. By the early eighteenth century, with the introduction of the horse, Indian groups had shifted from sedentary groups to semi-sedentary groups with migratory hunting patterns. The Kansa were an example of this change in lifestyle. They had lived along the lower Missouri River during the early eighteenth century, but by the nineteenth century they migrated to the Manhattan area and established a large village. From there they were moved to the Council Grove area and then to Oklahoma.

14GE41 EXCAVATIONS

Fourteen 2-x-2 m squares were excavated, exposing the area of the site nearest the shoreline of Lake Milford (Figure 2). The squares were opened at 20-cm intervals. No obvious strata were found, although the midden was maximally 1 m thick. These



14GE41

Figure 2. Contour map of 14GE41.

excavations established that the site covered at least 18 m² and probably an additional 10 or 20 m. To determine the northernmost boundary of the site, one test square was opened 16 m north of the shoreline, revealing a small amount of cultural material reaching a depth of 50 cm. The scarcity of materials in this square suggested that the site thinned out and that this was indeed the northern end of it. The excavations in general revealed that the site extended in a northwesterly direction from the shoreline, as most of the cultural material was found in this area. Materials probably were present due west of the tested area, but the land dipped down and had trees and shrubs on it.

Features

Seven features were found at 14GE41; all represent hearths (Figure 3).

FEATURE 1 IN SQUARE 6S-2E

This feature was situated in the east-central portion of the square. Its dimensions were 25 cm east to west (E-W) by 23 cm north to south (N-S). The almost circular feature proved to be a shallow (35-cm thick) basin, uncovered at 35 cm and extending to 70 cm below the surface. Three large pieces of burned limestone were recovered from it, as well as a good deal of charcoal. The color of this feature

ranged from a dark orange surrounding the limestone to a deep brown.

FEATURE 2 IN SQUARE 6S-2E

This feature was located in the northeastern area of the square from 70 to 90 cm deep. Its dimensions were 30 cm E-W by 50 cm N-S and 20 cm thick, making it the largest of all seven features. Its shape was almost a perfect oval. The colors were similar to those of Feature 1 but with a greater amount of charcoal, which made the dominant color black. It contained a great deal of burned limestone and animal bone.

FEATURE 3 IN SQUARE 6S-4E

This feature was located in the central part of the square. Its dimensions were 30 cm E-W by 32 cm N-S and 15 cm thick. It first appeared at 50 cm in the form of a circular stain of charcoal and extended to 65 cm. This feature was very dark brown to black in color. It yielded mostly burned limestone, charcoal, and bone.

FEATURE 4 IN SQUARE 6S-2E

This feature was located in the south-central part of this square. It extended into the wall of the square and was even with the water level, so no definite size was determined. The dimensions that could be measured were 25 cm E-W by 20 cm N-S and

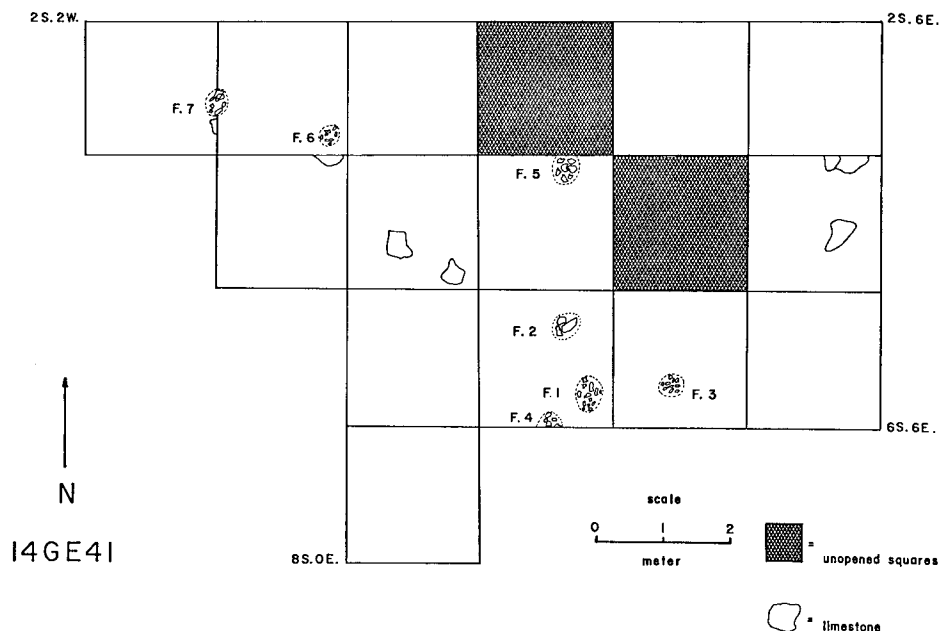


Figure 3. Map of features at 14GE41.

10 cm thick from 70 to 80 cm below surface. This feature was the smallest of the seven uncovered, but the N-S measurement would have been longer had the southern wall of the square not been so close to the water line. Feature 4 contained mostly burned limestone and charcoal, resulting in mostly black color.

FEATURE 5 IN SQUARE 4S-2E

This feature was located in the north-central part of the square. The measurements were 45 cm E-W by 50 cm N-S, and its shape was perfectly round. It was 12 cm thick. Burned limestone and charcoal started to protrude at the 48-cm level, and much animal bone and burned limestone was uncovered, as well as one tooth. The feature, dark brown and black in color, extended another 12 cm before the normal matrix of the soil was again visible.

FEATURE 6 IN SQUARE 2S-2W

Feature 6 was located in the southeast corner of the square. It measured 30 cm E-W by 25 cm N-S and 20 cm thick from 60 to 80 cm below surface. The dominant color was brown, with some mixing of charcoal. The feature contained mostly small pieces of burned limestone and many small potsherds, none of which was in very good condition.

FEATURE 7 IN SQUARE 2S-2W

This feature extended from the eastern wall of this square into the western wall of square 2S-4W. Its dimensions were 30 cm E-W by 35 cm N-S and 30 cm thick. The feature was recognized at 40 cm and was not totally removed until a depth of 70 cm. The fill was mostly brown and orange in color. It not only had the greatest depth but also yielded the most cultural material of the seven features. Several animal bones in excellent condition and also many good examples of pottery were uncovered. A good deal of charcoal and burned limestone were included in this feature.

14GE41 ARTIFACTS

Ceramic Material

A total of 188 pottery fragments were found at 14GE41. Eighty were discovered during the 1975 shoreline survey, 16 during 1976 re-survey, and 92

during excavations. Of the 92 excavated sherds, 78 were from the midden and 14 were from the features (Table 1). There were only three rim sherds; the rest were body sherds. These ceramic artifacts share the same traits of temper, color, and paste and are considered one ware.

The pottery is tempered with grit with some sand inclusions. Exteriors are undecorated, although some potsherds are so smoothed that they give the appearance of being slipped. Surface colors include light buff, light orange, brownish pink, and dark brown, with light orange being the dominant color. The interior surfaces are plain. The average thickness of all sherds is 9 mm, with the maximum thickness being 1.4 cm and the minimum being 5 mm. Light gray is the dominant core color, but dark brown, light pink, dark gray, and pinkish brown occur. One body sherd had a 4-mm hole in it; this is a repair hole used to tie broken pieces of a vessel together, making it serviceable to hold dry foodstuffs.

Two sherds were cord roughened and light gray in color. These two sherds, with maximum thicknesses of .5 cm, are much thinner than the rest of the pottery sample.

Three grit-tempered rim sherds were recovered from the site. The vessel form is a globular jar with slightly constricting mouth. Two have the same profile, so there are two rim types.

RIM 1

This rim is square with a slight rounding of the outer lip (Figure 4a). The vessel had a 24-cm orifice diameter with a scalloped effect on the rim lip, resulting from notches made at 5-mm intervals with the shaft of a small stick. The surface was plain with an ochre surface color and a light gray core color.

RIM 2

There are two examples of this form. It, too, is squarish in profile, but the inner lip is rounded in contrast to the rounded outer lip of Rim 1. Both vessels have plain exterior surfaces. One has a 24-cm orifice diameter with notches on the lip made with a flat stick at 6-mm intervals (Figure 4c and 4d). The result is a zigzag effect when viewed from the side. It has an orange-light gray core color and a brown surface color outside and orange inside. The other vessel has a 30-cm orifice. The rim has a scalloped

Table 1. Proveniences of Pottery and Chipped Stone Artifacts by 20-cm Levels.

Square/Depth	Pottery	Bifaces	Spokeshaves	Scrapers	Worked Chert
2S-0E/1	—	—	—	—	—
2S-0E/2	—	—	—	—	—
2S-0E/3	—	—	—	—	—
2S-0E/4	—	—	—	—	—
2S-4E/1	—	—	—	—	1
2S-4E/2	—	—	—	—	1
2S-4E/3	—	—	—	—	1
2S-4E/4	—	—	—	—	—
2S-6E/1	—	—	—	—	—
2S-6E/2	—	—	—	—	1
2S-6E/3	—	—	—	—	2
2S-6E/4	—	—	—	—	2
2S-0W/1	—	—	—	—	—
2S-0W/2	1	—	1	—	1
2S-0W/3	5	1	—	—	—
2S-0W/4	3	—	—	—	—
2S-2W/1	—	—	—	—	—
2S-2W/2	—	—	—	—	—
2S-2W/3	7	—	—	—	—
2S-2W/4	—	—	—	—	—
2S-4W/3	—	—	—	2	—
4S-0E/1	—	—	—	—	1
4S-0E/2	9	—	—	—	1
4S-0E/3	9	—	—	1	3
4S-0E/4	—	—	—	—	—
4S-2E/1	—	—	—	—	—
4S-2E/2	—	—	—	—	1
4S-2E/3	1	—	—	1	1
4S-2E/4	—	—	—	—	—
4S-6E/1	—	—	—	—	—
4S-6E/2	1	—	—	—	1
4S-6E/3	1	—	—	—	4
4S-6E/4	—	—	—	1	5
4S-0W/1	—	—	—	—	—
4S-0W/2	2	—	—	—	7
4S-0W/3	—	—	—	—	—
4S-0W/4	—	—	—	—	—
6S-0E/1	10	—	—	1	8
6S-0E/2	6	—	—	1	2
6S-0E/3	—	—	—	—	—
6S-0E/4	—	—	—	—	—
6S-2E/1	—	—	—	—	—
6S-2E/2	1	1	—	1	6
6S-2E/3	1	—	—	1	2
6S-2E/4	—	—	—	—	—
6S-4E/1	—	—	—	—	—
6S-4E/2	12	—	—	—	2
6S-4E/3	—	—	—	1	2
6S-4E/4	—	—	—	1	1
6S-6E/1	—	—	—	—	—
6S-6E/2	—	—	—	—	1
6S-6E/3	3	—	—	1	1
6S-6E/4	—	—	—	—	—
8S-0/3	—	1	—	—	—

continued

Table 1. continued

Square/Depth	Pottery	Bifaces	Spokeshaves	Scrapers	Worked Chert
8S-0E/1	3	—	—	—	1
8S-0E/2	—	—	—	—	—
8S-0E/3	1	1	—	—	1
8S-0E/4	—	—	—	—	—
6N-8W/1	—	—	—	—	2
6N-8W/2	2	1	—	—	1
6N-8W/3	—	—	—	—	—
6N-8W/4	—	—	—	—	—
6N-10W/2	—	1	—	—	—
Totals	78	6	1	12	63

/1 = 0-20 cm /2 = 20-40 cm /3 = 40-60 cm /4 = 60-80 cm

effect, caused by notching at 5-mm intervals with the shaft of a small stick (Figures 4b and 4c). Surface and core colors are light brown.

Table 2 represents a Guttman scaling of the attributes of these ceramics. The theoretical basis for this type of analysis, which is borrowed from the discipline of psychology, is given in Rowe (1959) and O'Brien (1972).

In general this pottery is fairly plain, lacking much of the decorative attributes of other Woodland pottery. There is little variability among these specimens, and, therefore, they constitute one ware. They are most similar to pottery found at the Elliott site (O'Brien et al. 1973:67-69), especially in rim form and notching of the rim lip.

Chipped Stone Material

The provenience and percentages of chipped stone artifacts are included in Table 1.

FROM SURFACE AND GENERAL EXCAVATIONS

Chipped stone artifacts gathered from the surface and test excavations of 14GE41 consist of scrapers, projectile points, biface fragments, etc. The cherts from which these tools were fashioned are the local Florence and Three-Mile varieties. The Florence chert is dark bluish-gray in color, and the Three-Mile chert is slightly lighter gray. The distinction between these two varieties of chert was made on the basis of their fossil contents. An analysis of the chert varieties was performed by Mr. Joseph Smalley of Kansas State University's Geology Department,

and he determined that no imported chert was used in the manufacture of these tools.

Projectile Points. Two points were found on the surface in 1975. One is a corner-notched Scallorn-type arrow point, measuring 2.6 cm long (incomplete), 1.64 cm wide, and 0.44 cm thick (Figure 4e). The second is a side-notched point, measuring 5.14 cm long, 2.47 cm wide, and 0.7 cm thick (Figure 4f). One dart point tip also was found on the surface.

Drill. One drill tip, measuring 1.97 cm long, 1.0 cm wide, and 0.59 cm thick, was found on the surface in 1975.

Table 2. Ceramic Attributes of Reconstructed Vessels.

Globular Jar Rims	Type 1	Type 2
grit temper	X	X
plain vessel exteriors	X	X
plain vessel interiors	X	X
24-cm orifice diameter	X	X
notching at 5-mm intervals	X	X
scalloped (stick shaft notches)	X	X
ochre surface color	X	
light gray core color	X	
30-cm orifice diameter		X
brown surface color		X
orange-light gray core color		X
light brown surface color		X
light brown core color		X
notching at 6-mm intervals		X
zigzag (flat stick notches)		X

Bifaces. Three types of bifaces or fragments thereof came from the surface. One is long and slender with a squarish base (Figure 4g), the second is sub-triangular in form with a square base (Figure 4h), and the third is thicker and more crudely knapped like a bifacial chopper (Figure 4i).

There are two examples of Type 1: one is 10.9 cm long, 2.34 cm wide, and .82 cm thick; the second is 4.18 cm long, 1.78 cm wide, and .64 cm thick.

There are three broken examples of Type 2: one is 3.9 cm long (incomplete), 3.29 cm wide, and .66 cm thick; the second is 4.65 cm long (incomplete), 3.22 cm wide, and .74 cm thick; the third is 3.6 cm long (incomplete), 3.4 cm wide, and 1.1 cm thick.

There are three examples of Type 3, which are ovoid in shape: one is 8.14 cm long, 4.57 cm wide, and 1.09 cm thick; the second 5.63 cm long, 4.8 cm wide, and 1.4 cm thick; the third is 4.68 cm long (incomplete), 3.58 cm wide, and 1.38 cm thick.

A crescent-shaped biface is 6.5 cm long, 5.0 cm wide, and 1.46 cm thick (Figure 4j). Three biface segments were found in squares 6N-10W/2, 6S-2E/2, and 8S-0/3.

Gouges (?) or Chisels. Several bifacially worked tools are sub-triangular in shape with thick lenticular cross sections, the distal ends of which were chipped to form steep, beveled, concave faces (Figure 5a). The four examples are all from the surface. They are 7.6, 5.58, 5.65, and 5.12 cm long; 4.47, 3.98, 3.99, and 3.98 cm wide; and 1.57, 1.96, 1.67, and 1.4 cm thick, respectively. They are similar to those reported as gouges by Katz (1974:23-25) from the Kansas City Hopewell Deister site.

Spokeshave-Side Scrapers. One spokeshave was found in 2S-0W/2 (Figure 5b). It was made on an expanding flake, and the shave itself was 2.2 cm long and .6 cm deep. The opposite lateral edge was used as a side scraper.

The second composite tool was made on a parallel flake. The two lateral sides have marked retouch, while a spokeshave is present near the right proximal corner (Figure 5c). It came from the surface and is 6 cm long, 4.1 cm wide, and 1.01 cm thick. The shave is .98 cm long and .37 cm deep.

End Scrapers. The scrapers from the surface collection include end and side types. The end scrapers

exhibit greater modification to the parent flake than do the side scrapers.

Thirteen end scrapers were recovered at the site. Generally they represent three broad categories or types: "classic" keeled, "blocky," and bifacially worked.

There are two examples of the keeled type, which are slender and plano-convex in cross section. Both are broken bases, so all measurements are incomplete (Figure 5d). One from 2S-4W/3 is 2.4 cm long, 1.94 cm wide, and .62 cm thick; the second from 6S-2E/3 is 1.69 cm long, 1.54 cm wide, and .28 cm thick.

The "blocky" scrapers are like those described by Bell (1976:35) for the Kansas City Hopewell Trowbridge site. The 10 specimens are made of thick flakes or tabloids and are divided into three subtypes, according to the locations of retouch made to them: end, side, and disto-lateral (retouch on one end and side). Two belong to the disto-lateral subtype, having retouch on the end and the right side (Figure 5e). One comes from 4S-2E/3 and is 4.73 cm long, 4.0 cm wide, and 1.68 cm thick. The other from the surface is 5.4 cm long, 4.86 cm wide, and 1.84 cm thick. One blocky scraper from 2S-4W/3 has retouch on the left corner rather than on the end or side (Figure 5f). It is 4.4 cm long, 3.12 cm wide, and 1.8 cm thick. A single blocky scraper from the surface is an end subtype with retouch only on the end (Figure 5g). It is 6.27 cm long, 4.94 cm wide, and 2.63 cm thick. The final six blocky scrapers have retouch on both lateral sides as well as the end (Figure 5h-j). Their dimensions are summarized in Table 3.

The last end scraper was made on a thick parallel flake. The bulb of percussion was removed, and the flake was worked on both sides (Figure 5k). It came from the surface and is 6.3 cm long, 3.84 cm wide, and 1.28 cm thick.

Side Scrapers. Ten side scrapers were recovered at the site. All of them are characterized by marked retouch on a lateral edge, but they are manufactured on otherwise unmodified flakes. White (1963:8) has defined a number of flakes as they are removed from cores as expanding, converging, or parallel. The 14GE41 flakes have retouched expanding, contracting, or parallel edges (White 1963:9).

Three expanding flake scrapers have retouch on

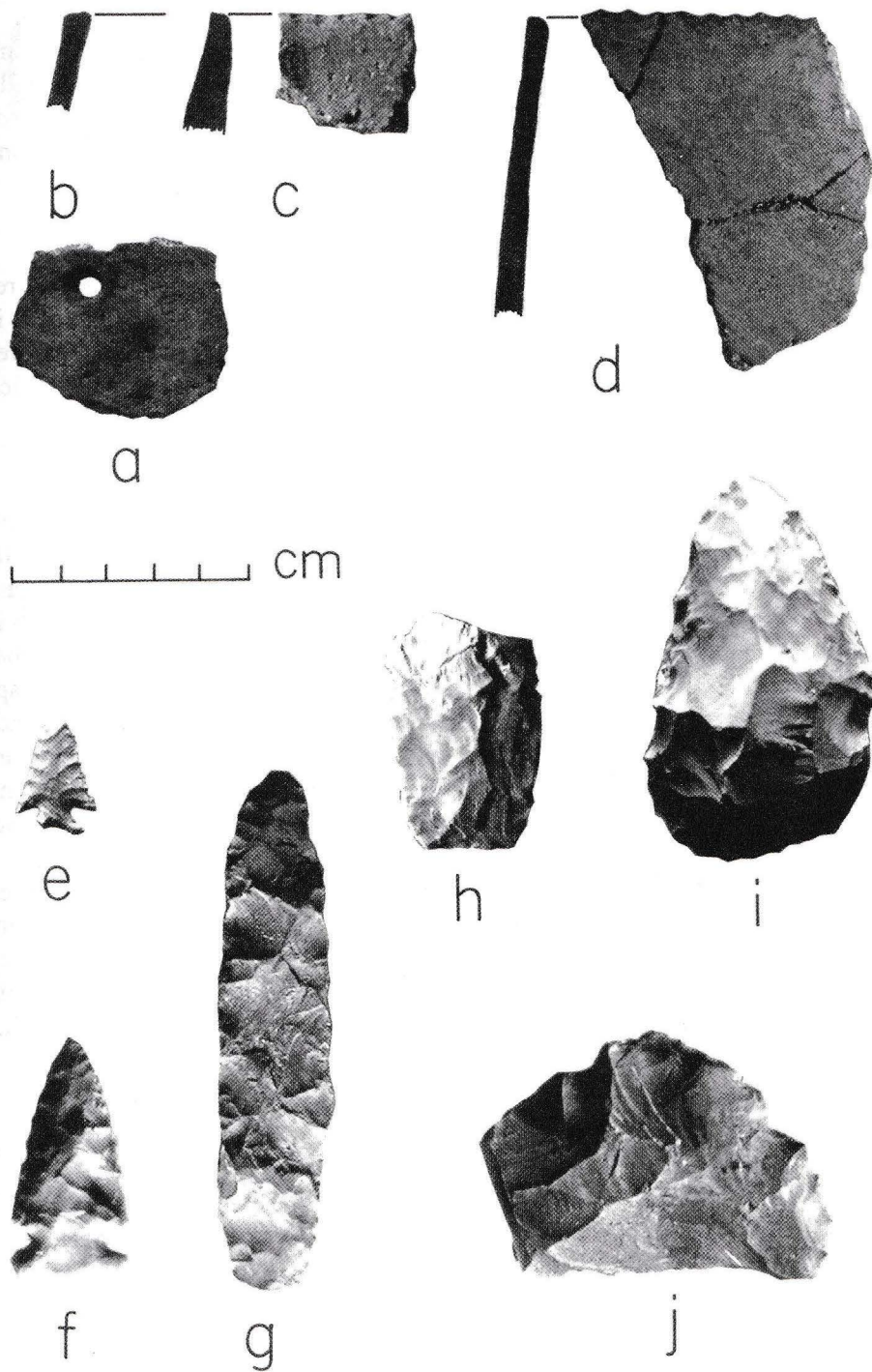


Figure 4. Artifacts from 14GE41: a-d) pottery, e-f) projectile points, and g-j) bifaces.

only the right edge. They were found in 4S-0E/3, 6S-0E/1, and 6S-4E/4. Two contracting flake scrapers are present; one from 6S-4E/3 has retouch on the left side, and the other from 6S-0E/2, on the right side. Of five parallel flake scrapers in the collection, three were retouched on the left side only, while two

had both edges retouched. The former came from the surface, 4S-6E/4, and 6S-6E/3, and the latter came from the surface and 4S-0E/3.

Miscellaneous Scraper. One small, broken but roughly triangular flake has marked retouch on all

Table 3. Dimensions in cm of Blocky Disto-Lateral End Scrapers.

Provenience	Length	Width	Thickness	Figure
surface	4.30	3.90	1.62	5h
surface	5.72	4.43	1.82	
surface	5.16	4.37	1.79	
surface	5.26	4.19	1.17	
4S-0/3	6.92	4.79	1.86	5i
surface	9.80	5.38	2.43	5j

three edges (Figure 5k). It is 2.86 cm long (incomplete), 3.41 cm wide, and 0.46 cm. thick. It came from 6S-2E/2.

Other Worked Chert. Sixty-three examples of worked chert were distributed evenly throughout the site. Level 0-20 cm contained seven flakes that have their cortex intact and six decortication flakes (primary or secondary removals struck from the surface of a core, retaining the cortex). Level 20-40 cm yielded 1 primary decortication flake, 8 secondary decortication flakes, and 17 flakes with their cortices. The 40-60-cm level contained 3 secondary cortication flakes (flakes from the interior of the core, lacking cortex) and 13 flakes with cortex. The final level, 60-80 cm, yielded three secondary cortication flakes and five flakes with their cortex.

Chert Debris. A total of 704 chert chips were recovered from the excavations; all were made of the local Florence chert.

FROM FEATURES

Artifacts. Four chipped stone artifacts were found in two features at 14GE41. Feature 2 contained one parallel flake side scraper with bifacial retouching on one side, one contracting flake side scraper with bifacial retouching, and one very large retouched flake. Feature 5 contained only one bifacially worked chopper. There was no modified debitage from any of the seven features.

Chert Debris. The distribution of 236 chert chips recovered from the seven features is described in Table 4. None of the features contained any worked chert chips that were evident throughout the rest of the site.

Ground Stone Material

Artifacts of stone manufacture used for grinding purposes included a hammerstone, two partially ground celt-like objects, and six metates. All of these specimens were fashioned from limestone except the hammerstone.

HAMMERSTONE

One light gray quartzite hammerstone was recovered from the surface of the site in 1975. It is oval in shape and flat in cross section and measures 9.08 cm long, 6.53 cm wide, and 3.41 cm thick (Figure 6a).

CELTS OR ABRADERS

Two partially ground celt-like objects were uncovered. One was from 6S-6E at a depth of 47 cm. Its measurements are 13 cm long, 5.86 cm wide, and 1.6 cm thick. It is shaped like a celt, but one end is ground to a very fine point (Figure 6b). The other celt-like object from 4S-0E has the same general appearance as the first but lacks the distinctive grinding (Figure 6c). It is ground on one side and appears to have been broken on the other, thus eliminating any evidence of grinding on that side. This artifact is 11.6 cm long, 5.66 cm wide, and 1.0 cm thick.

Limestone objects similar to these have been found in other Woodland sites. Their use is unknown. Given the evidence of abrading, they may be mano-like tools used in food preparation, such as the crushing of seeds, or perhaps for hide preparation.

METATES

Six metates were uncovered at the site. Feature 7 yielded one that measures 25 cm in length and 15

Table 4. Description of Chert Debris in Features.

Feature	Chert Debris
1	19 very small chert chips with no matrix
2	10 very small primary decortication flakes 120 very small chert chips with no matrix
3	9 very small chert chips with no matrix
4	10 very small chert chips with no matrix
5	1 very small chert chip with no matrix
2	primary decortication flakes
6	29 very small chert chips with no matrix
2	unworked flakes with matrix
7	34 very small chert chips with no matrix.

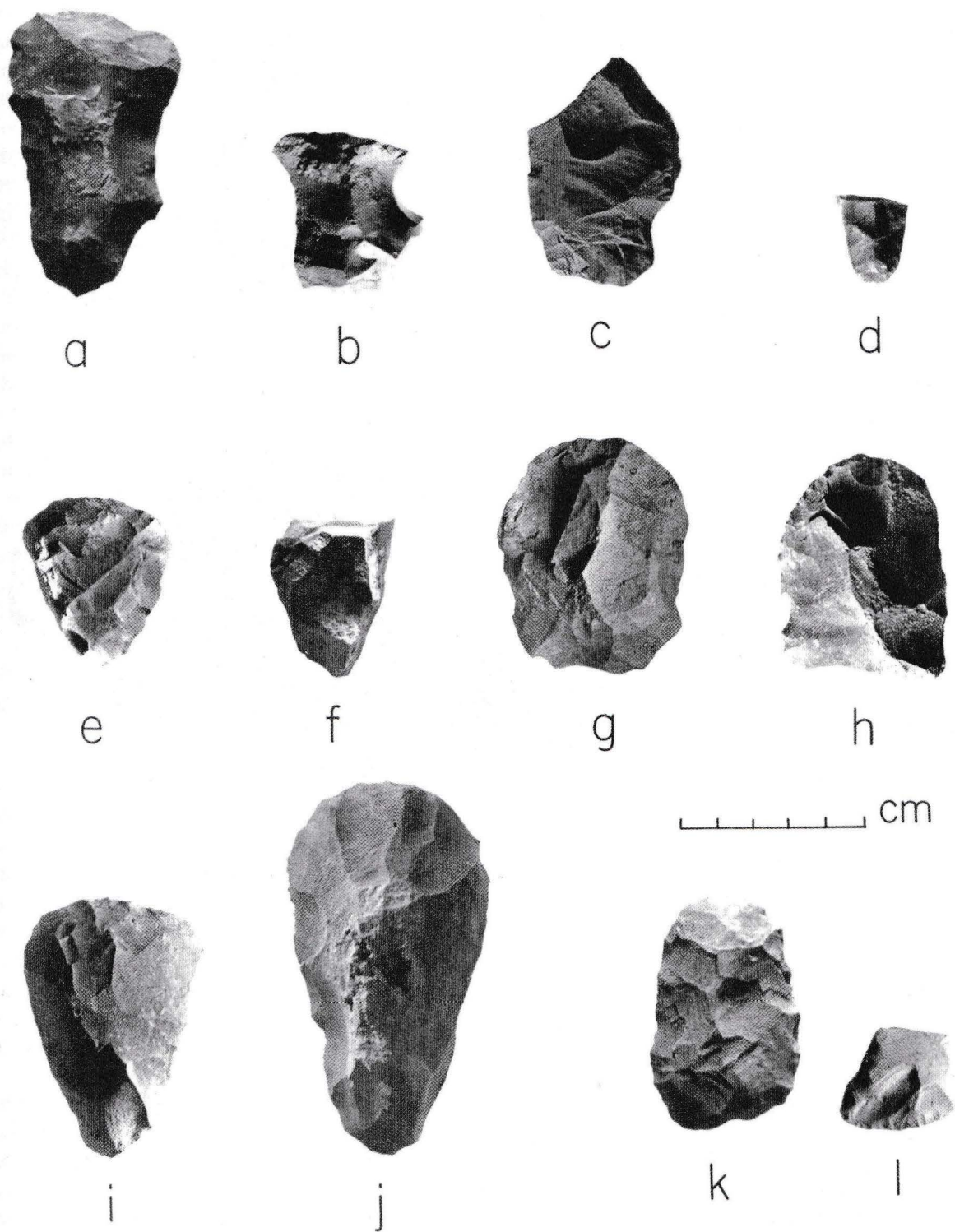


Figure 5. Chipped stone artifacts from 14GE41: a) possible gouge or chisel, b-c) spokeshaves, d-k) end scrapers, and l) scraper.

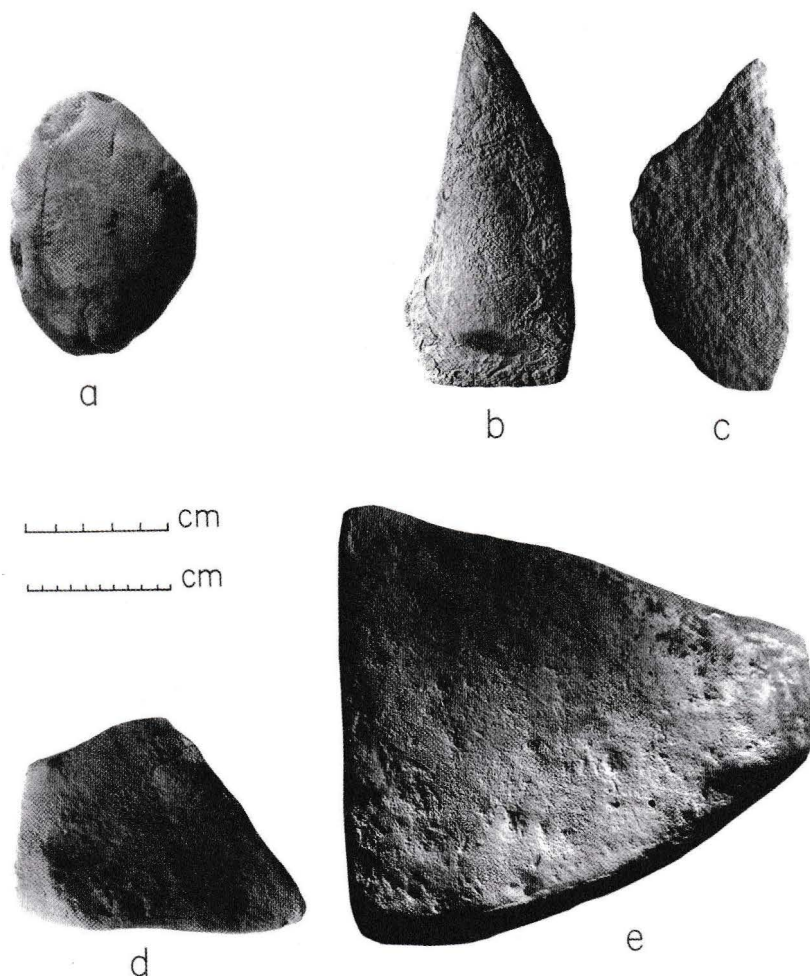


Figure 6. Ground stone artifacts from 14GE41: a) hammerstone, b-c) celt-like objects, and d-e) metates.

cm in width (Figure 6d). One side exhibits signs of grinding, and the other is very irregular, showing no signs of having been ground. This stone shows no evidence of burning, and its color ranges from light gray to yellow.

Square 4S-0E contained two metates at a depth of 60 cm. One stone, by far the larger and heavier of the two, measures 45 cm in length and 32 cm in width. Much has been broken from this very crumbly specimen, and it is very irregular, containing many holes and pits on both sides. Some signs of burning were present in the upper layers of soil around this stone, and many pieces of burned limestone were uncovered directly above and around it. This stone, as well as the surrounding pieces, are tan in color. There are no signs of grinding; however, due to the texture and condition of this particular stone, identification of intentional grinding is difficult. This stone may represent a metate blank, not yet

used. The smaller stone from this square measures 25 cm in length and 20 cm in width and is approximately even on all sides with no irregularities. The generally very rough surface shows no evidence of grinding, but there is a slight depression in the center, suggesting limited grinding use. There are no signs of burning, and its color is light gray with small amounts of yellow.

Square 4S-6E yielded three metates at depths from 71 to 79 cm. A stone uncovered at 71 cm was located in the north wall of the square, protruding slightly into square 2S-6E. It is 16 cm in length and 33 cm in width and is fairly smooth on one side, showing signs of grinding. It contains two rather distinct holes the edges of which are ground smooth. The holes measure 5 cm across and 1 cm deep and are connected by a shallow groove that extends 18 cm, the distance between the holes. The other side of the stone is very irregular with many rough spots

and small eroded holes. There is no sign of burning, and the color ranges from light gray to white. Two metates were uncovered at 79 cm. The larger one, measuring 41 cm in length and 25 cm in width, was located 70 cm from the south wall and 60 cm from the east wall. This stone was very irregular, brittle, eroded, and subject to continuing breakage. Its texture is much like that of soft sandstone and gives up its grains at the slightest pressure. One side shows signs of grinding and is very smooth, whereas the other side is extremely irregular with many small holes and pieces missing. Possibly this stone was burned, causing this texture. Its color is similar to the other metates—a mix of light gray and yellow. The smaller metate from this depth measures 33 cm in length and 32 cm in width (Figure 6e). Its location was in the north wall of the square, extending into the south wall of 2S-6E. This metate is ground smooth on both sides as well as its edges. There are no noticeable holes, but on one side there is an apparent break approximately 1 cm in depth. The broken edges have been ground smooth and resemble the smooth edges of the stone. There are no signs of burning, and the color ranges from light gray to white.

Square 4S-0E contained one metate. The implement measures 25 cm in length and 25 cm in width, with one side coming to a sharp point. One side of this stone has many small holes approximately 2 cm deep, resulting from water erosion. The opposite side has been ground but also contains three of the same small holes that show signs of grinding. This stone shows no signs of burning, and its color ranges from a light tan to cream.

Burned Limestone

Site 14GE41 contained a great deal of burned limestone; samples were found in every square opened. The limestone from locations other than the hearth areas was weighed and treated separately from the hearth limestone.

Consisting mostly of small pieces, the limestone was weighed together for a total of 3.85 kg. Colors include orange, red, brown, tan, gray, and white. Most of the stone is very chalky and crumbles at the slightest touch, which reflects its having been burned.

The burned limestone extracted from the features was weighed and examined separately. Of the

seven features, four contained a measurable amount of burned limestone, as described below.

FEATURE 1

This burned limestone is very chalky and powdery and shows no signs of having been ground. Its colors are dark orange, light orange, gray, and white. Burned limestone was taken from two levels in this hearth: 1.92 kg from 60-80 cm and 1.58 kg from 80-100 cm, for a total weight of 3.50 kg.

FEATURE 3

These limestone pieces are rather small and are all light gray except for one that is orange. They are very chalky and crumble easily. The material weighs .45 kg.

FEATURE 4

Three large pieces of burned limestone came from this feature. Two are bright orange, and the other is dark gray. The orange pieces are crumbly, whereas the gray piece is hard and shows only minimal signs of having been burned. The combined weight is 1.24 kg.

FEATURE 5

There are several very small pieces of orange and tan limestone, and all are very chalky and crumble easily. The total weight is 1.81 kg.

Daub

Samples of daub and burned earth were uncovered in every square of the site. The combined weight of the daub and burned earth is 1.40 kg. All the material is light brown to light orange in color and very crumbly.

Rough Rock and Miscellaneous Stone

Many miscellaneous rocks and stones—common quartzites, sandstones, and isolated pieces of limestone—were uncovered throughout the site. If no distinguishing attributes were recognized, they were grouped into the same category and weighed together. Their total weight is 3.40 kg.

Faunal Material

Site 14GE41 yielded a total of 809 faunal remains. The remains were identified by comparing them to

the osteological collection at Kansas State University and by using various books on the subject of faunal identification, especially works by Gilbert (1973) and Olson (1973). The faunal remains were categorized as to provenience within the site. The bones from features were analyzed and treated separately from the rest of the bone to achieve a better distribution pattern.

Table 5 summarizes the total numbers and percentages of remains that could be positively identified as to class, order, family, genera, or species. A genuine effort was made to determine the maximum faunal count; however, due to the deteriorated and fragmented state of most of the bone, this was impossible. Note that Table 6 shows bone within the features, while Table 7 shows bone throughout the remainder of the site.

Minute Materials from Features

The seven distinct feature areas uncovered at 14GE41 first appeared as dark stains in the matrix of the excavation squares. All of the features were similar and followed a layered pattern: burned limestone on top, concentrations of charcoal in the middle, and burned bone and pottery fragments at the bottom. The feature contents were processed by soil flotation in order to obtain the small, discrete data that ordinarily is lost with macro-excavation procedures. Table 8 summarizes the resulting data. Sixteen small vials of seeds could not be positively identified. Perhaps future investigations can identify them.

Some of the floral remains recovered from features were from edible plants. Their uses are detailed in Table 9.

Table 5. Identified Faunal Remains.

Class	Order	Family	Number of Remains	Percentage of Total
Class Mammalia	Order Rodentia	Family Castoridae <i>Castor Canadensis missouriensis</i> (American beaver)	1	.49
		Family Cricetidae (mouse)	11	5.40
	Order Carnivora	Family Canidae <i>Canis latrans latrans</i> (coyote)	1	.49
		Family Procyonidae <i>Procyon lotor hirtus</i> (raccoon)	1	.49
	Order Artiodactyla	Family Artiodactyla <i>Odocoileus virginianus macrourus</i> (white-tailed deer)	154	75.49
Class Pisces	Order Cypriniformes	Family Ictaluridae <i>Ictalurus punctatus</i> or <i>Pylodictis olivaris</i> (catfish)	36	17.64
Totals			204	100.00

Table 6. Faunal Remains from Features.

Depth	Animal	Element	Number of Remains	Percentage of Total
1	mouse	femur	1	4.04
	catfish	vertebrae	3	
	unidentifiable	small unburned pieces	14	
	unidentifiable	small burned pieces	11	
		Total	29	
2	deer	metacarpal	1	29.57
		right astragalus	1	
	mouse	femur	2	
		acetabulum	1	
		tibia	2	
		vertebrae	2	
		claw	1	
		unknown	2	
	catfish	vertebrae	19	
		mandible	1	
		unknown	8	
	unidentifiable	small unburned pieces	54	
		small burned pieces	118	
		Total	212	
3	mouse	femur	1	3.62
	unidentifiable	small unburned pieces	18	
		small burned pieces	7	
		Total	26	
4	unidentifiable	small unburned pieces	11	2.09
	unidentifiable	small burned pieces	4	
		Total	15	
5	unidentifiable	small unburned pieces	12	4.46
	unidentifiable	small burned pieces	20	
		Total	32	
6	catfish	vertebrae	2	27.76
	mammal	unknown	3	
	unidentifiable	small unburned pieces	103	
	unidentifiable	small burned pieces	91	
		Total	199	
7	deer	right tibia distal	1	28.46
		pelvic pieces	3	
		first phalange	1	
		left calcaneum	1	
		vertebrae centrum	1	
		tooth enamel	2	
		long bone fragments	2	
		small fragments	120	
	mammal	small rib fragments	6	
	unidentifiable	small unburned pieces	40	
	unidentifiable	small burned pieces	27	
		Total	204	
Totals			717	100.00

Table 7. Faunal Remains from Proveniences Other than Features.

Depth	Animal	Element	Number of Remains	Percentage of Total
0-20 cm	catfish	right opercle	2	6.53
		cleithrum	1	
	unidentifiable	long bone burned fragment	1	
	unidentifiable	small burned pieces	2	
		Total	6	
20-40 cm	deer	ribs	4	23.91
	catfish	small fragment	1	
	American beaver	right mandibular second molar	1	
	mammal	petrus portion of temporal bone	1	
		long bone	1	
	unidentifiable	small unburned pieces	3	
	unidentifiable	small burned pieces	12	
		Total	22	
40-60 cm	deer	basilar portion of skull	3	61.96
		metatarsala	5	
		ribs	3	
		transverse process of lumbar vertebrae	1	
		shaft of long bone	1	
	coyote	right mandibular first molar	1	
		assorted ribs	3	
		shaft of long bone	1	
	unidentifiable	long bone fragments	2	
	unidentifiable	tooth	1	
	unidentifiable	small unburned pieces	2	
	unidentifiable	small burned pieces	34	
		Total	57	
	deer	tibia fragments	3	
		seismoid bone	1	
		long bone fragments	3	
60-80 cm		Total	7	
				7.60
Totals			92	100.00

14GE41 DATING

Two charcoal carbon samples were submitted to the Geochronology Lab at the University of Georgia for radiocarbon assays. The results were:

Feature 2	1535 ± 85 B.P. A.D. 415 (UGa-2142)
Feature 5	1250 ± 165 B.P. A.D. 700 (UGa-2143)

The 285-year difference between them is greater than expected for a small habitation site. Given the large two-sigma range of the second date (A.D. 435-1153), it is believed UGa-2143 should be

discarded. The first date with a two-sigma range of A.D. 344-657 is more reasonable (Brad Logan, personal communication).

Only one other date is available on Schultz focus material from a small hearth at 14GE312: 1935 ± 75 B. P. or A.D. 15 (UGa-381) (O'Brien et al. 1973:70). Roper (2000:51) calibrated a two-sigma range of 98 B.C.-A.D. 252 but argued that the date was too early on the basis of associated artifacts.

14GE41 CONCLUSIONS

Site 14GE41 was originally tested to examine its potential to be placed upon the National Register of

Table 8. Minute Materials from Flotation of Features.

Feature	Minute Material	Weight in g
1	<i>Amaranthus</i> spp. (pigweed) <i>Juglandaceae</i> fm. (walnut) charcoal sand, rough rock, clay, twigs	3.5 5.5
2	<i>Amaranthus</i> spp. (pigweed) <i>Rumex</i> spp. (dock) <i>Saponaria</i> spp. (cow cockle) <i>Echinochloa</i> spp. (barnyard grass) <i>Juglandaceae</i> fm. (walnut) charcoal shell crenoid fossils, snail shell sand, rough rock, clay, twigs	12.3 23.3
3	<i>Digitaria sanguinalis</i> spp. (crab grass, finger grass, twitch grass) charcoal sand, rough rock, clay, twigs	2.6 1.9
4	charcoal sand, rough rock, clay, twigs	.5 1.9
5	<i>Urtica</i> spp. (nettle) charcoal sand, rough rock, clay, twigs	9.6 .7
6	<i>Saponaria</i> spp. (cow cockle) charcoal shell crenoid fossils	25.2
7	<i>Amaranthus</i> spp. (pigweed) <i>Rumex</i> spp. (dock) <i>Euphorbia</i> spp. (spurge) <i>Urtica</i> spp. (nettle) <i>Chenopodium</i> spp. (lambs quarters, pitseed goosefoot) <i>Panicum</i> spp. (switchgrass) <i>Plantago virginica</i> spp. (hoary plantain)	

Historic Places. The results of this brief test of the site indicate the following:

1. The midden was a meter thick, and seven hearths were excavated.
2. All of the artifacts recovered during the 1975 survey, as well as the excavated materials, were described and analyzed in order to help completely define the Schultz phase complex. Very few finished tools were found in the tests. The predominant materials were limestone grinding tools (metates and celts or abraders) and end and side scrapers. No hammerstones, projectile points, knives, bifaces, etc. were recovered in the tests. Broken pottery was found.
3. The presence of food preparation tools and cooking hearths, as well as hide processing tools, suggests that women used this portion of the site. Presumably the men's work areas, as well as the joint living areas with housing and storage facilities, were eroded away by wave action.

Table 9. Uses for Edible Plants from Features.

Plant	Use	Reference
<i>Amaranthus</i> spp.	The early shoots of pigweed were utilized as greens, like spinach. The black seeds were gathered from the mature plant and ground into flour. The flour was then used in cakes, mush, or bread.	Harrington 1975:68
<i>Digitaria sanguinalis</i> spp.	Common crabgrass grows to be very thick and coarse. Its seeds were used as substitutes for rice.	Fernald 1943:104
<i>Echinochloa</i> spp.	This grass is a very coarse annual variety that yields seeds from mid-summer to autumn. These seeds were gathered and ground into meal.	Fernald 1943:104
<i>Chenopodium</i> spp.	This is commonly known as Lambs Quarters and is regarded by many as a noxious weed. The Indians utilized the seeds of this plant as a meal for breads or gruels. The color of the ground seeds is dark brown.	Harrington 1975:82
<i>Juglandaceae</i> fm.	The walnut tree is familiar to everyone. The nuts were and are used for additives to other foods, dried nuts, and plain eating. Walnuts made up a very important part of many Indian groups' diets.	
<i>Lactuca</i> gn.	Commonly known as wild lettuce, this resembles the garden variety and was utilized as domestic lettuce is today.	
<i>Rumex</i> spp.	The common name of this plant is dock. The sturdy and tough plants are available in spring and summer, and their uses are as potherbs, purees, and breadstuffs.	Fernald 1943:169
<i>Salsola</i> spp.	The common tumbleweed was utilized as a potherb and eaten like any other green. The best time to gather this plant was early in the spring, when the shoots were tender and sweet.	
<i>Setaria</i> spp.	Fox-tail grasses were commonly used for breadstuffs and meals.	
<i>Urtica</i> spp.	Nettles are common in all parts of North America. They are used mostly as potherbs, eaten like spinach, and sometimes made into soups. Nettles contain formic acid, which produces a sting; however, the acid is neutralized during the cooking process. Nettles are a very good source of Vitamin C.	Harrington 1975:73
<i>Cannabis sativa</i>	Known as hemp or marijuana, this plant is edible if treated very carefully. It contains poisonous alkaloids that produce a narcotic effect. The Indians utilized this plant as an additive to cakes or mixed into different types of batters.	Harrington 1975:149

- The fill from all seven hearths was processed by soil flotation for maximum recovery of subsistence data. Analysis of floral and faunal remains indicated an economy based on hunting and collecting of wild resources, while the depth of the occupation suggested a persistent annual return to the site.
- By count, deer was the most important mammal, although beaver, coyote, raccoon (all pelt producers), and mouse were used, too. Catfish were an important protein resource. Another use of riverine resources was suggested by mussel shells (that disintegrated on touch), which is not surprising given the proximity of both creek and river.
- The plant remains recovered were available in both summer and autumn. They were potentially used for meal, flour, salad, food additives, and seasonings for gruels, soups, stews, etc.
- No domestic plants were found at the site. This is significant, as the floral materials came from the hearths, suggesting that either no such crops were raised or that this site represents a seasonal, rather than year-around occupation.
- Charcoal from the hearths gave dates ranging from A.D. 415 to 700. Although Brad Logan (personal communication) suggested discarding the specific A.D. 700-dated sample, a range of A.D. 400 to 700 is a reasonable time span for the Schultz phase.

THE SCHULTZ FOCUS

In his summary Charles Eyman (1966:332-333) concluded that the Schultz focus was a burial complex that:

...contains three varieties of burial structures which manifest a mixture of Hopewellian and

Plains Middle Woodland artifacts. The majority of the tumuli are earth-filled structures, with a relatively rare presence of masonry-walled tombs. Grit- and sherd-tempered pottery which lacks exterior decoration but which sometimes bears cord-marked interior surfaces near the rim is considered diagnostic of Schultz focus pottery; it is related to Lewis Cord Marked in Illinois. The exterior of these Schultz focus sherds is covered with cord-roughening applied vertically to the lip with little or no overlap. On the basis of the partially reconstructed vessel from the 14GE6 mound, vessel forms are conoidal containers with slightly flaring rims and relatively wide mouths. The presence of pottery in the Havana-Weaver tradition similar to that of the Kansas City Hopewell focus is noteworthy, as is true for the presence of Smoky Hill Aspect, Central Plains phase Riley Cord-roughened sherds.

Stemmed, serrated projectile points which lack side notches and non-serrated, side-notched stemmed projectile points are present in the mounds. The majority seem to be Scallorn form (Bell 1960:84), although characteristically many of the serrated specimens are longer and more narrow than the usual Scallorn points. Other attributes of the Schultz focus mortuary assemblage are spiral incised tubular bone beads which occur in relatively high percentages, in addition to perforated deer phalanges, plain tubular bone beads, annular incised bone beads, bone hairpins, bone needles and roulette, rib and antler rubbing tools. Various kinds of shell pendants, beads, and blanks of both marine and fresh-water origins occur, in addition to some calcite, shale, and bone pendants.

With regard to mound structure, basins which either possess or lack individual pits and occasionally exhibit slab floors, artifact caches, and pockets of charcoal (crematory areas?) are characteristic. Frequent instances of cremation prior to burial within the mounds, numerous bundle burials, and the grouping of bones according to skeletal parts are noted as additional attributes.

Eyman (1966:334) did not think that the Schultz focus was a Hopewellian colony but that it represented a lineage kinship society that was shifting its economic subsistence patterns from commensal plant collection and Plains fauna hunting to a

Chapalote-teosinte maize-growing culture complex. He proposed that the expansion of the Schultz focus into the Plains was prevented because of the restriction of Chapalote-teosinte maize to a relatively wet environment, thus causing the focus to be restricted to the relatively well-watered eastern third of Kansas. Eyman (1966:335) further noted that an analysis of the mound structural varieties and artifacts, including mortuary offerings within them, indicated preferences for marine shell artifacts and incised tubular bone beads. Also there was some inclination for inclusion of small, serrated Scallorn points with the dead.

Eyman had no radiocarbon samples from any of these mounds, so chronometric dating was not possible, but he proposed that the Schultz focus probably dated from A.D. 200 to 600, based on artifact comparisons. Furthermore, he considered it contemporaneous with the middle and late Kansas City Hopewell and the early part of the Valley focus, yet slightly earlier than Keith focus and the Smoky Hill aspect. Today it is known conclusively that the Schultz focus predates the Smoky Hill materials.

Later Terrell Phenice (1969:76) analyzed the human skeletal materials from the Schultz focus mounds and concluded that the Schultz crania belonged to a single physical stock that appeared to be the same as the Kansas City Hopewell crania series analyzed by Stewart (1943). The Schultz people differed from the Kansas City Hopewellians in artificial occipital flattening. The statures of the two populations were similar. At the same time the similarities between the three known Archaic skulls from Kansas and the Kansas City-Schultz human remains suggested that the Kansas City-Schultz people were the descendants and thus were indigenous to the Plains in Archaic times. Of course, this did not rule out possible migration of eastern or southern Hopewellians, and it was suggested that such a migration might be responsible for the slight increase in head heights found in later Kansas City-Schultz people. Otherwise, there were no indications that Kansas City-Schultz physical type represented a migration of these two peoples to the Plains.

Phenice (1969:74-76) noted that the Schultz mounds showed a wide variety of burial customs. Some of the mounds contained fairly complete and fragmentary material, with burned fragments accounting for less than 10 percent of the remains.

One group of mounds contained only single burials, most located in rectangular pits beneath the mound. A few of the mounds contained nothing but charcoal fragments and earth, admixed with a few specks of charcoal.

Some mounds showed a selection of cranial over post-cranial (below the skull) remains for burial. Males, females, and sub-adults were all subject to cremation. Cutting marks on fragments from seven of the mounds suggested that Schultz people practiced dissection of the dead on a small scale. Artificial openings in the crania suggested ceremonial or status significance for one or more of the individuals buried in the mounds. The openings and cranial deformation in two burials, together with similar burial practices, suggested that they were from the same cultural group (i.e., tribe or society).

An analysis of dental pathology showed that the mandibular teeth were most affected by ante-mortem tooth loss, abscesses, and caries. The third molar was the morphological class of teeth most affected in the mandible, whereas it was the first molar in the maxilla. Three-cusped maxillary third molars, Carabelli's tubercles (small additional cusps on the mesiolingual corners of upper molars), helicoidal (spiral) attrition were prevalent in the Schultz mounds dentition.

In his interpretation of the Schultz mound complex, Richard Krause (1995:129-142) accepted Eyman's listing of the mound groups as correct, but some proved not to be Schultz focus structures. Importantly, Krause discussed work done at 14GE129 by University of Nebraska archeologists; in his article he was especially concerned with the socio-political implications of mound building on the Plains.

SCHULTZ FOCUS MOUNDS REEXAMINED

Eyman's (1966) work contained contradictions in data; he clearly mixed Central Plains tradition materials and behaviors with Woodland. Now that there are artifact collections from local habitation sites excavated since 1966, it was decided to completely reexamine the Eyman-reported artifacts, now curated in the Anthropological Research and Cultural Collections at the University of Kansas. What follows is not a detailed description of the specimens,

for Eyman amply described them. Rather, the current authors studied the artifacts, particularly the ceramics and the projectile points, in order to relate those diagnostic materials to similar ones from archeological complexes presently known from the Manhattan-Junction City area in the northern Flint Hills. This was desirable because, while the original descriptions were extremely informative, some subtleties of the artifacts are best discerned by direct inspection.

When the mound artifacts were checked, it was discovered that a number of the sites that had been classified as Schultz focus Woodland were not Woodland at all. The only artifacts present at these sites belonged to the Central Plains tradition, either in the form of Upper Republican or Smoky Hill phase materials. For that reason mounds 14GE2-2, 14GE4-2, 14CY8, 14CY12-3, 14CY20, 14CY22, 14CY26:A-D, 14CY30, and 14CY31:1-2 were excluded from the following analysis. The sites reviewed here have a unity of artifact type, as well as of mound construction (Table 10).

As mentioned, Eyman originally defined three types of burial mounds: one with an interior masonry-lined chamber; a second with individual pits, containing bone remains, placed in the mound floor; and a third with a single basin. All three of these mounds were capped with slabs of the local limestone.

An examination of Schultz's original field notes and mound profiles indicated that there were not only three types of burials but actually at least four, counting non-Woodland remains. On the other hand, they do not all appear to be mounds. A structure similar to Eyman's rock-capped mound with its mixture of rocks, burned human bones, artifacts, and dirt fill within an interior "chamber" did exist. However, rather than a chamber, the floor of this type was simply lined with slabs of limestone upon which bones and the artifacts were placed. Dirt with an additional mix of cremated human bone was piled on top, and the whole structure was capped with limestone slabs. The second mound type was similar to the first but lacked the rock-lined floor.

The third type of burial might not even be a mound. Schultz's notes stated that he found these "mounds" by examining the ground surface by "prodding," which suggests a probe. Encountering rock slabs beneath the surface, he then excavated limestone slab-capped pits. If the field note

Table 10. Artifact Types Present in Mound and Habitation Sites.

Provenience	Kansas City Hopewell Pottery	Valley Focus Pottery	Shultz Phase Pottery	Scallorn Arrow Points	Corner-Notched Arrow Points	Kansas City Hopewell Points	"Snyder" Preforms	Plain Bone Bead	Annular Bone Bead	Spiral Bone Bead	Trapezoid Rib Bead	Squarish Rib Bead	Phalange Cones	"Hoe" Bone Pins	"Blades"	Flat Shell Beads	Flat Crinoid Beads	Conch Columella Beads	Marginella Beads	Burned/Broken Human Bone
Type A Mounds																				
14GE3	-	-	X	X	-	-	-	X	X	X	-	-	-	-	-	-	-	X	-	X
14GE5	-	-	-	X	-	-	-	X	X	X	-	-	-	-	-	-	X	X	?	X
14GE6	X	X	-	X	X	-	-	X	X	X	X	X	X	X	X	X	-	X	X	X
14GE129	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
Type B Mounds																				
14GE2-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	X
14GE4-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
14GE7	-	-	-	-	-	X	-	-	-	-	-	X	-	-	X	X	X	-	X	X
14CY12-1	X	-	-	-	-	-	-	X	X	-	-	-	-	X	-	X	-	-	-	X
14CY13	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	-	-	X
14CY23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
14CY24	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X
14BY32-1	-	X	-	X	X	X	-	X	X	X	-	-	-	X	-	X	-	-	-	X
14CY32-2	-	X	-	-	-	-	-	-	-	-	X	X	-	-	-	-	-	-	-	X
Ossuaries																				
14GE2-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	-	-	-	-	X
14CY27	-	-	-	-	-	-	X	-	-	-	-	-	-	-	X	-	-	-	-	X
Habitation Sites																				
14GE312	-	-	X	X	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-
14GE41	-	-	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X

description is correct, these were pits, not mounds. 14GE2-3 and 14CY27 are two examples of sites with pits that were deep (one at least 60 inches) and contained a scatter of broken and burned human bones, artifacts, soil, etc.

Thus, essentially Woodland materials that belonged to what Eyman called the Schultz focus were associated with two mound types, i.e., Types A and B. The basic construction differences were the presence or absence of a rock-lined floor and what might have been a rock-capped ossuary pit. While Eyman discussed other burials that Schultz had found, these lacked diagnostic artifacts or possessed certain traits that lead one to suspect that they

have nothing to do with the Woodland occupation. Be they Archaic or Central Plains is a moot point; they will not be examined here.

Type A Mounds

Mound Type A, the rock-lined floor type, is represented by four examples from Geary County: Neimuller site (14GE3), Chamberlain site (14GE5), James Younkin site (14GE6), and Krause's 14GE129. Krause (1995:136) presented a table listing the size of the above mounds, as well as the number of cubic meters of soil associated with their construction: 14GE3 = 14.11 m³, 14GE5 = 17.59

m³, 14GE6 = 334.25 m³, and 14GE129 = 42.61 m³. The John Davis Mound with the pipe had about 79.60 m³ of fill.

The mounds had a variety of artifacts that are diagnostic of a Woodland component, and their contents exhibited considerable internal consistency. Pottery from the mounds represents three major classes. In the James Younkin site, reported and analyzed by Schultz and Spaulding (1948), are grit-tempered ceramics belonging to two classes. The first group is rims and body sherds having Kansas City Hopewell design attributes, including rocker stamping, zone rocker stamping, cross hatching, and punctuates at the rim. Based on an analysis of Kansas City Hopewell pottery by Johnson and Johnson (1975), the designs date to the middle of the Kansas City Hopewell sequence, or roughly between A.D. 200 and 300. The 14GE6 ceramics in question, in fact, appear to be either trade pieces out of Kansas City or fragments of pots made by local Hopewellians. Considering the presence of Kansas City Hopewell habitation sites in the region, they probably were of local manufacture. The other pottery was Valley Cord-Roughened, bearing wrapped-stick impressions inside the rims and body sherds, the diagnostic pottery of Valley focus found in central Nebraska to the north. Taylor Mound (4DP3) in Doniphan County has the best-known collection of Valley focus materials in Kansas, and that site dated to about A.D. 100 (O'Brien 1971).

Pottery from the Neimuller Mound consists of a single body sherd; its surface is plain and undecorated, and it is tempered with crushed limestone. The 14GE3 pottery matches in every particular a limestone-tempered pottery excavated at the 14GE312, located approximately 25 miles east of the Milford Lake area.

Site 14GE129—located on a bluff overlooking the Republican River north of Milford and excavated by personnel from the University of Nebraska—possessed grit-tempered, plain-surfaced, undecorated pottery. This pottery also conforms to that from the Elliott site and from 14GE41 south of Milford Lake.

Thus, an examination of the ceramics from rock-lined floor mounds shows that “classic” Kansas City Hopewell and “classic” Valley Cord-Roughened ceramics were present, as well as ceramics that match the plain, undecorated wares tempered with

limestone and grit that are found at nearby habitation sites. It should be mentioned here that the Eggers site (14RY609), located near the mouth of McDowell Creek, has both Kansas City Hopewell and Valley Cord-Roughened ceramics. The senior author believes that Valley is simply an early type of Kansas City Hopewell. Spaulding (1949:110), too, argued that the Valley focus preceded the “developed Hopewell of the Renner site,” i.e., classic Kansas City Hopewell.

Present in the James Younkin Mound was a limestone platform pipe (Schultz and Spaulding 1948:309). Such a pipe, an obvious Hopewell element, was reported in 1879 from 14GE141, one of the four John Davis Mounds, which were situated 3 miles south of 14GE6 northwest of Junction City. Professor B. F. Mudge of the KSAC visited the John Davis Mounds excavation. An essay entitled “The Mound Builders in Kansas” quoted his presentation at the November 1879 meeting of the Kansas Academy of Science (*Lawrence Daily Journal* 9 November 1879:2). It is a description of the larger mound.

Only one mound has been opened, and the writer assisted in completing the search. Its size was about thirty feet across and three feet and a half in height, being the largest of the lot. Its original height may have been twice as much. This was indicated by the large amounts of rock in its construction, and the fact that we found the remains within three inches of the surface as well as at the bottom. We cannot suppose that when so much labor was bestowed on a burial that the bones would not have been left so near to exposure. Fully one-half of the material of the mound was composed of stones, varying in size and shape, from one to forty pounds in weight, thrown together in the utmost confusion. The remains consisted of human bones, pottery in fragments, beads, pipes and arrow heads.

The bones, with the exception of teeth, patella, finger and toe bones, were badly broken, and many in a frail condition. They indicated the skeletons of three adults, and at least one child about fourteen years of age. All had clearly been exposed and injured before burial, as the large bones had numerous marks of the teeth of wolves. Some of the bones and some fragments of pottery had marks of fire, made according to my judgement, before

burial. They had evidently been collected after being sometime exposed on the prairie and buried here. The body of the mound showed no internal marks of fire and feasting as were seen in the mounds which members of this Academy opened near Kansas City. When I visited this mound a space had been opened twelve by four feet and remains had been found in every portion, and we continued to find them as long as we labored.

The pottery was in small fragments and lay in all parts of the excavation, and with one exception, appeared as if broken before the interment of the bones. They were of the usual composition and make of those found in Missouri and farther east. Some of it was coarse and thick and others thin, of common designs, and some of more careful workmanship. While I was present several fragments with peculiar figuring were uncovered, which I immediately decided were from one vessel of more than ordinary workmanship. We collected some twenty-five or thirty pieces, and in the evening succeeded in uniting fourteen fragments which gave us nearly the full shape of the vessel. The shape and figures prevented the use of the grass basket in its manufacture and must have required considerable skill and care in its fabrication. Its capacity was about a pint and a half.

The beads consisted of four kinds. Sixty-three were made of the joints of crinoid stems, which is a common fossil of the adjoining limestone, and lay as if united on a string, which as a matter of course had decayed. Some twenty others were made of the shells from the adjoining river, several from the hollow bones of birds, on which the manufacturer had made some ornamental marks. One only was made to wear simply by a string around the neck, according to the fashion of our present Indians. The beads numbered altogether about 100. The arrow heads numbered eleven, — nine of very fine, slender, delicate workmanship, not far from an inch in length. The other two arrows were of common size and workmanship.

Approximately eight years later Chaplain Parker (1887:72-73) of Fort Riley summarized aspects of the work, but in particular he reported on the pipe.

The bodies seemed to have been laid on the surface of the ground without any order, and the mound

of mingled dirt and stones raised over them. The mound has been well dug out, and the interior now represents a mass of limestones of all sizes promiscuously thrown upon each other. The stones and some of the bones still retain evidences of heat having been applied when the bodies were buried. The number of teeth found would indicate that perhaps eight persons had been interred. Numerous fragments of the most primitive pottery—apparently urns—were found in the mound. Probably a hundred beads of soft limestone, and of encrinites, were taken from the mound. There was one pipe found, in the shape of a double moccasin, three inches in length from toe to toe. The bowl of the pipe was in the center an inch deep. The stem entered at one toe; the other toe had no orifice. This pipe was accidentally broken. Probably a dozen or two arrowheads were found.

The pipe as described was roughly T-shaped and a variation on a platform pipe, apparently identical to the one recovered from the James Younkin Mound (Schultz and Spaulding 1948:Plate xxix:d). From Mudge's comments the pottery would seem to be Hopewellian, but it was unclear whether this mound had a floor of dirt or rock; however, Parker clearly stated that the bone was laid upon the "surface of the ground," suggesting the mound lacked a stone floor, i.e., a Type B mound.

Intriguing, too, is a single chunk of obsidian about 1.5 inches long from the John Davis Mounds in the KSHS collections. Its source is unknown, but obsidian was traded from the west to Ohio and Illinois in Hopewellian times.

While the historical comment on the John Davis Mounds pottery is ambiguous, some sherds were donated to the KSHS in 1889. More than 30 Riley Cordmarked pieces probably represent a single vessel of the Central Plains tradition. There are two Hopewellian sherds: one is the rim of the miniature vessel with a row of punctates below the orifice; the larger second one is part of the shoulder with a series of punctates set within and above a zone line encircling the vessel shoulder. These attributes are associated with early Kansas City Hopewell.

Elements in the John Davis Mounds have parallels to the C. C. Witt Mound (14GE607), situated on a spur bluff on the east side of the Smoky Hill River less than 2.2 km due south of juncture of the

Republican and Kansas Rivers, and approximately 8 km directly east of the John Davis Mounds. As described by Mudge (*Lawrence Daily Journal* 9 November 1879:2), the John Davis Mounds held both Hopewellian and Smoky Hill cultural materials; the Hopewellian human remains were cremated ("Some of the bones and some fragments of pottery had marks of fire, made according to my judgement, before burial. They had evidently been collected after being sometime exposed on the prairie and buried here. The body of the mound showed no internal marks of fire and feasting . . ."), while the Smoky Hill burials were unburned ("The bones . . . were badly broken, and many in a frail condition. . . . All had clearly been exposed and injured before burial, as the large bones had numerous marks of the teeth of wolves.") The 14GE607 skeletal remains exhibited conditions identical to the John Davis Mounds bone (O'Brien 1991:54). Extensive cremated scattered bone was recovered, but soft, unburned, rodent-gnawed bone was scattered through the mound and in rodent trails and nests (West and Sager 1991:65-68). The ceramic artifacts belonged to Smoky Hill and Schultz phases. Thus like the John Davis Mounds, the C. C. Witt Mound was first constructed by Schultz phase people and was intruded into by Smoky Hill people burying their dead.

The projectile points recovered at these mound sites are of considerable interest because of their high degree of uniformity. The Neimuller Mound, Chamberlain Mound, James Younkin Mound, and 14GE129 all had Scallorn projectile points—as did the John Davis Mounds, although 14GE141 also had Langtry-like, Gibson, and Ensor points. The latter two are diagnostic of Kansas City Hopewell and would go with its early Hopewellian ceramics.

Present at 14GE6 was a single Langtry-like point and a possible Archaic slightly expanding base point. It is possible these latter points were intrusive in the mound-construction fill and have no relationship to the actual cultural affiliation of the mound. However, Langtry-like points were found at Ashland Bottoms (14RY603) (O'Brien et al. 1979:4), Don Wells site (14RY404) (O'Brien 1972:Figure 6c), and Eggers site (14RY609) in the same levels as the other points. Although identified by Bell (1976:Figure 13a-b) as Burkett and Dickson points, Langtry-like and Gary points are considered

early in the cultural sequence at the Trowbridge site (14WY1) in Wyandotte County.

Other projectile points from habitations with Hopewellian pottery, such as 14RY603 and 14RY609, are Steuben and Ensor types, typical of Kansas City Hopewell. The Macy site (14RY38) on Spring Branch Creek by the bridge crossing the Kansas River has Gibson points with Hopewellian sherds (Benison, Banks, and Mandel 2000:59, 81). The presence of Scallorn points in the mounds with Hopewellian ceramics, while Steuben, Ensor, and Gibson points are lacking, is puzzling, although secondary use of an earlier Hopewellian mound is the simplest explanation.

Also found in the rock-lined floor mound at 14GE6 were chert blades similar to the kind associated with Middle Woodland, typically Hopewellian, sites in Kansas City and farther east into Illinois.

The bone artifacts, excluding the human bone, are extremely interesting. Sites 14GE3, 14GE5, and 14GE6 possessed large numbers of tubular bird bone beads. These beads were made by simply removing the epiphyses of the long bones of a variety of birds, presumably waterfowl and others. The bone tubes were treated in different ways, creating three different types: the first is plain, the second has a series of annular incised grooves encircling the middle of the bead, and the third has an incised spiral line encircling the bead (Figure 7a-c). In addition, 14GE6 had a number of other bone beads, which are potentially diagnostic. One is a bead that was made from a small section of probably deer rib bone. Removal of the cancellous bone created a small trapezoidal bead that is extremely flat in cross section, and the bead has an incised "X" on each side (Figure 7d-e). Beads made from slender mammal long bones or the extreme proximal ends of ribs are almost square in cross section and are roughly as long as they are wide (ca. 1.5-2 cm) (Figure 7f). Small bone tinkling cones were made from deer phalanges that were ground to points at the distal ends with holes drilled at both the distal and proximal ends (Figure 7g). Schultz and Spalding (1948:309) reported another diagnostic bone artifact that they called a bone pin. Although none of these is complete, they essentially look like miniature hoes (Figure 7h). While large numbers of beads have not been recovered in the habitation sites, 14GE312 did have the plain and annular-incised bird bone types (O'Brien et al.

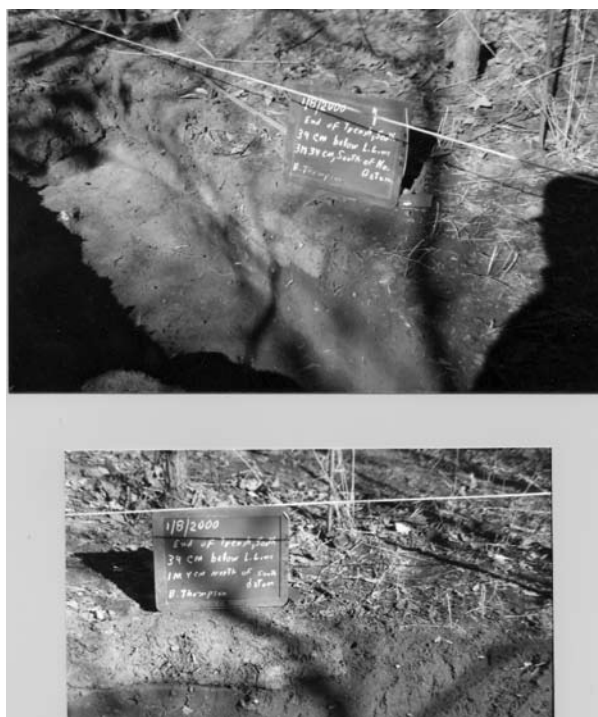


Figure 7. Schultz collection artifacts: a-c) bird bone beads, d) flat rib bead with X, e) plain flat rib bead, f) squarish bone bead, g) bone "tinkling" bead, h) four views of bone "hoe."

1973:Figure 9a-f). Like the mounds, the associated points are Scallorn (O'Brien et al. 1973:Figure 6).

Some shell materials recovered from the 14GE3, 14GE5, and 14GE6 mounds are conch shell columella beads, which represent trade from the Gulf Coast area of the southeastern United States. At 14GE6 *Marginella* shell beads also reflect trade in Atlantic Ocean marine species, and flat shell disc beads probably were manufactured from local fresh water mollusks of undetermined species. Finally, at 14GE3 and 14GE5 flat disc beads made from fossil crinoids were found.

Type B Mounds

Type B mounds with dirt floors include Dan Younkin Mound 1 (14GE2-1), A. Berry Mound (14GE4-1), Dixon Mound (14GE7), Dalrymple Mound (14CY12-1), Auchard Mound (14CY13), and Timber Creek Mounds (14CY23, 14CY24, and 14CY32:1-2).

Pottery was rare in these mounds. A single rocker-stamped, grit-tempered body sherd from 14CY12-1 was obviously related to the Kansas City Hopewell material at 14GE6. Sites 14CY32-1 and 14CY32-2 had Valley Cord-Roughened pottery, but 14CY32-2 also had 13 Riley Cord-Roughened potsherds from the succeeding Central Plains tradition. Approximately 90 percent of the bone in this mound was unburned (Phenice 1969:24, Table 21), suggesting that the bone belonged with the Central Plains material.

The projectile points consisted of the Scallorn type at 14CY32-1, while 14CY32-2 had several Central Plains tradition points (Eyman 1966:74). Site 14GE7 yielded a single corner-notched dart point, very similar to some found in the Kansas City Hopewell assemblage. Finally, 14GE7 also had a number of blades like those from 14GE6.

Bone artifacts comprised tubular bird bone beads, including plain as well as annular and spiral incised styles, recovered at 14CY12-1 and 14CY32-1. The squarish mammal rib bone beads (1.5 to 2.0 cm) were found at 14CY32-2. Also present at 14CY32-2 were the flat deer rib bone beads, identical to those at 14GE6 except that they lack the incised X decoration. Finally, 14CY13 had deer phalange cones.

The shell artifacts from 14GE7 were *Marginella* beads, flat shell beads made from fossil crinoids, and flat shell disc beads. Flat shell disc beads also were recovered from 14CY12-1 and 14CY32-1.

These descriptions reveal a basic similarity in artifacts from the rock-lined and dirt floor mounds, suggesting that the only variable in general architecture and mound construction is the presence or absence of rock lining the floor. The two mound complexes appear very similar with only slight differences that could be the product of change through time, geography, or social status. Like the Type A mounds, all Type B mounds had cremated human bone present; thus, cremation is the normal practice for all these Woodland-period (Hopewell, Valley, and Schultz) mounds.

Rock-Capped Ossuaries

There are two examples of the third type of burial structure, the rock-capped ossuary: Dan Younkin Mound 3 (14GE2-3) and Luthi Mound

C (14CY27-C). As noted earlier, Schultz found these structures essentially by probing beneath the surface. Human bone and artifacts were clustered in either an oval or squarish pit. Neither of these sites had any ceramic sherds, so their identification as Woodland sites is dependent on other criteria. For example, at 14GE2-3 the only remotely diagnostic artifacts were blades. These are similar to the 14GE6 and 14GE7 blades. Intriguing findings at 14CY26-C included blades, a possible Steuben point, and a set of very finely knapped large triangular preforms. Such preforms are found not only in the Kansas City area but beyond; they are called Snyder point preforms in the lower Illinois River area. Additionally, similar artifacts were found in Taylor Mound.

Assignment of a Hopewellian cultural affiliation to the rock-capped ossuaries is very, very tentative. At present it can only be said that such a burial pattern exists and that some of the materials contained relate to other Kansas City Hopewell materials.

Other Mounds

Finally, mention must be made of a mound class that seem not to be Woodland at all but were part of Eyman's original analysis. Four mounds excavated on the land of Robert Younkin (14CY26:A-D) and the Alquist Mound (14CY20) are in question. Three of these mounds were 9 feet in diameter, and two were 12 feet across. Capped with slabs of rock, they sat over basically rectangular pits, each containing an extended body, aligned on a northwest-southeast axis. Generally the heads faced to the northwest, with one exception facing to the southeast. No diagnostic artifacts were recovered from these mounds, but a number of mussel shells and flat shell disc beads were found. Indeed, in 14CY26:B the body had a large belt at its waist, while the body in 14CY26:C had both a large necklace and a bead belt. 14CY26:D had no artifacts. Mounds A and B also had large, rough conch columella beads.

This class of mounds differs from all others by small size, small rectangular pit, lack of ceramic, bone, and chipped stone artifacts commonly found in the others, and by the extended inhumation (fleshed body) burial mode. Their original Woodland assignment was based solely on the presence in

the northern margin of the James Younkin Mound of an extended, fleshed body, aligned on a northwest-southeast axis with head to the southeast. Unfortunately, the field notes are not adequate to resolve the question, but it is completely different from the other burials and is now believed to be a later intrusive interment. The senior author especially feels they are not related to the Schultz phase, as it will be defined herein nor to Woodland more generally. Indeed, they probably are Smoky Hill phase.

Habitation Site Data

The Schultz focus has remained, as it was originally defined, as a funerary complex; however, it is apparent that any population with a mortuary cult must live somewhere, so it is of some interest to research the Schultz population's habitation sites. To date two sites have been excavated that could be identified as Schultz phase settlements.

The first is 14GE312, which was excavated in 1970, 1971, and 1972 with final work in 1982. It is located at the

The earlier materials were reported in O'Brien (O'Brien et al. 1973) and Sorrell (1975).

Based on those studies, the following artifacts are present. Pottery comprises four broad wares. Three of these have plain surfaces, the first with limestone temper and second and third with grit temper, one with a micaceous paste. The fourth class consists of a non-mica grit-tempered paste with a smoothed-over cordmarked surface. In general these vessels are globular jars with rims that are slightly constricted and either plain or notched with cord. On occasion the plain surfaces can achieve a considerable polish.

Chipped stone artifacts consist of bifaces and blades. Scallorn and other unnamed corner-notched types are essentially arrow points. Also present are spokeshaves and choppers (either ovoid or oblique triangular in shape). Scrapers were made on parallel, lamellar, tabular, rectangular, and secondary decortication flakes, using White's (1963) categories of flake types.

The ground stone tools are hammerstones,

metates made out of broken slabs of limestone, and nutting stones. Burned limestone fragments were found throughout the midden.

Bone artifacts include both plain and decorated tubular beads. The decorated beads bear incised parallel annular lines perpendicular to their long axes. Bone awl fragments were present.

Faunal remains reflect the number of animals present. Bison, whitetail deer, and elk account for 77 percent of the identified species. Also present are mink, opossum, wood rat, red fox, dog, field mouse, fox squirrel, flying squirrel, and land squirrel. Avian remains consist of crow or duck, bald eagle, and meadowlark. Freshwater mussel was found, as was snail and western box turtle.

Also found in the midden and analyzed along with the animal bone, were small fragments of human bone from the cranium and dentition. Of course, the teeth could simply have been lost; however, the other bones suggest the practice of dissection and cremation of the dead at the habitation site with later interment in a mound, like the materials discovered in the Type A and B mounds.

A single radiocarbon date is available from 14GE312. The sample, which came from Feature 1, a hearth, yielded a date of 1935 ± 75 B.P. or A.D. 15 (UGa-381). Given the nature of the materials recovered, it is believed that this date is too early.

The data from the Elliott site was and is extremely interesting relative to the problem of the nature of Schultz habitation sites, especially when combined with data from the second site, 14GE41, reported herein. Although it enlarges the knowledge of subsistence and has two radiocarbon dates, 14GE41 has only two diagnostic elements: Scallorn projectile points and ceramic artifacts. Grit-tempered potsherds have mostly smooth surfaces, but several are cordmarked. The lips of the vessels were decorated with notches, made with sticks rather than cord like at the Elliott site, but the wares are clearly related. The site lacked bone and shell beads, and the bifaces, spokeshaves, hammerstones, and metates are non-diagnostic. Blocky end scrapers are common at Hopewellian sites, but they, along with plano-convex end scrapers, are common in Plains Woodland sites, too.

Two radiocarbon dates came from two of the hearths at 14GE41: 1535 ± 85 B.P. or A.D. 415 from

Feature 2 (UGa-2142) and 1250 ± 165 B.P. or A.D. 700 from Feature 5 (UGa-2143). While admittedly unscientific or non-statistical, adding the "plus years" to these dates yields a range of A.D. 500 to 865. This is not an unreasonable time span for the Schultz phase, but it is not reasonable for the site's occupation.

As pointed out earlier, Eyman (1966:334) believed that the "Schultz focus" represented a lineage kinship society that was shifting its economic subsistence patterns from commensal plant collection and Plains fauna hunting to Chapalote-teosinte maize growing. He proposed that the expansion of Schultz focus into the Plains was prevented because Chapalote-teosinte maize required a relatively wet environment, thus restricting it to the relatively well-watered eastern third of Kansas. No evidence of maize has been found at either the Elliott site or 14GE41. All recovered plant remains belong to wild species.

At the Macy site "potential cultigens recovered" included *Amaranthus albus*, *Chenopodium hybridum gigantospermum*, and *Chenopodium* cf. *Berlandieri*, *Iva* spp., and *Polygonum* (Benison, Banks, and Mandel 2000:94-95). However, they are only identified as **potential**, rather than **actual**, cultigens. Thus, the current data available in this area of the Flint Hills does not point to a Woodland economy, be it Kansas City Hopewell or Schultz, which included the use of domestic plants. An economy focused on exploiting wild flora and fauna seems to be the rule.

THE SCHULTZ PHASE: A REDEFINITION

In attempting to define the diagnostic features necessary to convert the Schultz focus into the Schultz phase, a certain point must be made very clear: very few elements define phases or indeed any archaeological taxa. The most obvious diagnostic traits are ceramic artifacts and projectile points, and they will be important here. While other artifacts, such as end scrapers, blades, axes, knives, beads, storage pits, houses, and burial modes, are used, some, like a hunting-and-gathering economy, hammerstones, or crude choppers, are too generalized to be useful. Time is considered first.

Dating

Present evidence points to Kansas City Hopewell dating between A.D. 1 and 600 (Logan 2006:349). Taylor Mound, the best-dated Valley focus site in Kansas, falls ca. A.D. 1 to 100 (O'Brien 1971:176). The Kansas City Hopewell and Valley materials within the Flint Hills fit this range, both in terms of style and radiocarbon dating.

The Schultz phase has two dates with a tight range: A.D. 15 ± 75 (UGA-381) from 14GE312 and A.D. 415 ± 85 (UGA-2142) from 14GE41. Frankly, it is thought the first date is far too early. The second has a two-sigma range of A.D. 344-657 (Brad Logan, personal communication), which covers the tail end of the Middle Woodland period and the very early part of the Late Woodland on the Plains.

This distribution has parallels with the dating of the Edwardsville phase of Kansas City Hopewell: A.D. 400 to 600 (Logan 2006:349). This may be significant as no evidence of late Kansas City Hopewell, what is called the Edwardsville phase, has been found in the Flint Hills. The Edwardsville phase (Johnson 1983:99-108) is best known from 14WY8, a small single-component site north of the Kansas River on Little Turkey Creek in Wyandotte County. Predominately the ceramics have undecorated surfaces and either plain or crenellated rim lips, with the crests of the crenellations peaking from 1 to 2 cm apart. As a plain ware, it parallels the Schultz ceramics.

It is thought that the Schultz phase fits in the general time span for Late Woodland on the Plains, ca. A.D. 500-1000, although the available radiometric dates fit the early end of the sequence.

Burial Mode

Two elements are common to all the Woodland burial remains in the region of the northern Flint Hills: cremations and mound construction. After death some of the deceased were cremated. Evidence from the Schultz phase Elliott site component points to the cremation ritual occurring at habitation sites (see Appendix). The loci of Hopewellian cremations are unknown, but it was a funerary practice. Data from Taylor Mound's cremation layer points to the burning occurring as part of the Valley mound construction ritual (O'Brien 1971:169). Thus, cremated

remains by themselves can be Schultz, Hopewell, or Valley in affiliation. They are not a burial feature associated with the later Smoky Hill phase, however. Furthermore, Taylor Mound had a limestone cist into which unburned long bones and skulls were placed. Thus, there are **select** non-cremated dissected remains, but apparently not complete skeletons, present in some Woodland mounds. The two unburned skull fragments from the Elliot site fit this model.

The second element was the construction of a mound in which the cremated bone and scattered artifacts were deposited. Mounds were situated upon a bluff overlooking a valley floor and were constructed of earth, usually capped with local rock. Because they are conspicuous, as pointed out by Krause (1995:142), and occur within the framework of a communal cult, interment in a "constructed" mound is a trait; however, the reuse of an earlier mound by later people also occurred. In other words, earlier Hopewellian or Valley mounds may have Schultz materials placed within them; indeed, later Central Plains tradition burials have been placed within them.

It is quite possible that in this region the Hopewellian/Valley mounds had rock-lined floors and the Schultz mounds had earthen floors. This is suggested because the rock-lined floor would be similar to a shallow limestone cist, like that in Taylor Mound, and the stone vaults of Kansas City Hopewell mounds, which used stone to define sacral space. Both patterns of Woodland peoples have mortuary goods, but they are not numerous either in the Flint Hills or in the Kansas City region. Hopewellian/Valley pottery, pipes, and projectile points are found in the mounds, as are Schultz phase pottery and points.

More difficult to gauge are the beads found in the mounds. Wedel (1943:156, 164-167, 170) reported shell beads or seashell beads in Kansas City area mounds, but bird bone beads were not mentioned. Presumably the shell beads are similar to the flat shell beads found in the Flint Hills mounds. The fossilized crinoid stem beads present in the Flint Hills mounds may reflect a resource available from local limestone.

Found in the mounds and in the local Schultz phase habitation sites were small tubular bird bone beads that are either plain or incised. The flat shell beads maybe generically Woodland, while the

tubular bird bone beads may be Schultz phase or Late Woodland. Kivett (1953:120, Plate 24, 3) illustrated plain tubular bone beads, seemingly of bird bone, from the Woodruff ossuary in northwest Kansas, which is a Keith phase site (Kivett 1953:137), so they may be a more generic Late Woodland trait. Additionally, annular incised bird bone beads were found with burials at the Massacre Canyon site (25HK13) in Nebraska (Kivett 1952:22). While 25HK13 has not been given a specific taxonomic assignment, its relationship to the Keith phase was noted indirectly through ceramics from the Doyle site (25RW28), which had both Massacre Canyon and Harlan (Keith phase) pottery types (Grange 1980:116; Johnson and Johnson 1998:207, 210). This would point to all these sherds belonging to the same chronological period: Late Plains Woodland. Why bird bone beads would be Late Woodland is unclear, but they seem to belong to this period and later. After all, tubular bone beads are so easily made; cut off the epiphyses of any chicken/turkey/duck/goose—or indeed any bird—femur, tibia, or humerus, and one has tubular bone beads.

Artifact Assemblage

The pottery identified as Kansas City Hopewell has all the attributes of that tradition, and sherds from James Younkin Mound stylistically date between A.D. 200 and 300. Additionally, other data on the Kansas City Hopewell occupation was collected from the Don Wells site on Wildcat Creek in west Manhattan, from the Ashland Bottoms and the Eggers sites on McDowell Creek south-southwest of Manhattan, and from the Macy site beside the Spring Branch Creek bridge entering Manhattan from the south. These are habitation sites, and by the stylistic sequence developed by Johnson and Johnson (1975) would date ca. A.D. 250-500.

The Macy site yielded a suite of radiocarbon dates, stratigraphically from youngest to oldest: 1490 ± 40 B.P. (TX-8590), 1690 ± 50 B.P. (TX-8592), 1830 ± 100 B.P. (TX-8591), and 1920 ± 80 B.P. (Beta-54313). These dates convert to A.D. 600, A.D. 389, and (combining the last two) A.D. 127, and it was concluded that the four dated strata covered a range of A.D. 2 to 654 (Banks et al. 2001:25-26, 34). Interestingly, this date range matches the radiocarbon dates on the Kansas City Hopewell

k-means (a statistical procedure to classify a given data set through a certain number of clusters) ceramic sequence produced by Johnson and Johnson (1975:Figure 6).

Kansas City Hopewell pottery in 14GE6 was associated with a grit-tempered, finely corded, cordmarked ceramics. This pottery also occurred by itself in other mounds: 14CY32-1 and 14CY32-2. While no rim sherds of this ceramic were present, the body sherds are the same as other sherds found in the Manhattan area, especially from habitation sites 14RY609 and 14RY613. All these sherds are similar to cord-roughened ceramics from Taylor Mound, which dates to A.D. 100.

Valley Cord-Roughened pottery, traditionally the diagnostic ceramic of the Valley focus in south-central and southeastern Nebraska, is similar or identical to the Rowe wares of southwestern Iowa, described by Tiffany (1978:169-182). Tiffany suggested that Rowe and Valley reflect a widespread non-Hopewellian Middle Woodland manifestation on the Plains that predated Renner site ceramics, i.e., classic Kansas City Hopewell. In fairness some scholarly discussions might be getting bogged down in semantics—perhaps “predating Kansas City Hopewell” and “being early Kansas City Hopewell” are not that far apart. The presence of Valley Cord-Roughened ceramics in these mounds means that there was a Valley focus occupation in north-central Kansas and that it was either contemporaneous with or preceded the Kansas City Hopewell infusion into the area, being accidentally incorporated into the fill during mound construction. However, its presence in middens at the same level as Kansas City Hopewell materials clearly points to the two cultures at least overlapping for some length of time.

The last pottery type present in two of the rock floor mounds, 14GE3 and 14GE129, as well as in two habitation sites, 14GE41 and 14GE312, is either grit or limestone tempered, has a plain undecorated surface, and has notches on the lip of the rim. It is characteristic of the Schultz phase and is generally typical of Late Woodland in the region.

The lithic artifacts from mounds and habitations have parallels with the ceramics. Plain surfaced, grit- or limestone-tempered sherds occurred with Scallorn projectile points and other small corner-notched arrow points in burial mounds. The Kansas City Hopewell occupation sites had Steuben, Ensor,

Gibson, and other large corner- and side-notched dart points. Those sites had a variety of blocky end scrapers that were not present at the Elliott site, but cruder types were found at 14GE41. Common to all Woodland sites—and all non-diagnostic—were heavy chopper bifaces, hammerstones, flake spoke-shaves and side scrapers, limestone metates, burned limestone, and bone awls.

Structures

No house remains were discovered at any of the Woodland habitations in the Flint Hills, and data on them in the Kansas City area are scant. While no storage pits have been discovered in the Flint Hills sites, they were very common at the large Kansas City Hopewell village sites. Unfortunately, Late Woodland remains are poorly known in the Kansas City region (see Johnson 1983).

Settlement Patterns

The lack of house structures and storage pits and documentation of a hunting and hide-processing tool kit at the extensively excavated Eggers and Ashland Bottoms sites led the senior author to think that the Kansas City Hopewell presence was characterized by seasonal—but persistent over time—exploitation of bison, deer, and elk. Local resources were used while these visitors were present in the area, and some individuals died and were buried locally, which could account for burial mounds with Hopewellian elements. However, this explanation may be incorrect. Perhaps a more permanent population was present, but evidence has been obscured by Euro-American settlement, namely the towns of Manhattan and Junction City. Four counts, three of which are archeological and one of which is ecological, support this latter interpretation.

ARCHEOLOGICAL COUNT 1

The large historic Kansa Blue Earth village was located about 1.5 miles east of the old juncture of the Kansas and Big Blue rivers on its large and wide north terraces. Thus, it was an attractive habitation area for native people. Also, in the late nineteenth century Brower (1898:61) reported the Brous site (14PO25), just west of the Kansa site, buried under river alluvium. While excavating the Kansa village,

Wedel (1959:198-200) relocated the Brous site and tested it, finding a Steuben point and rocker-stamped pottery, which he identified as Hopewellian. He thought the site might have covered 2 or 3 acres.

ARCHEOLOGICAL COUNT 2

Very near to the Brous site, but south of the Big Blue and Kansas River juncture on the Fairmont terrace of Spring Branch Creek, was the Macy site. That site had 1.5 m of Hopewellian deposits (Benison et al. 2000:Figure 11, 38), but its areal extent is unknown. The Macy site was severely impacted by modern construction of buildings, roads, and bridge abutments.

ARCHEOLOGICAL COUNT 3

The Dike site was situated near the mouth of the Vermillion, which is called a creek on modern topographic maps but a river on Kansas highway signs. Manhattan originally was established at northwest side of the old mouth of the Big Blue and Kansas Rivers, and Junction City was built on the terraces on the west side of the juncture of the Republican and Smoky Hill Rivers that forms the Kansas River. Today there is considerable urban sprawl over these river terraces, and any prehistoric materials have been either destroyed or buried under asphalt, concrete, and levees. The Vermillion River is the next major tributary east of Manhattan, but its major modern urban settlement, Wamego, is 4 miles to the west on the ascending high ground. Thus, the wide terraces at the juncture of the Vermillion and Kansas Rivers remain open farmland.

Jacob Brower (1897) in his handwritten notes (Microfilm Roll 1, Notebook 1) reported a burial mound on the land of R. W. Dike in Section 30-9-11, which turns out to be situated on the Vermillion River about 1.5 miles north of its entry into the Kansas River. Brower recorded that, when Mr. Dike opened this mound, he discovered it “had . . . a square row of stones inside which was a stone cist or burial . . .” (see Figure 8a). The mound was on “the lead terrace” and “made of earth brought from a distance.” Human remains were found in an advanced state of decay. Brower (1898:67) further stated that the mound was:

. . . principally constructed of large stones, covered with earth. Remains of the dead were found in an

oblong receptacle in the nature of a cist, made of stone, and Mr. Dike claims to have found the quarry from which the rock was removed, in a neighboring bluff. No pottery and a few flint chips have been found on the Dike farm.

These data are intriguing because the description and accompanying drawing of the mound have some features associated with Kansas City Hopewell burial mounds, except that the latter typically were situated on the bluffs overlooking a river or creek. Also, in his notebook Brower (1897) mentioned that, crossing the road and following the terrace south into Section 31-9-11, he located what he called the "Dike Village Site, Red Vermillion River." He drew the perfect likeness of the Kansas City Hopewell rim sherd with cross-hatching at the rim and a line of single punctates below it (see Figure 8b). Later Brower (1898:67) mentioned that "... potshards and flint implements were scattered over the surface of the cultivated field for nearly half mile."

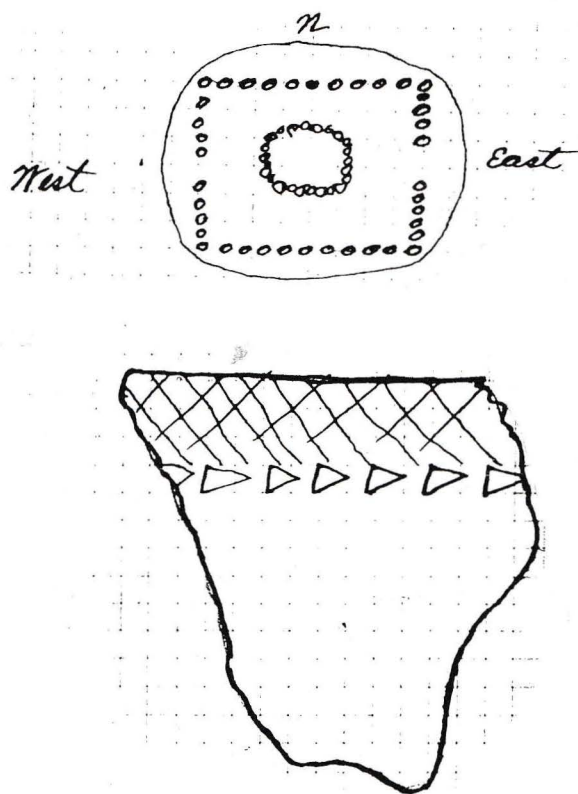


Figure 8. Brower's drawings of a) Dike site burial mound and b) Hopewellian rim sherd from the Dike Village Site.

Brower's map and his writings, both published and unpublished, point to the Dike Village site being on the east side of the Vermillion River.

Wedel (1959:200-201) identified the Dike site with 14PO26, situated in Section 31-9-11 but on the west side of the bend of the Vermillion, 1.5 miles north of its juncture with the Kansas River. Wedel reported and illustrated Kansas City Hopewell pottery and projectile points but also recorded Smoky Hill phase pottery and points at 14PO26. In the 1970s Virgil Peterson of Manhattan discovered and reported 14PO600, a site with Kansas City Hopewell projectile points, south of a township road directly south of Dike's land. Thus, 14PO600 appears to be a better candidate for Brower's Dike Village site with a Kansas City Hopewell affiliation. In any case, large Hopewellian sites occur on either bank of the Vermillion near its mouth.

Given the nature of the Dike, Macy, and Brous sites, it is suggested that Johnson's Hopewellian settlement system may be present in the northern Flint Hills region but is obscured by modern Euro-American settlement.

ECOLOGICAL COUNT 4

Johnson (1976:7-15) proposed a Kansas City Hopewell settlement system of large permanent villages near the junctures of large tributary streams with specialized ancillary camps scattered up a local drainage, forming a hunting-and-gathering territory. The bluffs adjoining the large villages were the locations of stone vaulted burial mounds.

The Vermillion River easily represents such a drainage, with Kansas City Hopewell ancillary camps situated on all the small tributary creeks fingering north-northwest into the heart of Pottawatomie County. Indeed, in the Flint Hills the various Kansas River junctures themselves might be considered part of "large tributary streams."

The presence of the burial mound on a "lead" terrace behind the sites may be due to the fact that the north Kansas River bluff line is 1.5 miles to the north; however, it is also possible the site had a different, more complex, function. Buikstra (Buikstra et al. 1998:68-69) reported on Mound House, a mound site on the Illinois River floodplain, and proposed that it was a sacred space associated with mortuary ritual. This mound site has yellow sand associated with it and may represent aspects of a

Hopewellian water symbolism linked to special soils (Buikstra et al. 1998:88).

Furthermore, as Logan (2006:345) noted, Johnson (1976) pointed out that four plant communities were associated with the Hopewellian settlement system: the Missouri Valley floodplain forest, an oak-hickory forest along the bluffs, an open woodland zone behind them, and tallgrass prairie in the uplands. There is no question the Flint Hills were a rich and attractive area in late prehistory and little reason to think it was not so in earlier times. Indeed, an examination of the original Land Survey Field Notes (USSG 1857a, 1857b, 1857c, 1859, 1862) reveals the present of oak and hickory in the region.

For example, the Junction City area where the Republican and Smoky Hill Rivers merge encompasses townships Townships 11-12 South, Ranges 5-6 East. Book 396 (USSG 1857b) recorded, "Timber exists upon the water courses alone, annual prairie fires prevent its extension upon the high lands. Cottonwood is the predominating species of this western country," and "Burr Oak, Elm, Hackberry, and Hickory also exist but not extensively." Book 402 (USSG 1857c) mentioned "Timber Oak, Elm and Hackberry" at the corner where Sections 23, 24, 25, 26 in Township 11 South, Range 6 East meet at Clark's Creek and the Kansas River. At the corner where Sections 22, 23, 27, 26 in Township 11 South, Range 6 East meet just southeast of Whiskey Lake, "Timber Hickory, Oak, Hackberry and Elm" were present (USSG 1857c). Along the north-south line of those sections "Timber White Oak, Hackberry, Elm, Cottonwood and Walnut too" were found (USSG 1857c). At the township line between Section 31-11-6 and Section 6-12-6, directly south of the junction of the Republican and Smoky Hill Rivers, it was recorded, "Land level bottom, soil 1st rate, Heavily timbered consisting of Burr Oak, Elm, Hackberry and Cottonwood. Undergrowth, Same, Greenbriers, Grapevines and Hazle Bushes." Noted in the General Description of the township was "Timber, chiefly Burr Oak, Hickory, Hackberry, Cottonwood, Elm on both sides of Clark's Creek and on south side of Kansas River" (USSG 1857c:23).

In the Manhattan area where the Big Blue enters the Kansas River, it is recorded on the right bank of the Big Blue beside the corner of Sections 5, 4, 8, 9 in Township 10 South, Range 8 East, "Land level, Timber Elm, Cottonwood, Box Elder and Willow"

(USSG 1859). The point is roughly north of the historic Kansa village. Just south of that village on the line separating Sections 9 and 16-10-8, it was mentioned, "Land level, Timber Cottonwood, Elm and a few Black Oaks" (USSG 1859). On the land on the left bank of the Kansas River (near to Spring Branch Creek) on the line between Townships 7 East and 8 East, it was recorded, "Mostly bottom land. Timber Oak, Walnut, Hackberry, Hickory, Elm and Sycamore" (USSG 1857a).

Of the Vermillion River area it was said, "The Vermillion is a large and unfailing stream of good water." "There is a moderated supply of timber in the township consisting of Burr Oak, Elm, Walnut, Hickory, Hackberry, Sycamore, Red Bud, Box Elder, Mulberry, Thorny Locust, Willow and Cottonwood." (USSG 1862:51). Directly in Section 31-9-11 on its east line was "Timber Oak, Elm, Walnut, Hickory, (unreadable), Red Bud, Buckeye, Willow, Sycamore and Cottonwood." At the corner of Sections 30, 31, 29, 32 in 9-11 were found "Timber Oak, Elm, Walnut, Hickory, Sycamore, Willow and Cottonwood." (USSG 1862:41-42).

Although attenuated, aspects of all four of Johnson's plant communities were present on the major river drainages of the Flint Hills. Thus, they might easily be considered the reason for a Hopewellian occupation in the region.

Finally, the lack of extensive, deep midden base camps in the Schultz phase points to a highly mobile hunting-and-gathering economy with the systematic and persistent use of specific "limited activity sites." However, a permanent base camp system similar to the Kansas City Hopewell pattern might have existed but remains to be discovered and excavated in the northern Flint Hills. Certainly, one problem with testing such ideas and with discovering such sites is the presence of two modern reservoirs on the Big Blue and Republican Rivers, making the lower Smoky Hill River key to answering such questions.

SUMMARY

The data from excavations in the northern Flint Hills region of Kansas suggest that the Woodland period was characterized by two cultural traditions: a Kansas City Hopewell penetration, particularly in the Vermillion, Manhattan, and Junction City

areas from A.D. 1 to 600 and the Late Woodland Schultz phase, from A.D. 500-600 to 1000. This assumes that the Valley focus was early Kansas City Hopewell.

Two types of burial mounds were present with associated cremated human remains: rock floor Type A and earth floor Type B. Type A commonly had Hopewellian artifacts with occasional Schultz or Smoky Hill intrusions. The rock-lined floor had affinities to Kansas City Hopewell stone vault mounds and Valley focus stone cists. Type B had mainly Schultz phase materials, probably some collected from habitation sites where cremations occurred and interred in the mound fill. A third pattern of non-mound rock-capped ossuary pits on bluffs was present, but data concerning them is too fragmentary for adequate cultural assignment.

Single component habitation sites belonging to Kansas City Hopewell and Schultz phase peoples have been excavated. They confirm the chronological separation of these populations, and again pottery and projectile points remain the most important means to separate them.

If Hopewellians ventured into the area to exploit special resources, they might have encountered local Late Archaic peoples (about whom very little beyond their projectile points is known). If that relationship was peaceful, as the meager data seem to suggest, some artifacts could have been exchanged along with ideas from back East.

The Hopewellian materials and the people who created them seem to have been replaced by the Schultz phase Late Woodland population. Given the radical differences in material culture, economy, and mortuary/ideology systems, they appear to be culturally distinct peoples. On the other hand, the osteology suggests that these populations might have been biologically related, and the transformation might represent a synthesis from declining Kansas City Hopewell with a Late Archaic economic core. In any case, these two Woodland traditions were replaced by the Central Plains tradition, whose people, in the senior author's view, might be the ancestors of the historic Pawnee nation.

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APPENDIX: ELLIOTT SITE (14GE312) HUMAN BONE

PATRICIA J. O'BRIEN

Eight traces of human remains were recovered at the Elliott site. O'Brien (O'Brien et al. 1973:66) asserted that this bone material was evidence of dissection and cremation of the dead at the site. Sorrell (1975:180-181) restated the argument. Based upon this same material, Roper (2000) argued that the human bone represented the remains of burials that were plowed out and eroded away.

First, it should be stated that 14GE312 was excavated by students taking a KSU class in Archaeological Field Methods. All the excavations were performed by shoveling scraping to allow for maximum recovery, but especially to aid in identifying the presence of any features and postholes in the undisturbed midden below the plow zone. The site midden was generally 40 cm deep, with 20 cm being completely undisturbed. No evidence of burial pits, and particularly no evidence immediately below the plow zone, was discovered.

Because many adult humans are from 15 to 20 cm thick (front of the chest to the back and front of the skull to back of the skull) and because the

present plow zone was approximately 20 cm thick, bodies thought to be in the plow zone originally would have had at least a foot of earth covering them. A foot of erosion from an agricultural field is certainly possible, but without land elevation measurements before modern plowing commenced, it is impossible to establish proof of it.

Included in the remains are three teeth: from 5S-10W/2 an upper left deciduous molar (Specimen #3136) with its crown worn flat belonging to a child 4-10 years of age (O'Brien et al. 1973:66), although the wear level indicated the older rather than younger age; from 0-5S/2 an adult canine (Specimen #3164) with its crown worn flat (O'Brien et al. 1973); and from 20W-35S/2 a possible lower adult incisor (Specimen #10920). None of the teeth displayed any evidence of being burned. In and of themselves, their existence does not suggest the presence of burials at the site because humans, especially children, can lose teeth throughout their lifetimes.

The remaining five bone fragments cannot be explained by being "lost" or shed. The first is part of the parietal of a skull (Specimen #3206), measuring approximately 3 x 2 cm at its widest point, from 0-15S/2 (O'Brien et al. 1973). It shows extensive evidence of burning. The second fragment, a frontal upper edge of the eye orbit (Specimen #3273) from 5E-15S/2, represents an adult female (O'Brien et al. 1973). It, too, shows evidence of burning and fire hardening. A third fragment (Specimen #3141) from 5W-5S/1 is part of the "left temporomandibular joint area (left temporal and sphenoid); young adult - sutures not closed." (O'Brien et al. 1973). A fourth skull fragment (Specimen #4214) with traces of a suture line at one end came from 5W-30S/2 (Sorrell 1975:180). It is small (ca. 3 x 1.2 cm) with evidence of gnawing and weathering but no burning. Recovered from square 10W-25S/2, the fifth and largest bone fragment (Specimen #11035), consisting of eight conjoining pieces, is about 10 cm long by 10 cm wide (squarish if held at an angle to the sagittal suture line). It is the top of an adult cranium, with traces of the coronal and lambdoidal sutures present. As the interior of the skullcap was facing downward, excavators at first thought that they had encountered a burial; however, it proved to be the top of a skull in the undisturbed midden. This bone shows **no** evidence of charring or fire hardening and

is more porous and soft than the other bone. As this bone and the fragment from 5W-30S/2 were identical in condition, they were examined to ascertain if they came from the same cranium. They did not fit each other, so they were treated as two individuals.

Thus, considering the cranium bones and excluding the teeth, there is evidence of an adult female who was cremated, a young adult who was cremated, and two adults who were "fragmented" in some manner. The author believes that the most parsimonious explanation of these remains is that they reflect the dissection and cremation of the deceased at the habitation site—not the remains of plowed-out burials. The fact that two skull fragments were burned is the strongest support for this interpretation.

Funerary Objects

Roper (2000) supported her argument for plowed-out burials by the presence of "funerary objects" in and around the squares containing the human fragments. These artifacts included beads and modified bone.

BEADS

The first bead (Specimen #4197), found in 5W-20S/1, was made from a mammal bone. Originally it was probably 3 cm long, 1.2 cm wide, and 7.5 mm thick with a 5 x 2-mm oval hole, but it was rodent-gnawed and incomplete on one end. It shows no evidence of being burned. Also present in 25W-35S/1 was a fossilized crinoid stem "bead" (Specimen #19760), which is 6 mm in diameter and 2.5 mm thick with a 2-mm hole. Crinoid stem beads have been found in burial mounds in the region (*Lawrence Daily Journal*, 9 November 1879:2).

Two complete and 23 fragments of tubular bird bone beads were found at the site. Sixteen were plain, and nine were incised with annular parallel lines. One complete bead, measuring 4.1 cm long and 8 mm in diameter, is charred black at one end (O'Brien et al. 1973:Figure 9a). Another is 1.5 cm long and 2 mm in diameter and is fire hardened, that is, still creamy-tan in color but hard or dense and shiny on the surface. Of the remaining beads, four of the plain bead fragments are charred. Twelve show no evidence of burning, but their hard, shiny surfaces **may** reflect, but **cannot be proven** to reflect, fire hardening, so they are treated as though

they are fire hardened. Of the annular parallel line-incised bird bone beads, five are charred white, one is fire hardened, and one seems unburned.

Thus, 5 of the plain beads are charred, and 12 are possibly fire hardened. That 10 of the 25 bird bone beads are charred is unquestioned, and their charred condition suggests that they might have been associated with the charred human remains. The remaining fire-hardened bird bone beads might go with those remains but might simply have been lost by the Schultz Woodland inhabitants of 14GE312.

Table 11 records the proveniences of these fragmented tubular bird bone beads.

BONE IMPLEMENTS

An incised shaft section of a possible bone “pin” (Specimen #3214) from 0-20S/1 has traces of decoration in the form of incised Vs (O’Brien et al. 1973:Figure 9f). It is charred gray and very incomplete, measuring 9 mm wide by 4 mm thick.

Present in 15W-35S/2 was a possible awl or pin fragment (Specimen #10950). The small fragment, 1.5 cm long and 5 mm wide, is charred black with a polished surface but too incomplete to establish function. Two similar fragments might represent the shafts of “pins.” One from 30W-35S/1 (Specimen #10890) is 1.6 cm long, completely charred black, dense, and polished. The second (Specimen #10882), also dense, polished, and completely charred black, came from baulk wall 30S between lines 30-35W/2. Finally, 0-15S/1 yielded a completely charred gray bone fragment (Specimen #19754), measuring 1.1 cm long, 4 mm wide, and 3.5 mm thick. Judging from the presence of long lateral striations on its polished surface, it might be a section of a bone awl.

All these implements are thoroughly charred. Therefore, if they are funerary objects, the author suggests that they were associated with the cremated human bone fragments and not with alleged plowed-out burials.

Table 11. Proveniences of Tubular Bird Bone Bead Fragments.

Specimen Number	Provenience	Description	Condition
3210	0-15S/3	3 plain	2 charred white 1 fire hardened
3158	0-0/1	plain	split; charred white
11369	25W-25S/2	plain	fire hardened
10922	20W-35S/2	2 plain	fire hardened
10938	15W-35S/1	2 plain	charred white
10955	baulk wall 30W between grid 30-35S/2	plain	fire hardened
11057	25W-25S/2	plain	split; fire hardened
19758	surface	3 plain	split; fire hardened
10915	20W-35S/1	plain; 2 mm in diameter	fire hardened
10950	15W-35S/2	plain; 3 mm in diameter	split; charred white
3264	5E-10S/2	center section separated with 3 annular lines & 1 line	charred white
3147	5W-5S/2	center section with 1 annular line	charred white
3192	5E-15S/3	center section separated with 4 annular lines & 1 line	charred white
11205 O’Brien et al. 1973:Figure 7i	15W-15S/1	2 cm long, 4 mm in diameter; 3 sets of 4 annular lines	almost complete; charred white
11205 O’Brien et al. 1973:Figure 7j	15W-15S/1	1.5 cm long, 4 mm in diameter; 3 sets of annular lines	unburned
4191 O’Brien et al. 1973:Figure 7k	5W-15S/1	center section separated with 4 annular lines on each side	fire hardened

Conclusions

Had the five human skull fragments **not** been recovered at 14GE312, the beads, bone “pins,” and teeth (especially the “baby” tooth) simply would have been interpreted as materials lost by its inhabitants. Although important, they would have been viewed in the same manner as the pottery, stone tools, animal bone, and other remains.

The cranium fragments must be explained, and this author considers the most parsimonious explanation to be that they resulted from dissection and cremation activities at the site in association with its inhabitants’ mortuary practices. Indeed, excepting the charred bone, one could account for the two unburned skull fragments as representing the remains of “trophy skulls” just as easily as the remains of a plowed-out burial. However, this author would not push the data that far, as next to nothing is known of prehistoric aggression in the Central Plains at this period of time. In the final analysis, the individual reader must decide which interpretation he thinks best fits the Elliott site data.

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THE CALF CREEK COMPLEX IN SOUTHEAST KANSAS: ANOTHER PRELIMINARY EXAMINATION

JIM D. FEAGINS
Belton, Missouri

In southeast and south-central Kansas, sites containing distinctive, mid-Archaic age Calf Creek points are slowly being identified. These sites occasionally are found in two geomorphic settings: in eroded uplands and when exposed well below the surfaces of valley floors. The three-fold focus of this article is to draw the attention of Kansans to this point type in the hope of identifying other Calf Creek sites; present information from an additional site, 14BO1402, containing a Calf Creek component; and summarize the Calf Creek horizon elsewhere in relationship to results of the Little Osage River Valley Archaeological Survey.

This article is written as a follow-up to “The Calf Creek Complex: Preliminary Research on the Lithic Technology in Kansas” by Michael D. Stites (2006), which appeared in the autumn 2006 issue of *Oklahoma Archeology*. Stites’ article focused primarily on the widespread but sparse evidence of this complex in four southeast Kansas counties: Bourbon, Cherokee, Crawford, and Linn. In addition to a brief discussion of previously recorded site 14CW639, containing a Calf Creek complex component (Kansas State Historical Society files), he presented information on Calf Creek artifacts from four or five previously unreported sites/areas in these counties. Unfortunately for ease of comparison and future research, Stites did not give their official site numbers in his article.

Oklahoma has taken the lead in intensifying the research on the Calf Creek complex—primarily with two thick volumes of the *Bulletin of the Oklahoma Anthropological Society* (Wyckoff and Shockey 1994, 1995). Together they contain 27 articles by 23 authors on the Calf Creek horizon from various parts of the state. Interest in the complex obviously continues in Oklahoma and adjoining areas (Odell 2007; Stites 2006; Thurmond and Wyckoff 2000; Wyckoff 2005).

The purpose of the present article is three-fold: to spotlight the Calf Creek complex in the hope of generating additional information from Kansas readers; to present additional data on Calf Creek

lithic artifacts from another southeast Kansas site, 14BO1402 (Figure 1); and to present a few additional comments about Stites’ article and more importantly about the complex itself from the vantage point of the Little Osage River drainage near the Kansas-Missouri border. Taken by itself, this new information is not of major importance; however, when presented with other known sites from this complex and as new information continues to mount, it should be useful to increase understanding of the Calf Creek horizon.

THE LORVAS PROJECT AND CRM WORK

The Little Osage River Valley Archaeological Survey (LORVAS) was started in 1968 and has continued quite intermittently for almost 40 years on a volunteer basis as the author’s time permitted. This survey was conducted mainly between 1968 and 1998. The survey was confined to the middle and upper portions of the Little Osage River drainage, including small portions of its largest tributary, the Marmaton River. In 1975 a summary of adverse impacts to the area’s sites, based on the results of an early stage of this survey, was published (Feagins 1975). LORVAS, supplemented by several small Cultural Resource Management (CRM) investigations and other research (Bradley 1969; Bradley and Harder 1969; Brogan 1982; Feagins 1973, 1978,

1979, 1980, 1983a, 1983b, 1993, 1994a, 1994b, 1995, 1996, 1997, 1998; Reynolds 1979; Rowlison 1974; Schmits et al. 1989; Weston 2001; Williams 1987a, 1987b), has identified over 460 sites in this drainage in Bourbon and Linn counties, Kansas, and Vernon County, Missouri. More than 95 percent of the sites resulted from LORVAS itself. Some reports of this investigation's results have highlighted the late prehistoric period (Feagins 1973, 1979, 1995, 1996).

LORVAS and the other local research findings listed above have supplied data that can be tapped to investigate various cultural components and to generate a variety of archeological research questions—about the Calf Creek complex settlement pattern and lithic technology, for example. Project records and memory indicated that 14BO1402 contained Calf Creek points. Memory also suggested that another Calf Creek projectile point/knife (PP/K) fragment from a different site might be present in the LORVAS collections; however, other site report forms make no mention of this fragment. While all the cultural materials in the collections are labeled with site numbers, individual artifact catalogues do not exist except for a relatively few sites. At present the only way to determine if Calf Creek biface fragments are present is to reexamine each collection, site by site. Because of time restraints, that has not been done; thus, only the artifacts from 14BO1402 have been analyzed for this article.

CALF CREEK POINTS

The site setting and the artifacts from 14BO1402 will be presented shortly. But first, the attributes of Calf Creek points will be reviewed, as they are the hallmark of this complex. Calf Creek points contain deep, narrow, parallel-sided basal notches (Perino 1968:14-15, 1985:62; Sandstrom and Ray 2004:14-15) formed in wide, relatively thin, triangular to slightly ovoid preforms. Stems are square to rectangular or often slightly expanding but occasionally slightly contracting. Stem bases are usually straight, but on occasion they are slightly convex or concave. These medium to large points have straight to convex blade edges, which are sometimes serrated prior to any resharpening (Sandstrom and Ray 2004:14). Some of the stems have been basally thinned (Wyckoff 1994:3), removing one or more

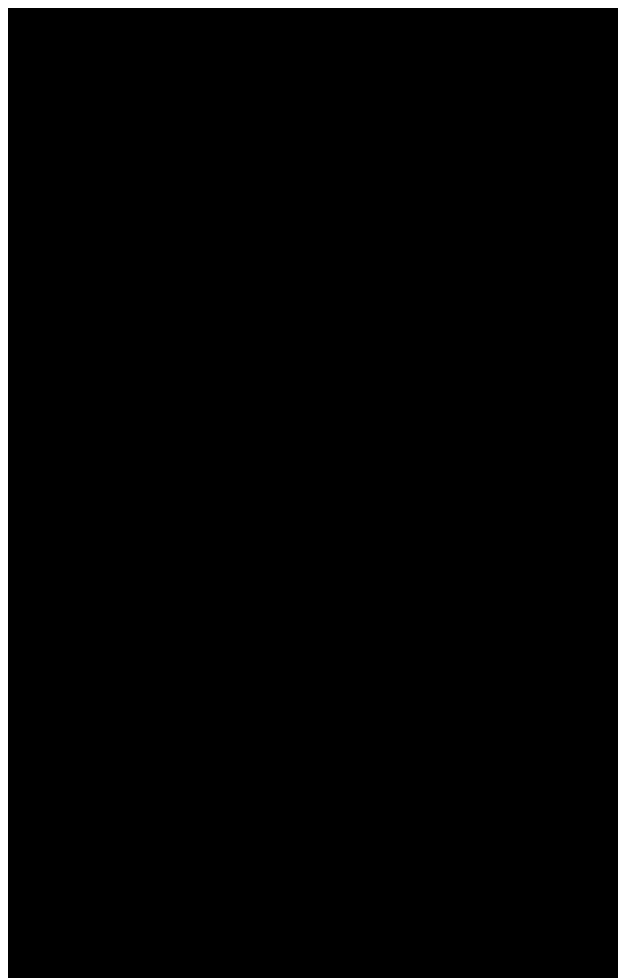


Figure 1. General locations of Calf Creek complex sites in a portion of southeast Kansas, including 14BO1402, 14CW639, and the unnumbered sites/areas mentioned by Michael Stites (2006:22). (Map redrawn by author.)

longitudinal flakes from the proximal end (Crabtree 1972:36). The stem edges generally are not ground. An exception is the McKellips site in Oklahoma, where points usually are basally ground (Duncan and Wyckoff 1994:260). Calf Creek points are commonly heat treated/thermally altered (Bartlett 1994:71; Cestaro and Carrell 1994:129; Duncan 1995:90; George 1995:11; Ray 2007:198, 218, 221, 344; Wyckoff et al. 1994:52). This presumably was done to further improve the cherts' knapping qualities during biface manufacture (Crabtree and Butler 1964; Mandeville 1973; Ray 2007:48). At the Bass site (Lopinot and Ray 1995) in Greene County, Missouri, and at a variety of other Calf Creek sites

in Oklahoma (Neal 1994:245; Neal et al. 1994:303; Shockey et al. 1994:343), Calf Creek knappers generally focused on light colored, medium- to coarse-grained cherts that were highly amenable to heat treatment (Ray 2007:223, 344). Even though fine-grained cherts were readily available, it seems that many of them intentionally selected poorer quality cherts, such as Undifferentiated Osagean, Frisco, and Keokuk/Boone, which produced satisfactory knapping materials only after heat treatment (Ray 2007:221, 344).

Abundant evidence indicates that many of the Calf Creek bifaces were used as projectile points (Bement et al. 2004; George 1995:10; Neal 1994:223-224), and many were used as cutting tools/knives (Perino 1985:62; Wyckoff et al. 1994:17). This explains Stites' (2006) use of the shorthand term "PP/K." Undoubtedly, many individual points of this style had multipurpose usage.

Many of these points were broken (Duncan 1995:90) and discarded or were lost after considerable use and resharpening. The barbs, given their length and exposure to lateral forces, were not robust. After dulling and resharpening, the blade became shorter, and the angle of the two blade edges at the tip became more obtuse. In some cases the tip at the distal end virtually disappeared, becoming quite rounded. Barb width tended to decrease slightly near the attachment to the remainder of the blade; with continued use, the weakened barbs often broke. Also because most Calf Creek points were heat treated, their tensile strength was less (Towner 1985:199-203), which probably increased their susceptibility to breakage and caused them to dull more rapidly (Duncan 1995:92) and to need resharpening more often. Regardless of how the tool was used, the barbs were exposed to stresses and often broke. Once the barbs were gone and with pronounced additional/repeated use and resharpening on the remainder of the point, its morphology appears quite different from when originally made. In this exhausted condition, Calf Creek points are much more difficult for collectors to identify and can easily be confused with other point styles. Bulverde points are one example (Bell 1960:12-12; George 1995:27; Wyckoff 1994:2). Caution in identification is always prudent; all the attributes, such as stem form, size, thinning, etc.—not just the overall shape—must be considered when identifying any

point type. As Vehik (2001:150) observed, these points "... were multifunctional, and extensively maintained and reworked."

The Calf Creek horizon is generally considered to date from the middle of the Holocene geological epoch or from the warm, dry climatic interval called the Altithermal (Brooks 1995:53; Wyckoff 1995:179) or from the Middle Archaic period. All are one and the same time segment but are described on different time lines. This horizon is considered to be approximately 5,000 years old (Wyckoff 2005:20). Generally these points are found in Oklahoma, eastern and central Texas, northwestern Louisiana, western Arkansas, southern Missouri, and southeastern and south-central Kansas. Noel Justice (1987:59-60) indicated that Calf Creek points, while rare, are found in southern Illinois and southern Indiana. While that may be correct, the single point that he illustrated from the lower Ohio River drainage (Justice 1987:56; Figure 12k) was not a typical Calf Creek point. Much more research is needed to confirm or reject the presence of a genuine Calf Creek horizon in that area.

Not much is known about the flora and fauna used by the inhabitants of Calf Creek sites. This would be expected to vary at different localities and be dependent on the season that a particular site was occupied. Bison were certainly among the fauna hunted and processed by the Calf Creek complex people at some locations (Bement et al. 2004; Spivey et al. 1994).

SITE 14BO1402: THE SETTING

Site 14BO1402 is located on a low bluff top overlooking the Little Osage River in northern Bourbon County (Figure 1). It is approximately 10 m above the normal river level. A county road cuts through the bluff line in the western portion of the site. Prior to this writer's first visit on April 3, 1972, it was rumored locally that a collector had found a projectile point and a few chert flakes in this roadway ditch (Raymond Tourtillott, personal communication). The small site occupies only about ½ acre, which was mostly under cultivation at the time of discovery. Because of severe erosion, the field was soon left fallow. For many years 14BO1402 was covered with grass and small woody scrubs except in small areas where bedrock is exposed. After the initial

survey, the site was revisited two additional times during periods of fair to poor surface visibility.

A small portion of the site contains the upper (Clareson) portion of the Ringo-Clareson complex of soils, which is somewhat peripheral to the Bates loam that occupies the bulk of the site. According to the Bourbon County soil survey (Bell and Fortner 1981:8-9, 15-16), the Ringo-Clareson complex is found on moderately steep upland slopes. The Clareson soil is a stony, silty clay loam. Found on upland ridges and side slopes, Bates loam is often eroded. In some areas of Bates loam, gravel-like patches of natural, regolithic chert are present. Regolith refers to mantel rock; in this case, natural chert left within a loose layer located above weathered bedrock. Dark yellowish brown, firm sandy clay loam subsoil is exposed on most, perhaps all of the site. With cultivation these soils can experience severe erosion, as is the case at 14BO1402. Bedrock, which normally is at a depth of about 23 inches, is exposed at the surface in the northern part of the site near the bluff edge.

The surface geology of Bourbon and surrounding counties is from the Pennsylvanian system of the Paleozoic era (Buchanan 1984:plate 32; Zeller 1968:21). The surface of this area is marked by a series of north-northeast to south-southwest escarpments that make up a physiographic province called the Osage Cuestas (Buchanan 1984:8, 16-19; Mandel 2006a:11-13). Erosion-resistant rocks cap the individual cuestas. Site 14BO1402 is located in a valley that was cut into one of these cuestas by the Little Osage River. This particular cuesta is capped by the Dennis limestone, a part of the Bronson subgroup of the Kansas City group, Missourian stage (Seevers 1969:plate 1; Zeller 1968:plate 1). Bourbon County is not noted for having good sources of chert; this is generally true south of the Bourbon arch at the edge of the Forest City basin. However, a secondary deposit of chert nodules within the soils apparently formed from weathered Dennis limestone. This chert is not high quality but is quite useable for manufacturing less refined artifacts, such as choppers, crude bifaces (knives), rough scrapers, certain expediency tools, etc. Projectile points made from this material are not common in the LORVAS collections. The more refined, better quality tools are generally made from non-local cherts—usually from the abundant chert varieties in

the Ozarks (Ray 2007) to the east and the Florence and Wreford cherts in the Flint Hills to the west.

SITE 14BO1402: THE ARTIFACTS

Only 92 cultural items in the LORVAS collection are from 14BO1402, ranging in age from the Middle Archaic period to at least the Late Woodland period. Apparently with repeated earlier years of cultivation and erosion, any cultural stratigraphy has collapsed. Through the centuries the various cultural occupations were light. However, the collection has more archeologically diagnostic material from the Archaic period than any other. The collection contains 14 mostly fragmental projectile points; 7 complete or mostly complete large, unstemmed bifaces; 25 small broken biface fragments; 2 gouges; 1 scraper fragment; 2 bifacially worked performs; 4 chopper-like tools; 3 cores; 20 retouched flakes; 12 unretouched flakes; 1 mussel shell fragment; and 1 pottery sherd. According to the survey collection strategy, only grab samples of unretouched flakes were collected; all other categories of cultural materials were retained. In spite of severe erosion, no dense concentrations of artifacts or eroding features were noted on the site's surface.

Projectile point # 1 is the stem portion of a broken Calf Creek PP/K (Figures 2 right, 3A). The stem is slightly expanding but is generally square, displaying some thinning flake scars originating from the base. This thinning might have occurred in the preform stage; however, it might have taken place after the notches were formed and served solely to thin the stem for attachment to a shaft, foreshaft, or handle. The edge angle of the base is quite low: 31 degrees. While the base is ever so slightly concave, it is essentially straight. There is no grinding on the stem edges. The chert color is gray (N5.5/0) on the Munsell scale. (All color descriptions in this paper are based on comparisons with the 1975 edition of Munsell Soil Color Charts). The point's shiny luster, fine grain, and flaking qualities suggest that it was thermally altered. The perpendicular break across the point's axis is in the area where the stem and blade join. The stem is 21.8 mm long and 6.75 mm thick. Its width varies from 20.5 to 23.85 mm.

Projectile point # 2 is a barb from a Calf Creek PP/K (Figure 2 center, Figure 3B). It was broken at the location where the barb attached to the remainder



Figure 2. Calf Creek PP/Ks from 14BO1402 in Bourbon County (photo by author).

of the blade. Measurements are 23.25 mm long on the notch side of the barb, 4.5 mm thick, and 9.95-11.35 mm wide. Barb edges show no evidence of grinding. The barb is white to pinkish white (5YR 8/1.5). The very slight pinkish coloration and fine grain suggest thermal alteration; however, that may be more speculation than fact.

Projectile point # 3 is another barb from a Calf

Creek PP/K (Figure 2 left, Figure 3C). Again, the break was at the juncture of the barb and the rest of the blade. As with the other specimens, there is no evidence of edge grinding. The stone is pale red (10R 6/4) to pale red to light red (10R 6/5). Made from very knappable chert, the luster is shiny, and the artifact exhibits nice flaking scars. From all appearances this point was heat-treated. The barb length, as measured from the notch side, is 18.7 mm, and its thickness is 4.15 mm. The width of the barb ranges from 8.1 to 11.1 mm.

Eleven other projectile points exhibit some diagnostic attributes. Most are shown in Figure 4. Five are side-notched dart points that are considered to be Archaic in age. An additional point is side- to corner-notched, and four other dart points are corner-notched. One point (Figure 4 lower right) is a small, corner-notched Scallorn arrow point (Bell 1960:84-85; Justice 1987:220-222; Sandstrom and Ray 2004:25). This type is found on Late Woodland and slightly later sites over a wide area. It is obviously from a much later time period than the Calf Creek points. The metric and other attributes of

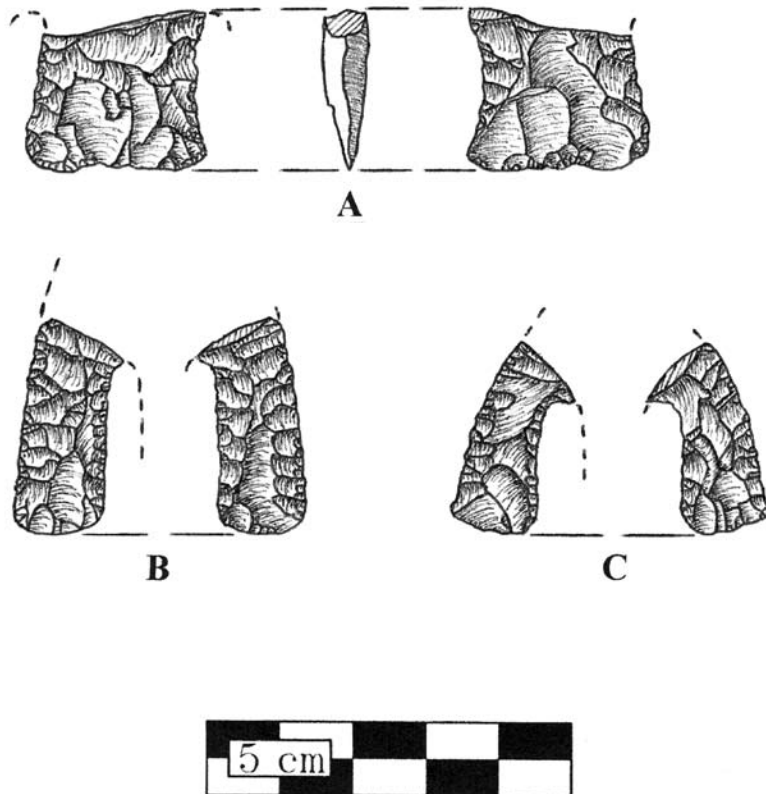


Figure 3. Obverse and reverse views of flaking on Calf Creek PP/Ks from 14BO1402 (drawing by author).

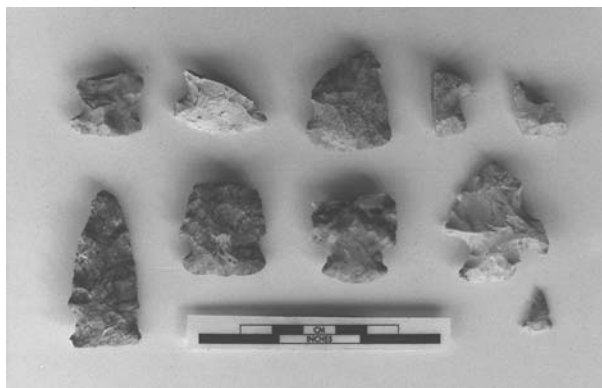


Figure 4. Selected other projectile points from 14BO1402 (photo by author).

these points are recorded on artifact analysis sheets that were filed with the 14BO1402 site form at the Kansas State Historical Society in Topeka.

Twenty-five artifacts are small biface fragments; perhaps one third of them may be from projectile points. A variety of chert sources are represented, and five or six appear to have been intentionally or unintentionally thermally altered. The three points described in detail (Figures 2-3) are the only ones identified with confidence as Calf Creek PP/Ks. It is not known if additional point tips or other quite small fragments are from this type of point.

Of the seven larger unstemmed bifaces in the collection, most (Figure 5 right and lower) appear to have been oval in shape and relatively thick. Only one is complete. A variety of chert sources occur in this artifact subset. These tools most likely were used as knives.

Two additional thick bifaces are preforms. They show no signs of use. One is made from local regolith chert.

Two chert gouges, represented by distal (bit) ends, are in the collection. Gouge #1's identity is based mainly on its morphology and edge-wear, as there is no pronounced polish on its surfaces (Figure 5 upper left). However, the dorsal surface does contain an ever-so-slightly greater luster than the opposite face. The bit edge was resharpened after which there was some additional dulling from use. The bit edge is straight to convex but is curved downward in the center of the bit (as viewed from the dorsal surface), which is typical of many gouges. This tool is 30.3 mm wide and 11.95 mm thick. Its



Figure 5. Gouges (upper, left, and center) and selected bifaces from 14BO1402 (photo by author).

bit edge angle ranges from approximately 50 to 60 degrees. The chert is fossiliferous and light gray to white (7.5/1) in color. The proximal (poll or handle) end of the tool is missing.

Gouge #2 (Figure 5 upper center) has a convex bit edge that also curves downward in the center, as viewed from its dorsal surface. There is a pronounced luster on the dorsal surface compared to its reverse (ventral) side. This light polish might be due to use as a woodworking tool. No wear on the bit edge is evident when examined under low magnification; however, this working edge appears to have been resharpened. This artifact is 32.6 mm wide and 8.35 mm thick. The bit edge angle ranges from 46 to 55 degrees. The color of the tool is pinkish white (8/2) with small inclusions associated with small fossils that are red (2.5YR 4/6). The color, quality of flaking, and the presence of a potlid provides proof that the artifact was thermally altered, possibly before manufacture but more likely inadvertently during or after breakage.

Only one scraper was recovered from the site. Made from a white chert (5YR 8/1), it is 25.55 mm wide and 10.05 mm thick. Its proximal end is missing. The presence of a potlid clearly indicates heat alteration—probably unintentional. The bit or working edge displays a 79-degree angle and some step fractures from resharpening. No wear was observed on the bit edge under low-power magnification with a binocular microscope.

Three cores and four chopper-like tools were made from local, weathered chert, which certainly

is useable for this type of tool. One of the choppers might have been thermally altered.

The collection also contains 20 retouched flakes and 12 unretouched flakes. Half of these were made from the local regolithic chert. Three flakes from each category appear to be thermally altered. According to the collection strategy used, there undoubtedly would have been additional unretouched flakes observed on the site's surface but not collected.

The only other materials collected were a worn mussel shell fragment and a small pottery sherd. The medium robust mussel fragment consists of the hinge area; however, it is so badly weathered that it probably is not identifiable as to species.

The potsherd is 9.7 mm thick and is from the body of a medium to large vessel. The stone temper is sand to very small, rounded pebbles. Additional temper appears to be previously low-fired clay (grog). The small, abundant iron concretions present in the paste are believed to be natural to the clay source; thus, they are not considered temper. The sherd's surface is probably plain; however, it is so weathered that it is difficult to determine surface treatment with any degree of confidence. The pottery sherd is probably Early to Middle Ceramic in age. It fits nicely with the Scallorn arrow point, possibly from a Late Woodland or a slightly later component, such as an early Pomona variant. Pomona pottery is usually rather poorly made and contains a range of temper types.

DISCUSSION

Site 14BO1402 is a multi-component site, ranging from at least Middle Archaic to Late Woodland or slightly later in age. The focus of this article is on an early component attributed to the Calf Creek complex. Because the collection was obtained from a quite eroded surface, it is difficult to determine if additional artifacts, besides the three Calf Creek PP/Ks, were associated with this component. Such a deduction is hindered by lack of understanding of the full range of Calf Creek horizon tools and their stylistic distinctiveness (or lack thereof) and the types of debris that might be associated. Scrapers, drills, and possibly gouges might be associated with Calf Creek components (Cestaro and Carrell 1994:109). Except for circular flake scrapers, certain

other scrapers, and so-called practice-notching pieces (Brooks 1995; Cestaro and Carrell 1994:109; Duncan 1995:92; Lopinot and Ray 1995:64-65), the Calf Creek complex is not noted for stylistically distinctive tools and debris. Much of what we know about this complex was obtained from surface collections, often from multi-component sites. At 14BO1402 some of the other bifaces, especially the small fragments, and some of the flakes and cores also might come from this horizon—but not necessarily! The two gouges and the scraper could have been produced by these people—but perhaps not!

Based on the view from the Little Osage River valley, these sites are not abundantly exposed on the surface. This conforms to what has been well established elsewhere by other researchers. Why are these points and the sites they represent so widely scattered? Is this a factor of highly mobile, widely dispersed, small bands of hunter/gatherers utilizing a diversity of resources? Or is this apparent distribution a factor of the geomorphic settings in which their sites are usually found? Do both questions play a part in their apparent lack of abundance?

Certainly “. . . the effects of geological processes on the archeological record . . . must be considered” (Mandel 1995, 2006b:28). The vast majority of prehistoric sites discovered during the LORVAS project are located on valley floors of the Little Osage River and its various tributaries. Over time these sites were and are subject to the various geological processes of removal through erosion and/or burial with deposition of alluvium and in some cases colluvium. In these valleys most of the Archaic occupations and some of the later cultural materials are buried within stream terraces. The exceptions are in situations where they are exposed by lateral erosion in stream banks, by oftentimes repeated floodplain scour routes during episodes of over-bank flooding, and by deep ground-disturbing activities by humans. Although most people do not realize it, a considerably greater area of the floodplain experiences deposition rather than erosion during any given period of over-bank flooding in this stream valley. Rolfe Mandel's geoarcheological work in southeastern Kansas, including the Little Osage River valley (Mandel 2008), and throughout the state (Mandel 2006b) has documented these natural processes and their relationship to archeological resources. When stream terraces are relatively undisturbed, many of

the Archaic-period occupations are several meters below the tops of the terraces.

Farther south in Crawford County, previously recorded site 14CW639, mentioned by Stites, is such a valley floor site. This small site is located in Radley silt loam (Rott et al. 1973) within the floodplain of Lightning Creek. This multi-occupation site contained Archaic and Woodland components; Calf Creek artifacts were mixed on the site's surface with materials from one or more later occupations. Presumably erosion and perhaps farming activities had an impact on 14CW639 in the past.

Of course, 14BO1402 is not a valley floor site. The LORVAS work has demonstrated that not nearly as many prehistoric sites are located in upland soils, and those present often appear lightly occupied and generally yield earlier cultural materials than most of the lowland sites—often as mixed components, such as at 14BO1402. Thus, some potential exists for occasional Calf Creek occupations at upland locations and in buried deposits within stream terraces in this drainage. Dr. Donald J. Blakeslee (personal communication) at Wichita State University indicated that the Calf Creek PP/Ks from south-central Kansas are usually from upland sites where they are more subject to erosion.

Michael Stites performed a useful service by carrying out his Calf Creek complex research in southeastern Kansas and by bringing this new information to the attention of the archeological community by way of his article. He (Stites 2006:10) recorded 15 Calf Creek hafted bifaces (projectile points/knives or PP/Ks) from his new sites/areas. In Figure 9 he also showed two points from previously recorded site 14CW639. However, the combined number (17) did not nearly equal the number of Calf Creek artifacts, including barbs, which he illustrated. Whatever the exact number, this point style clearly is not common in southeastern Kansas. That finding certainly is supported by the author's investigation in the middle and upper part of the Little Osage River valley's catchment basin. Also Blakeslee (personal communication) and Clinton Thomas (personal communication) from the Emporia area indicated that Calf Creek points are occasionally found in a few local collections from only a few sites. Stites (2006:10, 22) mentioned a few other Kansas Calf Creek sites outside of the four counties in Figure 1 and indicated that a few Calf

Creek (or Calf Creek-like) sites are known in Cowley, Chautauqua, and Sedgwick counties. Evidently Calf Creek sites are thinly scattered in the state.

The present article has attempted to describe a Calf Creek site in Kansas and supply information on three Calf Creek PP/Ks. Additionally, it is hoped that this article will draw Kansas readers' attention to the Calf Creek complex and encourage reporting of sites bearing Calf Creek materials to the Kansas State Historical Society. As more of these sites are identified and recorded in the state's confidential archeological database, researchers surely will be able to answer more questions concerning the distribution, technology, subsistence, and other life-style information concerning these ancient people. Clearly much additional work on this complex needs to be done in southeast Kansas and elsewhere in the state.

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Book Reviews

Stone Tool Traditions in the Contact Era.

CHARLES R. COBB (editor). University of Alabama Press, Tuscaloosa, 2003. ix + 214 pp., 43 illustrations, 15 tables, references cited, contributors, index. \$65.00 (hardcover). ISBN 0-8173-1372-9. \$34.95 (paper). ISBN 0-8173-1373-7. *Reviewed by* Jim D. Feagins.

Contact archeology covers a period of cultural volatility—a time of experimentation and exchange of goods and ideas. Many historians and archeologists hold the concept that, when Europeans arrived in the New World, Native Americans rather quickly adopted the material culture of the foreigners. Of course, this is an over simplification of what happened during the “Contact Era.” The process often moved slowly, in starts and stops; it was a two-way interaction, and there were many and varied cultural influences in play. For various reasons Native Americans were very selective in what was adopted and when. As a result, from ethnological, historical, and archeological perspectives, the rocky road toward acculturation proved to be quite interesting. If any reader doubts this, then *Stone Tool Traditions in the Contact Era* should prove otherwise.

In addition to editor responsibilities, Charles Cobb does a fine job of introducing the volume with his chapter, “Framing Stone Tool Traditions after Contact.” This book focuses on indigenous stone tool traditions and their selective nature through time, as evidenced at protohistoric and historic sites in North America and Hawaii. Written by 12 authors, the chapters are arranged in order of the degree of European contact—from archeological sites that represent initial contact with Europeans (or at least their trade items) to later sites whose inhabitants experienced many decades of relatively close contact with Europeans and/or Americans. Cobb and his fellow authors are concerned with how contact interactions “. . . transformed the material culture of the societies involved and, in turn, how those transformations were linked with the reproduction of those societies in new ways” (p. 1). Of course, as the title indicates, the volume uses the shifts in the role of stone tool technology,

sometimes in combination with ethnohistory, to illustrate the material culture evolution of various indigenous groups. As indicated by the variety of chapters, the subject is broader than one might first think.

One must consider functional, economic, symbolic, and ritual aspects of stone tools in relation to various cultures. For example, it is no longer acceptable to say that metal tools were simply superior and, therefore, displaced stone tools. The decline in stone tool use was protracted and diverse. Some stone tools might have functioned better for certain tasks than their metal counterparts. Also certain stone tools were often associated with social and religious traditions that were important to everyday social ties and belief systems. For example, “If we view pipes as only vessels for smoking or scrapers as merely involved in hide preparation, we only scratch the surface of the various relationships they might have mediated in the past” (p. 11). While sometimes dramatic, and sometimes subtle, change occurred over time and, of course, still progresses in indigenous communities.

The second and third chapters give examples of early, short, or intermittent contact. Cobb’s and Dino A. Ruggiero’s chapter titled, “Lithic Technology and the Spanish Entrada at the King Site in Northwest Georgia” and George H. Odell’s chapter, “Wichita Tools on First Contact with the French” relate to the beginnings of indigenous contact with Europeans in the Southeast and on the Plains. The King village site, representing the Lamar Culture, contained very little European trade material, and even then it was mostly restricted to so-called flintknapper burials. Only five burials, out of more than 250 excavated, contained European manufactured artifacts: “. . . one iron spike or rod, three celts, one wedge or tapered celt, what appear to be two (badly corroded) knives . . . , and one fragment of a possible spike” (p. 23). Also, pothunters found a sword in an unknown type of burial. Why were these objects made only of iron? (No copper or glass was found.) While inhabitants had ample opportunity to obtain the other types of trade items, the authors suggest that iron (with its black color associated with warfare and ballgame symbolism) might have been selected as

much for its symbolism as for its practical application. They further maintain, "... the links between social roles, lithic technology [flintknapper burials], and European material culture must be framed in terms of cultural appropriation by specific groups [flintknappers?] rather than universal statements about processes of culture contact" (p. 28). While this reviewer certainly has no quarrel with this statement in general, the support for it from the King site is weak, as only eight iron artifacts were recovered in useful contexts. In spite of the small sample size, the point is well taken.

Odell's chapter focuses on the Wichita's stone tools found at the Lasley Vore site (34TU65). This northeastern Oklahoma site was occupied at the time of first contact with the French. Odell correctly rejects the Euro-centric interpretive approach to early Native American-European interactions. The Wichita were not merely passive recipients of the material goods from dominant forces across the sea; rather, they were full and active participants in a cultural exchange. The site's material cultural reflected this concept. The Wichita chose to use some materials obtained from outsiders and rejected other things that they did not consider of major importance. For example, Odell hypothesizes that because of ease of manufacture, stone arrow points were not generally replaced with metal points until a later date (after the tribe moved to Texas) when scrap metal became common on Native American sites on the Plains. The stone tool assemblage and European trade items at the Lasley Vore site provide a glimpse of leading edge Wichita-European interactions. [Note: Kansas readers will find in-depth information on the Lasley Vore site in Odell (2002) and a review of that publication in Volume 27 of *The Kansas Anthropologist* (Feagins 2006).]

The next four chapters (4-7) provide examples of longer term interactions between indigenous and foreign groups: "Chickasaw Lithic Technology: A Reassessment" by Jay K. Johnson; "Tools of Contact: A Functional Analysis of the Cameron Site Chipped-Stone Assemblage" by Michael L. Carmody; "Lithic Artifacts in Seventeenth-Century Native New England" by Michael S. Nassaney and Michael Volmar; and "Stone Adze Economies in Post-Contact Hawaii" by James M. Bayman.

Johnson points out that when European trade goods were in short supply, the Chickasaw seemingly

retained the native tools that were easiest for them to manufacture themselves, e.g., chipped-stone arrow points. He also points out that men's tools, such as weapons, were more quickly replaced with iron tools than were women's tools, such as scrapers. Johnson states further, "Gender must certainly have been a factor in stone tool replacement during this period of time" (p. 56). While this differentiation might be correct, one must also make allowances for access, economic, and functional differences between the stone and metal tools useful for hide preparation.

Carmody focuses on the potential for functional and symbolic uses of European materials within Oneida Iroquois cultural systems. His studies at the Cameron site indicate that traditional native ideological systems played an important role in the types of European trade goods that were used. For example, glass trade beads were readily accepted because they could be equated with the traditional role of shell beads and crystals. Carmody also points out, "Clearly many trade items acted to replace traditional tools, such as appears to be the case with axes at the Cameron site, but other items might have followed very different trajectories as they became incorporated into the Native-American material culture assemblages..." (p. 76). This statement is backed up with use-wear studies on chipped-stone points and other tools.

Nassaney's and Volmar's studies of the Narragansetts and nearby groups in New England reinforce the concept that cultural exchange was a complex process and that indigenous people were active agents in choosing the tools they made, acquired, and used. The authors studied stone tool technology immediately before and after contact. They found that "...in some cases suitable replacements were lacking or considered unacceptable substitutes for traditional forms in certain contexts...[and] innovations in stone tool forms were developed, and these were assigned new meanings in the post-Contact world" (p. 78). Pestles, pipes, drills (for wampum manufacture), and axes were among the items discussed in comparisons with efficiency and gender roles.

Bayman indicates that, in the Hawaiian archipelago, adzes were used to fell trees, make canoes, build houses, carve religious images, and till soil in agricultural plots and perhaps to display rank.

He is interested in why the Hawaiian stone adzes persisted in use for nearly a century after European contact. As metal adzes are more efficient, why were the stone adzes not quickly abandoned in favor of efficiency? Bayman found “. . . that a rich variety of political, economic, and geographic factors governed the persistence of . . .” these stone tools (p.108).

The next three chapters (8-10) provide studies about how nineteenth-century stone tools reflect the beginnings of industrial capitalism within indigenous communities in three regions in North America. These chapters include “In All the Solemnity of Profound Smoking: Tobacco Smoking and Pipe Manufacture and Use among the Potawatomi of Illinois” by Mark J. Wagner; “Using a Rock in a Hard Place: Native-American Lithic Practices in Colonial California” by Stephen Silliman; and “Flint and Foxes: Chert Scrapers and the Fur Industry in Late-Nineteenth-and Early-Twentieth-Century North Alaska” by Mark S. Cassell.

All three of these chapters provide additional case studies that reinforce many of the concepts and conclusions already enumerated in this review. Wagner describes how stone pipes from Windrose, a Contact period site in northeast Illinois, lend support to the Potawatomi involvement in the Native American revitalization movements. Silliman studied the nineteenth-century chipped-stone technology and raw material found at a Mexican-California rancho on land formerly controlled by a Franciscan mission. Again, many aspects of stone tool technology were not abandoned as soon as European metal tools were introduced. Cassell discusses the chert scrapers found at John Kelly’s shore whaling station at Point Belcher, Alaska. This short-lived company town (not a village) was occupied by up to 80 Iñupiat Eskimo early in 1892 and was used for obtaining whale baleen and fox fur. Cassell states that Kelly “. . . would not have been able to capitalize (quite literally) on the productivity of the fur trade without the skin preparation know-how of the Eskimo employees and the technological development of the chert endscrapers” (p 162). Clearly, certain tasks, such as hide scraping, were better performed by native technology than by tools introduced by outsiders.

Douglas B. Bamforth serves as a discussant in an excellent concluding chapter simply titled

“Discussion.” Many of the volume’s authors highlight the technical sophistication of the Contact-period flakes-stone technology. Bamforth points out the lack of attention by these authors to taphonomic processes that might have influenced their interpretations. While taphonomic studies (a consideration of the total range of cultural and natural processes affecting an artifact, a feature, or a site) might not have changed any of their interpretations, they should have been pursued to help rule out other possibilities.

The volume speaks clearly through material culture studies combined with ethnohistory as to the diverse ways indigenous groups responded through time to acculturation efforts. The end result was a catastrophic transformation of these cultural groups; however, the roads toward that result were varied and ever changing with time. Bamforth states, “. . . the course of Post-Contact technological change occurred at different rates and involved different kinds of tools in different parts of North America” (p.168). The volume is not just about different cultural groups replacing stone tools with metal tools as they became increasingly available; rather, it is also about the complex nature of a range of cultural factors acting on this process. The volume documents a range of factors, as Bamforth states, “. . . the abundance of metal tools available, social factors within intact native communities affecting access to metal, the relative performance of metal and stone tools in use, the locations of raw material sources for stone tools, and the ideological importance of traditional technology for Indian people . . .” (p. 169).

Indigenous people were not simply passive victims; however, their range of choices and the freedom to make them gradually diminished as the post-Contact period progressed. Alternatively, Bamforth correctly states that in some cases, “. . . it is possible that persistent use of stone tools may be evidence more of choices constrained by poverty, powerlessness, and lack of options than choices made to symbolize resistance” (p. 172).

This useful volume focuses attention on lithic technology during the Contact Era—a somewhat neglected aspect of archeology and much more complex topic than some archeologists realize. Archeologists must be wary of generalizations concerning this period of time. *Stone Tool Traditions in*

the Contact Era can be obtained through your local bookstore or by contacting the publisher at www.uapress.ua.edu or 800-621-2736.

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Looting Spiro Mounds: An American King Tut's Tomb. DAVID LA VERE. University of Oklahoma Press, Norman, 2007. ix + 256 pp., 17 photographs, 2 maps, notes, bibliography, acknowledgments, index. \$24.95 (paper). ISBN 978-0-8061-3813-8. *Reviewed by* Randall M. Thies.

For years I wondered about what really happened at Spiro Mounds. Now I know, and it is truly an intriguing story—and a sad one, because so many things were taken from that very special site.

David La Vere has written a very readable historical account, describing the destruction of Spiro Mounds, a large and once flourishing Mississippian site that is located in eastern Oklahoma and dates from A.D. 800 to 1450. As the title indicates, most of the work at Spiro consisted of nothing more than out-and-out looting by a group of relic hunters. Known as the Pocola Mining Company, they attacked the mounds in the early 1930s and plundered everything they could find, then sold it all to almost anyone for virtually nothing. The mounds contained hundreds of human skeletons, most of which were simply pushed aside. The mounds also produced an incredible treasure trove of exotic Indian artifacts that were considered to be some of the most impressive examples of Mississippian artwork ever found.

Regrettably, all of this occurred just before the Oklahoma Legislature passed the state's first antiquities act in 1935. This law required anybody wanting to conduct archeological excavations to obtain a permit from the chair of the University of Oklahoma Department of Anthropology—that person being

Odell, George H.

2002 *La Harpe's Post: A Tale of French-Wichita Contact on the Eastern Plains*. University of Alabama Press, Tuscaloosa.

Forrest Clements, a staunch archeologist who was aghast at what the Pocola Mining Company had done. Clements thought he had solved the problem by driving the Pocola men from the site in July 1935. Assuming that the situation was safe, he left for California to teach summer school, intending to return in November. This proved to be a mistake, because the Pocola men came back and assaulted the site with utter vengeance, virtually destroying several mounds and looting many more artifacts. They promptly sold these for next to nothing. Finally in November 1935, knowing that Clements would be returning soon, the Pocola men were so angered about being driven off the site that they loaded kegs of black powder into the central chamber of one of the mounds and touched off a mighty explosion, causing a moderate cave-in and a huge crack in the mound. That brought an end to their work, and the Pocola Mining Company ceased to exist.

Clements heard what was happening and raced back to Oklahoma, but by then the deed was done. Saddened and enraged, he nevertheless put it all aside and began a systematic excavation of Spiro Mounds. Over the next few years (1936-1941), he and various other archeologists continued to carry out their investigations with the assistance of a large number of workers paid by the federal Works Progress Administration (WPA). In the years that followed, other excavations were carried out intermittently. In 1973 the Oklahoma Tourism and Recreation Department acquired the site, resurfaced the mounds, and constructed an interpretive center. The Spiro Mounds Archaeological Park was opened to the public in 1978.

In his book La Vere also presents an informative discussion of the people who once inhabited the

Spiro Mounds site, describing the changing nature of their civilization and the amazing amount of artwork that was created during the time that Spiro was occupied. With that in mind, it is truly unfortunate that the Spiro Mounds were so thoroughly ravaged by the Pocola boys. La Vere declared that

this splendid site with its multitude of exotic items was almost an American version of King Tut's tomb. While many artifacts have slowly found their way back into museums, many other artifacts are lost forever.

The Allen Site: A Paleoindian Camp in Southwestern Nebraska. DOUGLAS B. BAMFORTH (editor). University of New Mexico Press, Albuquerque, 2007. xvi + 284 pp., including 108 figures, 69 tables, references cited, contributors, index. \$55.00 (hardcover). ISBN 978-0-8263-4295-9. Reviewed by Jim D. Feagins.

The Allen site (25FT50) was located in the Medicine Creek River valley in southwestern Nebraska, approximately 27 miles north of the state's border with Kansas. The site was inundated in 1949 by the waters of the Harry D. Shrunken Lake (also called the Medicine Creek Reservoir). Medicine Creek is part of the Kansas River basin and enters the Republican River near the town of Cambridge, approximately 12 miles downstream from the site. Two other buried Paleoindian (some archeologists prefer the term Paleoamerican) sites—Red Smoke (25FT42) and Lime Creek (25FT41)—were located upstream on a tributary of Medicine Creek. They also were affected in varying degrees by the reservoir. Slightly farther upstream, an additional Paleoindian site, the Stafford site, was discovered later on private property.

The Allen Site: A Paleoindian Camp in Southwestern Nebraska consists of 14 chapters written by 11 authors. In addition to editorial responsibilities, Doug Bamforth wrote all or portions of seven chapters, including the introduction, which is an overview of past and present views of late Paleoindian lifeways and how the Medicine Creek locality has and will contribute to changing perspectives of its ancient inhabitants. As Bamforth indicates, studies about this time period are now much “. . . more than bison and spear points” (p. 6). This volume contains reanalysis of some aspects of the archeological and related work in the locality in the 1940s and early

1950s and presents a portion of the results from the more recent (1989-1995) work from the Medicine Creek Paleoindian Project. It also includes some information from all of the sites mentioned above, plus other nearby locations where landscape studies were conducted.

In the second chapter the late E. Mott Davis describes the earlier Paleoindian research in the Medicine Creek drainage, part of which he directed. His historic narrative is sometimes interspersed with personal reminiscences and anecdotes. It is unfortunate that he is not alive to see the completion of this volume, which is dedicated to him.

Abundant flora and fauna, as well as major outcrops of Niobrara solidified chalk (Smoky Hill jasper) and a steady water supply, undoubtedly attracted people to the Medicine Creek area for thousands of years. Much of the volume is devoted to paleoenvironmental studies, especially Chapters 3 through 7.

David May discusses the landforms (principally stream terraces) and details of alluvial stratigraphy and correlates the strata (cultural and non-cultural) with radiocarbon dates. He describes strata from the Allen, Lime Creek, Red Smoke, and Stafford sites and from a selected cutbank along Medicine Creek. His detailed soil science/stream geomorphology study is presented in a typical manner for such research. At the Allen site the original excavators grouped the cultural levels into Occupational Level 1 (OL1, lower level; 15-24 cm thick), an Intermediate Zone (45 cm thick), and Occupational Level 2 (OL2, upper level; 12-18 cm thick).

Robert E. Warren's chapter, "Cultural and Paleoenvironmental Implications of Freshwater Mussels from the Allen Site," and James C. Chatters' chapter, "Growth Increment Analysis of Freshwater Mussel Shell from the Allen Site," are of special interest from a paleoenvironmental perspective. Six species were identified from the site's components:

Quadrula pustulosa (pimpleback), *Quadrula quadrula* (mapleleaf), *Unio merus tetralasmus* (pondhorn), *Lampsilis cardium* (plain pocketbook), *Lampsilis siliquioidea* (fatmucket), and *Ligumia recta* (black sandshell). Species comparisons were made with the other Paleoindian sites in the drainage. Freshwater mussels are sensitive indicators of the evolution of the Medicine Creek valley and its water quality, including water body types, water depth, velocity, and stream substrate. Three shells from the Allen site collection were culturally modified: two were altered by fire, and one was damaged and worn from scraping.

Chatters examined the annual growth increments of the resiliar tuberosity on the shells. Season at death was determined by the percentage of new growth compared to a growth index from the previous year(s). He compares this information with modern control samples. Although the sample suitable for this type of seasonality analysis was small, the season of death (presumably when they were collected) was mid-July to mid-September. The age of the specimens ranged from 4 to 21 years. Growth rate varied considerably among the species. This data suggests that the flow of Medicine Creek declined between Occupational Levels 1 and 2, which correlated with the general drying of the western Central Plains at about 8000 B.P. Chatters conducted similar studies in the Northwest but views this study as "... a trial of the nondestructive resiliar tuberosity method of growth increment measurement and analysis with species from the Great Plains" (p. 76).

Linda Scott Cummings, Thomas E. Moutoux, and Reid A. Bryson present paleoenvironmental interpretations based on pollen and phytolith evidence. Since the Allen site is submerged and possibly totally destroyed by reservoir waters, these researchers could not revisit the site to collect samples needed for this type of analysis. Rather, they used pollen and phytolith data from the nearby Red Smoke, Lime Creek, and Stafford sites and from a non-cultural Medicine Creek cutbank to supply information on the area's Late Pleistocene and Early Holocene environments. This information was then interpreted by constructing archaeoclimatic models. It is a little difficult for a non-specialist, as is this reviewer, to evaluate some aspects of their models.

L. Anthony Zalucha studied the paleobotanical

and paleoethnobotanical vegetation in the Medicine Creek area. The plant remains from the 1948 excavations at the Allen site consisted almost entirely of charcoal. In addition to the archeological samples from the Allen site, geological charcoal and uncarbonized wood at roughly the same time period were obtained from Drill Hole # 3 at the Lime Creek site. Many samples could be identified as to the genus and family and occasionally species level. The Allen site's cultural levels did not contain sufficient charcoal to reconstruct the full range of vegetation. However, evidence generally supported the poorly refined paleoclimatology model developed by others for the region. Apparently, "... as glacial ice retreated, boreal forest in the Plains rapidly gave way to grassland-dominated vegetation. It is possible, however, that coniferous and deciduous forests occurred in a geologically brief interval between these two vegetational stages" (p. 107).

Most of the remainder of the volume, Chapters 8 through 13, describes various aspects of the Allen site archeology itself. After a catastrophic flash flood exposed fresh deposits in 1947, the site was discovered by a field party of paleontologists. They recovered a fairly extensive collection of archeological materials and produced a sketch map of the site location. The following year, Preston Holder supervised archeological excavations. By 1949 the reservoir was filling, and many other sites were in need of study. Thus, only limited archeological research was conducted at Allen that year, mostly under the direction of C. B. Schultz. At the time Paleoindian studies in the Medicine Creek valley and elsewhere never failed to stir up a tremendous amount of excitement among members of the scientific community.

The cultural components at the Allen site were found within two buried soil horizons (paleosols) and an intermediate zone. The full horizontal extent of the site (it undoubtedly varied through time) is not known. Clearly, various small groups of people intermittently camped in this general location for relatively short episodes. However, these mini-episodes of occupation occurred over a considerable period of time—perhaps 1.75 millennia (10450 to 8700 B.P.) based on radioactive carbon analysis. Except for the two periods at the top (OL2) and bottom (OL1) of the cultural sequence, where ground surfaces were stable enough to allow

for soil development, the other intermediate levels (within the Intermediate Zone [IZ]) were practically impossible to distinguish from each other. Many hearths were scattered throughout the stratigraphic sequence, including the IZ, but the individual cultural occupations therein were relatively light. The lack of readily observable soil horizons and the relatively limited cultural materials found within the IZ restricted the analyses that could be conducted. This site did not contain the relative abundance of cultural materials that one expects from a kill site. This weakness was also one of the site's strengths, as little is known about Paleoindian habitation sites. In the past the view of Paleoindians was greatly biased by the fact that the vast majority of their sites were kill locations.

Mark Becker joins Bamforth in discussing the site's spatial structure, the refitting efforts with its lithic assemblage, and the detailed analysis of this assemblage. They examined horizontal and vertical artifact distributions by refitting as much of the lithic assemblage as possible and by plotting horizontal artifact densities by stratigraphic unit. This data allowed them to plot cultural "hotspots" within the excavated portion of the site through time. As one would hope, there were more refits horizontally than vertically. The volume contains abundant site maps by level to show lithic distributions. There were many local artifact concentrations, areas that the authors sometimes considered as evidence of prehistoric dumping. There were many cleaning episodes, and clearly the site had been reoccupied numerous times.

The lithic assemblage is described very well. The categories established by the authors include bifaces, projectile points, perforators, beveled tools, edge-modified flakes, cores, chunks, scaled pieces (directly opposed flake removals formed by bipolar percussion, "pieces esquillees"), and debitage. The lithics were examined for thermal alteration and source information. The vast majority of the material came from Niobrara (Smoky Hill) sources, most of which would have been obtained locally. In addition, limited microwear and blood residue analyses were conducted. Bison, bear, human, elk, and deer were identified from the blood residues tested on selected points and bifaces. This type of study is admittedly quite controversial. The projectile points

were identified as Agate Basin, possible Hell Gap, and concave-based, lanceolate points.

Ground stone was present at the site, as well as a number of hammerstones. The source of at least some of the sandstone grinding tools is thought to be some 300-400 km from the Allen site. There are a couple of unusual round, grooved stones in the collection. Perhaps they were used as bola stones or net sinkers.

The bone artifacts consisted of needles, beads, antler "burnishers," and other end modified, edge modified, and bi-pointed bone objects. The presence of fired mud dauber nests suggested that their larvae might have been a source of food or, more likely, simply reflects their presence in some type of architectural structure(s). The site's excavators identified 20 hearths. A few scattered human bones suggested the presence of mortuary features in the site's vicinity. A human deciduous or "milk" tooth indicated a child's presence.

Jean Hudson examined approximately 10,000 fragments of animal bone. There are too many species of mammals, birds, amphibians, reptiles, and fish to list in here; however, there are 10 primary taxa, represented in all strata and containing butchering marks: bison, deer, pronghorn, coyote, badger, jackrabbit, cottontail, prairie dog, goose, and box turtle. The burned bones (in diminishing order by species) are jackrabbit, cottontail, prairie dog, bison, deer, pronghorn, and frog. While the larger animals made up the major supply (volume) of meat, smaller game animals were commonly used. The importance of bison, deer, and pronghorn and the abundance of their bones at the site, made them ideal to identify the body parts (meat cuts) brought to the site. The ages of the bison harvested by these groups of Paleoindians were identified; apparently only small numbers of various ages and sexes of bison were used at any given time. The aquatic resources utilized, including waterfowl, were also discussed. Comparisons of bone concentrations with hearths and lithic densities were made.

The last two chapters (13-14) serve as a synthesis of the Paleoindian occupation at the Allen site, to compare it with other sites of similar age, and to begin to move toward the establishment of a more balanced view or "model" of Paleoindian-period land use and lifestyle in the western Central Plains.

Bamforth does an excellent job of integrating archeological with environmental data and establishing the importance of the Allen site in providing a better understanding of the inhabitants' ancient lifeways.

Since the Allen site was excavated about 60 years ago, new approaches to research and advances in technological methods have greatly enhanced what can be learned from the site. While *The Allen Site:*

Remington Army and Navy Revolvers, 1861-1888. DONALD L. WARE. University of New Mexico Press, Albuquerque, 2007. xlv + 434 pp., 198 figures, appendixes, notes, and index. \$65.00 (hardcover). ISBN 978-0-8263-4280-5. Reviewed by Jim D. Feagins.

In spite of its large size, *Remington Army and Navy Revolvers, 1861-1888* might easily be overlooked by archeologists. It is written primarily for gun collectors and dealers, although museum personnel, historians, and archeologists would find portions of the book of considerable interest. The volume contains everything and more that an archeologist needs to know relating to the Remington Army and Navy revolvers used during the Civil War and the Indian wars that followed.

The Indian wars were caused by the continuing push of eastern tribes onto the plains and the pronounced encroachment of many white, and a few black, settlers and miners into the western states and territories. Shortly after the Civil War, the United States Ordnance Department purchased 128,575 Remington revolvers. These guns filled a need of military personnel during the Civil War, and after the war they were used extensively by civilians and Indians, as well as the U.S. military. Sidearms were essential to the pioneers who migrated westward. American Indians obtained Remington percussion revolvers, often "... acquired from army troops as skirmish or battle souvenirs, others by barter with illicit Indian traders" (p. 363). In addition, early Indian police were sometimes armed with requisitioned Remingtons from local forts and posts.

E. Remington and Sons of Ilion, New York,

A Paleoindian Camp in Southwestern Nebraska has been a long time coming, it was well worth the wait. The volume may be obtained through your local bookstore, by going online to unmpress.com, or by calling 800-249-7737. It will be of interest to professional archeologists and serious avocational archeologists interested in the Paleoindian period and to paleoenvironmental scholars in related fields.

produced the first of a series of .31 caliber pocket revolvers in 1857. What good timing. This gave the company the background to develop and have in production a U.S. Navy revolver shortly after the start of the Civil War. The stage was set for company growth and the international recognition of Remington's name as an arms manufacturer.

Donald Ware has gathered information on Remington revolvers for more than a quarter century; the research is clearly a labor of love. Reams of correspondence and other records were gleaned from the National Archives, and much of the text is quoted from these and other primary sources. In that regard Ware admits that he functions more as an editor than an author. One of the volume's strong points is the authoritative documentation of when, where, and how these weapons were modified in various ways to meet the needs of Remington's clients—primarily the U.S. Army and Navy. Much trial and error was involved as improvements were made. These variations and modifications should prove useful for archeologists in refining their understanding of the manufacturing dates. Aiding in this endeavor are tables of serial numbers.

The book is not one that most readers, except perhaps diehard collectors and a few dealers, would read cover to cover. Rather, most researchers, including archeologists, especially would be interested in certain chapters and would skip through others of lesser interest.

In spite of the title, the volume contains information beyond the Remington revolvers of the time. Limited information, including illustrations, is presented on Remington's competitors: Smith and Wesson, Colt, and Savage. Also, one chapter deals with metallic cartridge alterations during the

period. Another is about Remington's Civil War rifle and carbine contracts. In addition, revolver accoutrements are illustrated and discussed, such as the combination screwdriver and cone wrench, bullet molds, percussion caps and box case, and cleaning tools. Probably the most useful chapter for archeologists is the one titled, "Identifying Remington Army and Navy Revolvers," which draws together much of the information scattered elsewhere in this heavy volume.

Remington Army and Navy Revolvers, 1861-1888 could have been improved with more detailed captions on certain photographs. Also, an upfront, large, generalized (master) drawing of one of the disassembled Remington revolvers, with the individual

parts labeled, would have been helpful. In addition, with almost 200 figures, a list of illustrations would have been useful at times. Deleting or condensing many of the quotations would have tightened the text, increased readability, and perhaps reduced the price of the book. The press is to be commended, though, as very few minor errors were noted.

While probably not written with archeologists in mind, *Remington Army and Navy Revolvers, 1861-1888* is nevertheless a useful reference for those working with the material culture of Civil War and later Euroamerican and Native American sites. The volume may be obtained through your local bookstore or directly from the University of New Mexico Press at www.unmpress.com or 800-249-7737.

ABOUT THE AUTHORS

Timothy G. Baugh



Timothy Baugh is the Archaeological Collections Manager for the Chickasaw Nation. He served as the Tribal Archaeologist for the Wichita and Affiliated Tribes for over 10 years and as a Research Archaeologist for the Kansas State Historical Society in the late 1980s. He received his B.A., M.A., and Ph.D. from the University of Oklahoma. He is a member of the KAA.

Jim D. Feagins



Jim Feagins is a private archeological consultant who also serves as part of the adjunct archeological staff for the St. Joseph Museum and is senior archaeologist for Environmental Advisors and Engineers, Inc. He received a B.S. degree from Pittsburg State University and a M.N.S. degree from the University of Oklahoma. After 30 years as a science instructor for Consolidated School District No. 4, Grandview, Missouri, he retired in 1995.

Active in promoting archeological education, he is president emeritus of the Missouri Archaeological Society. He also served as president of the Kansas City Archaeological Society and as a vice-president of the Missouri Association of Professional Archaeologists and the Kansas Anthropological Association (KAA). He is a life member of the KAA.

Sharon Parks-Mandel



Sharon Parks-Mandel received a B.S. in Anthropology in 1977 and M.A. in Geography in 1982 from Kansas State University. She worked briefly doing contract archeology on the U.S. Army Corps of Engineers project to build Clinton Lake in Douglas County. She worked as a planner in healthcare administration for 14 years before returning to school. Since receiving a B.A. degree in Criminal Justice from Washburn University in 1995, she has served as Chief Medical Investigator for the Shawnee County Coroner's Office. She has never lost interest in archeology and continues to use those skills in her current profession.

Patricia O'Brien



Pat O'Brien is emeritus professor of sociology and anthropology at Kansas State University. She graduated from the University of Illinois and is interested in Plains and Midwest archeology.

Jeffrey Spencer



Jeffrey Spencer is an undergraduate student at Washburn University and a volunteer in the Archeology Laboratory at the Kansas State Historical Society. He has been interested in archeology since childhood. During the spring 2008 semester he was an intern at the KSHS. He analyzed pottery decorations from 14WY8 and constructed the 2008 Kansas Archaeology Month display, which focused on comparing pottery decorations from the Kansas City Hopewell and Cuesta phase peoples.

Randall M. Thies

Randy recently retired after many years as a highway archeologist with the Kansas State Historical Society. During that time he was involved in Kansas burials, both prehistoric sites and historic cemeteries, but currently he is working like crazy, both around the house and out back by the pond.

Robert E. Thompson

Archeology as an interesting hobby turned into an avocation for Bob since he retired 20 years ago. He has worked as a field technician in 17 states in the mid-continent for a number of universities (Arkansas, Illinois, Kansas, Kansas State, Northeast Louisiana, Missouri, Oklahoma, and South Dakota) and various contract companies (Burns & McDonnell, Geo Marine, Lopez Garcia, Louis Berger Group, and Jeff Indeck at Ft. Riley).

He has participated in Kansas Archeology Training Program field schools for about 15 years and in the US Forest Service Passport in Time program at prehistoric and historic sites.

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FINKE, JERRY & MARILYN	██████████	████████	■	████████
FITZGERALD ,BETTY & CARL	██████████	██████████	■	████████
FITZMAURICE, TOM & SANDY	██████████	████████	■	████████
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FRASER, JOHN & SHARON	██████████	██████████		██████████
FREDERICKSON, ALEX	██████████	██████████	■	████████
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GATES, BRITTANY	██████████	████████	■	████████
GENTINE, LYNN	██████████	██████	■	████████
GENTRY, FLOYD & MARJORIE	██████████	██████	■	████████
GIBSON, JIM & KATHERINE	██████████	████████	■	████████
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GOEBEL, PAUL	██████████	██████████	■	████████
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GREITL, ANNE	██████████	██████	■	████████
HAAS, SUSAN	██████████	██████████	■	████████
HAND, DAVID	██████████	██████████	■	████████
HEASTY, DON & CAMILLA	██████████	██████████	■	████████
HEBLE, DUANE	████████	██████	■	████████
HEDERSTEDT, DAVID	██████████	██████████	■	████████
HEIMAN, ARVILLA	██████████	██████	■	████████
HIDER, JENNIFER	██████████	████████	■	████████

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HOFFMAN, ALTA	██████████	██████	■	██████████
HOFMAN, JACK	██████████	██████████	■	██████████
HOPPER, VIRGINIA	██████████████████	██	■	██████████
HOSTETLER, MAGGIE & LORRI SIPES	██████████	██████████	■	██████████
HOYT, CRAIG	██████████	██████████	■	██████████
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JOHNSON, MARK & ELMA	██████████	██████████	■	██████████
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KLATASKE, RYAN	██████████	██████████	■	██████████
KNORR, WILLIAM & DIANE	██████████	██████████	■	██████████
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LANGFORD, KEANNE	██████████████████████████	██	■	██████████
LINDHOLM, BOB	██████████	██████████	■	██████████
LINTZ, CHRIS	██████████	██████	■	██████████
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LOGAN, LAUREN RITTERBUSH & BRAD	██████████	██████████	■	██████████
LOPEZ, SARA	██████████████████	██████	■	██████████
LUNDEEN, GAIL	██████████████████	██████████	██████████	
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Virginia A. Wulfkuhle, Editor
Archeology Office
Kansas State Historical Society
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Telephone (785) 272-8681 Ext 255; Fax (785) 272-8682; E-mail vwulfkuhle@kshs.org

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