Caddo Archeology Journal

Volume 28 **2018**

Caddo Archeology Journal

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ISSN 1522-0427

Stephen F. Austin State University Press

Printed in the United States of America at Hudson Printing in Longview, Texas

CADDO ARCHEOLOGY JOURNAL

Volume 28, 2018

CONTENTS

From the Editor

The current volume contains several full length articles, short current reports of research, and reports of 2017 activities from the Caddo Conference and Caddo Culture Club.

The recent addition of the Current Research has been well-received and several contributions are included in this volume. As with the last volume, contributions to this section were compiled by Timothy K. Perttula and represent some of the current projects of Caddo researchers. At the approval of the editorial board, I have listed Dr. Perttula as Current Research editor.

I am grateful to reviewers who allocated time and effort to review the articles in the current volume and I look forward to submissions for the next volume.

Duncan P. McKinnon, Editor

The *Caddo Archeology Journal* is devoted to the anthropology, history, geography, and current activities of the Caddo Nation, an American Indian group with a historical range covering the four-state area of Texas, Louisiana, Arkansas, and Oklahoma. The *Caddo Archeology Journal* began as the *Caddoan Archeology Newsletter* in 1989 and in 1996 the name changed to simply *Caddoan Archeology*. In 2003 the name of the journal was changed to *Caddoan Archeology Journal*, and in 2006 the name was changed again to *Caddo Archeology Journal*.

Timothy K. Perttula was founder and editor from 1989 until 1993 when Lois Albert became editor. Perttula resumed his editorial role in 2002 until George A. Avery became editor in 2010. Duncan P. McKinnon is the current editor beginning in 2016. Stephen F. Austin State University is currently publishing the journal. The *Caddo Archeology Journal* is published once a year in the Spring.

Members of the Caddo Conference Organization receive a copy of the journal and access to digital copies on the Caddo Conference Organization website (http://www.caddoconference.org/). Print backorders can be ordered by contacting the journal editor or at the Caddo Conference Organization meeting.
The *Caddo Archaeology Journal* publishes:

- Articles directly related to the interpretation and evaluation of Caddo archeology and history that provide relevant consideration of an issue or theoretical position.

- Preliminary, review, and updated regional summaries of anthropological and historical work conducted within the Caddo region or has linkages to Caddo studies.

- Technical and methodological reports that are comprehensible to most readers and provide new insights into evaluating Caddo archeology.

- Book reviews related to Caddo publications on history, geography, ethnography, anthropology, and current activities of Caddo Nation.

Information for Authors

Articles should not exceed 10,000 words in length, including references. Reports should not exceed 5,000 words including references.

Please submit the following to dmckinnon@uca.edu
- a PDF file of the complete submission (following American Antiquity style)
- OR a Word file containing the complete paper (i.e., including abstract, tables and figures)
- OR a Word file containing the text, references, table and figure captions, plus an individual file of each figure (600 dpi) and/or table. Excel file of tables is preferred.

After submission, papers will be sent out to a minimum of two reviewers. Reviewer comments are requested within 30 days.

The Effects of Horses and Raiding on the Salt Industry in Northwest Louisiana

Paul N. Eubanks
Middle Tennessee State University

When French explorers first arrived in northwest Louisiana, the local Caddo Indians had already earned a reputation for being important players in the salt trade. Likewise, many western Caddo groups living near the southern Plains were known for their involvement in the horse trade. In the first part of this paper, the relationship between the local salt industry and the introduction of the horse is considered. It is suggested that at least some of the salt made in northwest Louisiana was being fed to horses and other livestock acquired either directly or indirectly from the Spanish. In addition to its potential effect on the salt trade, the introduction of the horse in the southern Plains also spurred an increase in theft and raiding. Historical data suggest that Caddo salt producers may have been worried about such activities from hostile groups like the Osage and Chickasaw. In the second part of this paper, it is argued that these Caddos may have tried to discourage raiding by using salt licks bordered by waterways, by working in close proximity to other salt producers, and by traveling long distances to reach well-protected salt production sites.

Introduction

By the early eighteenth-century the Caddo Indians of northwest Louisiana were well known for their prominent role in the salt trade. However, this reputation may have been earned as recently as the protohistoric period, since there is little evidence of large-scale salt production in this region prior to A.D. 1600 (Eubanks and Brown 2015)[1]. The relatively late onset of salt making in northwest Louisiana is generally out of step with the rest of the Southeast. For instance, in southern Illinois there is evidence for pre-Mississippian salt manufacture beginning sometime between A.D. 750 and A.D. 900, and at salines in southern Alabama and southeastern Missouri there is also evidence for Woodland-period salt production (Dumas 2007; Keslin 1964; Muller 1984). Likewise, in other parts of the Caddo Homeland such as southern Arkansas and eastern Texas, salt making appears to have started sometime around the fourteenth century (Early 1993; Kenmotsu 2005).

In much of eastern North America and throughout the world in general, there is a connection between the beginning of salt production and the rise of agriculture. This is because most plant-based foods, including maize, are naturally low in sodium chloride, a mineral which is necessary for human survival (Brown 1980:4; 2004). Although the late prehistoric Caddo were consuming some low-sodium foods like maize, in northwest Louisiana it seems doubtful that a dietary need for salt resulting from agriculture alone could account for the beginning of salt making, since there is little evidence that salt was made in this region prior to the protohistoric period (Eubanks 2016:231-232). Thus, while maize appears to have been a common source of food in late prehistoric northwest Louisiana, so too was meat, especially from deer and fish (Kelley 2012:427-429). These animal-based foods, which are rich in sodium, seem to have made it unnecessary for the late prehistoric Caddo in this region to supplement their maize-heavy diets with additional salt.

Elsewhere, I have argued that the local environment and the presence of nearby European traders played important roles in helping to drive the Caddo salt trade in northwest Louisiana (Eubanks 2014). However, it is suggested here that other factors such as raiding and the introduction of the horse also had an impact on the salt trade. This latter topic is the subject of the first part of this paper while the issue of raiding will be dealt with in subsequent sections. While current data do not permit any firm conclusions to be drawn, the following hypotheses are presented:

1. At least some of the salt made in northwest Louisiana found its way into the hands of people who were feeding it to horses and other livestock.
2. Raiding would have been a concern for the individuals involved in the production and trade of salt in northwest Louisiana during the protohistoric and early historic periods.

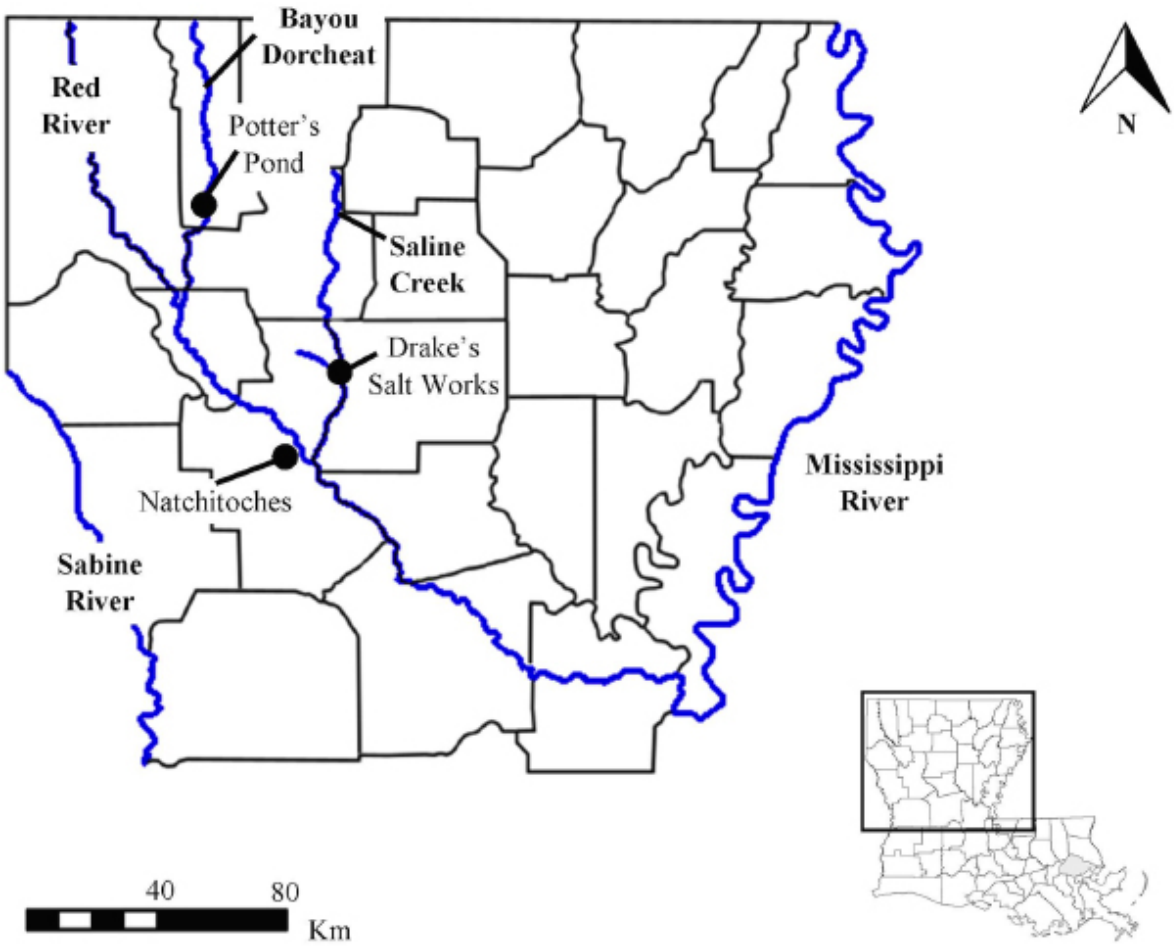

Figure 1. Northern Louisiana with the locations of sites and waterways mentioned in this article.

Major Salt Licks in Northwest Louisiana

Much of the contact-era salt production industry in northwest Louisiana occurred roughly 30 km (18 miles) northeast of present-day Natchitoches at the Drake's Salt Works Site Complex (Figure 1). In addition to being the most intensively utilized salt production locale in northwest Louisiana, this saline also played a key role in helping to facilitate trade between the various groups living in and around the southeastern portion of the Caddo Homeland (Eubanks 2016). Today, Drake's Salt Works contains half a dozen discrete salt flats, all of which are located within about 1.5 km (1 mile) of each other and are the surface expression of the Drake's Salt Dome. These natural salt deposits are known colloquially as "licks," since they were visited by animals that would lick the brine or salt off the ground surface.

During the protohistoric and early historic periods, the two primary salt-making locales at Drake's Salt Works were the Upper Lick (16WN30) and the Little Lick (16NA11). The Upper Lick is situated on the eastern side of the saline while the Little Lick is located less than a kilometer to the west (Figure 2). Both of these licks contain two separate salt production zones represented by large middens of broken salt bowls, burned earth, and charcoal. At the Upper Lick, the largest of these zones is located on an old terrace remnant in the center of the salt flat, known as "Widdish" Island after the Caddo word for "salt." Recent testing and excavations conducted on this island by The United States Forest Service (USFS) and The University of Alabama revealed that its midden spans an area of almost 1,000 square meters (Eubanks 2016:164). Approximately 80 m (260 feet) to the west of Widdish

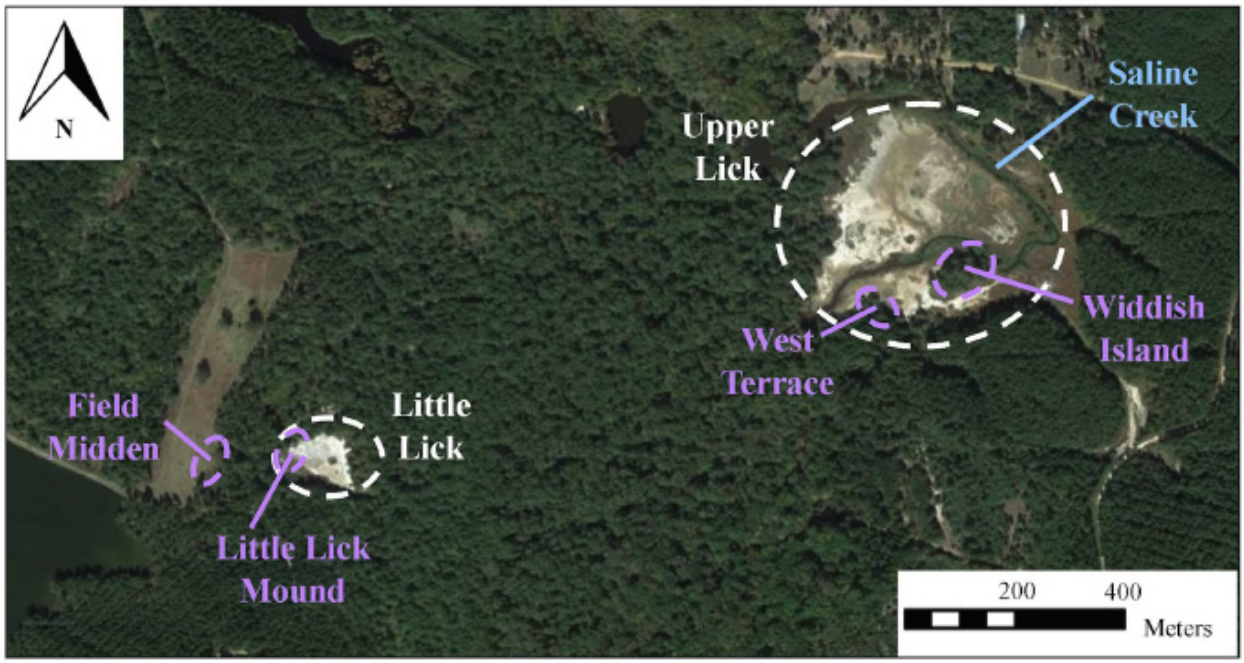

Figure 2. Salt Production Middens (Purple) at the Upper and Little Licks (White). Map data from Google Earth © 2012.

Island is a natural terrace with another, slightly smaller midden of salt production debris, referred to here as the "West Terrace."

The two salt production middens at the Little Lick appear to be more or less contemporaneous with their counterparts at the Upper Lick. The largest midden at the Little Lick, known as the "Little Lick Mound," sits on the western edge of the salt flat and is approximately 1 m high with a diameter of about 25 m. (82 feet) It is composed almost entirely of contact-era salt production debris. Prior to the mound's seemingly rapid construction, the nearest elevated landform to the flood-prone Little Lick would have been in a field roughly 90 m (300 feet) to the west. The quickest way for a salt producer to reach this field would have been to climb up a fairly steep 6 m-high hill (20 feet). Despite this, there is evidence of a salt production midden in the field at the top of the hill. This locale, referred to here as the "Field Midden," has been heavily disturbed by modern activities and by a Civil War-era salt-making operation (see Figure 2).

The Potter's Pond saline (16WE76) in Webster Parish was also utilized for salt making sometime during the protohistoric to early historic period (Girard 2006:60). This site is located about 70 km (43 miles) northwest of Drake's Salt Works and was mapped originally by the geologist Arthur C. Veatch (1902) at the turn of the twentieth century. Nearly a century later, in 1983 and 1984, this site was excavated by the Louisiana Archaeological Society (McCrocklin 1985). More recently, in 2005, it was surveyed by Jeffrey Girard at Northwestern State University (Girard 2006:54-69). Since the creation of Lake Bistineau in the early nineteenth century, Potter's Pond has often been at least partially inundated. However, during Girard's survey, the water level had been artificially lowered allowing him to map the site and make note of exposed artifact concentrations. As with the Upper and Little licks, Potter's Pond also contains a slightly elevated, flood-resistant working area with a concentration of salt making debris (Girard 2006:58-59).

During the 2013 excavation season at Drake's Salt Works, AMS radiocarbon samples were taken from the base of the Little Lick Mound and from the base of the Widdish Island midden. The sample from Widdish Island had a 2 Sigma calibrated date range of A.D. 1485 to 1650 while the Little Lick sample yielded a 2 Sigma calibrated date range of A.D. 1470 to 1650 (Table 1). Although European trade based largely out of Natchitoches likely played a major role in shaping the early historic salt trade, this post was not established until 1714. Further, the French likely settled on the

Provenience	Conventional Age	Measured Radiocarbon Age	2 Sigma Calibration
Widdish Island Midden	310 +/- 30 BP	AD 1620 +/- 30BP	Cal AD 1485 to 1650 (Cal BP 465 to 300)
Little Lick Mound	320 +/- 30 BP	AD 1600 +/- 30BP	Cal AD 1470 to 1650 (Cal BP 480 to 300)

Table 1. AMS Dates from Drake's Salt Works.

location of Natchitoches, in part, because they wanted to be close to the salt trade, thereby implying that this economic activity was in existence prior to the permanent arrival of Europeans (Castañeda 1936:18; Gregory 1973:255). Thus, while the European demand for salt and salt-treated commodities like meat and animal hides during the eighteenth century was probably a major driving force behind the local and regional salt trades, this demand does not answer the question of why people in northwest Louisiana began making salt in the first place.

The Introduction of the Horse

One possibility that could have resulted in an increased demand for salt during the protohistoric period is the introduction of the horse, since this animal both craves salt and requires it to live. While wild horses familiar with a particular landscape are capable of acquiring salt on their own, this would likely not be the case for domestic horses or other livestock, especially those recently transported to an unfamiliar geographic region (Alexianu et al. 2015). Thus, domestic horses raised in the Caddo Homeland would likely not know where to go to acquire salt thereby making it necessary for humans to supply them with this substance (Figure 3).

Accounts from early French explorers indicate that by the 1680s some western Caddo groups were raising and trading horses acquired either directly or indirectly from the Spanish in the Southwest (Cox 1905:233; Joutel 1906:148). A few years later in the 1690s, Henri de Tonti noted that horses were common among both the Kadohadacho and the Hasinai (Cox 1905:48-50). Other sources reveal that by the first half of the eighteenth century, the Caddo were trading horses to indigenous groups such as the Quapaw, Tunica, Illinois, as well as to the French (John 1975:199; Swanton 1942:194; Usner 1992:63). While the horse may have been less common among the Caddo when compared to

Figure 3. A Caddo Man and his horse, 1893. Reprinted with permission from the National Anthropological Archives, Smithsonian Institution (BAE GN 01373 06259700).

groups from the Plains and Southwest, the wide reaches of the early eighteenth-century Caddo horse trade has led to the argument that the Caddo were "the most experienced horse dealers" in the lower region of French Louisiana (Usner 1992:178). Despite this reputation, the horse may have been a fairly recent addition to the contact-era economies of northwest Louisiana. In the 1720s, for instance, the French at Natchitoches, having only a few dozen horses and mules, attempted to acquire livestock from the Spanish in east Texas where these animals numbered in the thousands (Burton and Smith 2014:147-148; John 1975:207-208). Within a few years, the French settlers were able to acquire some stock from the Spanish, which they often bred on small islands in the Red River, and by the 1730s, there were hundreds of horses, mules, and cattle in and around Natchitoches (Burton and Smith 2014: 148-149, Table 7.1). While many of these horses belonged to the French, at least some were owned by the local Natchitoches Indians as Winslow Walker (1935:3) reported finding two horse burials during his excavations at the Fish Hatchery site, a cemetery associated with a Natchitoches village.

In the section below, the timing of the diffusion of the horse into the Caddo Homeland is briefly examined. Several approximate dates relating to this diffusion are presented in Figure 4; however, it

Figure 4. Approximate dates for the diffusion of the horse into the Caddo Homeland.

should be stressed that these dates are speculative and are based on very limited information. While there are several possible avenues through which the Caddo may have procured the horse, it is suggested here that this animal probably arrived into the Caddo region from the west via the southern Plains. Thus, following the suggestion of one reviewer, a distinction has been made below between the Caddo in east Texas who obtained horses at an earlier date and eastern Caddo groups who, presumably, would have acquired horses sometime after their counterparts to the west. In his influential publication "The Influence of the Horse in the Development of Plains Culture," Clark Wissler (1914:2) reasoned that the Caddo "became fully equipped with horses" sometime between A.D. 1600 and 1680. Here, it is suggested that the middle part of this date range may apply to the western Caddo, while the Caddo of northwest Louisiana seem to have acquired the horse about half a century later.

The De Soto Expedition

Although there were Spanish horses in Florida and along the southern Atlantic coast prior to and shortly after the de Soto expedition in the early 1540s, it is extremely unlikely that these horses were captured, bred, and traded westward to the Caddo (Chard 1940:91-92; Clayton et al. 1993:II:251). Instead, many horses from early Spanish explorations were either killed by Indians or eaten by the starving conquistadors (Hudson 1997). Horses that managed to escape these fates often became sick and died, perhaps in part, due to the same lack of salt experienced by the Spanish soldiers (Clayton et al. 1993:I:383-384). Excluding the very unlikely possibility of a rapid westward diffusion from Florida, the first time Caddos would have seen horses would have been during the early 1540s on the de Soto expedition. However, there is no written evidence that horses were traded to or captured by any indigenous populations at any time during the expedition.

Francis Haines (1938) speculates that one or more indigenous groups conceivably could have gotten horses from the de Soto expedition in the vicinity of east Texas. Nevertheless as Thornton Chard (1940:92) points out, by the time de Soto reached the west bank of the Mississippi, more than half of his original 200 horses had already been killed. In the spring of 1542, only 22 of de Soto's original 200 horses remained to be ferried down the Mississippi River, and of this number, only a handful escaped the mouths of the hungry Spanish (Chard 1940:99-100). This, along with the propensity for many indigenous groups to kill de Soto's horses and the fact that mares were rarely taken on long expeditions, makes it doubtful that a breeding population of domestic horses was established by any group in the Southeast as a result of the de Soto entrada (Chard 1940).

While the Caddo probably did not receive horses from the de Soto expedition, this does not mean that they would not have seen how the Spanish treated and cared for their animals. For instance, there were times that de Soto's soldiers were known to have acquired salt from various groups in the Southeast, including the Caddo (Clayton et al. 1993:I:124-125, 142). As the men on the de Soto expedition were in dire need of salt, it is reasonable to infer that their horses also experienced a similar need. Thus, when the Spanish were able to obtain salt, it is likely that they reserved at least a portion of their supply for their horses. If this act did not go unnoticed, then perhaps the Caddo and other groups in the Southeast recognized that horses, like humans, crave salt.

The Southwest and Southern Plains

It is generally believed that the horse diffused into the Caddo Homeland via the Southwest (e.g., Fletcher 1907; John 1975; Swanton 1942:36-37, 193; Usner 1992:177; Wisler 1914:2). The first time that many people in the Southwest would have seen a horse came in the early 1540s during the Francisco Vasquez de Coronado expedition. Following a brief foray into New Mexico by Fray Macros de Niza and Estéban, a survivor of the de Vaca expedition, Coronado led several hundred soldiers, numerous Mexican Indian allies, several priests, and as many as 1000 horses and hundreds of other livestock into the Southwest. While a few of these horses are known to have escaped, it is unlikely, especially given the lack of mares, that enough were lost to sustain a herd or for a breeding population to be established (Morris 2003:229; De Steiguer 2011:69-70).

The next major Spanish move into the Southwest occurred several decades later with a sustained effort at settlement and missionization. In 1598, after several years of attempting to organize an expedition into New Mexico, Don Juan de Oñate, ventured into the Southwest and the southern Plains. With him were 400 men, many of whom brought their families; almost 100 wagons and carts loaded with supplies; and thousands of horses and other livestock (De Villagrá 2004:xxvii). From this time on and especially after the establishment of Santa Fe in 1610, Pueblo groups would have had access to Spanish horses. However, these animals would have been a prime target for raiding parties. For instance, by the first decade of the seventeenth century, various Apache groups were known to have routinely relieved the Spanish and Pueblo of some of their horses (John 1975:55-57). The horse, in turn, dramatically increased the Apache's range for trading, raiding, and hunting. As a result, by the mid-seventeenth century, the Apache were also encroaching into the western Caddo Homeland.

Other groups from the southern Plains with horses, such as the Jumano, were also in contact with western Caddo groups in east Texas as early as the 1630s and 1640s (John 1975:166-171). Thus, it would not be surprising if the horse was present in east Texas shortly thereafter, perhaps sometime around 1650. For the next several decades, the Jumano served as middlemen in a trading network stretching from the Southwest across the southern Plains to the western Caddo Homeland. Similar to the Spanish and Pueblo, the Jumano were also harassed by the Apache. This harassment intensified after the Pueblo Revolt of 1680 with the Jumano pleas for help from the Spanish at El Paso going unanswered. Without support from the Spanish, the Jumano were no longer able to continue their role as middlemen in the horse trade (John 1975:171-180). While this may have served to limit interaction between the Caddo of east Texas and groups to the west after 1680, it is almost certain that at least some western Caddo villages had acquired the horse by this point. Only six years later, for instance, the horse was common enough among some Hasinai that Henri Joutel, a member of the La Salle expedition, reported that he was able to trade only one axe for a horse (Joutel 1906:148). Another member of this expedition, Father Anastasius, claimed to have been offered a horse in exchange for a cowl (Cox 1905:233). In 1690, a Hasinai group gave Henri de Tonti four horses, two of which had been branded by the Spanish. In addition, de Tonti noted that horses were also common among the Kadohadacho to the northeast with one of their villages containing approximately 30 horses (Cox 1905:48-50).

By 1711, Caddos in the vicinity of southwestern Arkansas were trading Spanish horses to Indian groups in Illinois in exchange for French trade goods (John 1975:199). Similarly, by the early 1720s, if not slightly earlier, French traders were being supplied with horses from groups to the north and east of the Caddo, including the Osage and the Tunica (Surrey 1916:301; Usner 1992:63). While the Tunica may have acquired some of their horses via trade networks to the west, the preferred method among the Osage for obtaining horses seems to have been raiding, especially after the Pueblo Revolt (Rollings 1995:101-102). Around this time, the Quapaw in eastern Arkansas also seem to have acquired the horse. When Joutel visited this group in 1687, he did not mention them owning any horses. However, when they departed the village, Joutel's party left their horses behind, meaning that the Quapaw would have had access to horses by at least 1687 (Arnold 2000:19; Lewis 1924:256).

The Terán Expedition

Another potential source of horses and other livestock for the Caddo would have been the 1691-1692 Terán expedition. The purpose of this expedition was to establish missions among the Tejas Indians and to remove individuals who had illegally settled on lands claimed by Spain. However, the expedition was not successful and largely served to worsen relations between the Spanish and Tejas (Weber 1992:115). Terán reported that the Hasinai stole their horses and mules, which is not surprising given that he refused to pen these animals to prevent them from trampling the Caddos' crops (Chipman and Joseph 2010:94; John 1975:191). Not including theft, the stampeding alone may have resulted in the loss of more than 100 horses (Jordon 2004:98-99). While these animals could have served as a source of stock for groups like the Hasinai, the horse is known to have been in this region by the 1680s, and could have been present several decades before this (Cox 1922:233; Joutel 1906:148).

As Terán neared the Red River, he may have passed near lands affiliated with the Yatasi. Given the propensity for Terán's livestock to go missing, it could be the case that the Yatasi were able to acquire stock from the Terán expedition. If so, then it is also possible that a number of these animals came with some of the Yatasi in the 1710s when they moved to the southeast to settle near the Natchitoches following a series of attacks by the Chickasaw (John 1975:204-205; Swanton 1942:7, 57). Given the French reports of there being several dozen horses and livestock in Natchitoches by 1722, it would not be too much of a stretch to say that these animals were present in northwest Louisiana by at least the 1710s and that some of these may have belonged to the Yatasi or were descended from stock on the Terán expedition (Burton and Smith 2014:147-148).

Horses, Salt, and Sustained European Contact

Although the precise date for their appearance throughout the Caddo Homeland is up for debate, once they were there, horses, like other types of livestock, would have needed salt. Thus, the presence of horses in the western and central parts of the Caddo Homeland would have created a need for this substance. Much of this need could have been fulfilled by salines in east Texas. However, it is possible that a portion of the demand for salt was met by Caddos to the east at places like Drake's Salt Works and Potter's Pond. If so, then the introduction of the horse might be one reason to help account for the onset of protohistoric salt production in northwest Louisiana.

Regardless of what may have initially motivated the inhabitants of northwest Louisiana to start making salt, once the French and Spanish arrived on a permanent basis, the demand for salt would have increased substantially (Eubanks 2016). While there is little to no evidence to suggest that salt was used to preserve meat in prehistoric times, this was not the case following European contact since several indigenous groups were known to have been involved in the trade of salted meats (Gregory 1973:253-269; Hawkins 2003:21; Hubert 1717). Horses and other livestock in and around Natchitoches would also need to be supplied with salt, especially after the 1730s, when these animals became fairly abundant (Burton and Smith 2014:147-148). In addition, the high demand for deerskins and other animal hides on the French market meant there was a considerable demand for salt since Europeans often used this mineral in the hide tanning process. Thus, by the early-mid eighteenth century, it would have been the European demand for salt and salt-treated commodities at places like Natchitoches that would have been driving the local salt trade.

Raiding

Given the value of salt in contact-era northwest Louisiana, it would not be surprising if the transfer of this commodity from one group to another was not always a friendly affair. Although numerous environmental and economic considerations likely impacted the salt trade, territorial encroachment and theft may have also affected when and where salt was produced and traded. The potential for these factors to impact the salt trade would have been especially apparent after the introduction of the horse, since this animal increased the range and effectiveness of raiding parties. The American Indian Agent John Sibley provides some insight into the problem of raiding at Caddo salines when he reported in 1807:

> Three Caddos arriv'd special messengers from the Caddo chief to inform me that a party of Chactas consisting of eight persons from the great nation under a leader called Stamelachee had lately been at a camp of Nandacos at a saline on the River Sabine where the Nandacos live, the men being out hunting and left their women to make salt and had *murdered two of the women and wounded some others* [emphasis added], without any provocation and brought the scalps of the women through the Conchetta village on their way to the great Chacta Nation (Sibley 1922:22-23; see also Swanton 1942:82).

If protecting their salt from hostile groups was a concern for the salt producers of northwest Louisiana, then perhaps one of the ways that these individuals could have dealt with this problem would be to only make salt at places where they had a commanding view of their surroundings so that they could easily spot approaching raiding parties. If this was the case, then utilized salines in northwest Louisiana might be expected to have larger areas of visibility, or "viewsheds," when compared to salines that were not utilized. In addition, salt producers may have preferred to work at salt licks located in close proximity to each other in an effort to find strength in numbers. In order to test these two ideas, spatial analyses involving fourteen recently surveyed salt licks in northwest Louisiana were conducted using Arc GIS. The majority of these surveys were conducted between 2011 and 2014 by the University of Alabama and the USFS. Potter's Pond was surveyed in 2005 by Jeffrey Girard (Eubanks 2014; Girard 2006:54-69). Of the fourteen surveyed licks, only three yielded definitive evidence of sustained usage in the form of large quantities of ceramic salt-making debris (Eubanks 2016:177; Girard 2006:54-69) (Figure 5). While this work did not encompass all of northwest Louisiana's known salt deposits, these data can nevertheless provide some meaningful insight into salt lick preference during the contact era.

Visibility

Following the reasoning that if salt producers were concerned about raiding they would prefer to have large

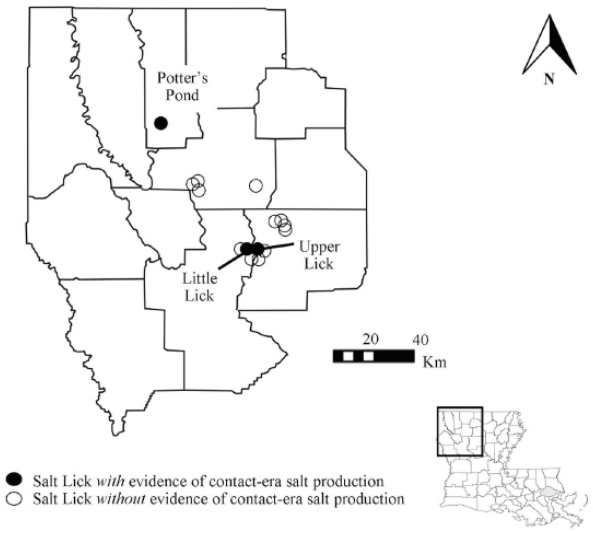

Figure 5. Salt Licks with evidence of contact-era salt production (modified from Eubanks 2014:Figure 9).

viewsheds, visibility analyses of the aforementioned salt licks were conducted using 5 m (16 feet) resolution LiDAR digital elevation data available online at https://atlas.ga.lsu.edu/. At salt licks with evidence of usage in the form of production middens, viewshed analyses were conducted from the highest elevation at each production zone, or "viewshed observation point," using a standard observer height of 1.7 m (5.5 feet). For salt licks without middens of production debris, the highest elevation point within 100 m (325 feet) of the salt flat was used as the point of observation. This somewhat arbitrary distance was employed following the logic that prospective salt producers would likely not want to transport large quantities of brine, fuel, and salt-enriched soil more than a short distance from the salt lick.

At the Little Lick at Drake's Salt Works, there were two viewshed observation points corresponding to the two middens of salt production debris. These points are located on top of the Little Lick Mound and in the adjacent field roughly 90 m (300 feet) to the west of the salt flat (see Figure 2). From the highest point on the Little Lick Mound, an observer can easily see the entirety of the salt flat (Figure 6). Such a view may not have been present from the field during early historic times, since, unlike the salt flat, the hill separating this locale from the Little Lick can support the growth of large trees and other types of sight-blocking vegetation. However, if the salt producers needed more wood for

Figure 6. Photograph of the Little Salt Flat as seen from the Little Lick Mound.

Figure 7. Photograph of the Saline Creek and the Upper Salt Lick Flat as seen from the west terrace.

Site	Viewshed (ha)
Utilized Licks	
Potter's Pond	1216
Little Lick Field	178
Little Lick Mound	19
West Terrace, Upper Lick	23
Widdish Island, Upper Lick	27
Mean Viewshed	**293 (62 without Potter's Pond)**

Table 2. Viewsheds for Utilized Salt Licks.

fuel than what could be provided by simply collecting limb fall, then they may have concentrated their clearing efforts on the forested hill between the two production locales. In doing so, it is possible that these individuals may have had a partial view of the salt flat.

Like the Little Lick, the Upper Lick at Drake's Salt Works also contains two salt-working areas. While relatively flat, the highest elevation point at each of these middens was used to conduct the viewshed analysis. One of these viewshed observation points is located on Widdish Island while the other is on the West Terrace (see Figure 2). Widdish Island is surrounded by salt-enriched soils and is thus generally devoid of vegetation, making it fairly easy to see anyone approaching the island via land. In addition, Saline Creek, which runs through the center of the Upper Lick is also visible from Widdish Island. Similarly, producers working on the West Terrace would have had a clear view of Saline Creek and the Upper Lick salt flat, though they would have been bordered to the south and west by trees, which would have reduced their total visibility (Figure 7).

At Potter's Pond, the landscape is generally flat, but it would still be challenging for the salt makers to spot approaching raiding parties or to keep an eye on the nearest waterway due to the surrounding vegetation. As one reviewer pointed out, even when the lake is drawn down and vegetation is relatively minimal, it is still difficult to see over long distances when standing at the lick. Although the people making salt at Potter's Pond may not have been able to see the nearest waterway or sight over long distances, they would have been only a couple hundred meters from Bayou Dorcheat, a tributary of the Red River.

Site	Viewshed (ha)
Unutilized Licks	
Drake's Big Lick	192
Durbin Lick	9
Jack's Lick	149
King's Big Lick	36
King's Upper Lick	29
Lower Lick	508
Open Lick	201
Price's Big Lick	151
Price's Lick	53
Smith's Lick	161
Tilly Lick	192
Mean Viewshed	**153**

Table 3. Viewsheds for Unutilized Salt Licks.

The results of the viewshed analyses for the surveyed salt licks in northwest Louisiana are presented in Tables 2 and 3. The mean viewshed area for utilized salt licks is 293 ha (720 acres) while the mean area for unutilized licks is 153 ha (378 acres). The former figure is skewed upward by Potter's Pond, which has a viewshed of over 1200 ha (2965 acres). This figure is probably being inflated to some extent by the flat surface of Lake Bistineau, which was created at the turn of the nineteenth century. When Potter's Pond is removed from the analysis, the mean area of visibility for utilized salt licks drops to 62 ha (153 acres), which is less than half of the mean viewshed area for unutilized licks. Even if the figure for Potter's Pond is included, the difference between these viewsheds is still not statistically significant with a Mann-Whitney U Test p-value of .25. Thus, it would seem that simply having a large area of visibility would not have been the sole deciding factor for salt producers when selecting which salt licks they wanted to use. It is important to keep in mind, however, that oftentimes what could be seen is just as important, if not more important, than how much could be seen.

It is probably no coincidence that all of the known salt production locales in northwest Louisiana are located within a couple hundred meters of a creek or bayou that feeds into the Red River. These waterways, along with facilitating transportation and trade, could have been monitored by the salt producers either directly from the lick or indirectly with the aid of a spotter. Thus,

if a hostile group was spotted approaching on foot or on horseback, then the producers could escape into the creek or bayou using their canoes. Further, the creeks and bayous could have also served as natural barriers. For instance, if a raiding party was approaching the salt lick from the opposite side of the creek, then they would first have to cross the creek to reach the salt producers, thus giving the latter more time to notice and react to the presence of the former.

In addition to working near waterways, there may have been other steps that the salt producers could have taken to help protect themselves from raiding. At the Upper Lick, the two production zones are separated by less than 100 m (328 feet) and are not only mutually-visible, they are also easily within shouting distance. As a result, if only one producer spotted a raiding party, that individual could warn all of the salt makers working at the lick. A similar tactic could have been employed at the Little Lick since the two production zones are also located within less than 100 m (328 feet) of each other. Further, if the Upper Lick and the Little Lick were used at the same time, which the available AMS and ceramic data indicate is a possibility, then perhaps the various salt making groups at the Upper and Little licks were attempting to protect themselves from raiding by having a large number of producers that could defend the two salt-making operations.

While it is doubtful that groups working at the Upper and Little licks would have been able to hear each other directly, they may have been in indirect communication. For instance, if there were one or two people stationed between these licks then warnings or other types of information could be exchanged fairly quickly. In addition, if a producer from one lick ran a few hundred meters toward the other, then this individual probably could have been heard by the producers at the other lick. Thus, if the people at one salt lick were attacked, then they could seek help from their counterparts at the other salt lick, or at the very least, warn them of the potential for danger.

Traveling Salt Makers and the Distribution of Utilized Salines

Although the scenarios described above are somewhat speculative, the idea that raiding was a concern for contact-era salt producers would help account for the regional distribution of salt production sites in northwest Louisiana. If groups of salt producers chose to work in close proximity to each other to guard against raiding, then some of these groups may have needed to travel fairly long distances in order to reach safe salt-making localities. This may explain why the Upper and Little licks were utilized by multiple salt-making populations when there would have been many other unutilized licks elsewhere in northwest Louisiana (Eubanks 2014).

The potentially-simultaneous use of the Upper and Little licks would also make sense if these salt makers were part of the same or closely-related cultural groups. In this sense, raiding may not have been an issue; instead they may have simply lived near the Upper and Little licks and elected to use these two salt resources for the sake of convenience. However, this does not seem to have been the case since the decorated pottery at the Upper Lick resembles other local late prehistoric/early historic Caddo assemblages while the decorated sherds from the Little Lick appear to be more at home in the Lower Mississippi Valley (Figures 8 and 9). The presence of these apparent non-local sherds suggests that the Little Lick was used by a group of salt makers who may have traveled hundreds of kilometers in order to reach the Little Lick. If this is correct, then this phenomenon would not be too out of the ordinary since groups from the vicinity of west Mississippi were traveling to south Louisiana to make salt at Salt Mine Valley during the protohistoric period (Brown 1999:122). In addition, Antoine-Simon Le Page du Pratz provided evidence for the existence of traveling salt producers in Louisiana when he reported, “The natives come from quite long distances to this place to hunt here during the winter and to make salt here” (Swanton 1911:78).

Given the Little Lick’s location within a geographic area typically associated with the protohistoric and early historic Caddo, one may speculate that the Upper and Little lick salt makers, despite their cultural differences, were on at least somewhat friendly terms and that the former may have even “allowed” the latter to work at the Little Lick. The Taensa, for instance, seem to have known of the location of Caddo salt deposits in northwest Louisiana, and it could be the case that the use of this or another

Figure 8. A sample of decorated sherds from Upper Lick.

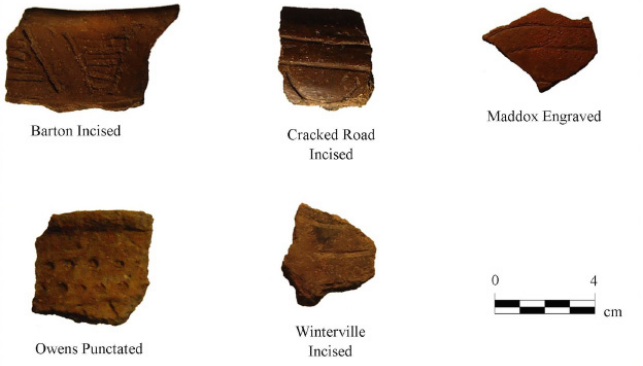

Figure 9. A sample of decorated sherds from Lower Lick.

nearby saline was a part of their 1690 treaty with the Natchitoches mediated by Henri de Tonti (John 1975:186). While speculative, it is also possible that the people working at the Little Lick had once been able to acquire enough salt through production or trade closer to home but were cut off from their supply sometime during or shortly after the protohistoric period. In such a scenario, groups like the Taensa or Tunica, who were known historically to have been active in the salt trade, may have decided to start making salt themselves rather than acquiring it via trade. If this was the case, then the journey to the Little Lick would not have been insurmountably difficult since this trip could be completed almost entirely by canoe given that the Mississippi River connects with the Red River, which in turn connects to the Upper and Little licks (see Figure 1). Working closer to the French at Natchitoches may have also helped to curb the threat of raiding as the salt producers and traders would have been relatively close to the military outpost at Fort St. Jean Baptiste. In addition, they would have less distance to travel to the Natchitoches trading post, and thus, fewer opportunities to be attacked.

Environmental Considerations

Aside from the potential for raiding, another concern for the salt producers of northwest Louisiana would have been prolonged rainfall, since most of the low-lying salt flats in this part of the state are prone to flooding. At the Upper Lick, flood-resistant landforms occur naturally on the landscape in the form of Widdish Island and the terrace surrounding portions of the salt flat. These elevated landforms would have been beneficial as they provided dry land on which the producers could work when the salt flats were flooded or when they were too soggy to boil brine. Given the advantages of such a landscape, it would be surprising if salt producers chose to work at a saline where there was not some type of elevated landform or one immediately adjacent to the salt flat. Nevertheless, this is exactly what is seen at the Little Lick. The only naturally-elevated landform at this site is at the top of the 6 m-high hill 90 m (300 feet) to the west of the salt lick. Carrying fuel, brine, and salt-enriched soil up and down this hill, while certainly not impossible, would have been difficult, especially if children and the elderly were involved in this process (Eubanks 2015). If working near the Caddo at the Upper Lick was a priority for the traveling salt producers, then this would help account for why they chose to work at the Little Lick when there were other licks with landscapes seemingly more conducive to making salt elsewhere in Louisiana. The use of a flood-prone salt flat like the Little Lick might also be explained if the producers were simply not concerned with having elevated working platforms. However, this was almost certainly not the case, since the Little Lick salt producers constructed a flood-resistant platform, in the form of the Little Lick Mound, along the edge of the salt flat. Thus, the construction of this mound meant that the people at the Little Lick could be near the producers at the Upper Lick without having to climb up and down a hill in order to make salt on dry land.

Conclusions

At present, there is little evidence to suggest that large-scale salt production occurred in northwest Louisiana prior to A.D. 1600. Compared to other parts of the Caddo Homeland, the beginning of the salt industry in this region appears to have been delayed by at least two centuries if not slightly longer (Early 1993; Eubanks and Brown 2015; Kenmotsu 2005). Additionally, it does not seem prudent at this point to suggest that dietary motivation alone was the primary reason the occupants of northwest Louisiana began making salt.

The first part of this article introduces the possibility that some of the early demand for salt in northwestern Louisiana was partially a result of the spread of the horse into the Caddo Homeland. While horses both crave and need salt, the potential impact of this animal and other livestock on the early salt trade in Louisiana is still far from clear. However, by the 1730s, only two decades after the establishment of Natchitoches, there would have been hundreds of salt-hungry horses, cattle, and mules in northwest Louisiana (Burton and Smith 2014:147-148). Thus, it is not unreasonable to think that a portion of the salt made in this region could have been given to these animals. Although some salt may have been reserved for animals, the European demand for salt and salt-treated commodities like meat and animal hides during the eighteenth century may have been the most important driving force behind the local salt trade (Eubanks 2014).

In the second part of this article, it is suggested that raiding may have also had an impact on northwestern Louisiana's salt industry. Based on limited historic evidence, it is known that at least some raiding was occurring at Caddo salines in east Texas (Sibley 1922:22-23; Swanton 1942:82). If this threat was present in northwest Louisiana, then it is possible that the salt producers could have dealt with this problem by using salt licks bordered by waterways, by working in close proximity to other producers, and by traveling long distances to reach well-protected salines. Raiding may have also been an issue for the individuals involved in trading the salt once it was produced. However, in the case of Drake's Salt Works, this threat was mitigated to some extent since this site complex is only about 30 km (18 miles) from Natchitoches on land or about 60 km (37 miles) if only waterways are used.

It is still unclear to what extent raiding from hostile groups, such as the Osage and Choctaw, would have concerned the salt producers of northwest Louisiana. However, what is clear is that there would have been many other unutilized salt licks in this region aside from those at Drake's Salt Works that the non-local producers at the Little Lick could have utilized but did not. If the threat of raiding encouraged groups from the Lower Mississippi Valley to travel to the Little Lick in an effort to find strength in numbers with the Caddo at the Upper Lick, then this would help account for the spatial distribution of salt making sites in northwest Louisiana. While factors such as brine purity and strength may have influenced the distribution of salt production to some extent, it is worth pointing out that there are other salt licks in this region with stronger and purer brine than the Upper and Little licks (Veatch 1902:94-95). Thus, it would seem that other non-environmental considerations, such as raiding, might have also been on the minds of the contact-era salt producers in northwest Louisiana.

Notes

1. Here, a distinction is made between producing salt and gathering salt. The former technique is much larger in scale and often generates considerable quantities of debris resulting from the artificial heating of brine (e.g., broken saltpan sherds, burned earth, fire-cracked rock, and charcoal). On the other hand, activities like gathering a few scoops of salt from a dry lick or filling up a handful of containers with brine are much smaller in scale and may leave behind few, if any, archaeological remains.

Acknowledgements

Financial support for this research was provided by the National Science Foundation, the Avery Island Inc./ McIlhenny Company, and The University of Alabama. In addition, I would like to thank Ian Brown, Ashley Dumas, Ann Early, Steve Kosiba, Velicia Bergstrom, and Daniel Cain for their assistance with interpreting and collecting the data presented in this paper. However, as always, any incorrect or overzealous interpretations are the responsibility of the author. Lastly, this paper benefited greatly from the comments provided by two anonymous reviewers.

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Addressing the Cosmological Significance of a Pot: A Search for Cosmological Structure in the Craig Mound

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Ceramic vessels and cosmological structure at first may seem quite unrelated. Many argue the basic and perhaps only function of a pot was a simple human-made container which held foodstuff for cooking and serving purposes. Pre-Contact communities also used ceramics to display complex iconography, some of which may represent important cosmological meanings in time and space. For this paper, I examine the temporal and spatial placement of pottery in 98 Craig Mound burials at the Spiro site in search for cosmological patterns in the imagery of the vessels. Only burials unassociated with the Great Mortuary and the Spirit Lodge were considered, because they have been seriously understudied. Spatial and temporal patterns that emerged from this study suggest burials outside of the Great Mortuary and the Spirit Lodge were also placed in specific areas of the Craig Mound to represent a cosmogram or a ritual display that expressed an important cosmological narrative.

Introduction

Ceramic vessels and cosmological structure at first may seem quite unrelated. Many have argued that the basic and perhaps only function of a pot is simply a human-made container for cooking and serving purposes. In this view, decorative elements and motifs adorned on pots are not seen as culturally meaningful. Rather, they have been interpreted as more mundane objects. Any related decorations become the by-products of that function, and as a result, we lose a significant amount of research value (Pauketat and Emerson 1991). This paper emphasizes that non-representative decorative patterns on Caddo pottery at the Spiro site may have functioned as objects by which individuals connected to other cosmological realms. Overall, this research suggests that Craig Mound participants used decorated pottery to highlight and express Above and Below World narratives.

Accordingly, I examine the symbolism and placement of pottery in the Craig Mound burials, which are located at the Spiro site in eastern Oklahoma. Only burials that are not in context with the Great Mortuary or the Spirit Lodge are considered here, because they have been severely understudied. The results of this study show that burials outside of the Great Mortuary and the Spirit Lodge seem to be deposited in specific areas of the Craig Mound perhaps to represent a cosmogram, a religious display that helped to convey an important cosmological narrative.

A complete understanding of pre-Columbian cosmological meaning is beyond the scope of this paper and most likely beyond our archaeological grasp. However, the combination of iconographic elements that denote each cosmological world, in addition to their discrete placement within the Craig Mound, may highlight a religious configuration that Craig Mound participants followed to access specific powers and ritual knowledge from each cosmological world. Separating out each cosmological world through time and space may have also been necessary for religious practitioners to create a powerful tableau that produced an important narrative that expressed a broader Southeast Native American belief system. Also, this analysis has revealed that during the initial stages of Craig Mound construction, Craig Mound participants incorporated highly decorative pottery in burials that were not associated with the Great Mortuary or the Spirit Lodge that may have expressed an important cosmological structure. By the beginning of the fifteenth century, however, when the Great Mortuary and the Spirit Lodge were constructed, it appears that utilizing decorated pottery fell out of favor to other material types to express other ritual narratives (Brown 2012). This significant material alteration may be associated with the increased social interactions between Caddo communities and other major mound centers, such as Cahokia in the American Bottom and Moundville in the Black Warrior Valley (Steponaitis et al. 2015).

First, I discuss the Spiro site in eastern Oklahoma. Then, I consider the pros and cons in using ethnographic analogies to interpret iconography. Next, I discuss and ethnographically examine the ways in which Native American groups constructed their cosmological worlds. Then, I discuss research regarding Southeastern Ceremonial Complex (SECC) imagery and materials and how ceramics play an important role in iconographic studies. Lastly, I examine and discuss a very intriguing ceramic vessel found in the Craig Mound that depicts complex motifs, compositions, and themes that sheds light on Caddo cosmology as well as showcases the importance of incorporating other Craig Mound ceramics into broader iconographic research efforts.

The Spiro Site in Eastern Oklahoma

The Spiro site is one of the major Caddo mound centers on the fringes of the Eastern Woodlands. This site is part of a much broader Caddo landscape that occupied Eastern Oklahoma, Western Arkansas, Northeast Texas, and Northwest Louisiana (Figure 1). The Caddo-speaking people inhabited areas along many major drainages, such as the Little, Red, and Arkansas Rivers. Spiro was occupied by Caddo religious elites, but by the end of the fourteenth century, it was used primarily as a ceremonial center, which distinguishes itself from other mound centers in the Mississippian Southeast (Brown 1996; Rogers 2009). The site had major regional influences and maintained long-distance interactions (Rogers 2011) by exchanging important ritually-charged objects with complex iconographic elements, motifs, and themes, such as whelk shells, stone figurines, gorgets, and pottery.

Figure 1. Location of Spiro site in eastern Oklahoma.

The Craig Mound at Spiro

Spiro was active as a major mound center for over five hundred years (ca. A.D. 900-1450) and continued well into the mid-seventeenth century as a mortuary. At the end of Spiro's occupation in the mid-fifteenth century, the Craig Mound was comprised of four cones, the largest of which contained several burials known as the Great Mortuary. A separate construction above the Great Mortuary is the well-known hollow central chamber or the Spirit Lodge (Figure 2). The placement of the Craig Mound artifacts and the different ways in which the burials were superimposed in the Great Mortuary represented the cosmological and iconographic complexity of these ancient groups (Brown 1996, 2012). As James A. Brown (2012:136) so elegantly noted, "the Great Mortuary and the totality of the main cone of the Craig Mound in this kind of scale becomes a ritual-architectural object of religious allurement." The Craig Mound was the "center of the universe" that brought together many different but socially linked pre-Columbian Caddo groups and their sacred objects. Thus, the Great Mortuary was not about personhood, but about the importance of the community as the whole. Moreover, the Spirit Lodge has been inferred to have been a separate episodic event that was constructed around A.D. 1450. This unique event seemed to be centered around one individual, who was buried with thousands of objects. Brown (2014) asserted that this one male individual was being transformed into a supernatural being. This narrative can be seen played out on dozens of engraved shell cups that were deposited with this individual. Thus, the act of constructing the Craig Mound and the placement of powerful objects represented the participants' "known universe in its geographical and cosmological dimensions" (Brown 2012:136-137).

Using Ethnographic Analogies

Meanings associated with prehistoric art forms are heavily drawn from colonial-period and other ethnographic sources. This information is then projected backwards through time and transposed onto the beliefs and actions of past peoples as a way in which to illuminate that past. The use of historical sources

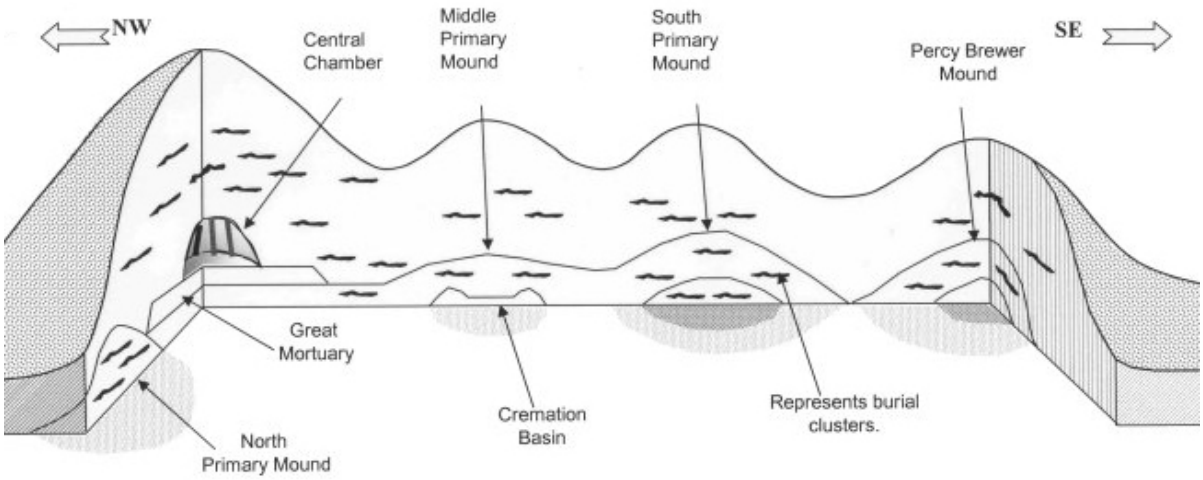

Figure 2. A 3D profile view of Craig Mound's four cones with their associated burials and location of the Great Mortuary and the Central Chamber (Spirit Lodge) (adapted from Merriam and Merriam 2004).

as a way in which to describe rituals and the religious beliefs of pre-Columbian groups has been fraught with acceptance and rejection over the past 50 years (Knight 2013). The advantages and disadvantages became the catalyst by which art historians, iconographers, and archaeologists argued over how to interpret ancient representational images. For instance, the famous Mayan iconographer George Kubler (1969:48) once wrote:

> However lucid they may be, foreign texts of late date should not be forced to explain matter beyond their own scope without painstaking calibrations. When Thomas Aquinas explained Aristotle, he explains his own mind more than the Stagyrite's. When Sahagun codified the reports of many Aztecs informants, they were no more concerned with classic Maya life than St. Thomas was with pharaonic Egypt.

Therefore, we should be mindful of the variety of sources that can be used to interpret the past and, when used, to acknowledge their explanatory pitfalls. Despite this methodological division in conjunction with the inherent limitations of the archaeological record, ethnographic sources are still commonly used as references for interpreting pre-Columbian imagery. Iconographers have agreed to take a more middle-ranged approach when it comes to ethnographic analogies. No more are claims made that the past and present are continuous and static belief systems. Ethnographic analogies have much utility and can be viewed as complimentary to the archaeological record. All in all, are not most things that archaeologists do analogies in themselves? The utility for using more contemporary indigenous groups who most likely had a relationship to the past peoples in which archaeologists show interest is significant and should not be ignored. As Knight (2013:232) stated, "In iconography, all talk of cultural models, of systems of beliefs, of mythic referents, of communities, of artisans, of elites, and of ritual is thoroughly grounded in ethnographically framed possibilities." If we want to study iconography it would be almost impossible to take off the ethnographic tool from our methodological tool belt. For this study, I draw on ethnographic resources concerning several early historic tribes that resided in the Southeast and surrounding areas. Their origin narratives are very similar and consequently are used to make interpretive sense of the iconography found in the Craig Mound burials.

Creation of the Cosmos: An Ethnographic Perspective

Studying iconography has three faces: what we know, what we think we know, and what we do not know. Iconographic research of pre-Columbian groups without written histories has unique challenges, but it

is still possible to reveal meanings behind the images that were depicted on shell, copper, stone, and pottery (Lankford 2011). Iconography is the "relation of their imagery to their ritual referents" (Knight 2013:4). Over thousands of years, humans have embedded into art the communication of ideas, ranging from the mundane to the supernatural. The art belonging to ancient societies in North America possess no accompanying texts with which to compare, however, and there is no "set in stone" method for interpreting them. Nevertheless, attempts to interpret North American iconography have only gained fervor in the last decade (See Knight 2013; Lankford 2011; Lankford et al. 2011; Reilly and Garber 2007). Studying the iconography that is depicted on Craig Mound ceramics offer up other challenges, but it is nonetheless an important way in which we can expand our understanding of the Caddo and Mississippian worlds.

In the beginning of the cosmological formation, before any humans were created, air, water, and earth were the only elements that existed. These elements were divided by several different spiritual powers or beings. According to southern Siouan speakers (e.g., Kaw, Omaha, Osage, Ponca, and Quapaw) this power was known as Wa-Kon-Da. This entity could not be seen and did not make any sounds, and yet it transcended through all known worlds and helped to create male and female life forces (Bailey 1995:30-31; Fletcher and LaFlesche 1911:597-599; Howard 1965:99). The Pawnee also had a very similar creative force called Tirawa. This being created all things according to early Pawnee accounts (Dorsey 1904:3). Under Tirawa, there were semi-gods that were associated with the sun, moon, and various stars. Tirawa positioned the sun, moon, and the stars into specific places in the cosmos. The sun is usually personified as a male, while the moon is usually personified as a female, apart from the beliefs of the Tunica tribe. Morning Star, an incredibly important spiritual figure in most Southeast tribes, had control over the gods: Cloud, Wind, Lightning, and Thunder. The west is indicative of Morning Star's existence. Finally, Tirawa commanded all the gods to smack the water to separate it from the earth, and they subsequently sang and danced the worlds into existence. Once these worlds came into existence, specific animals played an important role, such as elk (Osage), crawfish and bears (Creeks), and hawks (Caddo) to help to uphold the cosmological balance (Swanton 1929).

Complex representational imagery was one of the main mediums by which individuals and other groups accessed ritual knowledge to create and manipulate their cosmological worlds (Dye 2012). The organization of their cosmological worlds was based on opposing layers, which created a tri-level cosmology. Because of several scholars' past work efforts, several locatives or visual keys to identify specific religious and ritual narratives have been identified that express each cosmological layer (Reilly 2004; Reilly and Garber 2007). The layers include "the bottom layer, or the beneath world, that comprised a vast body of water [as well as underwater creatures], whereas the above world included the majestic expanse of the sky. The middle world lay between the bound and opposing forces of the beneath world and the upper world" (Dye 2012:142). The Below World was thus seen as the counterpart of the Above World, very chaotic and used by destructive forces (Hudson 1976:122-132).

The sun and flying creatures characterize the Above World, whereas humans, plants, and animals characterize the Middle World (Lankford 2011; Reilly et al. 2007). "This notation expresses the tension of the natural balanced against the supernatural, or of the Above World poised against the Beneath World" (Reilly 2004:127). In other words, the Caddo peoples who resided in the middle world were in a constant battle to keep the two opposing worlds in balance. One way religious elites wielded sacred power to balance opposing worlds was adorning motifs on copper, shell, and pottery. Essentially, "their [cosmological worlds] were a set of contradictions, which had to be stabilized through ritual propitiation and iconographic representation" (Reilly 2004:126).

Addressing the Cosmological Significance of a Pot

Iconographic research in the Southeast has primarily emphasized images that are depicted on marine shell, copper, textiles, and stone (Brown 2012; Horton 2010; Phillips and Brown 1978; Reilly and Garber 2007). Late prehistoric (A.D. 950-1600) societies in the North American Southeast has yielded copious

amounts of this distinctive material culture, which have a wide spectrum of geometric shapes, supernatural and natural animals, people, and cultural heroes, all of which provide glimpses into cosmological ideologies. The pervasive adoption of these materials and iconography across the Southeast has been referred to as the Southern Cult, the Southeastern Ceremonial Complex (SECC), Southeastern Interaction Sphere, Mississippian Iconographic Interaction Sphere (MIIS), and Mississippian Ideological Interaction Sphere (Reilly 2004; Knight et al. 2001; Waring and Holder 1945). However, since the 1940s, iconography depicted on ceramics has not been regarded as an integral part of this sacra. Ceramics, therefore, are frequently dismissed from being associated with a ceremonial complex (Dowd 2011).

Archaeologists routinely regard Caddo ceramics as merely containers with some ritual attributes, such as their placement within burials or on-mound contexts, but disassociate their relationships to other representational art forms because of their ubiquity in the archaeological record and their deposition in domestic contexts. In this vein, ceramics are stigmatized as not unique enough for iconographic research. However, in the Caddo region, ceramic vessels are associated with other material types that have more highly visible anthropomorphic and zoomorphic imagery.

Archaeologists have performed iconographic methods to understand the imagery on ceramic vessels. These types of studies emphasized the roles of pottery in understanding Caddo ritual activities and the different people who had access to their power (Blitz 1993; Dye 2011; Lambert 2014; Pauketat 1989, 2013; Pauketat and Emerson 1991; Rees 1997). Pauketat and Emerson (1991) concentrated on examining how ceramics reflect the cosmological structure of pre-Columbian Native North Americans. They discovered that Ramey Incised vessels, made by Cahokia potters, were coiled and decorated to maintain cosmological stability as well as reaffirm the ideologies of ritual elites (Figure 3). But the fact remains that ceramics with complex elements, motifs, and themes are still viewed as watered-down versions when compared to "finer-made" materials, like stone maces, engraved whelk shells, shell gorgets, or copper plates.

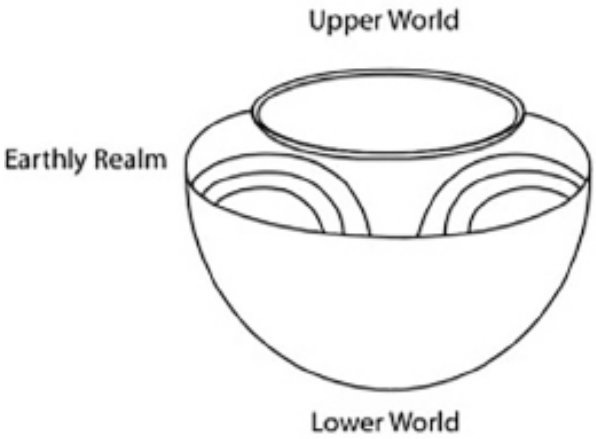

Figure 3. Ramey Incised pot from Cahokia representing the Mississippian cosmos (adapted from Pauketat and Emerson 1991: Figure 11).

Iconographic research into ceramics has gained some momentum in the last five years. Phillips (2012) studied Hemphill Engraved style pottery found at the Moundville site in Alabama. While Phillips (2012:98) "avoided iconographic meaning in favor of style," she did compare the meaningful referents of the motifs to different economic models. Phillips' findings suggested that these motifs fit best with an Association Model whereby there are discrete separations between iconographic themes in different contexts.

In recent years, Caddo archaeologists have spent a lot of time interpreting the meanings of ceramic imagery. For instance, Fields and Gadus (2012) and Gadus (2013) explored the structural similarities in Late Caddo Ripley Engraved motifs on bottles. To make sense of the abstract motifs on the bottles, they compared them with more representational imagery found on shell gorgets and shell cups from mound sites in Texas and Oklahoma. Their findings indicated that ceramic motifs expressed lower and upper world imagery as well as highlighted the importance on how vessel forms play an important role when considering the overall iconographic significance (Fields and Gadus 2012; Gadus 2013). Nash (2017a, 2017b) studied the iconography and distribution of Avery Engraved vessels. Her findings suggest that not only do Avery Engraved vessels portray locatives to the celestial Upper World, but also portray locatives of the Beneath World. Dowd (2012) studied the widespread adoption of reptilian imagery in Late prehistoric Caddo communities. She hypothesized that the variety of reptilian imagery,

such as frogs and snakes adorned on ceramics, were localized manifestations of similar Below World narratives. Lankford (2014) conducted an interregional comparison of ceramic imagery and ceramic paste with more representational imagery found on southeastern shell engravings and southwestern cave paintings to understand the extent to which Datura cult ideologies influenced the Caddo region and beyond. Hart and Perttula (2010) studied the ceramic imagery from a double burial from the Washington Square Mound site in northeast Texas. The authors believed that rattlesnake as well as other iconographic themes were regional variations associated with broader themes from the Southeastern Ceremonial Complex.

McKinnon (2013, 2015, 2016) has been a major figure in trying to understand the meanings of Caddo iconography on multiple scales of analysis. McKinnon (2013) wrote an intriguing article, which viewed Caddo landscapes as their own ritual object that can be studied in relation to the organization of settlements and distribution of materials. In other words, Caddo landscapes have an ontological relationship between the people and objects who live on and modify them through time and space. Ceramic vessels are literally made from what I believe to be a part of McKinnon's notion of ritual landscapes. These two objects are so closely related (i.e., permanent versus portable landscapes), that a study of their relationships would make for an excellent research topic. He also used a GIS approach to understand the large-scale distribution of the rayed circle motifs on whole Caddo vessels. McKinnon discovered that the distribution of the rayed circle overhead motif is much more dispersed and widely shared, while the rayed circle burst motif is more clustered and restricted to certain river drainages (see McKinnon 2016, Figures 6 and 7).

Since the discovery of the Great Mortuary and the Spirit Lodge in the Craig Mound at the Spiro site, ceramic studies have been limited to petrographic, chemical, and stylistic studies (Brown 2012; Early 2012). As a result, finely-made ceramics with complex iconography have been seriously understudied. Iconographic studies into pottery are necessary to obtain a better understanding of cosmology and the ritual activities that maintained those narratives. The guiding premise of this paper is that the ceramics found in ceremonial contexts in the Craig Mound is an assemblage of forms and meaningful imagery created for ritual use and perhaps to illustrate specific cosmological narratives.

Methodology: Iconographic Comparisons and Analysis

In the last 10 years, iconographic studies have advanced the interpretive value of the archaeological record. We are now able to breakdown a complex representational image, understand each motif and its relationship to one another, and then reconstruct the image to develop a much more nuanced narrative of the past. Iconographic studies go beyond the identification of what is depicted on specific objects, such as an anthropomorphic figure with wings. Rather, this method seeks to explore deeper understandings of the cultural significance of the depiction, such as "does it resonate an identifiable motif or theme that carries information about the cultural milieu in which it was produced" (Knight 2013). An example is the well-known Craig style of two anthropomorphic figures depicted on either side of a pole, also known as the axis mundi (Figure 4). At first glance, the two figures look like they are standing idly beside the pole. However, as Reilly (2004, 2007) has asserted, perhaps pre-Columbian compositions were not supposed to be understood in a two-dimensional state. Instead, once we deconstruct each motif and reconstruct the series of motifs in a three-dimensional

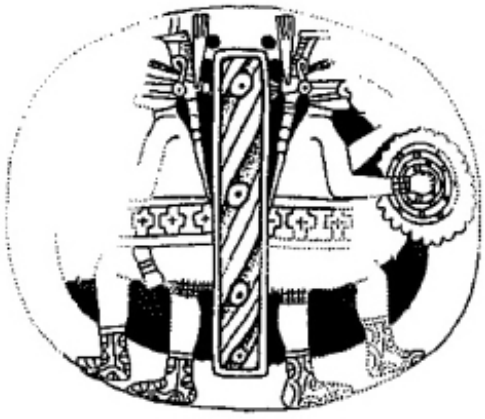

Figure 4. Craig Style Gorget from the Craig Mound (adapted from Reilly 2007:Figure 3.1).

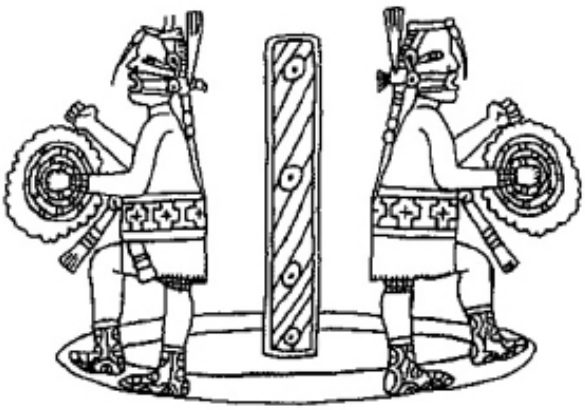

Figure 5. 3D reconstruction of a Craig Style Gorget from the Craig Mound (adapted from Reilly 2007:Figure 3.1).

style, it is understood that the gorget portrays two anthropomorphic figures dancing around the axis mundi (Figure 5). The shell beneath their feet would then be a locative of the underworld while the axis mundi would be the locative of the Above World.

In this paper, I analyzed 98 ceramic vessels from Craig Mound burials. Specifically, I used a unique composite vessel that was recovered in one of the Craig Mound burials, which depicts the iconography of each cosmological world (Lambert 2014). I utilized this one vessel as a kind of "Rosetta Stone" to help decipher the iconographic grammar of other ceramics in Craig Mound burials. I also use highly visible representational imagery on shell cups and shell gorgets to help decipher the more abstract curvilinear and rectilinear motifs on pottery. As mentioned earlier, I only concentrated on the burials that were not associated with the Great Mortuary or the Spirit Lodge; the reasons for this will become apparent in the discussion section below. I dated each burial with their associated materials. As a result, I assigned the burials to four different periods: Spiro I, Spiro II, Spiro III, and Spiro IV. Finally, I arranged the ceramics that depicted different cosmological worlds in time and space to identify patterns in the data. Ultimately, what this methodology demonstrates is that pre-Columbian representational images from Spiro have the potential to convey larger cultural, social, and historical narratives that not only reflect the producers of the imagery, but also its association within the broader community. Also, this approach highlights the importance of using ceramics in iconographic research because of their cultural significance to the Craig mound participants.

Craig Mound Motifs and Their Meanings

I used a four-step approach to study iconography on Craig Mound ceramics. This approach was developed and outlined by Knight (2013), Kubler (1962), and Straten (1994). I also took the composition, themes, and styles that Phillips and Brown (1978) used to create iconographic meanings with Spiro shell engravings. I first tried to identify sequences, elements, motifs, and compositions that were found on a complex composite vessel and ended with attempting to infer the underlying principles that linked those motifs to other Craig Mound ceramics. By element, I am referring to basic lines and shapes that are brought together by the producer to create a motif. By motif, I am referring to individual anthropomorphic, zoomorphic, or geometric figures that are a set of elements which creates the identifiable representational image. By composition, I am referring to an amalgam of elements and motifs that were used to create a specific narrative or theme. By sequence, I am referring to a set of similar compositions that are expressing the same theme.

Iconographic Meaning of the Composite Vessel

Figure 6 represents a complex composite vessel, but it also reveals combinations of Caddo motifs that have never been seen together on a ceramic pot in the Arkansas Basin. Thus, it is feasible that the rarity of this pot will help translate other Craig Mound ceramics with similar iconography. This vessel is a composite Caddo ceramic form, and my assertion here is that the vessel has embodied a three-dimensional representation of the Caddo peoples' three-level cosmological configuration.

First, the vessel's form is just as important as its iconography. Starting from the bottom-up, the vessel is a bowl, turns into a jar, and finally, the top becomes a bottle. The vessel's decorative composition is separated into three components, and the segments are engraved with three very distinct motifs. The skilled potter(s) who coiled and decorated this vessel likely joined together these three vessel forms to create three separate

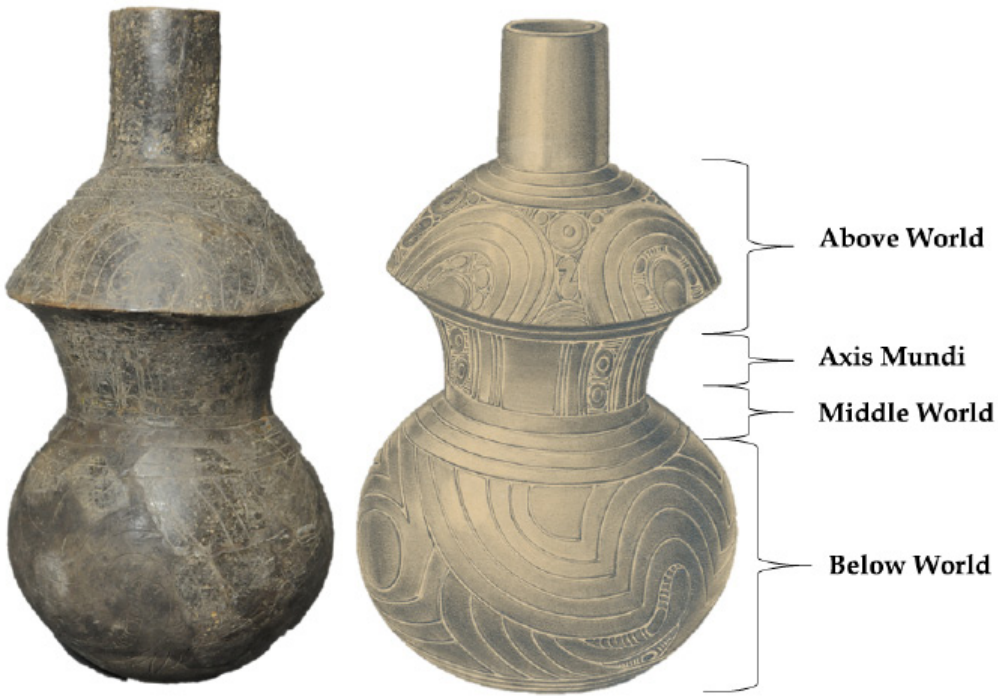

Figure 6. Left: Complex composites vessel from Burial 7 in the Craig Mound; Right, WPA artifact illustration depicting the very complex composite bottle with engraved motifs referencing the axis mundi and the Above, Middle, and Below Worlds.

sections on which to convey their cosmological worlds. Observing the vessel's profile, we can see that the bottom or "bowl" portion is a Spiro Engraved motif with other iconographic elements which signifies the Below and Middle worlds.

The lower half of the bowl portion is very water-like with underwater creatures (perhaps underwater serpents?) swimming between the Below and Middle worlds. This is most likely a reference to the Below World. The upper half of the bowl portion has four pedals or "quatrefoils" that are positioned in the cardinal directions and these four lobes are resting or floating on top of the watery underworld. This is most likely a reference to the Middle World. The iconography on the middle section or the "jar" portion of the vessel is clearly referencing the striped pole, sacred tree, or the axis mundi, which connects the Below and the Above worlds. Other depictions of the axis mundi are commonly found on shell gorgets and copper plates. It is also interesting to note that the engraved lines beneath the sacred pole could be indicative of the ceremonial dance circle, which has also been displayed on other engraved shell gorgets from the Craig Mound (Reilly 2004). Lastly, the iconography on the upper or "bottle" portion of the vessel is perhaps the most complex of the three motifs. I do not think many would argue against the notion that this portion is showcasing the intricacies of the sky. There are concentric rayed circles going all around the vessel. These types of motifs are considered references to the Above World, yet there are other iconographic elements here that need further study.

What makes this vessel even more remarkable is that not only can one observe the three worlds and the axis mundi on its profile, but all three cosmological worlds and the axis mundi can be viewed in plan view (Figure 7). From this viewpoint, the axis mundi on the jar portion disappears, but reappears as the opening of the vessel's orifice. It is as if the maker of this vessel wanted or needed to view the three worlds and the axis mundi from all angles. This would especially be the case if participants poured a liquid into the vessel and drank from it. As they raised the vessel, the three worlds and axis mundi would come into view again. A ritually charged liquid, such as the Black Drink (e.g., Crown et al. 2012), passing through the three worlds and being consumed individually or communally would have

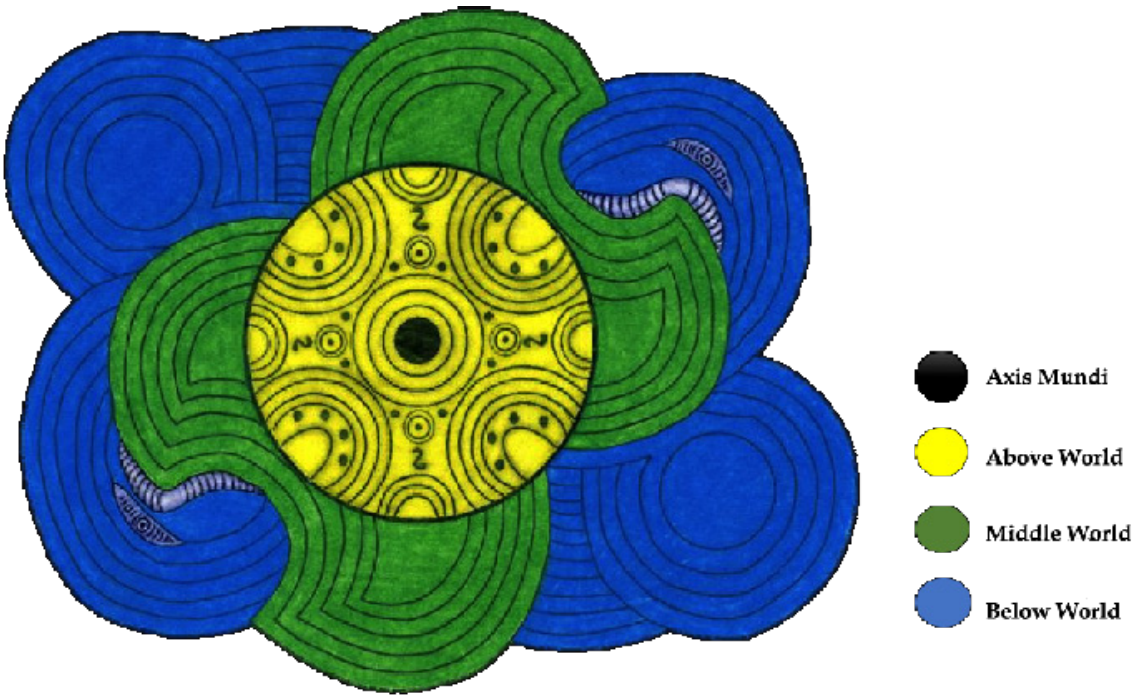

Figure 7. A plan view or an above view of the composite vessel's iconography.

had powerful religious meanings. It may be that many different Craig Mound participants came together and represented their cosmological worlds on this vessel. The fact that this vessel was recovered from a burial in northeast corner of the Craig Mound further supports this claim.

Deciphering other Craig Mound Burials

I studied the iconography of all pottery vessels from the Craig Mound that were not associated with the Great Mortuary or the Spirit Lodge. I used the composite vessel mentioned above as a kind of tool to decipher iconographic grammar and locate similar motifs, elements, and themes on other Craig Mound vessels. The bottom portion or the "bowl" segment is clearly a Spiro Engraved motif. Spiro Engraved bottles always depict "watery" motifs that have been interpreted in the past as a locative of the underworld (Lambert 2014). This is also strengthened by the strong possibility that ritually charged liquids most likely were contained within the bottles. Therefore, I first examined each Craig Mound Burial to identify Spiro Engraved bottles. Of the 98 burials that were examined, 14 burials contained a total of 18 Spiro Engraved bottles. It is important to note that all 14 burials that contained Below World iconography did not contain any Above World iconography. For each individual burial that contained Spiro Engraved vessels, there may have been a rule in place whereby people could not enter another cosmological realm. Lastly, and probably the most intriguing finding is that all burials that contained Below World iconography were restricted to the southeast portion of the Craig Mound.

The middle portion or the "jar" segment of the composite vessel clearly shows the axis mundi in the four cardinal directions. I assert that the composition on Crockett Curvilinear Incised vessels is depicting the axis mundi. When the design is rolled out, it bears a remarkable resemblance to the axis mundi on shell gorgets and shell cups (Figure 8). Unfortunately, all but one Crocket Curvilinear Incised vessel recovered from the Craig Mound are from significantly disturbed contexts. Thus, I was unable to match most of the vessels with their associated burials. Yet, it is intriguing nonetheless that the one Crocket Curvilinear Incised vessel (Burial 66) was in the very center of all the Craig Mound burials. Of course, this is completely speculative now but should still merit some consideration when other meaningful patterns emerge.

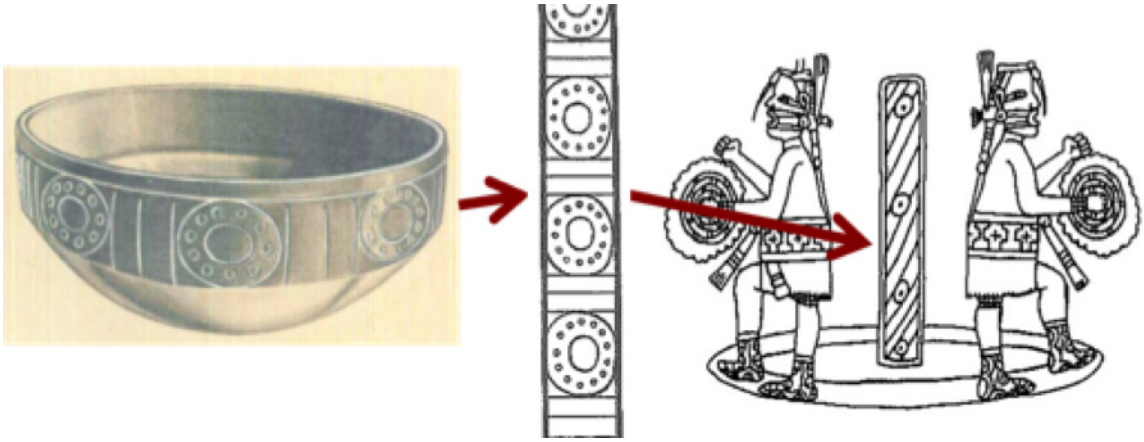

Figure 8. Illustration of a Crockett Curvilinear Incised vessel from the Craig Mound (left); roll out of the vessel's design (middle); and vessel rollout looks very similar to axis mundi's found on shell gorgets (right).

The upper portion or the "bottle" segment of the composite vessel clearly shows the details of the Above World. The concentric ray motifs create a distinctive composition that has been theorized in the past as locatives of the Above World (Phillips and Brown 1978). There are also what could be abstract flying creatures between the rays. Birds or raptors, such as hawks as well as flying serpents, have also been theorized in the past as references to the Above World (Reilly 2007). Thus, ceramics in other Craig Mound burials that have similar compositions can be hypothesized as indicative of the Above World. Out of the 98 burials analyzed, eight burials (and nine vessels) contained ceramics with Above World iconography. Interestingly, all the Above World ceramics were depicted on jars, and just like the Spiro Engraved bottles, no Below World iconography was found with the Above World burials. Furthermore, burials with Above World iconography are only recovered in the northwest corner of the Craig Mound. All the ceramic types that have Above World iconography are Avery Engraved and Sanders Engraved (Figure 9). Spiro Engraved is the only ceramic type that has Below World imagery (Figure 10).

Results of the Analysis

The analysis of the Craig Mound vessels has shown the importance of individuals to be buried with artifacts conveying a specific cosmological world, but each cosmological world had to be depicted on separate vessel forms that includes Below World (only bottles), Middle World (only bowls and carinated bowls), and Above World (only jars). All things considered, it appears there were defined spaces in the Craig Mound in which individuals that signified a specific celestial realm could be placed.

Now that there is a good understanding of what the ceramic imagery signifies, it is time to see if there are patterns in the Craig Mound burials through time, from Spiro I through Spiro IV periods, to understand the history and creation of Craig Mound's cosmological structure.

Figure 9. Examples of Above World iconography on vessels: Avery Engraved (left) and Sanders Engraved (right).

Figure 10. Examples of Below World iconography on Craig Mound ceramics, Spiro Engraved.

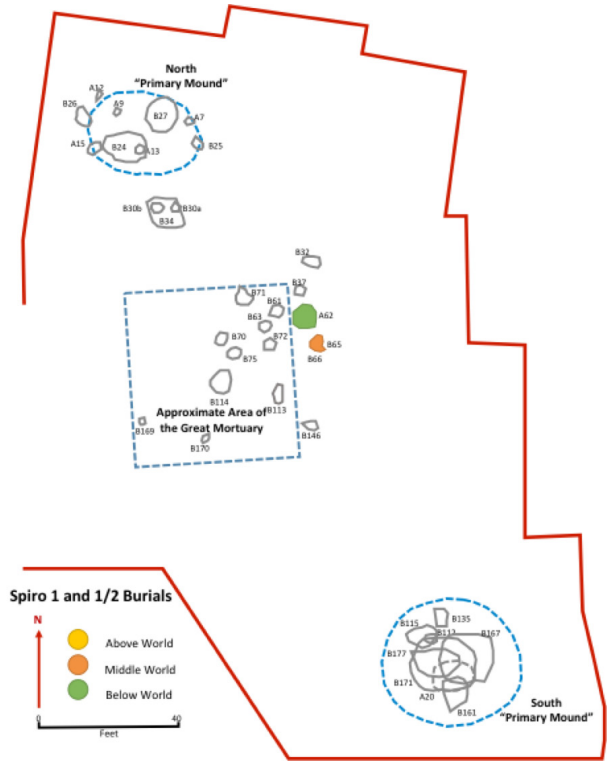

Figure 11. Craig Mound burials from Spiro I and I/II periods.

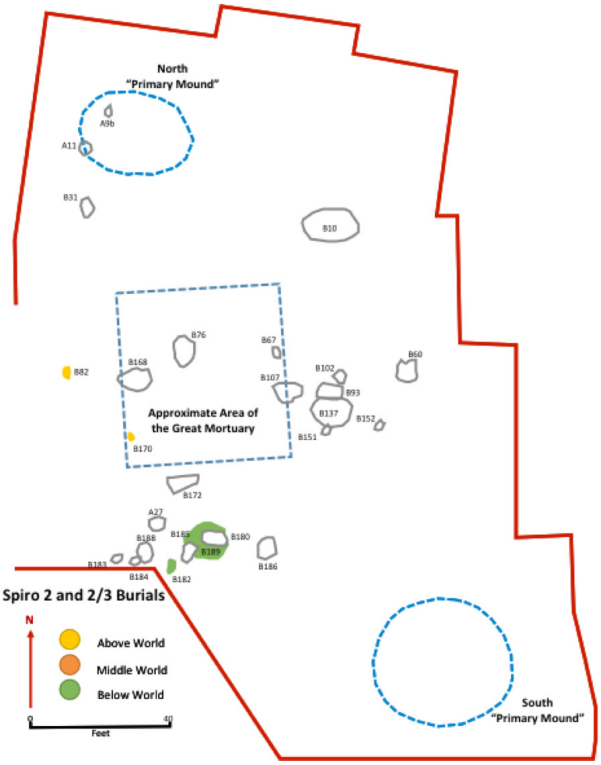

Figure 12. Craig Mound burials from Spiro II and II/III periods.

Thirty-four burials date to the Spiro I and I/II phase, ca. A.D. 1000-1100 (Figure 11). In this period, there are only two ceramic vessels that have iconography, one Spiro Engraved bottle and one Crockett Curvilinear Incised bowl. No Above World iconography was present in the Spiro I burials. Therefore, as shown in Figure 11, there does not seem to be any cosmological structure regarding the use of ceramics. However, this period had the earliest burials and perhaps Craig Mound participants were still negotiating how to (re)create their cosmos through burying their dead.

By Spiro II and II/III periods, ca. A.D. 1100-1250, a pattern has started to emerge (Figure 12). Twenty-six burials dates to the Spiro II period, and as shown in Figure 12, there are ceramic vessels present that suggest Above and Below Worlds. Burials 82 and 170 have Avery Engraved and Sanders Engraved vessels and are placed in a northwestern direction. Both burials 182 and 189 have Spiro Engraved bottles (n = 7) and are oriented in a southeastern direction. During this period, a cosmological structure may be developing due to the separation of ceramic vessels with Above World and Below World imagery.

By the Spiro III and III/IV periods, ca. A.D. 1250-1400, a stronger pattern emerges that may signify a cosmological structure. There is a significant increase in the number of burials and the quantity of ceramics that have Above and Below World imagery (Figure 13). It is in this period that the complex composite pot (Burial 7) that depicts all three cosmological worlds was buried in the Craig Mound. This pot was buried in the far northeast corner of the Craig Mound, and perhaps used create the cosmological ordering of the burials. This could be why there is such a large increase in burials with Above and Below World iconography: 42 burials comprise Spiro III and III/IV burials. Seven burials (B7, B3/4, B29, A18, B50, B36, and B64) all contained Above World ceramic jars. The ceramic types include Sanders Engraved and Avery Engraved. It would be interesting to use INAA or other types of compositional analyses to understand from where these vessels were made. Are they non-local vessels being represented here and whose iconography is being depicted – communities living around Spiro or imported from southern Caddo communities? Just like the Spiro II and II/III periods, Above World burials were only found in the northern part of the Craig Mound. Ten burials (B100, A25, B88,

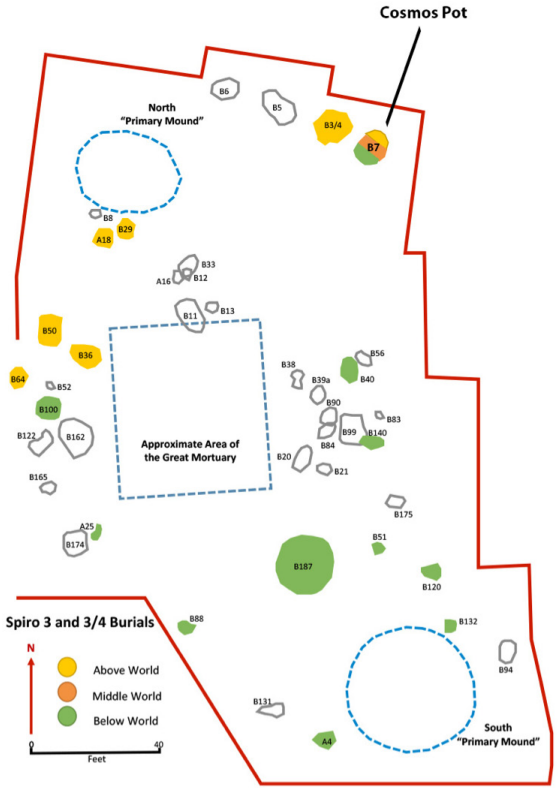

Figure 13. Craig Mound Burials from the Spiro 3 - 3/4 periods.

A4, B187, B51, B120, B132, B140, and B40) all contain Below World Spiro Engraved bottles. Just like the Spiro II and II/III periods, Below World bottles were only found in the southern portion of the Craig Mound.

Discussion: Looking for Cosmological Structure in Craig Mound Burials

In this paper, I have used the word ritual several times. Therefore, it is important that I define this term to understand data I am observing. For the Caddo peoples, ritualism and access to other celestial worlds was a tangible process that was interwoven into their daily, social, political, and economic life (Miller 1996). It was embedded in their subsistence, agriculture, hunting, and technologies. Ritual practices were expressed from pole-setting to constructing whole villages. Thus, I consider Caddo ritual as "a heightened awareness [and expression] of interconnectedness and the relations between things" (Fowles 2013:103) as other Caddo archaeologists have theorized (Perttula 2017). I view Caddo rituals as "in the moment" social practices that brought people, things, and the cosmos together. Rituals then can be defined as the actions by people, things, and the cosmos. Rituals are the actions that construct, create, and modify religious beliefs. During rituals, people can remember, forget, accept, deny, or alter their beliefs (Fogelin 2007, 2008). Rituals are also materially expressed through embodied practices of people (Joyce 2012). In this view, ritual is also seen as an active practice that is made routine and constantly negotiated within a social collective. This study has examined many Caddo burials in the Craig Mound. It is reasonable to assume that during these ritually amplified events of burying the dead with meaningful objects they too were expressions of a similar Caddo worldview that promoted a sense of interconnectedness between people, places, and things.

It has been argued that the ways in which the Caddo organized themselves and their objects spatially and temporally was significantly interwoven into how their cosmos was also structured. Kay and Sabo (2006) extensively studied Formative and Early Caddo period (A.D. 850-1150) charnel houses. Charnel houses had extended entranceways. They are viewed as special places by which ritual elites processed and stored the dead. Their analysis revealed that charnel houses had a specific southward orientation. For the Caddo, important places and objects positioned in a southward direction had symbolic meanings to death, renewal, and the way to the path of souls where spirits ventured into the Below World. Brown (2012) has been the premier archaeologist to research the Great Mortuary in the Craig Mound. The Great Mortuary was a massive episodic burial event comprised of several litter burials and ritually charged objects. Brown studied the placement of these important objects in relation to the burials and cardinal directions. He surmised the Great Mortuary as a cosmogram or tableau, whereby ritual elites drew cosmological power from through the placement of objects in certain cardinal and semi-cardinal directions. Furthermore, Sabo (2012) compared a seventeenth century Spanish map, called the Teran map that illustrated a large Nasoni Caddo village along the Red River in East Texas, with how the Caddo people structured their cosmos. He discovered that the ways

Figure 14. All Craig Mound burials from Spiro I-IV periods.

in which Caddo people built their living environment related to how they structured their cosmological worlds. Like Brown and McKinnon, Sabo also asserted that entire communities and landscapes could be considered as a ritual object.

In this study, I have shown that the Craig Mound burials not associated with the Great Mortuary or the Spirit Lodge can also be explained as a cosmogram (Figure 14). I also stress that earlier Craig Mound burials may have been used to place highly decorative Caddo vessels to represent the Caddo's cosmological structure, which is something not seen in later Spiro IVB burials (ca. AD. 1400-1450) from the Great Mortuary or the Spirit Lodge. The only pottery interred in the Great Mortuary and the Spirit Lodge now is roughly made plain ceramic vessels that most likely were locally made at Spiro (Hammerstedt et al. 2015). Decorative vessels seemed to have been replaced with other objects, such as gorgets, copper plates, engraved shell cups, and other objects. I would argue that the increases social interaction between Caddo communities with other late prehistoric groups in conjunction with an intensified participation in the Southeastern Ceremonial Complex altered the ways in which Craig Mound participants structured their cosmos.

Conclusions

So much can be learned from Craig Mound ceramics, and once they are investigated as thoroughly as other Southeastern Ceremonial Complex artifacts that came from the Great Mortuary and the Spirit Lodge, the more fine-grained our interpretations of Spiro will become. Ceramics from Spiro I -IV burials highlight that ceramic iconography can now be used to address a multitude of research interests, such as Caddo rituals and their overall cosmological structure in time and space. Interesting to note here that Spiro Engraved vessels were deposited in Craig Mound from Spiro I through Spiro IV Periods, which suggests that many could be considered heirloom objects by the time of their deposition.

The research value of these ceramics has resulted in important contributions to the archaeological understanding of Caddo imagery, rituals, and cosmology. The study of the composite vessel drawing from the Craig Mound revealed that the known universe of Craig Mound participants was portrayed on one pot, but the reason(s) it was constructed and the meanings behind the representational images are still up for debate. The decorative themes on each section of the vessel, which certainly needs further consideration, may be specific iconographic compositions representing different cosmological realms. The creation of the stacked vessel was most likely not made at Spiro (perhaps along the Red River?), and its journey and placement in the northeast corner of the Craig Mound suggests it was a highly valuable object. This cosmos vessel was placed in the Craig Mound at the same time when we see a significant increase in the deposition of other highly decorative pottery. Thus, after the pot was coiled, engraved, dried, and fired, it was eventually obtained by Craig Mound participants and placed with a burial as an integral part of the Craig Mound's cosmological construction. Using the composite vessel as a way in which to decode other Craig Mound ceramics led to the identification of temporal and spatial patterns

(Spiro III and III/IV Burials), suggesting Craig Mound participants may have had a specific ritual formula to bury their dead in time and space. This exploration of what the Craig Mound vessels represent helps to illustrates their research potential, to find what was once lost, and to spur novel archaeological interpretations. With future research, I plan to study the directionality of Craig Mound burials as well as include other funerary objects in the burials to assess whether the cosmogram hypothesis still holds true with the additional data. Once this is complete, other contemporaneous ceremonial centers can be examined for similar temporal and spatial iconographic patterns.

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The Cosmos in Clay: An Analysis of Avery Engraved Vessel Motifs

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This study seeks to provide new interpretations for the abstract and geometric Avery Engraved vessel motifs created by the prehistoric Caddo. I argue that certain motifs represent wings, feathers, and the Upper World, while other motifs act as locatives and are representative of the Lower World in the Caddo conception of a tiered universe. Given the nature of archaeological research, it is not possible to ascertain all of the implications, nuances, and complexities of the motifs that appear on Avery Engraved vessels. However, this study and others like it, which work to extrapolate the meaning of motifs through comparative analysis with representational engraved shell imagery and through the use of ethnographic and ethnohistoric data, can enrich our knowledge about how the Caddo rendered and communicated core beliefs in nonrepresentational ways.

Introduction

The prehistoric Caddo, who lived in present-day southwest Arkansas, northwest Louisiana, eastern Oklahoma, and northeast Texas from about A.D. 800-1700, were highly skilled potters who created intricate designs on a variety of vessel structures. In addition to routine food preparation, storage, and serving uses, pottery was a highly visible medium that was used during community feasts, religious rituals, and burial ceremonies as grave goods (Townsend and Walker 2004:245). Caddo potters did not create figural designs on their vessels but instead adorned their pottery with nonrepresentational motifs that likely pertained to important cultural, religious, and cosmological themes. A decoration type known as Avery Engraved portrays motifs that have traditionally been interpreted by scholars as relating to the celestial Upper World in the Caddo conception of a tiered universe by representing the sun (Pauketat and Emerson 1991:928).

However, after comparing the abstract geometric motifs on Avery Engraved vessels with representational images from the broader corpus of Caddo religious imagery found principally on engraved shell cups from Caddo sites, and considering recent Caddo iconographic studies and ethnographic and ethnohistoric analogies, I believe that Avery Engraved vessels actually portray motifs that directly reference specific aspects and beings of both the Upper and Lower Worlds. Additionally, the Upper World is likely referenced by motifs that symbolize feathers rather than the sun. The relation of Avery Engraved motifs to the Lower World has not, to my knowledge, been discussed to any great length in the literature. Yet, within this study's sample size of 132 Avery Engraved vessels, Lower World motifs had been used in conjunction with Upper World ones to reference fundamental religious beliefs concerning the tiered cosmos, beings of power, and the journey to the afterlife. These new interpretations of Avery Engraved motifs provide a greater understanding of how abstract, geometric motifs were used by the Caddo as referents and locatives that conveyed nuanced aspects of the dualistic and opposing realms of the universe.

In this article, I provide some basic background on the culture and society of the prehistoric Caddo. Next, the methodology and use of a comparative iconographic approach and the use of ethnographic and ethnohistoric material are considered. I then demonstrate through the analysis of Avery Engraved vessels from burials located in Texas, Arkansas, and Oklahoma how motifs, in both isolation and in combination, were placed on vessels in order to derive particular cosmological and religious associations with either Upper, Lower, or both worlds. This study further elucidates how the Caddo expressed religious themes through both the medium of ceramics and through nonrepresentational imagery.

Caddo Culture and Society

The Caddo people, whose complex and distinctive culture has been the focus of many archaeological

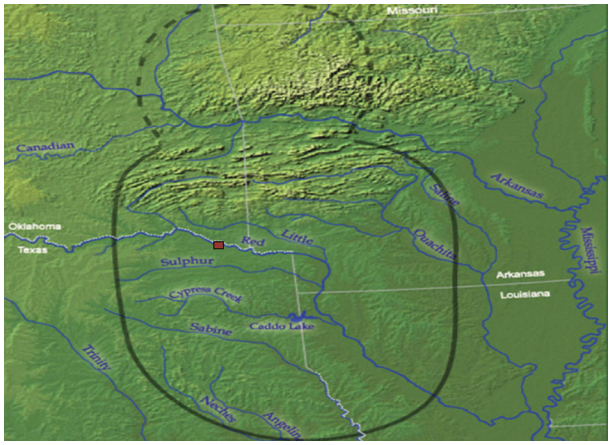


Figure 1. Map of the Caddo region. Solid line shows primary area; dashed line represents the northern extent of Caddo habitation (from Texas Archaeological Research Laboratory, 2010). Box features the generalized location of the Roden, Sam Kaufman, and Bob Williams sites, all of which contain Avery Engraved Vessels.

studies, are considered to be linked together by a common cultural and historical heritage (Perttula 1996, 2012). From about A.D. 800 into historic times, the Caddo people lived as distinct communities and social groups in principally sedentary dispersed settlements, with civic-ceremonial centers near the edge of communities. These communities were comprised of isolated farmsteads, several larger villages with groups of farmsteads, and the civic-ceremonial centers that were visited by individuals from nearby settlements (Perttula 2012).

The region that the Caddo traditionally inhabited, as evidenced through archaeological investigation and ethnohistoric and historic accounts, centers on the Red River and its tributaries (Perttula 1996). This includes areas in present southwest Arkansas, northwest Louisiana, eastern Oklahoma, and northeast Texas, as shown in Figure 1 (Perttula 2012). For this study, analysis will focus on whole Avery Engraved vessels originating from sites in Arkansas, Texas, and Oklahoma from around the Middle to Late Caddo periods. The temporal duration of Caddo chronology can be divided into five general periods, as seen in Table 1; these period divisions are based upon broad trends seen in the archaeological record (Dowd 2011b; Perttula 1996). Regional phases further delineate specific social and cultural changes.

The McCurtain Phase, a regional phase of the Middle Red River, begins at A.D. 1300, ends at A.D. 1700, and roughly corresponds to the Middle and Late Caddo periods. Sites occurring during this phase are located along the Red River drainage and also along the Little River drainage (Dowd 2011b:6). This phase saw a variety of red slipped vessels including Avery Engraved, Clement Redware or Roden ware, and Simms Engraved, (University of Oklahoma, Oklahoma Archeological Survey [OAS]) and it was during the entirety of the McCurtain Phase that Avery Engraved vessels occurred most frequently (Dowd 2012). Over the course of the McCurtain Phase vessels featured different body forms and motifs. By the end of the McCurtain Phase, around A.D. 1700, Avery Engraved vessels had largely been "replaced by conical Taylor and Hodges Engraved vessels" (Perino 1983:74).

McCurtain Phase settlements were generally villages "with substructural mounds, household cemeteries, shaft tombs for multiple burials, and house sites scattered along major and minor drainages" (University of Oklahoma, OAS). Some settlements were connected to civic-ceremonial and mound centers. The civic-ceremonial centers were formed using one or more platform or conical earthen mounds situated around a large plaza. Structures, like temples, were sometimes built on flat platform mounds. Conical mounds frequently contained burials and ceremonial fire mounds were also used for public and religious functions and

Periods	Period Dates (A.D.)	Phases of the Middle Red River Area	Phase Dates (A.D.)
Formative Caddo	800–1000	Albion	900–1100
Early Caddo	1000–1200	Mound Prairie	1100–1300
Middle Caddo	1200–1400	Early McCurtain	1300–1500
Late Caddo	1400–1680	Late McCurtain	1500–1700
Historic Caddo	1680–1860+	Historic	1700–1730+

Table 1. Caddo period and phase chronology (adapted from Dowd 2011b; Perttula 2012).

celebrations (Perttula 1996:306). Elaborate ceremonies and mortuary rituals were conducted at mound centers, with the socially and politically elite members of society buried in shaft tombs accompanied by exotic, rare, and elaborately made grave goods (Perttula 1996, 2012). Certain Avery Engraved vessels, particularly bottles, have also been discovered in the context of shaft tombs and mound burials (Skinner et al. 1969). Caddo society during both prehistoric and historic times was socially ranked and matrilineal descent is evident through kinship terms (Dowd 2011b; Perttula 2012:9).

Caddo societies share many features with their southeastern neighbors, such as the utilization of and intensification in the production of maize, social and political ranking with recognized elites, and complex ceremonies comparable in nature to other Mississippian societies. While some archaeologists believe the Caddo to be a western or peripheral expression of the larger Mississippian world (Blitz 2010), other scholars argue that the Caddo developed independently (Perttula 1996, 2012). Presently, many scholars conducting research on Mississippian societies, cultures, and iconographies acknowledge and emphasize local, regional, and temporal variation and diversity (Knight et al. 2001; Reilly 2004; Reilly and Garber 2007:1).

The Southeastern Ceremonial Complex

First synthesized in 1945, the Southeastern Ceremonial Complex (SECC) focuses on a body of icons and artistic motifs that are believed to portray the principle ideologies of Mississippian religion (Waring and Holder 1945). The corpus of the SECC predominantly features subjects such as ancestors, nature, animals, warfare, and the transformation or hybridization of animals, humans, and objects into one another (Simek et al. 2012:196). The definition of the SECC has undergone a number of revisions regarding type and content of iconographic depictions, thematic messages, and stylistic classifications. With certain images and styles crossing spatial and temporal boundaries, it is emphasized that "variation in styles, genres, thematic content, and chronology" should be more adequately studied to better understand Mississippian art, society, and religion (Knight et al. 2001:130).

Investigation into symbolically significant themes and motifs, especially from traditional SECC studies, has primarily focused on a wide variety of material types largely exclusive of nonrepresentational ceramic vessels. Materials such as engraved shell cups and gorgets, copper masks and repoussé, effigy statues, and vessels were often at the center of discussions pertaining to religious and ritual significance (Knight et al. 2001). Studies on ceramics have chiefly been concerned with "identity and degrees of social interaction between different groups" (Dowd 2011b:1; Krieger 1946; Perttula 1992), utilitarian uses (Braun 1983), research on "household size, prehistoric diet, trade patterns, learning networks, change" (Rice 1996:138), social and political status (Pauketat and Emerson 1991), and the establishment of relative chronologies. Decoration on pottery is now "interpreted within a broader realm of stylistic behavior," and investigations into cultural and religious meanings have now become more prominent (Gadus 2013; Rice 1996:149).

Caddo vessels were decorated using abstract and geometric designs instead of the representational iconography of the broader SECC (Townsend and Walker 2004; Reilly 2004:126). This variation appears deliberate, as representational imagery is found on other Caddo items, like engraved marine columella shell cups and gorgets, at Caddo sites such as the Spiro site and Roden Mounds site in Oklahoma and Texas respectively. Geometric and abstract designs unaccompanied by other representational figures can make attaching particular cosmological associations to these designs difficult; however, ascertaining general symbolic meaning is still possible (Lankford et al. 2011; Philips and Brown 1978; Reilly and Garber 2007). Potential meanings or associations of nonrepresentational motifs can be suggested by iconographical studies that center on the comparison of abstract motifs with representational imagery. These studies can be further supported by ethnographic and ethnohistoric accounts.

The principle thematic meaning traditionally related to Avery Engraved vessels is that of the celestial realm because arcs, especially rayed and ticked arcs, are believed to be related to the "sun circle" motif and to represent sunrises (Perino 1983; Phillips and Brown 1978; Waring and Holder 1945:4). The sun circle motif has long been considered a principle motif in the SECC (Waring and Holder 1945:4). However, given the specific types of primary and secondary

motifs uncovered during the course of this study, I believe that there is more nuance and variance to Avery Engraved vessel motifs than this simple assessment. Many vessels have motifs of crosshatching, "SZ", and interlocking ends that are related with the Lower World. The means by which motifs are associated with different cosmological realms are largely through studies of representational imagery, like the kind found on engraved shell cups, along with ethnographic and ethnohistoric accounts.

Theoretical and Methodological Approaches

The methodology that has been employed to investigate the relationship between Avery Engraved vessel motifs and associated religious meaning emphasizes the use of visual analysis. This form of analysis is frequently used in art history, in which the individual elements and larger context of images are examined and discussed (Writing Studio Duke University 2016). This analysis of Avery Engraved vessels will recognize and consider the following: (1) the primary and secondary design motifs; (2) the relationships among various motifs; (3) how motifs differ based on certain vessel forms, such as bottles. As particular designs are discussed, certain terms may require clarification. Theme can be understood as "a large-scale design or combination of design elements," while a motif is considered "a smaller design unit" that is distinctive (Muller 1989:12). When referring to individual components of a motif, the term element is used. Representational images are those that clearly portray an identifiable image, such as an animal, human, or supernatural being. While some images may seem to imply or suggest a referent, if they do not portray a recognizable form then images are referred to here as nonrepresentational. Nonrepresentational images often do not intend to "present an accurate depiction of the physical appearance of people or things" (Oxford Living Dictionaries 2016).

Studies that investigate iconography, especially nonrepresentational iconography on vessels, provide an entirely new avenue of investigation into how prehistoric communities structured, replicated, retained, and transmitted their religious worldviews (Gadus 2013). This study builds upon previous iconographic studies including those conducted by Fields and Gadus 2012, Gadus 2013, Lankford et al. 2011, Philips and Brown 1978, and Reilly and Garber 2007. The iconographic studies done by Fields and Gadus (2012) and Gadus (2013) focus upon the comparison of engraved shell cups and Caddo vessels, such as Ripley Engraved bottles. Gadus (2013) concluded that important cosmological and iconographic themes including the tiered universe, "the sacred pole, fierce birds, twisted serpents, and the Great Serpent" could be related with images on Ripley Engraved, Johns Engraved, and Wilder Engraved bottles. Similarly, for this study the connection between symbolic imagery and cosmological worldviews is considered. Symbols, including religious symbols, are organized into complex systems (Gertz 1973), and archaeologists are able to study these systems through material remains because "ideology is materialized in objects," and "symbols are material things that can be manipulated and used by people in the past" (DeMarrais et al. 1996; Fogelin 2007:65; Robb 1998, 1999). Symbolic imagery, including Avery Engraved vessel motifs, enabled the Caddo to graphically express core cosmological beliefs that were a central part of their social and cultural identity.

In this study, information on vessels has been obtained from the George T. Wright collection curated at the Sam Noble Oklahoma Museum of Natural History, from site report descriptions and photographs, and from photographs of vessels from various sites and museum collections compiled by the Arkansas Archeological Survey (ARAS). A total of 132 vessels were analyzed from sites in Arkansas, Oklahoma, and Texas. Of these 132 vessels, 12 are bottles, 14 are jars, two are effigy vessels, and 104 are bowls.

These vessels originated from a minimum of 27 sites across Arkansas, Oklahoma, and Texas. The exact number of sites is uncertain, because many vessels in this study were donated to museum collections with an unclear provenience. In some instances, Avery Engraved vessels taken from several sites were amassed by individuals into different collections that were later donated to museums. In contrast with carefully recorded archaeological excavations, these collecting practices have resulted in some Avery Engraved vessels having very little contextual information. This lack of provenience presents serious limitations as to the

types of research questions that can be addressed. For example, the role of Avery Engraved vessels in regard to questions of gender and social status would presently be difficult to ascertain from many museum collections because collectors and looters frequently did not determine or record information about the age, sex, and status of the individual with whom the vessels were buried.

The known sites and collection were chosen because of the availability of information and images for whole vessels that they provide, as well as the fact that these sites represent relatively contemporaneous McCurtain phase communities. These sites are also representative of different regions, allowing for a wider comparative sample. The availability of images was particularly important for this study, as only images of whole vessels were analyzed. In some instances, different sides and angles of vessels were shown in photographs allowing for a more complete view of a vessel. However, the majority of vessels had photographs with only one view. While many Avery Engraved vessels were recorded as having repeating motifs that occurred around the vessel, it is important to note that this was not verified by a physical examination. The nuances that a complete, in-person view would supply therefore could not be ascertained, and the following interpretation is based upon an extrapolated understanding of each vessel's motif structure. The engraved shell used in this study consists of a gorget from the Roden Site and the published works of Phillips and Brown (1978, 1984), which depict over 300 plates that feature rubbings and line drawings of engraved shell cups, cup fragments, gorgets, and gorget fragments from Craig Mound at the Spiro site in Oklahoma.

Only images of whole vessels have been analyzed in this study; small sherds, whether decorated or plain, are difficult to classify under the Avery Engraved decoration type. This problem arises because "types were defined from complete vessels that often had different decorative patterns on vessel rims and bodies" (Girard 2012:255). Caddo potters in particular often used "different interchangeable techniques and designs on the rims and bodies of their vessels" (Dowd 2012:139). Additionally, it is difficult to determine the complete motif and to note the frequency of motif co-occurrence from smaller sherds. Sherds also make it harder to identify the exact positions of motifs on vessels and any relationships among motif elements.

While sherds from Avery Engraved vessels occur throughout sites, such as in storage or refuse pits in the floors of houses, burials are the chief location at each site where whole Avery Engraved vessels are found; therefore, for this study, Avery Engraved vessels from burials are primarily used. As most or all of these vessels were interred with individuals, the vessels form a comparable data set since they "are all from discrete contexts and had similar functions and social meanings" (Dowd 2011b:33). The engraved shell cups and gorgets were primarily found deposited in Craig Mound at the Spiro site, which also contained burials.

Early ethnographic works, such as those written by Dorsey (1905), Fletcher (1903), and Swanton (1928, 1929, 1942, 1946), provide information on the beliefs, organization, and cultural traditions of the Caddo and other Southeastern peoples. Further ethnographic and ethnohistoric material has been drawn from native peoples in the Muskogean, Algonkian, Caddoan, and Siouan language families (Dowd 2011a:87; Hall 1997). These groups share a number of cosmological beliefs and parallels among their mythologies despite their diverse languages, cultures, and geographies (Dowd 2011a:87). While scholars recognize the acute importance of interpreting the iconography of a particular society based upon that society's specific material, these "shared beliefs have allowed for the development of a general Southeast cosmological model, which has proven useful for identifying certain iconographic themes" (Dowd 2011a:87). These iconographic themes can then guide researchers as they assess the specific contexts, mythologies, and ethnographies of groups, since shared motifs may have had different meanings across different peoples. Wherever possible, Caddo mythology and sites are used to interpret Avery Engraved vessel motifs.

Avery Engraved Motifs

Avery Engraved vessels were formally described in 1962 in the *Handbook of Texas Archaeology: Type Descriptions*, edited by D. A. Suhm and E. B. Jelks. The Handbook describes Avery vessels as having "several concentric semicircles, all plain lines, [or] plain lines

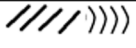
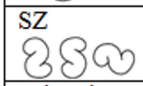
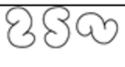
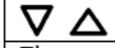
Primary Motif	Total Number of Vessels	Total Number of Bottles and Jars	Total Number of Bowls	Secondary Motifs	Total Number of Vessels	Total Number of Bottles and Jars	Total Number of Bowls
Rayed arcs  (placement of rays varies)	35	4	31	Hatching 	55	14	41
Concentric Circles 	23	16	7	Circle 	37	13	24
Plain arcs 	23	3	20	Crosshatching 	22	2	20
Ticked arcs  (placement of ticks varies)	17	2	15	Rectilinear lines 	19	2	17
Interlocking ends 	11	4	7	Triangle 	17	1	16
SZ 	11	3	8	SZ 	17	10	7
Triangle 	9	0	9	Curvilinear lines 	11	4	7
Zig-zag 	5	0	5	Bars 	7	2	5
Swirl/spiral 	5	0	5	Oval 	7	1	6
Diamond 	3	1	2	Half circle 	6	2	4
Circle 	2	1	1	Diamond 	1	0	1
Curvilinear lines 	1	0	1				
Half circle 	1	0	1				
Primary Motif Total:	146	34	112	**Secondary Motif Total:**	199	51	148

Table 2. Principle primary and secondary motifs recorded from the vessels in this study, also the number of vessels each motif occurred on. Multiple primary and secondary motifs may occur on the same vessel (images of SZ, bars, swirl/spiral, and interlocking ends from Gadus 2013:221).

alternated with ticked lines" that repeat around the vessel, usually four times (Suhm and Jelks 1962:1). These repeating semicircular or oval arc motifs can also have small triangular shaped scalloping along the lines of the arc, which are referred to as rayed arcs in this study (Table 2). Arc motifs are often divided by bands that can include motifs such as bars, circles, hatching, and the SZ motif.

Motifs that appear on Avery Engraved vessels in this study are shown in Table 2. The primary motifs are the ones that are given prominence on the vessel, usually by being the largest and centrally placed

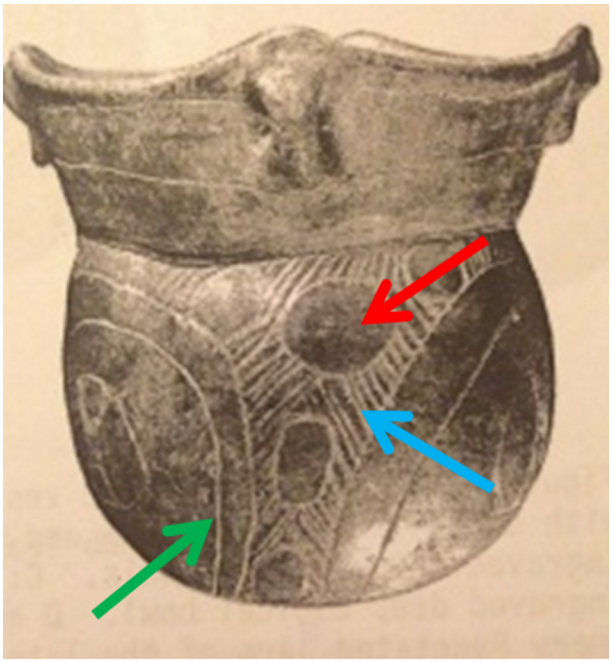


Figure 2. A jar from the Bob Williams Site with circles (red arrow), concentric circles (green arrow), and hatching (blue arrow) (Perino 1983).

(Gadus 2013:220). Secondary motifs frequently appear alongside primary motifs, but these are often smaller and less centrally located. Secondary motifs regularly serve to divide the repeating primary motifs. Generally, secondary motifs "appear to take on a modifying role" in relation to primary motifs (Gadus 2013:220). Some motifs were used interchangeably as primary and secondary motifs. Due to the small number of bottles and jars present in this study, and the general difference in motifs between these vessel types and bowls, bottles and jars have been listed separately from bowls (see Table 2).

The arc, which is comprised of concentric half circle elements, is the dominant motif of Avery Engraved bowls. However, there is a good deal of variance in this typology, as Table 2 demonstrates. As shown in Figures 2 through 5, Avery Engraved motifs can be expressed on a variety of different vessel structures such as bottles, jars, simple bowls, carinated bowls, compound bowls, composite bowls, and effigy vessels. Motifs may vary due to the structure of the vessels and differences in space, as "decorative fields of different sizes will differ in their physical visibility" (Braun 1991:367). Of the vessels examined, bottles and some jars appear to differ from bowls in terms of which

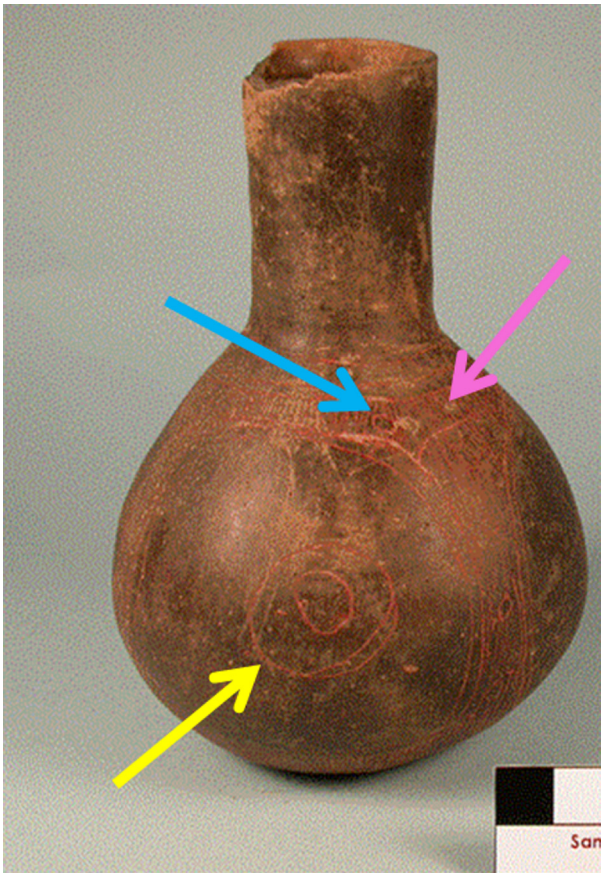


Figure 3. A bottle featuring concentric circles (yellow arrow), circles (blue arrow), and hatching (pink arrow) from the George T. Wright collection.

motif is considered primary. While the vast majority of bowls have a primary motif of an arc, nearly all bottles and many jars have concentric circles as a primary motif. As bowls comprise the majority of vessels in this study, the following discussion is focused on the arc motif on bowls. Currently, it does not appear that scholars have performed residue analyses on Avery Engraved vessels to determine food or drink contents; therefore, at present, it is not possible to attribute motif variance to the past contents of these vessels or to the role these vessels played in serving and storing food or drinks.

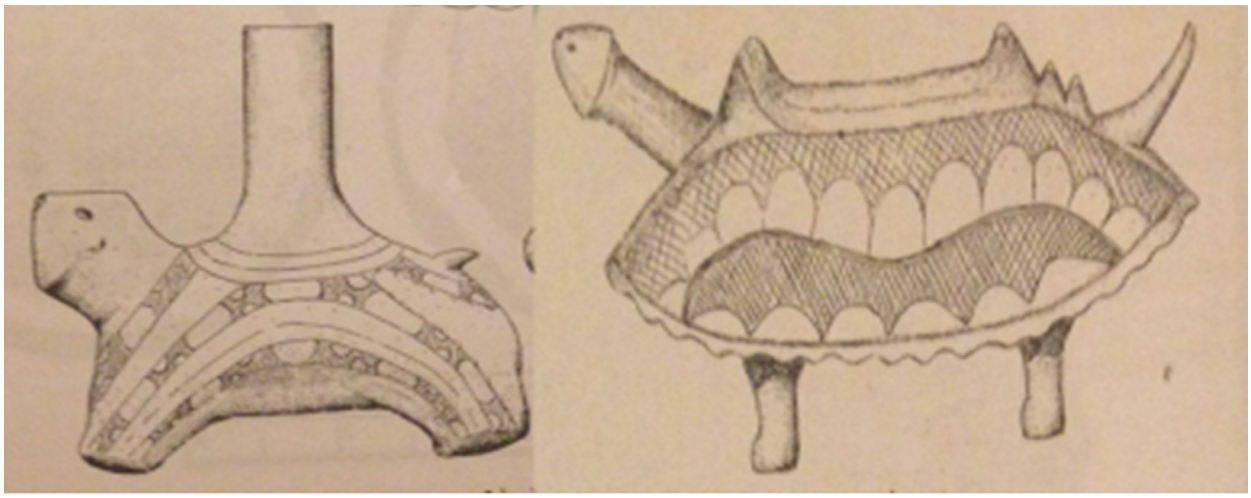


Figure 4. Bear and turtle effigy vessels from the Roden Site (Perino 1981:8).

Figure 5. Avery Engraved bowls. Top left: a simple bowl featuring a complex design of interlocking ends that are connected to form an SZ motif (from the George T. Wright Collection). Top right: a carinated bowl with plain arcs (image from Arkansas Archeological Survey). Bottom left: a compound bowl with plain arcs that are separated by hatching. Bottom right: composite bowl with rayed arcs (images from Arkansas Archeological Survey).

Cosmological Associations with Motifs: Discussion

Tiered Universe

Ethnohistoric accounts show that the cosmological model for the Caddo, as well as for other Southeastern groups, is that of a tiered universe consisting of three principle layers. The Upper or Above World is a celestial realm that consists of air as well as some solid elements on which beings reside. It is home to forces such as the sun, the Thunderbirds, and the four directional powers, sometimes referred to as the wind powers (Dowd 2011a:88). The Middle World is the realm that humans, animals, and plants inhabit. Finally, the Lower or Beneath World consists mostly of water (Lankford 2007a:15). Some of the "forces representing the Beneath World include the Great Serpent, water spirits such as snakes and panthers, and sometimes serpents that held the Middle World in place at each of the four corners" (Dowd 2011a:88).

Relating to celestial phenomena, the Upper World is conceived of as being predictable, cyclical, and associated with order and structure (Lankford 2008:95). The Lower World lacks predictability and is related with change, fertility, and unexpected events such as natural disasters (Lankford 2008:95). Hudson (1975:127) clearly delineates the dualism of the Upper and Lower Worlds: "the Upper World represented structure, expectableness, boundaries, limits, periodicity, order, stability, and past time. The Under World represented inversions, madness, invention, fertility, disorder, change, and future time." These realms carried no moral connotations since "the Under World is not evil, nor is the Upper World good" (Lankford 2008:95). The dual and opposing nature of these realms contrasted with each other but was considered by Southeastern people to be the natural structure of the cosmos. The principle goal of people residing in the Middle World was to maintain balance between these two opposing realms (Lankford 2008:95).

The dualism between the Upper and Lower Worlds is discussed in ethnographic accounts of Caddo beliefs. It is presently "unclear to what extent this dualism is incorporated into artistic expressions in the Caddo area" (Dowd 2011a:90-91). It is sometimes portrayed on engraved shell cups and gorgets, which can feature images relating to serpentine, avian, human, and feline subjects. The figures that feature combinations of avian and serpentine attributes are likely representative of Upper and Lower World themes and may explore the relationship between these opposing powers (Phillips and Brown 1978, 1984). Similarly, other types of Caddo vessels, such as Ripley Engraved, Wilder Engraved, and Johns Engraved, have been analyzed and argued as representing themes related to the Upper World and Great Serpent, Lower World, and the Middle World, respectively (Gadus 2013:243). This study on Avery Engraved vessel motifs further contributes to the exploration of the degree of cosmic dualism that has been artistically expressed by the Caddo.

Upper World Imagery on Avery Engraved Vessels

Historically, the Upper World was perceived by Southeastern tribes as existing above a sky arch or vault from which the Middle World was suspended (Hudson 1976). The common arc motif found on Avery Engraved vessels is possibly related to this concept of a sky vault or arch. During a study of Ramey vessel iconography, Pauketat and Emerson (1991:928) suggested that the similar arc motif found on Ramey vessels may have been representative of such a sky arch and therefore a reference to the layered cosmos. Others have suggested that the arcs found on Mississippian vessels, such as Ramey vessels, actually symbolize rainbows (Hall 1973; Pauketat and Emerson 1991).

The most readily available interpretation for arcs, particularly ticked or rayed arcs, is that these images relate to either the sun or fire (Pauketat and Emerson 1991:928). Traditionally, rayed circles, the cross-in-circle motif, and even isolated circles have been believed to represent the sun (Waring and Holder 1945). Since it is impossible to know with complete certainty what these images represented, the arcs on Avery Engraved vessels may very well still represent either the sunrise or sunset. Fire is also possibly represented by these arcs. Among historic Southeastern tribes, fire was often considered a representation of the sun or as an intelligent entity that worked with the sun (Swanton 1928:208). Furthermore, the Caddo had an important relationship to the moon, and these arcs may in fact

represent the moon and rays of moonlight (Dorsey 1905; Miller 1996). While any of these interpretations may be perfectly valid, it can only serve to broaden our understanding of nonrepresentational Caddo iconography by considering new interpretations.

As the majority of arcs on Avery Engraved vessels have ticked or rayed secondary motifs, I believe these modifying features may further clarify the objects or the themes that the arcs symbolize. These rays and ticks may symbolize rays of sunlight, moonlight, or the flames of fire, as previously discussed. Additionally, building on recent iconographic research, scholars have compared the ticked marks that appear on the scrolls and spirals of other vessel types with imagery from engraved shell cups and gorgets. Some researchers have argued that this type of secondary, modifying motif symbolizes feathering and references the Upper World by acting as a locative - a visual element that signifies a location (Hall 1977; Reilly 2007: 47-48; Texas Archaeological Research Laboratory 2012).

Engraved shell cups and gorgets from the Spiro site feature the engraved image of "Birdman," (Figure 6) who appears to have several types of feathers. These include long flight feathers that are portrayed with ticked lines and are covering downy feathers. Downy feathers, originally thought of by scholars as flower petals and termed the "Petaloid Motif," also appear on the tail of the "Birdman" figure but with a triangular spine or quill design that denotes them as tail feathers (Reilly 2007:45). It has been argued that this petaloid motif communicates to the viewer that the image theme is celestial (Reilly 2007). As this motif occurs frequently with a "frame or border composed of bands or stripes" (Reilly:2007:46), as seen in Figure 7, I believe that it is conceivable that the ticked or rayed arcs on Avery Engraved vessels also relate to Upper World themes in this same manner by portraying the feathers of birds. The ticked arcs seen on Avery Engraved vessels may be indicative of flight feathers, while the rayed arcs may correspond to the downy feathers or flight feather spine or quill design.

Similarly, if the rayed and ticked marks on Avery Engraved vessels indeed correlate to the petaloid motif, then I propose that it is possible that the triangles on Avery Engraved vessels, when they occur as a primary motif and are not hatched or crosshatched, may

Figure 6. Birdman (from Reilly 2007; Phillips and Brown 1984:Plate 203).

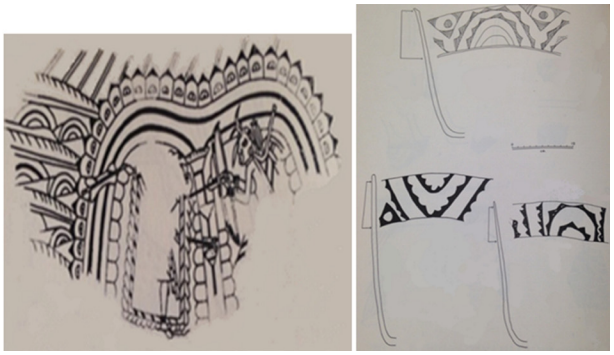


Figure 7. Right: fragmented scene on engraved shell cup of possibly a celestial sacrifice featuring the petaloid motif with triangular quills on an arc (from Reilly 2007:46; Phillips and Brown 1984:Plate 165). Left: Avery Engraved vessel imagery from the Sam Kaufman Site with rayed arcs appearing similar to the quilled petaloid motif (from Skinner et al. 1969).

be an enlarged, stylized representation of the prominent triangular-shaped tail feather quill or spine. Figure 8 shows Avery Engraved vessels with triangular motifs and engraved shell cup images that portray birds with triangles for tail and flight feathers (Phillips and Brown 1978:Plate 121, Plate 86). The vessels shown in Figure 8 also have circle motifs inside the triangle motifs. This combination of motifs is similar to those seen under the triangular quill design in Figure 7 left and on the tail feathers of birds shown in Figure 8 bottom left. On engraved shell cups, the circles located on the triangular quill design tail feathers are believed to be a "semilunar eye-motif," that also may act as a reference

Figure 8. Top: simple bowls with concentric triangular motifs from the George T. Wright Collection and the Roden site respectively (Perino 1981:31). Bottom: Birds with triangular motifs representing feathers from engraved shell found at the Spiro site (from Phillips and Brown 1978:Plate 121, 68).

to the celestial realm (Reilly 2007:48). Reilly (2007:48) suggests that specifically this "semilunar eye-motif" may reference the celestial realm by being a "metaphor for the earth's-eye view of the starry firmament or a specific domain within the sky." When Avery Engraved vessels have triangles as a primary motif, particularly when these triangles contain circle motifs, it is possible that these also act as references to the Upper World.

Further reinforcing a feathered association with Avery Engraved vessel arc motifs, engraved shell gorgets from the Roden site in Texas and from the Spiro site in Oklahoma both depict a pair of dancers facing a pole with a shield or fan attached to their backs, as seen in Figure 9 (Gadus 2013; Phillips and Brown 1978). If these objects are indeed fans, they would have been composed of feathers; if they are portrayals of shields, then it is believed that they have a feathered petaloid motif (Gadus 2013:230). As the Spiro engraved shell gorget shows a dancer with a whole bird on his back, the association of the fan or shield with feather designs is likely an accurate one. These feathered shields or fans

Figure 9. Top: (left- from the Roden site, right- from the Spiro site) two engraved shell gorgets showing dancers with fans or shields on their backs that appear similar to Avery Engraved plain and ticked arcs (Gadus 2013; Perino 1981:7; Phillips and Brown 1978). Bottom left: simple bowl from the George T. Wright Collection featuring the ticked arc motif. Bottom right: compound bowl from Arkansas with plain arc motif.

are depicted using arcs much like the ones found on Avery Engraved vessels, as in Figure 9.

The ticks and rays acting as flight or tail feathering along with the downy feathers may be indicative of the three cosmic realms and more explicitly could serve as references to the Upper World and to important figures such as "Birdman," who is believed to be a mythic hero who "symbolizes rebirth, the defeat of death, and continuation of social continuity" (Brown 2007; Gadus 2013:232). These themes would have been significant to Caddo society and particularly relevant to portray on objects included in burials. It therefore seems appropriate that these Avery Engraved vessels, acting as grave goods, might convey messages of renewal.

Carrying the Upper World and celestial realm interpretations of Avery Engraved vessels further in relation to their use as grave goods, the feathered petaloid motif may also signify the "Path of Souls" (Reilly 2007:47). In many Native cultures, it is believed that the dead follow the Milky Way or Path of Souls to

reach the afterlife. For example, in a Caddo story that was titled in 1905 "Coyote Regulates Life After Death," it was recorded that "the people are taken to the sky when they die and become the stars that we see at night" (Dorsey 1905:15). Further concerning ethnographic records on the Path of Souls for the Caddo, Spanish explorer Espinosa wrote in 1746 that the souls of the deceased ascend into the air and travel to the House of Death that is situated in the south (Bolton 1987:146; Lankford 2007c). Ethnographic accounts such as these, along with archaeological material, show that traditional Caddo beliefs included the concept of the Path of Souls.

Celestial paths like the Path of Souls are portrayed on Spiro shell cups. The shell cup image with the Path of Souls in Figure 10 has an arc with the petaloid motif, which includes downy and tail feathers that have a triangular quill or spine design. The shell cup drawing featuring turkeys on a feathered celestial path in Figure 10 also prominently features ticked and rayed arcs similar to those seen on Avery Engraved vessels, such as the ones in Figure 11. It is possible that on Avery Engraved vessels, the arc motif, especially the rayed or ticked arc, refers to feathering and thus is a reference to the celestial realm and possibly to the Path of Souls.

Rayed and ticked arcs and primary triangular motifs on Avery Engraved vessels might thus be interpreted as nonrepresentational images of feathers, and therefore may act as locatives to the celestial Upper World. The possible celestial inferences of these motifs can be further modified by secondary motifs, such as hatching, which frequently occurs on bowls with ticked and rayed arc motifs, to include implications of other cosmic realms such as the Lower World. As primary triangles, ticked, and rayed arcs are argued to represent feathering with the associated act of flight suggestive of travel and movement, it is entirely possible that travel may be through the Upper World, on the Path of Souls, or through the three tiers of the universe. The lines of an arc may be acting as a path through different cosmic levels (Reilly 2007). Engraved shell cups, such as those in Figure 10, show figures both human and avian traversing on pathways that are associated with arcs (Phillips and Brown 1978:Plate 87; 1984:Plate 164). Arc motifs that do not have ticked or rayed elements symbolizing feathering may not solely reference the Upper World; similarly when ticked or rayed arcs occur with motifs that have been closely associated with the Lower World it is possible that multiple realms or the travel between realms is being referenced.

Lower World Imagery on Avery Engraved Vessels

Avery Engraved primary motifs do not all seem to carry Upper World associations. While this may seem an unusual assessment regarding vessels so commonly associated with Upper World sun motifs, I believe that certain motifs, particularly on Avery Engraved bottles, may instead reference the Lower World. The 12 analyzed Avery Engraved bottles mainly have concentric circles as a primary motif, with SZ, interlocking ends, circles, hatching, and crosshatching as secondary motifs. Including all combined Avery Engraved vessel types sampled in this study, five had the swirl or spiral motif, 11 had the interlocking end motif, 28 had the SZ motif, 22 had crosshatching, and 55 had hatching present. The watery Lower World is often represented by snakes and images pertaining to the Great Serpent, a powerful being who presided over the Lower World. The majority of the previously listed motifs have long been associated with snakes by scholars in prior iconographic studies (Dowd 2011a; Fields and Gadus 2012:514-515; Gadus 2013; Phillips and Brown 1978; Reilly 2007; Lankford et al. 2011).

Nonrepresentational references to snakes are often integrated into the SZ and spiral or swirl designs on engraved vessels (Dowd 2011a:Figure 8; Fields and Gadus 2013:221). Of the five Avery Engraved bowls that had swirl or spiral designs in this study, four were associated with other lower world imagery such as crosshatching, triangles, and the SZ motif. Spirals could also relate to the marine columella shell. Shell was a valued material associated with the Lower World, and shell cups were used during ceremonialism related to social integration, life, and fertility (Emerson 1989:72). The spiral motif and the interlocking ends motif also closely resemble a snake and have been compared to the canebrake rattlesnake motif that has been found on other vessels, which feature representational images of rattlesnakes (Gadus 2013:226). The SZ motif, as seen on vessels in Figure 13, is likely also closely linked to snakes due to its serpentine form and its placement on the Great Serpent's body, visible in the images

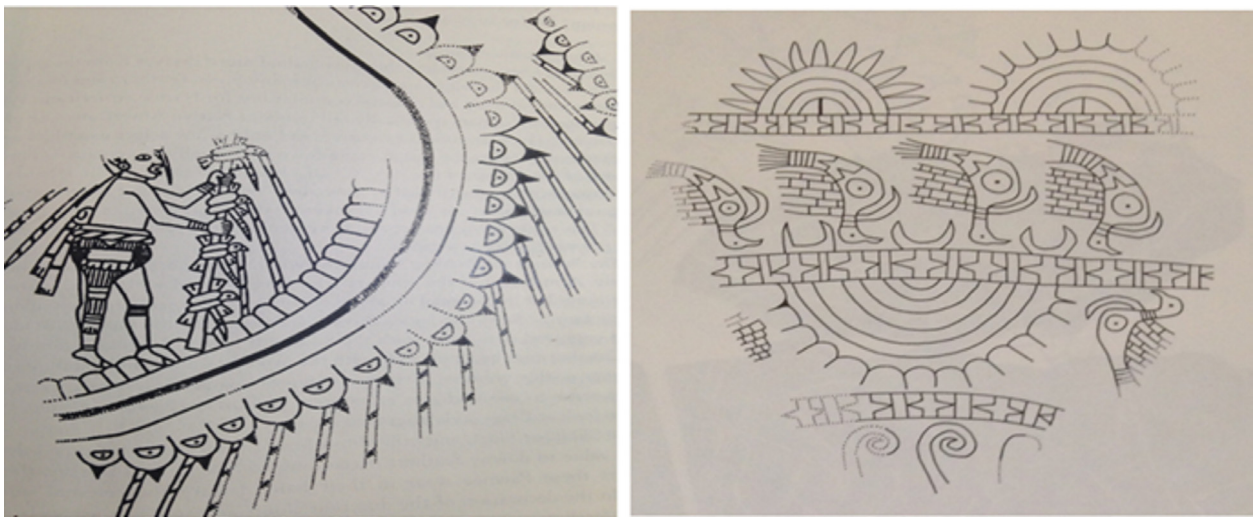


Figure 10. Left: a likely depiction of a journey on the Path of Souls, which is portrayed as an arc with the petaloid motif having a triangular quill design. Right: turkeys (Gadus 2013:233) flying on what is believed to be a feathered celestial path (Phillips and Brown 1978:Plate 87; 1984:Plate 164; Reilly 2007). Note the rayed and ticked arcs, which are similar in appearance to those found on Avery Engraved vessels (see Figure 11).

Figure 11. Left: bowl with the ticked arc motif from the George T. Wright Collection. Right: bowl from Arkansas with ticked arcs, SZ, and circle motifs.

displayed in Figure 12 (Fields and Gadus 2012:514-515; Hart and Perttula 2010; Phillips and Brown 1978). There were eight Avery Engraved bowls examined that had a primary SZ motif. The most common secondary motif on these bowls was hatching. A total of 10 Avery Engraved bottles and jars in this study had SZ motifs that were secondary to another primary motif, most commonly that of the concentric circle motif, which is also seen on Great Serpent imagery.

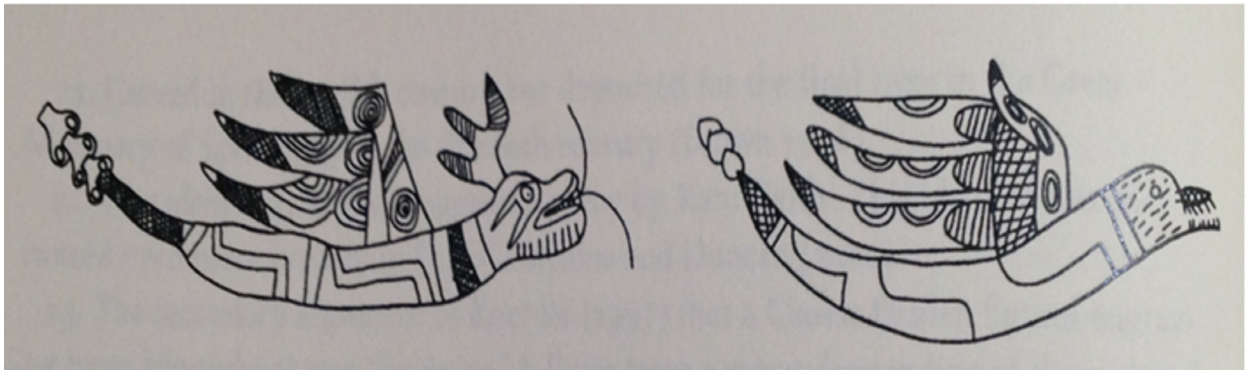


Figure 12. Images of the Great Serpent with wings on ceramics from the Mississippian site Moundville located in Alabama; images feature motifs also found on Avery Engraved vessels (see Figure 13) such as SZ, arcs, concentric circles, and crosshatching (Reilly 2007; Moore 1905:229, 1907:374).

The spiral, SZ, and interlocking ends motifs are frequently found with hatching or crosshatching. Hatching and crosshatching also occur with a wide variety of other motifs such as the rayed arc. Crosshatching is nearly always interpreted as a snake motif, as it appears on the bodies of snakes and the tails of rattlesnakes (Dowd 2011a; Gadus 2013; Pauketat and Emerson 1991; Phillips and Brown 1978, 1984). Crosshatching "symbolized renewal based on the earthly serpent's ability to shed its skin" (Dye 2012:148). These Lower World related motifs appear on other types of Avery Engraved vessels besides bottles. They also appear simultaneously with Upper World related iconography. The relationships among motifs and the combination of both Upper and Lower World iconography on Avery Engraved vessels possibly portray the multiple levels of the cosmos and the dualism that is so prevalent in the Caddo's traditional belief systems.

Upper and Lower World Imagery Combinations

Many of the Avery Engraved vessels in this study contain both Upper and Lower World motifs. While it is possible that motifs such as arcs, crosshatching, and SZ imagery have different meanings when associated together, the possibility that these motifs are dualistic or opposing in nature should not be ignored. Rather, when Upper and Lower World motifs occur on the same vessel together, the relationship and interplay of motifs and themes should be explored.

Phillips and Brown (1978:Plate 38) relate that triangles, especially hatched or crosshatched triangles, can be associated with serpents. Engraved shell cups from Spiro demonstrate how rounded triangles appear on snakes and how the heads of some snakes are triangular in shape (Phillips and Brown 1978:Plate 38). The triangular spine or quill design of tail feathers as previously discussed relating to the celestial realm has also been noted on engraved shell cups, such as on Cup 238, "snake birds" and on Cup 298, "birdman with serpentine arms" that carry Lower World connotations (Phillips and Brown 1978, 1984). Triangles on Avery Engraved vessels, when they are secondary motifs and occur with hatching or crosshatching, may possibly convey Lower World meanings. Reversely, when triangles are primary motifs and are not associated with hatching or crosshatching, they might be representative of tail feathers and signify a celestial realm as discussed previously. The triangle motif on Avery Engraved vessels, depending upon its placement and combination with other motifs, may carry entirely different meanings and cosmic associations. Arcs, particularly rayed and ticked arcs, which have also been previously discussed as possibly symbolizing feathered wings and acting as a locative for the Upper World, also occur frequently with hatching or crosshatching, which are believed to be representative of snakes and pertain to the Lower World. This combination may then reference both realms. Arcs also appear on Mississippian clay vessels that depict the Great Serpent when winged.

These representational images of the Great Serpent, including the ones shown in Figure 12, contain either the SZ motif or a triangle on the Great Serpent's body. Concentric circles and crosshatching can also be observed from these images. The Caddo possibly used these types of geometric motifs to convey a

Figure 13. Avery Engraved vessels featuring motifs found on Great Serpent images. Left: bottle from the Sam Kaufman site with concentric circles, crosshatching, SZ, and circle motifs (Skinner et al. 1969). Center: bottle from the George T. Wright Collection with concentric circles, SZ, and circle motifs. Right: simple bowl from Arkansas with SZ motif and crosshatching.

nonrepresentational version of this powerful being. As scholars have noted using ethnographic information, the Great Serpent has a variety of powers, which include the ability to take on aspects of several different creatures and to transcend realms (Gadus 2013). It is argued that these different aspects "symbolize his embodiment of the above, middle, and beneath worlds" (Dye 2012:147). Avery Engraved vessels may reference multiple cosmic realms and this traversal of realms through motifs relating to the Great Serpent, feathers, and the Path of Souls.

When the Great Serpent is shown with wings, these wings likely act as a locative for the celestial realm. The Pawnee, a Caddoan-speaking group, explicitly identified the Great Serpent with the constellation Scorpio (Fletcher 1903:15). This constellation, with its serpentine form, was believed to depict the Great Serpent in the prehistoric Southeast, since the night sky was conceived as "the visible manifestation of the Lower World" (Dorsey 1905:15; Gadus 2013:239; Lankford 2007b:132-134; Reilly 2004:127). Ethnographic and ethnohistoric data reveal that the Caddo believed that, in order for the souls of deceased people to reach the Realm of the Dead, a journey on the Path of Souls or Milky Way must be undertaken; during this journey the souls may encounter obstacles such as the Great Serpent, who is the guardian of the Realm of the Dead and can either help or harm people. The deceased must correctly engage with the Great Serpent to be permitted to pass into the Realm of the Dead (Lankford 2007c:178). The interpretation that Avery Engraved vessels portray aspects of both the Upper and Lower Worlds and specific themes that may reference the Path of Souls aligns with the context of these vessels as grave goods.

The combination of Upper and Lower World motifs can both signal "action or actors in multiple world levels," as in the case with the Great Serpent, and highlight the dual, opposing forces of the cosmos (Gadus 2013:239). Knight (1981:55) has argued that a vessel itself can be considered "culturally modified earth" because it is made from clay and that the very nature of the vessel is a reference to the Middle World (Pauketat and Emerson 1991). Since the principle goal of humans residing in the Middle World was to maintain balance and harmony between the realms (Lankford 2008), using pottery to portray these Upper and Lower World themes would have been one way that the Caddo could have engaged with and communicated these fundamental religious beliefs to others in their community.

Conclusions

Directions of Future Research

Future research projects on Avery Engraved vessel motifs could follow a number of avenues. Research could focus on possible temporal changes in motifs. It would be especially interesting to note if Lower World imagery varies over time. For this type of project, archaeological site reports would be utilized instead of museum collections so that vessels could be accurately dated. Additional, temporally related questions could center on motif differences between Avery Engraved vessels and earlier vessel type motifs such as those of Ripley Engraved vessels, which feature scroll motifs instead of arcs. The relationship between Avery Engraved vessel motifs and the earlier Sander's Plain vessels that do not feature motifs could also be explored. As Avery Engraved vessels were replaced by Taylor and Hodges Engraved vessels at the end of the McCurtain Phase and the beginning of the historic period, further research could investigate the relationship between the motifs of these two vessel types and those of Avery Engraved (Perino 1983:74).

Regional and inter-site differences in motif depictions on Avery Engraved vessels could also be a future line of inquiry. In addition, future studies could examine the motifs present on Avery Engraved vessels and large sherds from non-burial contexts, like those from storage and refuse pits and from inside house structures. Residue analysis could be performed on vessels from both burial and domestic contexts to further investigate any connections between motifs and food or beverages. This type of study could be especially relevant for Avery Engraved bottles, as bottles primarily displayed motifs that referenced the Lower World. It is possible that these bottles may have been used in a manner similar to that of engraved shell cups and contained specially prepared beverages that were to be ceremonially consumed, such as the historically known black drink that was brewed from a type of holly tree (Dye 2012:141). The possible relationship between Avery Engraved bottles and engraved shell cups could be determined and explored. Some engraved shell cups have been noted to have both rayed concentric circles and SZ elements (Phillips and Brown 1978, 1984). This combination is also seen frequently on Avery Engraved bottles.

Prospective studies could also be conducted concerning the connection between Avery Engraved vessels found within a burial context and other grave goods, particularly other vessel types. For example, at the Bob Williams Site, Avery Engraved vessels were frequently uncovered with Nash Neck Banded and Emory Punctated vessel types in graves. It would be enlightening if this co-occurrence has been found at other sites as well and if any relationships between these vessel types could be discerned.

Finally, future analysis could also center on potential correlations between Avery Engraved vessels and the age, sex, and social status of the individual with whom the vessels were interred. Fields and Gadus (2012:371–385) found at Pine Tree Mound burials of both men and women that contained vessels with imagery; however, only some adult males were interred with bottles that were adorned with imagery related to the Great Serpent. This restricted access to imagery could reflect status differences in that community. Determining if certain Avery Engraved motifs were also restricted to a particular subset of a site population, such as adult males, would contribute to studies on the social organization and stratification of Caddo sites.

Concluding Remarks

The prehistoric Caddo primarily applied nonrepresentational motifs to their pottery vessels to depict fundamental cultural, religious, and cosmological themes. To interpret and better understand these themes as they appear on pottery vessels, a comparative iconographic visual analysis between Avery Engraved vessel motifs and representational engraved shell imagery was implemented in addition to the use of ethnographic and ethnohistoric accounts and recent iconographic studies. Upon referencing the wider corpus of Mississippian and Caddo iconography, it is possible to assess Avery Engraved motifs more specifically and in greater detail rather than solely relying on the traditional conclusion of sun imagery. While it is still very possible that the rayed, ticked, and plain arcs relate to fire and the sun, it enriches and broadens our understanding of the prehistoric Caddo use of nonrepresentational

imagery when alternative interpretations are considered. This study also expands our knowledge concerning the degree to which cosmic dualism is graphically expressed by the Caddo.

The primary arc motif, whether plain, ticked, or rayed, may reference the Upper World by symbolizing wings and feathers instead of the sun. Additionally, the unhatched primary triangular motif may also represent tail or flight feathers and refer to the Upper World. Avery Engraved vessels often feature motifs such as SZ, crosshatching, spiral, and interlocking ends that I believe act as referents to the Lower World. Specific beings and aspects of the tiered cosmos, such as the journey to the afterlife on the Path of Souls and the Great Serpent, may also be referred to by Avery Engraved motifs. These new interpretations of motif meaning and the frequent inclusion of both Upper and Lower World motifs on Avery Engraved vessels provide a greater understanding of how the Caddo utilized abstract motifs as referents and locatives to reflect their belief in a dualistic and opposing nature of the cosmos.

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Middle Caddo Whole Vessels from the Ferguson Site (3HE63)

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The Ferguson site (3HE63) is a Caddo ceremonial center in Hempstead County, Arkansas. The Arkansas Archeological Survey and Arkansas Archeological Society excavated Ferguson between 1972 and 1974, under the direction of Dr. Frank Schambach. The site has a middle Caddo Haley phase (A.D. 1200- 1400) component consisting of two mounds, several structures, and a small cemetery area, set atop a 2-acre Woodland period Fourche Maline village. One of the mounds included several elite Caddo shaft graves rich with ceramic artifacts. My recent research with Ferguson site collections included a metric and stylistic analysis of whole vessel ceramics from the Haley phase Caddo components. This paper reports on some results of this inventory and analysis.

Introduction

The Ferguson site (3HE63) is a Caddo mound site in Hempstead County, Arkansas. This site was recorded by the Arkansas Archeological Survey (ARAS) in 1971, and was the focus of salvage excavations lead by Dr. Frank Schambach during the Arkansas Archeological Society's (AAS) annual Field Schools in 1972-1974 (Schambach 1972, 1996; Schambach and Early 1985). During the field schools, two Caddo mounds, a small cemetery area, a Fourche Maline midden, and Early Archaic, and late Paleoindian components were meticulously excavated (Figure 1).

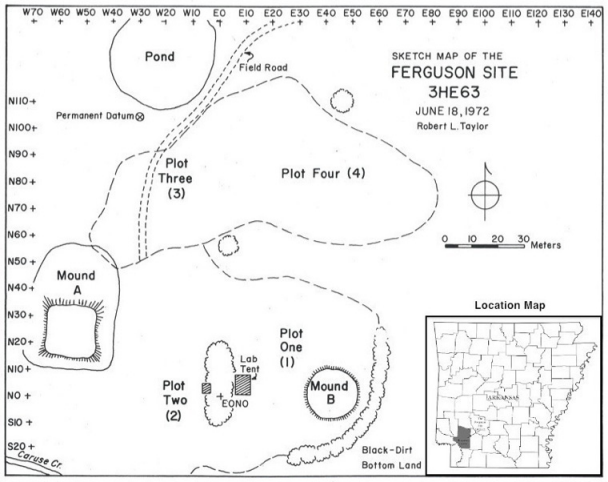

Figure 1. Site plan and location map.

Background

Joe Weeks and David Keith reported the site to the ARAS in September of 1971. Dr. Frank Schambach was notified in January 1972 when Mound A (which turned out to be a large two-level temple mound) was about to be leveled, for use in the property owner's new raised road to their new house site on the bluff above (Schambach 1972a). Mr. Caroll and Mrs. Glenda Ferguson voluntarily scaled down and halted leveling and landfill operations following Schambach's initial visits and consequent realization of the site's significance.

The Ferguson site was subjected to pothunting in the early decades of the twentieth century, as with most major Caddo sites. Locals claim that a large hole was excavated in the top of Mound A (Schambach 1972a). This early treasure hunting increased the difficulty of interpreting Mound A's stratigraphy. In the 1960s, artifact collectors looted burials along a cemetery area northeast of Mound A. Schambach's investigations revealed that artifacts accompanying the burials were Haley phase Caddo, with at least one grave lot representing a late Caddo use of the cemetery. Mound B was a low inconspicuous dome-shaped structure. Quantities of burned debris and resilient clay atop Mound B may have functioned as a concealment and deterrent to looters, since few potholes penetrated the clay cap, leaving the burials within this mound generally undisturbed. In one case, a pothole intersected the corner of a grave-shaft.

As excavations proceeded, it was revealed that the Ferguson site was a multi-component 2-acre (0.8 ha) site including two mounds. Mound A, in its latest prehistoric manifestation, was a large two-level

Figure 2. Carol Ferguson leveling Mound A (AAS-SAU file photo 1972-671).

temple mound that dominated the site from the west. Mound B was 280 feet east (85 m) and slightly south of Mound A. The area between the mounds was level with about a two-foot (60 cm) deep midden, which had minimal plow disturbance in 1972, no deeper than 4-5 inches (10-12 cm). The soil in this area was slightly acidic so bone preservation was poor, other than under the mounds. The midden was especially rich beneath the mounds, yielding about a quarter-acre of deposits that had been completely sealed off since about A.D. 1100 (Schambach 1972a).

When the ARAS became involved at the Ferguson site in 1972, the plan was to monitor and document features while the landowner was leveling the site (Figure 2). However, when a greater sense of the site's significance was observed, Schambach convinced the landowners to halt their land-leveling activities. Consequently, the ARAS and AAS conducted extensive salvage excavations over the next three-years.

Haley phase people were the first to initiate mound construction at the Ferguson site similar to Red River valley Caddo ceremonial centers such as Hatchel, Battle, and Belcher (McKinnon 2013, 2017; Perttula et. al. 2008; Webb 1959). There was an abrupt cultural change and regional diversification that occurred at each of these sites in the Middle to Late Caddo periods. Despite the divergent local traditions that were manifested at these sites and regions, mound building increased to new heights and volumes. The Haley phase may have developed out of the earlier Alto complex, with continuities between it and the earlier Early Caddo period, including the use of shaft burials for certain members of society, sent to the afterlife with relatively rich grave offerings (Suhm et. al. 1954:169-175). Complex mortuary ceremonialism, status ranking of burials, and the organizational control necessary to construct mound centers and suggest that there was a "political and religious hierarchy that operated throughout the Haley [phase] society" (Wyckoff 1974:110). The Texarkana phase followed the Haley phase at the Hatchel site. The Belcher phase followed the Haley phase at the Belcher site. A mixture

of Texarkana and Belcher phases was found post-Haley phase at the Battle Mound (McKinnon 2008, 2013, 2016).

Clarence B. Moore (1912) spent more time at Haley Place (3MI11), three weeks, than any other site on the Red River (Gopher log, 7-24 February 1912, in Weinstein et al. 2003:65). His data from the site played an important role in the understanding the development of the Caddo cultural sequence in southwest Arkansas and served as the type-site for the Haley focus (now phase) (Krieger 1946; Suhm and Jelks 1962; Weinstein et al. 2003:65). Moore reached the 'Mounds on the Haley Place,' in Miller County, Arkansas the morning of February 7, having already traveled nearly 400 miles up the Red River, with little to show for it. This changed once he reached Haley, where he found three mounds. The first was very eroded and had a contemporary building on it. The second was a rectangular mound with two platforms on it. The third was roughly circular. Moore's excavations into the rectangular mound did not expose any burials and he correctly surmised that it was a base for Caddo structures, like Mound A at Ferguson (Moore 1912; Weinstein, et al. 2003:65). In the third, a circular burial mound similar to Mound B at Ferguson, Moore and crew encountered nine high-status Caddo burials. At Haley, each of these graves contained the remains of a single individual, interred with a considerable quantity of grave goods including numerous "pottery vessels, conch shell cups, shell beads and disks, fresh water pearls, ceramic pipes, a limestone human-effigy pipe, copper-covered ear spools, and ceremonial celts." The fragmentary pottery sherds were so numerous that Moore was not able to estimate the total number of vessels that were represented in the burials. Weinstein et al. (2003) typed the whole vessels Moore catalogued and illustrated, including examples of what are now known as: Haley Engraved (Moore 1912: Figures 42,49,54-56), Haley Complicated-Incised (Moore 1912:43,51,53,57, Plate XXXIX), and likely trade vessel Nashville Negative Painted (Moore 1912: Plate XXXVII). All were in association with the Middle Caddo Haley Phase components at the site. Amateur archeologists located two cemeteries at Haley in the 1960s and excavated over 80 burials. Hoffman (1970) reported that most the excavated materials were contemporaneous with the mound burials Moore excavated, but some were slightly later (Hoffman 1970:162-163).

Prior to Moore's visit to Haley, he visited the 'Mound near Sulphur River,' which was in the woods at the time (Moore 1912:527). He wrote very little about what was found there other than the site location and that it contained no burials. The site was later recorded by the ARAS in 1979, as the Myers Mound Site (3MI39). Like Ferguson, the ARAS was at Myers to salvage information as the mound was scheduled to be leveled. This salvage work revealed that the site was a Middle Caddo Haley Phase site that served as platform for the "sacred fire" (Miller 1986; Weinstein et al. 2003:65).

At least two sites that Harrington (1920) excavated in the Little Missouri River drainage, in Hempstead County, the Washington Site (3HE35) and Ozan No. 1 (3HE37), produced artifacts similar to the Haley site. Krieger (1946) utilized the data from these three sites to define the 'Haley Focus' (213- 214). Following this, Haley components were also recognized at Crenshaw on the Red River (Table 1; Figure 3). Moore was the first to excavate at Crenshaw, followed by Judge Lemley, Glenn Martin, M.P. Miroir, and Schambach. Other sites with Haley components include: 1) the lower component of Hatchel mound in Bowie County, Texas, 2) the cemetery adjacent to Battle Mound at the Handy Site, 3) the lower component at Battle (Krieger and Howard 1948), 4) the lowest level (IV) at Belcher mound, in Caddo Parish, Louisiana (Webb and Dodd 1941; Webb 1948), and 5) East Mound in Clark County, Arkansas, which was excavated by Dr. Robert Proctor of Arkadelphia and the Huddlestons (Suhm and

Site #	Site Name
3CL0021	East Place
3HE0035	Washington Mounds
3HE0037	Ozan #1
3HE0040	Tom Jones Place
3HE0063	Ferguson site
3HO0001	Mineral Springs
3LA0001	Battle Mound
3MI0006	Crenshaw site
3MI0011	Haley Place
3MI0039	Myers Mound
3PI0013	Davis Farm

Table 1. Known Haley phase sites in Southwest Arkansas.

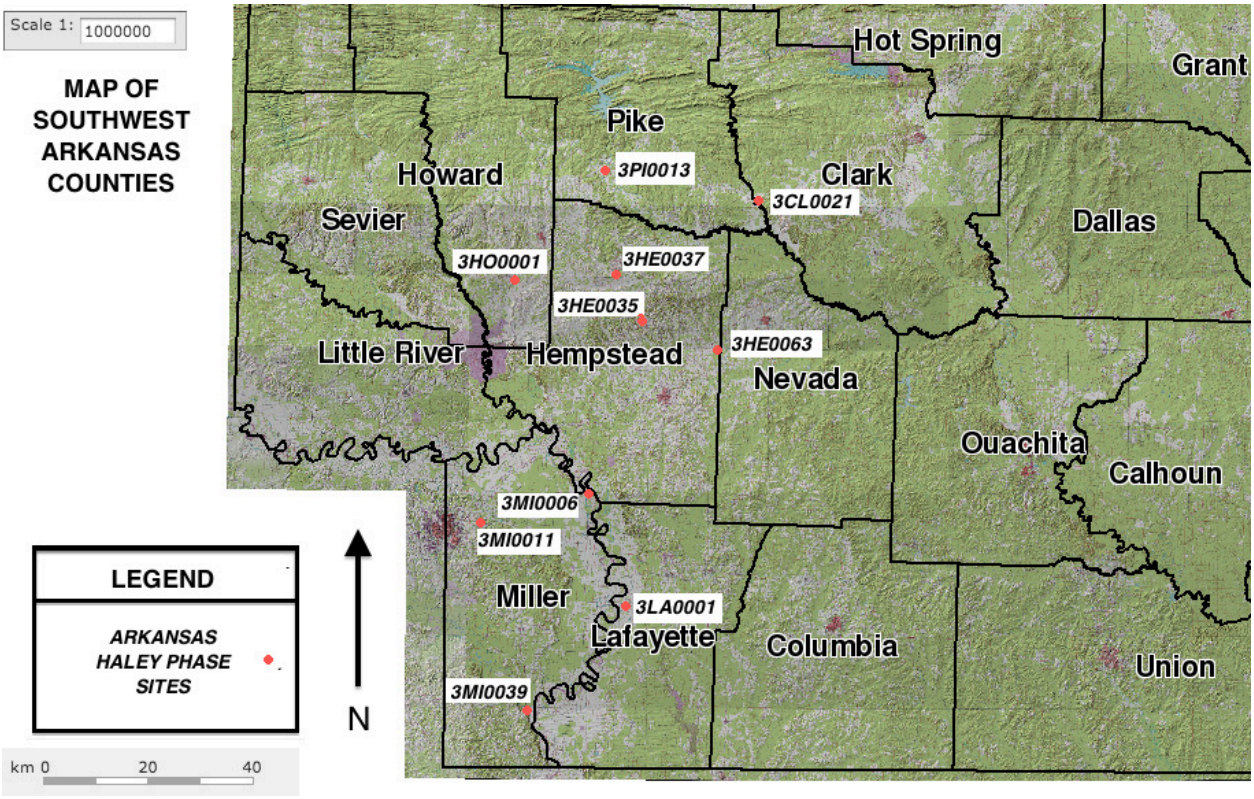

Figure 3. Map of known sites with Haley Phase component in southwest Arkansas.

Jelks 1954:170). Newell and Krieger (1949: Figures 63-65) illustrated the ceramic vessels from the East site and described how they diverged from other Haley Phase sites.

The Haley phase marked the appearance of ceramic features such "as the use of handles (wide strap handles on polished bowls as well as cooking jars), appliqué fillets and nodes, brushing on jar surfaces as alternative to incising, fairly extensive use of red filming, and effigy vessels" in the Caddo ceramic tradition (Suhm and Jelks 1962:171). These elements are almost completely absent at Spiro, Gahagan, and Alto. The Sanders phase was contemporaneous with the Haley phase based on trade vessels appearing bi-directionally between the regions (Newell and Krieger 1949; see also Schambach 1997, 1998).

Numerous elite Caddo shaft graves excavated at the Ferguson site contained whole ceramic vessels diagnostic of the Haley phase. These grave lots contained pottery vessels of established Caddo pottery types, such as Adair Engraved, East Incised, Friendship Engraved, Glassell Engraved, Haley Complicated Incised, Haley Engraved, Hempstead Engraved, Karnack Brushed Incised, Kiam Incised, Mineral Springs Engraved, Moore Noded, Pease Brushed-Incised, and Sinner Linear Punctate (see Brown 1996; Early 1988; Suhm and Jelks 1962). Vessel forms included bottles, bowls, and jars.

Treatment of the Ferguson site whole vessels

During the early 1970s excavations at Ferguson, soil was carefully removed from around the complete vessels in the field. No attempt was made to completely clean the surfaces. Wisely, archeologists hoped this would help retain any pigments or other materials adhering to the outer surfaces of them. In general, fineware vessels and sherds were not washed in the field lab. These were carefully cleaned and curated at the lab at ARAS-Southern State College (now Southern Arkansas University) in Magnolia. As best they could, ceramic samples were restored and all the fitting sherds of individual vessels were glued back together. This ceramic assemblage has remained unstudied since that time.

During this study, I collected metric data from the Ferguson site vessels by utilizing the ceramic documentation form developed by the ARAS Registrar Office. This form was created as part of a grant project geared toward documenting whole vessels curated by the University of Arkansas Museum, following the guidelines of the Native American Graves and Repatriation Act (NAGPRA). The whole vessels from grave contexts at Ferguson are subject to NAGPRA repatriation by the Caddo Nation of Oklahoma, although they have not been claimed from the ARAS at this time. The structure and categories of this form were chosen due to its comprehensiveness and for the sake of comparability. This form was based on analytical techniques and guidelines developed by Prudence Rice (1987) and are thoroughly outlined in *Pottery Analysis: A Sourcebook*. The version of the paper form I utilized was revised by Dr. Leslie Walker on April 10, 2009. Additionally, a manuscript on file at the ARAS Registrar Office entitled "Documentation of Ceramic Vessels as part of a NAGPRA Grant," by Khawam (2003), was consulted as a guide for recording standards.

Following the completion of these paper forms, I developed a digital database in the Filemaker Pro-Bento (version 3.06). I inputted all the data from the paper copy forms into the digital database, which offered numerous opportunities for adding media content, and broad sorting, querying, and exporting options (i.e., forms, tables, spreadsheets, comma separated files, PDF documents, etc.). Some fields of my database form vary slightly from the original paper form but maintained all key information while providing additional details, fields, and media. The initial part of the form includes: accession number, vessel number, site name, facility or location, associated burial(s), collection area, cultural affiliation, type, variety, and bibliographic citation.

The vessel condition was recorded as complete, partial, or sherds. Complete and partial vessels were further delineated as reassembled (long term or glued) or reassembled (short term or taped). Overall vessel shape was assessed based on criteria outlined in Anna Shephard's (1956) *Ceramics for the Archaeologist*. In my study, Ferguson site vessels were sorted as: (1) bottles, (2) bowls, or (3) jars. Bottles included vessels with highly constricted neck openings. Bowls were relatively shallow vessels in which the orifice is either not constricted or slightly constricted. Jars are relatively deeper than bowls, had some constriction at the junction of the rim and body, and usually had more constricted orifices than bowls.

The colors of the exterior, interior, and core of the vessel were recorded using a Munsell Handbook. Then, multiple additional measurements were taken including metric data regarding fields of the vessel, as applicable, which included rim/lip, neck/lip, handle, body, base, appendages, etc. The height, thickness, and orifice diameters were then recorded for each field. An osteological board and line level were used for measuring height. The maximum vessel diameter of each vessel was measured at the widest portion using calipers. The vessel paste was determined based on whether it was compact or crumbly, soft or hard, smooth or silty, and the temper size (fine, medium, or coarse). A crumbly paste was flaky or degraded. In contrast, a compact paste was intact. If the vessel could be scratched with a fingernail, that is a soft paste. Rather than damaging the vessel with a new scratch, I based this assessment on the relative presence and frequency of existing scratches on the vessel. The siltiness of the paste was assessed based on whether any of the body wiped off as powder while it was being analyzed. Vessels with a smooth paste did not degrade onto gloves, or the lab space while analyzed.

Temper was assessed based on the size and content of the particles utilized for this purpose. Vessels with visible particles smaller than 1 mm had a fine temper. Medium temper was noted when more than five particles were larger than 1 mm, although most could still be less than 1 mm. Vessels with a coarse temper had particles up to 6-7 mm in diameter, with the majority being larger than 1 mm in size. The temper materials were also noted, with clay, grit, bone, and some combinations of these being the most common in the Ferguson site ceramic assemblage. In a few cases, there were no breaks and the temper was not visible through the vessel surface.

Decorative elements on the original interior and exterior of the vessel were then recorded, with non-exclusive categories such as smoothed, burnished, brushed, incised, engraved, etc. A detailed description of the vessel shape was recorded, along with qualitative assessments made visually and quantitative data

carefully measured with calipers. As applicable, these included vessel height, vessel maximum diameter, rim shape, rim height, rim thickness, rim diameter, rim decoration, rim surface mode/treatment, lip shape, lip thickness, lip shape, lip thickness, lip surface mode or treatment, lip decoration, neck shape, neck height, neck thickness, orifice diameter, neck mid-exterior and base diameters, neck decoration, neck surface treatment, handle shape, handle decoration, body decoration, body shape, body height, body thickness, body diameter, body mode, body surface treatments, base shape, base decoration, base diameter at top and bottom, and base surface treatment. Then, any evidence of pre-depositional use wear was recorded. Carbonized remains and encrustations observed were examined under a magnifying glass or microscope, recorded, and prepared for additional photo documentation. Following this, any effigies or appendages on the vessel were measured and described in detail. Then, any additional comments, such as grave associations, similar vessels, etc. were further documented. Finally, digitally rendered vessel illustrations, pictures, and design or pattern illustrations were attached to the form.

Ferguson site Whole Vessel Descriptions and Burial Associations

A total of 42 whole ceramic vessels were documented and analyzed during this study (Table 2). These whole vessels originated in numerous Middle Caddo burial features, except for the pre-Caddo Fourche Maline Burial 14, around the site (Table 3). These include Burial 1-4 (Mound B, Feature 2), Burial 21 (Mound B, Feature 8), Burial 5 (Mound B, Feature 32), Burial 12 (Mound B, Feature 14/15), Burial 14 (Plot 2, Feature 6), Burial 11 (Plot 3, Feature 8), and an Early Caddo grave Burial 9 (Plot 2, Feature 18). Half of the vessels (n=21) originated in Burial 21, an elite Middle Caddo group shaft grave (with two individuals) in the very center of Mound B. Nearly another third of the whole vessels collection came from the Burial 1-4 group burial, which included another Middle Caddo leader with three possible 'retainer graves' accompanying him (see Rose and Powell 1975; Schambach 1972a; Schambach and Early 1985). Burial 5 was another contemporaneous Caddo grave, and had four whole vessels. Burial 9, 12, and 14 each contained a single whole vessel. Finally, Burial 14 had two untyped plain bottles.

Type	# Vessels
Adair Engraved	1
East Incised	1
Friendship Engraved	5
Glassell Engraved	2
Haley Complicated Engraved	2
Haley Engraved, *var. Caruse*	8
Haley Engraved, *var. Adams*	1
Haley Engraved	1
Mineral Springs Engraved	2
Hempstead Engraved	2
Karnack Brushed Incised	1
Kiam Incised	1
Moore Noded	1
Pease Brushed Incised	3
Pease Brushed Incised/Sinner Linear Punctate combo	1
Sinner Linear Punctate	7
Untyped Vessels	3
	42

Table 2. Ferguson site whole vessel pottery types.

Burial #	Feature #	Vessels
Burial 1-4	Mound B, Feature 2	12
Burial 21	Mound B, Feature 8	21
Burial 5	Mound B, Feature 32	4
Burial 12	Mound B, Feature 14/15	1
Burial 14	Plot 2, Feature 6	2
Burial 11	Plot 3, Feature 8	1
Burial 9	Plot 2, Feature 18	1
		42

Table 3. Ferguson site whole vessels by burial feature

Ferguson Pottery Types and Descriptions

Adair Engraved var. Adair

Adair Engraved was distinguished from the original Friendship Engraved type "at the suggestion of Schambach in recognition of the basic difference between the cross-hatched background of the revised Friendship type and the use of cross-hatched panels arranged around the design elements"

Figure 4. Adair Engraved *var. Adair* (Vessel 28, Acc. #: 72-22-1772-18).

(Brown 1996:377). Additionally, Schambach distinguished the variety *Adair* with its "three to four sets of double or triple short appliqué strips or bosses arranged vertically on the shoulder and body of bottles. The body is decorated with rectilinear to slightly curvilinear bands of cross-hatching placed vertically around the body" (Brown 1996:377).

One bottle and seven sherds of this type were found at the Spiro site. Schambach noted that Adair Engraved *var. Adair* is found in sites in Pike, Garland, and Henderson counties in Arkansas (personal communication 2010). At Ferguson, a whole bottle of this type and variety (Vessel 28, Acc. #: 72-22-1772-18) was found in the Burial 21 (Mound, Feature 8)

Figure 5. East Incised (Vessel 38, Acc. #: 72-22-196-1).

grave in association with Haley Engraved *var. Caruse*. This compound carinated insloping bottle has a flat lip, vertical-insloping neck, and a circular and convex base (Figure 4). The bottle has a predominantly clay temper, with a little bone. The body includes the bottom two components of a tripartate compound vessel. The bottom is engraved with three sets of cross-hatched lines with spurs and three sets of appliqué ridges. The top of body has sets of three sets appliqué ridges and four annular engraved lines running the circumference of the vessel.

East Incised

East Incised vessels have a fine clay-grit and low sand content temper. The texture is very fine with a color ranging from shades of brown and reddish brown. The red on East Incised vessels may be produced by firing temperature on mottled surfaces or a red slip may be applied. The cores are brown and gray. Vessel surfaces are smoothed but seldom polished (Suhm and Jelks 1962:41).

East Incised vessels are usually small and not over 18-20 cm in height or diameter. Simple bowls have straight, vertical, or convex sides which are recurved and stand "more or less vertical or sloping slightly inward or outward." Rims may have opposed peaks, four peaks, or two opposed tabs built out on side of lip. These tabs "may or may not have small pits sunk in center." Other forms with effigy rim riders, cylindrical, barrel-shaped, and deep bowls with truncated cones have been documented in the East Incised type. Two opposing suspension holes in the rims are a common trait in upright vessels.

East Incised vessels are decorated with incised lines that are partly or entirely smoothed over. Designs include horizontal lines encircling the vessel rims, "except where they are interrupted by sets of semicircular lines placed under rim peaks or effigy features" (Suhm and Jelks 1962:41). On rare occasions, white pigment is preserved in the lines of East Incised vessels. One bowl of the East Incised type (Acc. #: 72-22-196-1) was excavated from a Caddo burial, Burial 12 (Mound B, Feature 14/15) at the Ferguson site. Human remains from this grave included only fragmentary cranial fragments. The bowl was lying intact on its side with its open end facing toward the west end of the grave. Schambach noted that if "the head of the skeleton was near the pot--what is likely--head would have been toward the [West]" (Schambach 1972b).

Ferguson Vessel 38 (Acc. #: 72-22-196-1) is an ovaloid bowl with a circular rim with two opposing tabs, a flat lip, and circular and flat base (Figure 5). This vessel was found on its side in Mound B, Feature 14 and was a grave good accompanying Feature 15 from the pre-mound subsoil level. The bowl is grit tempered with some shell and has two opposing rim tabs that have paired excised triangles with an excised circle in the center. The body of the vessel is smoothed with a red slip and has a band of four annular incised lines going from the top of the body to the top of the rim. The bowl has observable wear and is fire-mottled. Black bituminous encrustations are visible on the inside and outside of the vessel.

Friendship Engraved

Friendship Engraved ceramic vessels are a Caddo fineware that usually have no temper, but sometimes do have small amounts of fine clay-grit or sand in the paste (Suhm and Jelks 1962:45). The texture of these vessels is very fine and compact. Friendship Engraved vessels have a color that ranges from shades of "reddish-brown and gray-brown from light to dark and nearly black" (Suhm and Jelks 1962:45). The surface finish includes a fair to good polish.

Friendship Engraved vessels are nearly all bowls or bottles. Carinated Friendship engraved bowls have shallow bottoms and high rims that are vertical or slant inward or outward slightly. Suhm and Jelks also documented other forms such as simple conical bowls, as well as small jars with squat bodies and the rims pointed outward slightly. In Early's (1989:75-77) revision of this type, Friendship Engraved vessels must have a band running diagonally of placed scrolls against a cross-hatched background.

Ferguson Vessel 32 (Acc. #: 72-22-1772-26) was excavated from Burial 21 (Mound B, Feature 8) (Figure 6). This carinated bowl has a rounded lip and convex to almost flat bottom base. This sample is grit and bone tempered and is engraved with cross-hatched lines. This vessel is the larger of two Friendship Engraved bowls from Mound B, Feature 8. Ferguson Vessel 29 (Acc. #: 72-22-1772-19) was also excavated from Burial 21 and is a carinated bowl with a slightly rolled lip and concave base (Figure 7). The sample is grit and bone tempered.

Friendship Engraved, var. Freeman

In her report on ceramics from the Hardman site, Early (1993:90) distinguished the *Freeman* variety of Friendship Engraved as "restricted to carinated bowls with convex bodies, no definable bases, nearly straight rims that are vertical or slightly insloping, and very small straight to slightly flaring lips." The decoration on this variety is limited to the rim, consisting of two or three horizontally placed panels that may contain horizontal lines, scroll, and oval elements. The background decoration is usually "cross hatched, and the decorative elements may be embellished with ticks, hatched lines, or engraved segments" (Early 1993:90).

Three whole vessels from the Hardman site collection were reported as Friendship Engraved *var. Freeman*. Early also reported over 200 vessels from the ARAS photo files for this type, "and virtually all of them came from sites in the middle Ouachita River valley between Arkadelphia and Malvern" (Early 1993:90).

Five whole vessels from the Ferguson site are of the Friendship Engraved type. Four are carinated bowls and one is a conjoined triple carinated bowl (Acc. #: 72-22-1772-28.30.32). That vessel, along with three others (Acc. #s: 72-22-1772-17, 72-22-1772-19, 72-22-1772-26) are from Burial 21 (Mound B, Feature 8). Another bowl resembling this type was found in Burial 5 (Mound B Feature 32). Ferguson Vessel 34

Figure 6. Friendship Engraved Bowl (Vessel 32, Acc. #: 72-22-1772-26).

Figure 7. Friendship Engraved Bowl (Vessel 29, Acc. #: 72-22-1772-19).

(Acc. #: 72-22-1772-28.30.32) is a triple conjoined bowl that originated in Burial 21 (Mound B, Feature 8) and matches the Friendship Engraved *var. Freeman* type (Figure 8).

One vessel similar to Friendship Engraved *var. Antoine* was found at Ferguson in Burial 21 (Mound B, Feature 8). Schambach notes that a 4-cogged rim carinated bowl (Acc. #: 2003-675-48) from the A-7 House at the Tom Jones site (3HE40) is a virtual twin to the Ferguson site vessel. The Tom Jones site bowl is from a well dated floor context 2-Sigma cal A.D. 1280-1425 (Frank Schambach, personal communication 2010). The Ferguson Vessel 27 (Acc. #: 72-22-1772-17) bowl and the Tom Jones bowl both have four decorated panels with scrolls cross-hatching and spurred lines (Figures 9 and 10). The Ferguson site sample is grit tempered.

Glassell Engraved

Glassell Engraved is a Caddo fineware pottery type that has little to no visible temper, a fine and compact texture, and has a mahogany brown to black color shading into dark gray-browns, although occasionally buff or reddish-brown. The cores are darker than the surfaces and are mottled (Suhm and Jelks 1962:53).

Figure 8. Friendship Engraved triple conjoined bowl (Vessel 34, Acc. #: 72-22-1772-28.30.32)

Figure 9. Side view: Friendship Engraved *var. Antoine* (Vessel 27, Acc. #: 72-22-1772-17).

Vessel surfaces are smoothed to well-polished. Bowls of this type are finished the same on the exterior and interior. Bottles are polished on the outside, but are not smoothed on the inside.

Known vessel forms of the Glassell Engraved type includes carinated bowls and bottles. The bowls have slightly convex or slanted inward rims. Bottles have globular bodies and spouts that are usually "long and swelling near [the] middle, but spouts may also be larger at the top than at bottom" (Suhm and Jelks 1962:53). Wall thickness varies between 3-5 mm. The lip is "usually thickened with a strip of clay attached to outer edge, which sometimes splits off; otherwise, thin, wedge-like" (Suhm and Jelks 1962:53). The base is convex on bowls, and slightly convex to flat on bottles.

Glassell Engraved vessels are engraved with decorations including rectilinear patterns, ticked or spurred lines running "horizontally through center of blank space and either ends against an arc placed vertically, or makes a step up or down and runs through another such blank space" (Suhm and Jelks 1962:53). Arched lines are placed back-to-back vertically providing "dividing elements" between panels, and between the four major units of the design. Bottles possess various "combinations of curved lines and circles in which principal diagnostic feature is common use of very narrow 'ladders,' or parallel lines with closely-spaced cross-lines" (Suhm and Jelks 1962:53). Additionally, narrow hatched or cross-hatched bands are used on Glassell Engraved designs, along with red pigment.

Two carinated bowls of the Glassell Engraved type were found within Ferguson site Burial 1-4 and 21 group graves. Vessel 6 (Acc. #: 72-22-101-07) was

Figure 10. Top view: Friendship Engraved *var. Antoine* (Vessel 27, Acc. #: 72-22-1772-17).

a carinated bowl excavated with the Burial 1-4 group (Mound B, Feature 2) (Figure 11). Pigments may have been present within the engraved lines of this sample at one time, but are no longer visible. The bowl has some dark stains around rim and one side of exterior and had some visible grit and bone temper.

Haley Complicated Incised

Haley Complicated Incised vessels have a clay-grit temper, usually a coarse somewhat crumbly texture, though "occasionally finer and firmer" (Suhm and Jelks 1962:59). The range of color for this type includes from light to dark shades of brown and gray-brown with cores darker than surfaces. Haley Complicated Incised vessels consist "almost entirely of small jars, about 10-25 cm. high" (Suhm and Jelks 1962:59). Some have outflaring rims, while others have high and cylindrical rims. Two wide strap handles are found on the latter rim form. The rims may be "raised into four prominent peaks... either with or without strap handles" (Suhm and Jelks 1962:59).

Based on paste, Haley Complicated Incised is considered a Caddo 'course' or utilitarian ware. Despite

Figure 11. Glassell Engraved (Vessel 6, Acc. #: 72-22-101-07).

this association, the decorations on these vessels are very baroque with various appliqued, incised, and punctated elements. The designs include: "Concentric circles, scrolls, and parallel diagonal lines set in a wide variety of arrangements. Small areas flanking main design units may be filled with stick punctates or parallel lines, or both" (Suhm and Jelks 1962:59). Also found are "sets of fine diagonal or spiral lines may be alternated with single rows of fillets running vertically, diagonally...[with] the fillets usually being notched or punctated along the top" (Suhm and Jelks 1962:59). Strap handles found on these vessels have the same range of decorations as the bodies. Jars with high rims may have rows of horizontal punctates midway, which rise into punctate-filled triangles below the four rim peaks. The lips of these vessels are often notched along the outer edge.

Both of the large group Caddo shaft graves in Mound B, Burial 21 (Mound B, Feature 8) and Burial 1-4 (Mound B, Feature 2) had a Haley Complicated Incised jar among the grave goods. They are Vessel 7 (Acc. #: 72-22-101-8) and Vessel 18 (Acc. #: 72-22-1772-2) (Figures 12a and 12b). Both are barrel-shaped jars with an outsloping rim, slightly everted lip, triangular handles, and a circular and convex base. The jars have a clay and bone temper, the paste is soft, fine, and compact, and the whole body have fire-mottled exteriors.

Haley Engraved

Haley Engraved is a Caddo fineware type that was described in detail by Suhm et al. (1954:274) as having a paste composed of fine clay-grit, with either a small amount of sand, or none. The texture is fine and compact. The color of Haley Engraved vessels include shades of brown and gray-brown from medium to nearly black, with cores as dark as, or darker than, the surface. The surface finishes are well smoothed to highly polished with bottles unsmoothed inside.

Haley Engraved vessel forms are predominately bottles. The bodies are typically small and necks are cylindrical or slightly tapered toward the mouth. Suhm and Jelks (1962: 62, Plate 31) illustrated one example of a Haley vessel with a small body and large cylindrical neck and two vertically-perforated lugs on the rim. Also, the type includes large, high compound bowls, with an inverted shoulder area and outflaring rim, with two broad handles. Wall thickness range for 3-5 mm. Lips are rounded or flat and flush with the rim. The bases of the vessels are flat to slightly convex, and have the same thickness as the side wall.

In terms of decoration, Haley Engraved vessels are engraved with "gracefully arranged scrolls, doubled-back meanders, or vertical panels, consisting of very fine lines in parallel sets, or more open work with individual lines and tightly packed sets which appear almost like excising. Slanting ticks and spurs appear

Figure 12a. Haley Complicated Incised (Vessel 7, Acc. #: 72-22-101-8).

commonly in opposing pars (on different lines, running close together), either as the principal element in any of several ways; ticks also occur along single lines as bordering elements. Design units repeated two, three, or four times. Red and white pigments occur in lines" (Suhm and Jelks 1962:61).

Haley Engraved, var. Caruse. Haley Engraved *var. Caruse* is an "engraved type characterized by multiple-lined curvilinear and rectilinear units combined in a complex layout" with "borders usually lined with ticks" (Brown 1996:377). The variety Caruse was distinguished by Schambach to include bottle shapes with square shoulders and vertical panels with predominantly rectilinear designs. At the Spiro site, Haley Engraved *var. Caruse* samples included one narrow-mouthed bottle in the card sample, the sherds of two narrow-mouthed and one wide mouth bottle, and one bowl (Brown 1996:377).

Eight square shouldered bottles from the elite Caddo shaft graves Burial 1-4, 5, and Burial 21 at Ferguson are identified as Haley Engraved *var. Caruse*. Similar vessels have also been noted from the Mineral Springs site (3HO1) Burial 9 (see Bohannon 1973:23 and Figure 10-q). Haley Engraved *var. Caruse* was also recovered from the Spiro site (34LF40) Burials 7 and 62, as well as from the Craig Mound general collection (Brown 1996:378).

Figure 12b. Haley Complicated Incised (Vessel 18, Acc. #: 72-22-1772-2).

Ferguson Vessel 1 (Acc. #: 72-22-101-01) is associated with Burials 1-4 (Mound B, Feature 2). This square shouldered cylindrical bottle has a vertical slightly insloping rim, a rolled lip, slightly insloping neck, and a square and flat base (Figure 13c). This bottle is one of five Haley Engraved *var Caruse* (Brown 1996) bottles from the Mound B, Feature 2 burial group. It is very similar in vessel form but distinct with engraved line designs including: 1) multiple spurred line disc patterns, 2) arc spurred line panels, 3) cross-hatched

	Vessel Number	Accession Number	Collection Area	Associated Burial(s)	Type	Variety
a	04	72-22-101-4	Mound B, Feature 2	Burials 1, 2, 3, 4	Haley Engraved	Caruse
b	11	72-22-101-12	Mound B, Feature 2	Burials 1, 2, 3, 4	Haley Engraved	Caruse
c	01	72-22-101-1	Mound B, Feature 2	Burials 1, 2, 3, 4	Haley Engraved	Caruse
d	02	72-22-101-2	Mound B, Feature 2	Burials 1, 2, 3, 4	Haley Engraved	Caruse
e	03	72-22-101-3	Mound B, Feature 2	Burials 1, 2, 3, 4	Haley Engraved	Caruse

Table 4. Haley Engraved bottles from the Ferguson site.

zones, 4) oblique lined arc-lined zones, 5) rectangular partial scrolls, and 6) partial vertical stepped scrolls. The bottle has a grit and bone temper and a fine and compact paste. The entire body has engraved lines filled with red pigment.

Vessel 2 (Acc. #: 72-22-101-02) is associated with Burials 1-4 (Mound B, Feature 2). This square shouldered cylindrical bottle has a vertical slightly insloping rim, a rolled lip, slightly insloping neck, and a square and flat base (Figure 13d). The bottle is very similar in vessel form but distinct similar in vessel form the other Haley bottles form this grave with engraved line designs including: 1) oblique lined arc-lined zones, 2) convex arced outlines within a central element, 3) arc spaced spurred line panels, and 4) spurred lines adjacent to central element spacers. The exterior appears thermally altered and there is an unknown dark residue on one side of the neck. The temper consists of grit and bone and the paste is fine and compact. The entire body is engraved with engraved lines filed with red or white pigment.

Vessel 3 (Acc. #: 72-22-101-03) is associated with Burials 1-4 (Mound B, Feature 2). This square shouldered cylindrical bottle has a vertical to vertical slightly insloping rim, a flat lip, vertical to slightly insloping neck, and a square and flat base (Figure 13d). The bottle is very similar in vessel form the other Haley bottles form this grave but distinct with engraved line designs including: 1) crosshatched zones, 2) spurred lines adjacent to central elements, arc spaced spurred line panels, 3) arc spaced spurred line panels, 4) multiple spurred line disc patterns (with annular lines between discs), 5) convex arced central elements, 6) rectilinear partial scrolls, and 7) partial vertical stepped scrolls. Entire body has engraved lines with red pigment. The temper is composed of grit and bone and the paste is fine and compact.

Vessel 4 (Acc. #: 72-22-101-04) is associated with Burials 1-4 (Mound B, Feature 2). This square shouldered cylindrical bottle has a vertical to vertical slightly insloping rim, a flat lip, vertical to slightly insloping neck, and a square and flat base (Figure 13a). The bottle is very similar in vessel form but distinct in vessel design from the other Haley bottles form this grave with engraved line designs including: 1) multiple spurred lines outlining scroll panels, 2) spurred ticked lines between central design elements, 3) rectangular and disced spacer panels, and 4) and vertical as well as horizontal annular lines. The top two-thirds of the body has engraved designs filled with red pigment, which are separated into seven design panels. Three annular lines wrap the threshold between the body and neck. There is obvious wear around diameter of neck of an unknown cause. The temper includes grit with some bone and the paste is fine and compact.

Vessel 11 (Acc. #: 72-22-101-12) is associated with Burials 1-4 (Mound B, Feature 2). This square shouldered cylindrical bottle has vertical slightly insloping rim, a slightly rolled lip, slightly insloping neck, and a square and flat base (Figure 13b). The bottle is very similar in vessel form but distinct in vessel design from the other Haley bottles from this grave with engraved line designs including: 1) convex arc elements (with both filled and/or unfilled lines), 2) annular rows of triangles, and 3) disced areas. The entire body is engraved with engraved lines filed with red or light gray pigment. The vessel temper is bone and the paste is fine and compact and this bottle was found crushed on its side.

Vessel 15 (Acc. #: 72-22-341-03) is associated with Burial 5 (Mound B, Feature 32) an adult female

Figure 13a. Haley Engraved *var. Caruse* bottle from Burial 1-4, (Mound B, Feature 2) (Vessel 4, Acc. #: 72-22-101-4).

Figure 13b. Haley Engraved *var. Caruse* bottle from Burial 1-4, (Mound B, Feature 2) (Vessel 11, Acc. #: 72-22-101-12).

Figure 13c. Haley Engraved *var. Caruse* bottle from Burial 1-4, (Mound B, Feature 2) (Vessel 1, Acc. #: 72-22-101-1).

Figure 13d. Haley Engraved *var. Caruse* bottle from Burial 1-4, (Mound B, Feature 2) (Vessel 2, Acc. #: 72-22-101-2).

Figure 13e. Haley Engraved *var. Caruse* bottle from Burial 1-4, (Mound B, Feature 2) (Vessel 3, Acc. #: 72-22-101-3).

burial within Mound B. This tear dropped bottle has a vertical slightly insloping rim, slighlty rolled lip, an insloping slightly curved neck, and a square and flat base (Figure 14e). The body is engraved with geometric lines and cross-hatching, separated into four horizontal patterned design fields. Three engraved lines run parallel around the rim, just below the lip. There is some visual evidence of red pigment within the engraved lines. The temper is composed of grit and bone and the paste is hard and compact.

Vessel 26 (Acc. #: 72-22-1772-13) is associated with Burial 21 (Mound B, Feature 8), a central shaft grave intruding Mound B. This cylindrical tear-dropped bottle has a slightly everted lip, an outsloping-slightly incurved neck, and a square and flat base (Figure 14d). Red pigment is visible inside the engraved lines on the vessel body. The paste is compact and the temper includes grit and possible crushed mica and hematite. The vessel has an ink-like residue on and below the neck. This Haley Engraved *var. Caruse* bottle is similar in form and design to Vessel 30 (Acc. #: 72-22-1772-20). The stepped Davis Rectangle designs on the bodies look like mirror-opposites of each other. Vessel 26 has red pigment in the engraved lines while Vessel 30 has light grey/white pigment in the lines.

Vessel 30 (Acc #: 72-22-1772-20) is associated with Burial 21 (Mound B, Feature 8), a central shaft grave intruding Mound B. This cylindrical-tear drop shaped bottle has a slightly everted lip, outsloping-slighlty curved neck, and a square and flat base (Figure 14c). The paste is compact and the temper included grit and bone. The engraved lines throughout are separated into four rectilinear design fields with light pigment filling the engraved lines. Unknown brown encrustations are visible on the neck.

Haley Engraved var. Adams. Haley Engraved *var. Adams* was constructed as a tentative type by Bohannon (1973:45) based on two vessels recovered from the Mineral Springs site (Table 5). Webb (1959:187) previously reasoned that this variety of bottle was "transitional between Haley Engraved and Belcher Engraved" with the "shape and concentric circle motif [being] typical of Belcher Engraved, but [lacking] the punctates between the lines diagnostic of that type" (Bohannon 1973:45). These vessels include globular or oblate bottles with disc bases and short cylindrical necks. The decoration includes two lines encircling the top of the body, with the body being "divided into two panels by excised spurred band or paired engraved lines" (Bohannon 1973:45). Each of the panels contains a series of concentric circles with plain, ticked, or spurred lines. Red pigment was found in the engraved lines of the Mineral Springs bottles.

Ferguson Vessel 23 (Acc. #: 72-22-1772-08) originated in Burial 21 (Mound B, Feature 8). This globular bottle has a slightly everted lip, slightly insloping neck, and a circular and flat base (Figure 14a). The temper includes clay, grit, bone, and hematite, while the paste is hard and compact. The engraved lines include concentric circles and 'sunbursts' on two sides, with 'ticked lines' filling the concentric circles. White pigment was found in its lines, in contrast with the red pigment found in the Haley Engraved *var. Adams* vessels from the Mineral Springs site.

	Vessel Number	Accession Number	Collection Area	Associated Burial(s)	Type	Variety
a	23	72-22-1772-8	Mound B, Feature 8	Burial 21	Haley Engraved	Adams
b	43	72-22-1513-9	Plot 3, Feature 8	Burial 11	Haley Engraved	-
c	30	72-22-1772-20	Mound B, Feature 8	Burial 21	Haley Engraved	Caruse
d	26	72-22-1772-13	Mound B, Feature 8	Burial 21	Haley Engraved	Caruse
e	15	72-22-341-3	Mound B, Feature 32	Burial 5	Haley Engraved	Caruse

Table 5. Haley Engraved bottles from the Ferguson site

Figure 14a. Haley Engraved *var. Adams* bottle from Burial 21, (Mound B, Feature 8) (Vessel 23, Acc. #: 72-22-1772-8).

Figure 14b. Haley Engraved bottle from Burial 11, (Plot 3, Feature 8) (Vessel 43, Acc. #: 72-22-1513-9).

Hempstead Engraved

Hempstead Engraved vessels are a Caddo ceramic fineware that have a fine and compact paste "somewhat harder than most Caddoan pottery" including a fine clay-grit, shell, or trace of sand in the temper (Suhm and Jelks 1962:69). These vessels have a light yellowish-brown to dark brown and gray color. The surfaces are fair to polished.

Hempstead Engraved vessel forms include small and large carinated bowls, hemispherical bowls, and bottles. Wall thicknesses typically range from 3-5 mm. The lips are convex on bowls and tend to be more flattened on bottles. The engraved designs principally include "pairs of hatched or cross-hatched triangles placed around rim of bowls…and around body on bottles" (Suhm and Jelks 1962:69). They include one to three horizontal borderlines above the triangles and at least one below. Hempstead Engraved vessels may also include right triangles or pendant triangles. Red pigment is typically placed in engraved lines.

Three Hempstead Engraved bottles including Vessel 31 (Acc. #: 72-22-1772-25), Vessel 35 (Acc. #: 72-22-1772-29), and Vessel 37 (Acc. #: 72-23-1772-34)

Figure 14c. Haley Engraved *var. Caruse* bottle from Burial 21, (Mound B, Feature 8) (Vessel 30, Acc. #: 72-22-1772-20).

Figure 14d. Haley Engraved *var. Caruse* bottle from Burial 21, (Mound B, Feature 8) (Vessel 26, Acc. #: 72-22-1772-13).

Figure 14e. Haley Engraved *var. Caruse* bottle from Burial 5, (Mound B, Feature 32) (Vessel 15, Acc. #: 72-22-341-3).

were recovered at the Ferguson site were from Burial 21 (Mound B, Feature 8). Vessel 35 (Acc. #: 72-22-1772-29) is a globular bottle with a vertical slightly outsloping rim, a slightly rolled lip, an outsloping slightly incurved neck, and a circular and convex base (Figure 15). This vessel has clay, grit, and bone temper. Parallel engraved lines are etched to the lip, and diagonal tics run along bottom, with engraved lines spanning the circumference of the neck. 'Sun-burst'-like patterns are on the vessel body, made of composed of four concentric circles surrounded by triangles. Also, opposing triangles at the top and bottoms are filled with cross-hatched lines and annular engraved lines around the top of body.

Karnack Brushed Incised

Karnack Brushed-Incised is a Caddo ceramic utilitarian ware type having a fine to coarse texture and a clay-grit temper with occasional pulverized bone temper. These vessels have surface colors that range from cream to shades of gray and brown to nearly black (Suhm and

Figure 15. Hempstead Engraved (Vessel 35, Acc. #: 72-22-1772-29).

Jelks 1962:85). Karnack vessels are often highly fire-mottled and the cores are colored like the surfaces, if not darker. The interiors are poorly smoothed and the exteriors are roughened by decoration.

Karnack Brushed-Incised vessels have barrel-shaped bodies with convex or barely flat bases that "do not stand up well" (Suhm and Jelks 1962:85). The rims are low and slightly turned outward sharply or they may be higher and turned outward less sharply. Wall thicknesses range from 4-7 mm. Karnack vessels are decorated with incising and brushing. The incised lines were made individually or brushed (possibly with grass). These lines run vertically, or nearly vertically, over the whole body of the jar. The rim exteriors have incised

Figure 16. Karnack Brushed-Incised (Vessel 22, Acc. #: 72-22-1772-7).

lines that run vertically or diagonally or brushed lines running horizontally around the vessel (Suhm and Jelks 1962:85). It is unusual for Karnack Brushed-Incised vessels to have a plain rim.

One Karnack Brushed Incised jar, Vessel 22 (Acc. #: 72-22-1772-7), was excavated from Burial 21 (Mound B, Feature 8) (Figure 16). The color of this vessel is highly varied due to fire-mottling. The globular jar has a vertical-slightly outcurved rim, a flat lip, and convex and flat bottom. The temper is clay grit and the paste is course and silty. This burial vessel was found nearly complete (only one rim sherd glued back on). This pot is poorly smoothed on the interior and exterior, and the exterior is further roughened by brush-incising.

Kiam Incised

Kiam Incised is an Early Caddo utilitarian ware with a clay-grit temper, with the occasional addition of bone, carbon, or sand. The texture of these vessels is coarse, ranging from compact to crumbly" (Suhm and Jelks 1962:89). Vessel color ranges from "light yellowish-brown, reddish brown, medium brown and chocolate" (Suhm and Jelks 1962:89). The cores are gray, gray-brown, and are the same color as the surface. The surface finish on Kiam Incised vessels ranges from poorly smoothed to polished, except for the decorated parts.

Figure 17. Kiam Incised (Vessel 39, Acc. #: 74-267-23-2283).

Kiam Incised is primarily composed of "jars with rims vertical to everted…from only about 10 cm. high to as much as 50 cm or more; the latter are fairly numerous and may be regarded as storage jars" (Suhm and Jelks 1962:89). Kiam Incised vessels have fingernail punctations and incising as their main decorative elements. In rare cases, stick punctating was also used. The designs include horizontal lines encircling the rim on all vessels. This is "rather crudely done, lines do not 'overhang'" (Suhm and Jelks 1962:89). The bodies are occasionally plain but are usually vertically incised, and as closely spaced as the rims; or fingernail punctations are arranged across the body in horizontal rows. Appendages are absent on Kiam vessels.

One Kiam Incised jar, Vessel 39 (Acc. #: 74-267-23-2283) was recovered from Burial 9 (Plot 2, Feature 18) (Figure 17). This jar has tool or fingernail punctates around both the body and rim, which are separated by a band of brushed-incised elements encircling the boundary between them. The presence of this type in Burial 9 may indicate an Early Caddo period use of the Plot 2 area of the Ferguson site, preceding the Middle Caddo Haley phase burials associated with the Mound A and B areas.

Figure 18. Mineral Springs Engraved (Vessel 25, Acc. #: 72-22-1772-12).

Mineral Springs Engraved

Mineral Springs Engraved is a type defined by Schambach "as characterized by patterns of concentric lines made up of 'ladderlike' elements" (Brown 1996:379). Vessels of this type were originally assigned to the Maddox Engraved type (see Webb 1959; Brown 1971; Bohannon 1973). One of the five carinated bowls from Burial 21 (Mound B, Feature 8) (Acc. #: 72-22-1772-12) is of the Mineral Springs Engraved type (Figure 18). This carinated bowl has an insloping slightly incurved rim, rolled septogonal lip, and circular and convex base. The vessel is grit with some bone temper and has a hard and silty paste. The body has four design fields filled with engraved lines with crushed red hematite within the lines.

Moore Noded

Moore Noded was named by Lynn Howard in an unpublished manuscript on the Battle site about a local version of the Lower Mississippi Valley type, Fortune Noded (Phillips et al. 1951:120, see Bohannon 1973:120; see other examples in Webb 1959:120, Harrington 1920: Plate XXIIIb). Bohannon (1973:47) listed two vessels from the Mineral Springs site as Moore Noded. These vessels were medium to crumbly coarse-grit bowls decorated with nodes on the body, arranged in regular groups below the lip or placed randomly. The surfaces were reddish-brown and the cores were brown to grey. These vessels had flat bases round and flush with rim lips that were 8 mm in thickness.

Moore Noded var. Ferguson. One noded vessel, Vessel 21 (Acc. #: 72-22-1772-5), recovered from Burial 21 (Mound B, Feature 8) at Ferguson differs from these other examples of Moore Noded in several ways. These differences define the new Moore Noded *var. Ferguson* (Figure 19). The body decoration is divided into six vertical panels, alternating between three noded and three punctated panels (two horizontal and one diagonal). The rim is everted and is brushed horizontally. The temper includes significant quantities of bone along with clay and grit.

Pease Brushed Incised

Pease Brushed Incised is a Caddo coarseware that has a clay-grit temper, including occasional pulverized bone pieces (Suhm and Jelks 1962:119: Plate 60). The texture is granular, with medium-sized particles. Surface colors include shades of buff, light gray, occasionally dark gray to black with mottling due to uneven firing. The core is usually darker than the surface. The interior surface is smoothed while the exterior is roughened

Figure 18. Moore Noded *var Ferguson* (Vessel 21, Acc. #: 72-22-1772-5).

by decoration. The vessel form is exclusively jars with slightly outflaring rims varying considerably in height. The oral diameter is usually less than that of the body. Most known specimens are between 12-24 cm in height. Originally, no very large examples or miniature vessels were noted within this type.

Pease Brushed Incised vessel decorations include "incising, brushing, appliqué, and punctation in various combinations" (Suhm and Jelks 1962:119). Designs covered the entire exterior, except the base. The body is divided into panels with vertical appliqued fillets or rows of punctates, or punctates made in appliqued fillets (appliqued fillets are punctated—that is what makes them fillets). There is no consistent number of panels, which varies from six to twenty or more. The panels are "filled with brushing or parallel incised lines set diagonally in alternating directions with 'herringbone' effect" (Suhm and Jelks 1962:119). Lines are often deeper at one end over the other. The rim decoration is similar, "except brushing or incised lines may run in different directions from those on body" (Suhm and Jelks 1962:119). There is almost always at least one row of punctates around the rim that has been made through the brushed or incised lines. Often, "there are two or more such rows, one just under the lip, one around the middle of the rim, and perhaps one at the base of the rim" (Suhm and Jelks 1962:119).

One Pease Brushed Incised jar, Vessel 5 (Acc. #: 72-22-101-5), was recovered from the group shaft grave in Burial 1-4 at Ferguson (Figure 20). Another

Figure 20. Pease Brushed Incised (Vessel 5, Acc. #: 72-22-101-5)

Figure 21. Pease Brushed Incised Jar from Mound A, Feature 6-8 floor.

jar from this grave (Acc. #: 72-22-101-9), has a Pease Brushed Incised body decoration and a Sinner Linear Punctated rim. This oval bodied jar has an outsloping rim, slightly everted lip, and circular convex base. It has a clay temper and a soft, fine, and compact paste. This Pease Brushed Incised Jar is one of four large jars interred with the Mound B, Feature 2 burials. A small Pease Incised-like (not brushed) cup or jar was found associated near the skull of Burial 1 in this grave. Schambach has suggested the type Chance Incised for this and similar small incised jars (personal communication June 2010). Additionally, a large three gallon Pease Brushed Incised jar with a convex base was also found crushed on the floor of the Feature 6-8 house, a daub-covered square or rectangular temple structure that was intentionally burned on Mound A (Figure 21) (see Schambach 1972a, 1996; Schambach and Early 1985).

Sinner Linear Punctate

Sinner Linear Punctate ceramic vessels are a Caddo utilitarian ware with a clay-grit temper, with some pulverized bone (Suhm and Jelks 1962:143). The texture is fine and compact, while the color includes surfaces with cream, buff, shades of brown and gray, to nearly black in fire-mottled areas. The cores tend to be the same color as surfaces or darker. Sinner Linear Punctate vessels are typically composed of small jars about 10-15 cm high, with vertical to everted rims meeting the body at a slight angle. They have globular bodies with rims "varying from low and everted to high and vertical" (Suhm and Jelks 1962:143).

Decorations on this type include punctating and appliqued nodes or ridges. Bodies and rims are "almost completely covered with punctations set close together in closely spaced rows, so regular as to give the suggestion of cord marking" (Suhm and Jelks 1962:143). These punctations are made either individually with small round-tipped tools or are made in rows with a carved stamp. Though infrequent, the tip of the fingernail is also used to make the punctations. The rows of decoration "are arranged in parallel sets, pitched at different angles and either straight or slightly curved" (Suhm and Jelks 1962:143). This is sometimes broken into four design panels with rows of nodes or fillets running vertically on the body.

Figure 22. Sinner Linear Punctate (Vessel 16, Acc. #: 72-22-341-04).

Eight Sinner Linear Punctate jars and one jar with a Sinner rim and Pease Brushed Incised body were recovered from Ferguson. The dual type jar and two others were from Burial 1-4 (Mound B, Feature 2), three were from Burial 21 (Mound B, Feature 8), and two were from Burial 5 (Mound B, Feature 32). Ferguson Vessel 16 (Acc. #: 72-22-341-04) is a globular enlongated jar with an outsloping incurved rim, slightly rolled lip, a globular elongated body, and circular and convex base (Figure 22). This jar has dark areas from

Figure 23. Sinner Linear Punctate (Vessel 9, Acc. #: Acc. #: 72-22-101-10).

possible fire mottling, is grit and bone tempered, and has a hard and compact paste. This vessel is the larger of two Sinner Linear Puncate jars from Burial 5 (Mound B, Feature 32).

Ferguson Vessel 09 (Acc. #: 72-22-101-10) is associated with the Burial 1-4 group (Mound B, Feature 2) (Figure 23). This globular elongated jar has a vertical and slighty outsloping rim, slightly rolled lip, globular and elongated body, and a pedestal outsloping side base meeting a circular and flat to convex, with minimum curvature on the bottom. This vessel has a clay temper and a soft, fine, and compact paste.

Figure 24. Untyped plain bottle (Vessel 40, Acc. #: 73-117-2058-1).

Figure 25. Untyped plain bottle (Vessel 41, Acc. #: Acc #: 73-117-2058-2).

Untyped Pottery Vessels

Vessels 40 (Acc #: 73-117-2058-1) and 41 (Acc #: 73-117-2058-2) are a pair of plain bottles found with Burial 14 in an ancestral Caddo-Fourche Maline grave, discovered off-mound in Plot 2, Feature 6 (Figures 24 and 25). A quartz crystal (Acc #: 72-117-2058-3) was also found within the grave goods in Burial 14. These Woodland period bottles are very thick compared to the Middle Caddo vessels in the rest of the Ferguson site whole vessel assemblage. No visible decorations are present on either bottle.

Vessel 46 (Acc. #: 72-22-1772-06) is an untyped Middle Caddo small bottle recovered from Burial 21 (Mound B, Feature 8). Doubled-lined X's are engraved around the circumference of the bottle. These X's are filled with smaller x's or chevrons. Some down-facing chevrons around the top of body are filled with tool-marked ticks. This vessel may represent an atypical example of the Hempstead Engraved type.

Summary and Discussion

The Haley phase marked the appearance of ceramic features within the Middle Caddo period such "as the use of handles (wide strap handles on polished bowls as well as cooking jars), appliqué fillets and nodes, brushing on jar surfaces as alternative to incising, fairly extensive use of red filming, and effigy vessels" (Suhm and Jelks 1962:171). These elements are very rare on pottery vessels from the Spiro, Gahagan, and Alto sites.

Numerous elite Caddo shaft graves excavated at Ferguson contained whole ceramic vessels diagnostic of the Haley phase A total of 42 whole ceramic vessels were documented and analyzed as a part of this study. Caddo pottery types in the Ferguson site assemblage include Adair Engraved (n=1), East Incised (n=1), Friendship Engraved (n=5), Glassell Engraved (n=2), Haley Complicated Incised (n=2), Haley Engraved (n=10), Hempstead Engraved (n=3), Karnack Brushed Incised (n=1), Kiam Incised (n=1), Moore Noded (n=1), Pease Brushed Incised (n=2), Sinner Linear Punctate (n=7), a combination Pease Brushed Incised and Sinner Linear Punctate (n=1) vessel, and three that are untyped (n=3). Vessel forms included bottles, bowls, and jars.

These whole vessels originated in numerous burial features around the site including: Burial 1-4 (Mound B, Feature 2), Burial 21 (Mound B, Feature 8), Burial 5 (Mound B, Feature 32), Burial 12 (Mound B, Feature 14/15), Burial 14 (Plot 2, Feature 6), Burial 11

(Plot 3, Feature 8), and Burial 9 (Plot 2, Feature 18). Fifty percent of the vessels (n=21) originated in Burial 21 alone, an elite Caddo shaft grave intrusive in the center of Mound B. Nearly another third of the whole vessels collection came from the Burial 1-4 group shaft grave. Burial 5 was another contemporaneous Caddo grave and had four whole vessels. Burial 9, 12, and 14 each contained a single whole vessel from the Middle Caddo period as well. Finally, Burial 14 was a Woodland period grave that had two untyped plain bottles.

Acknowledgements

Thank you to the Arkansas Archeological Survey for allowing me to study the Ferguson site collection. Dr. Jamie Brandon generously offered access to the collection and site records from the Southern Arkansas University-Arkansas Archeological Survey Station, along with support and encouragement throughout the analysis. All data on the Caddo of Ferguson would have been lost if not for years of excavation conducted by the Survey and Arkansas Archeological Society, under the direction of Dr. Frank Schambach. His meticulous fieldwork, notes and generously shared memories make the presentation and preservation of these data possible. Thank you to Dr. Ann Early who guided me with the Collegiate Style Descriptive Classification rim and body designs of the Ferguson vessels. Thank you to Dr. George Sabo III who read and commented on an earlier version of this paper. Finally, thank you to Jane Kellett for photographing the Ferguson site vessels.

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Feature-Scale Analysis Using Ground-Penetrating Radar and Low Altitude Prospection at the Collins Mounds Site, Northwest Arkansas

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Geophysical survey and other non-invasive methods are, in some cases, the only options available for archaeological investigation. This is exemplified at the Collins site, a possible Late Woodland to Middle Mississippian period, multi-mound, civic ceremonial center in Northwest Arkansas. The site is located on private property and although excavation is not allowed, non-invasive survey methods are permitted on its northern section. This paper presents the results of a ground-penetrating radar survey over Mounds B, C, and D. The results reveal a number of features that are interpreted as mortuary structures as well as evidence of multiple building episodes over time within distinct layers of Mound C. A high-resolution DEM generated with aerial imagery is used in interpreting the GPR data as well as to provide an updated map of mound size and distribution. By integrating the GPR data with the DEM, orthoimagery, and magnetic gradiometry data from a previously documented survey, and comparing the results to ethnohistoric accounts, interpretation of the geophysical data is enhanced. Geophysical survey is often used to assess an archaeological site on a landscape scale. By narrowing the scope to individual mounds, this article demonstrates how multiple, complementary technologies, when used in concert, can inform on the feature level.

Background

The Collins mound complex (3WA1) is one of three multi-mound civic-ceremonial centers in northwestern Arkansas. The site is nestled within the western Ozark Highlands, a physiographic region spanning across northwestern Arkansas, southwestern Missouri, and northeastern Oklahoma, placing it within the northern cultural boundary of the Caddo Area (Perttula 1992:136-143). Five earthen mounds are distributed across the site with a tier of three in the north and two in the south (Figure 1). The property is divided by a barbed wire fence extending east-west across the site with each section owned separately by a private landowner. Survey of any kind is prohibited south of the fence due to the wishes of that section's landowner. Access to the northern section has been granted, but with restriction. Non-invasive survey methods are permitted, however excavation is not allowed.

Systematic survey is needed to work out the developmental sequence of the site as well as to understand its use history and role within the archaeological framework of the region. Because excavation is not allowed, the Collins site is a perfect candidate for "inquiry-based archaeogeophysics" (Thompson and Pluckhahn 2010:38). In this context, rather than using geophysical survey as a post hoc method, it is used as a principle source of data. The survey must be situated within a theoretical framework driven by specific research questions allowing anthropological interpretations to be derived from the results (see Thompson et al. 2011).

This need was first addressed through a magnetic gradiometry survey conducted by Sullivan and McKinnon (2013), which revealed numerous architectural features, some of which are interpreted as mortuary structures (Figure 2). The excellent magnetometry results prompted further non-invasive investigations. Although it was not particularly fruitful, a thermal imaging and near-infrared survey was performed over the northeastern section of the site to test an experimental thermal data processing technique in an effort to detect archaeological features by reducing vegetation noise (Cool 2015:66-77). Additionally, aerial images were collected over the northwestern section of the site to produce a high-resolution digital elevation model (DEM) including elevations for Mound D (Sullivan et al. 2015).

This article presents the results of an aerial imaging survey over the site's northeastern section as well as the results of ground-penetrating radar (GPR) survey over Mounds B, C, and D. The GPR survey

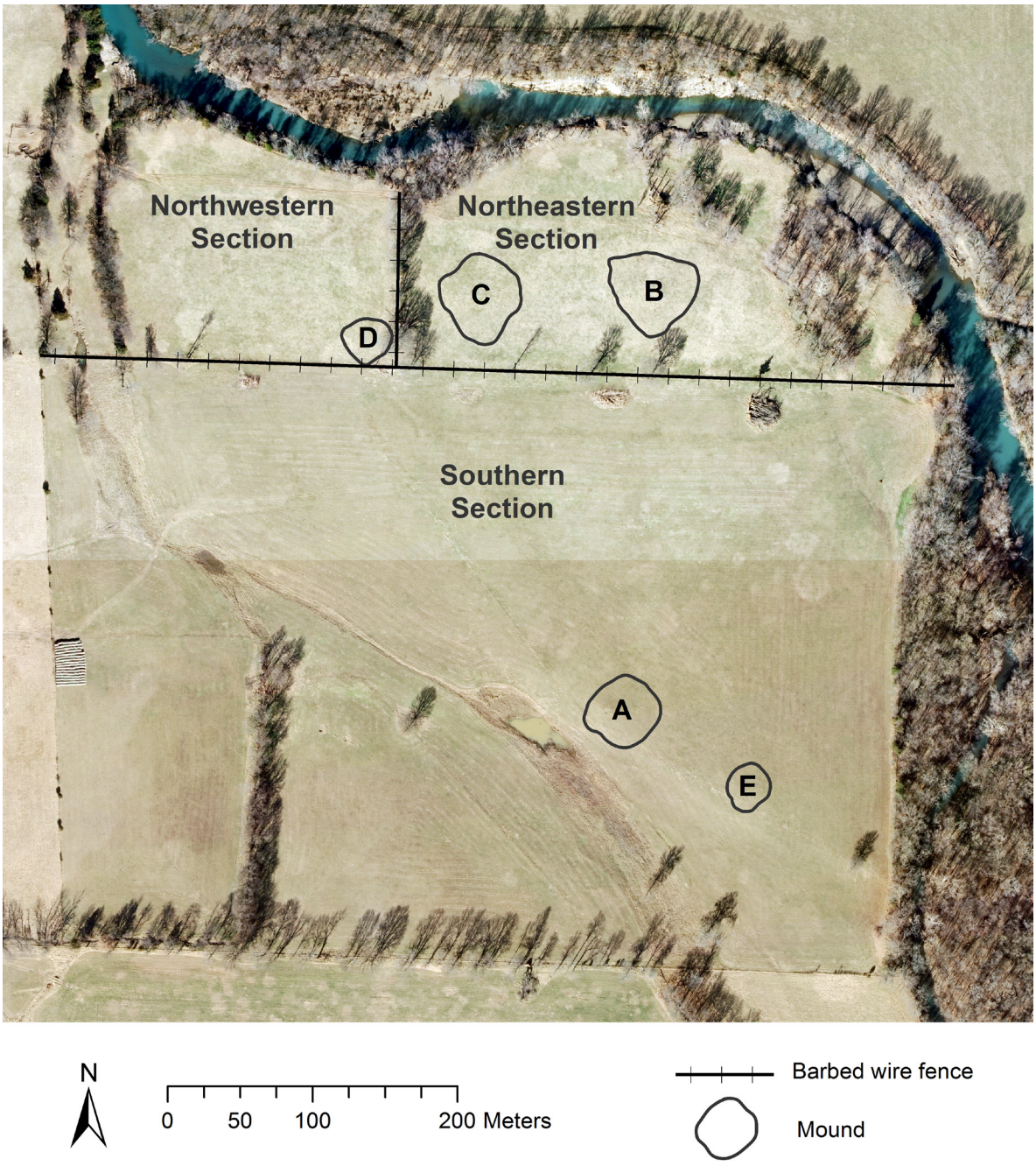

Figure 1. Map of the Collins site including mound layout and sections of the site as they are referred to in the text.

offers a complimentary dataset with which to compare the previously acquired magnetic gradiometry data (see Figure 2) (Clay 2001). Interpretation of the GPR data is bolstered through its integration with the magnetic gradiometry and aerial imaging datasets in a geographic information system (GIS) (see Gaffney 2008; Kvamme 2006; Neubauer 2004).

Aerial Survey

Methods

A high-resolution DEM was needed to accurately map the size and orientation of the mounds, to obtain elevation data across the site, and to attempt to topographically correct the GPR data presented later

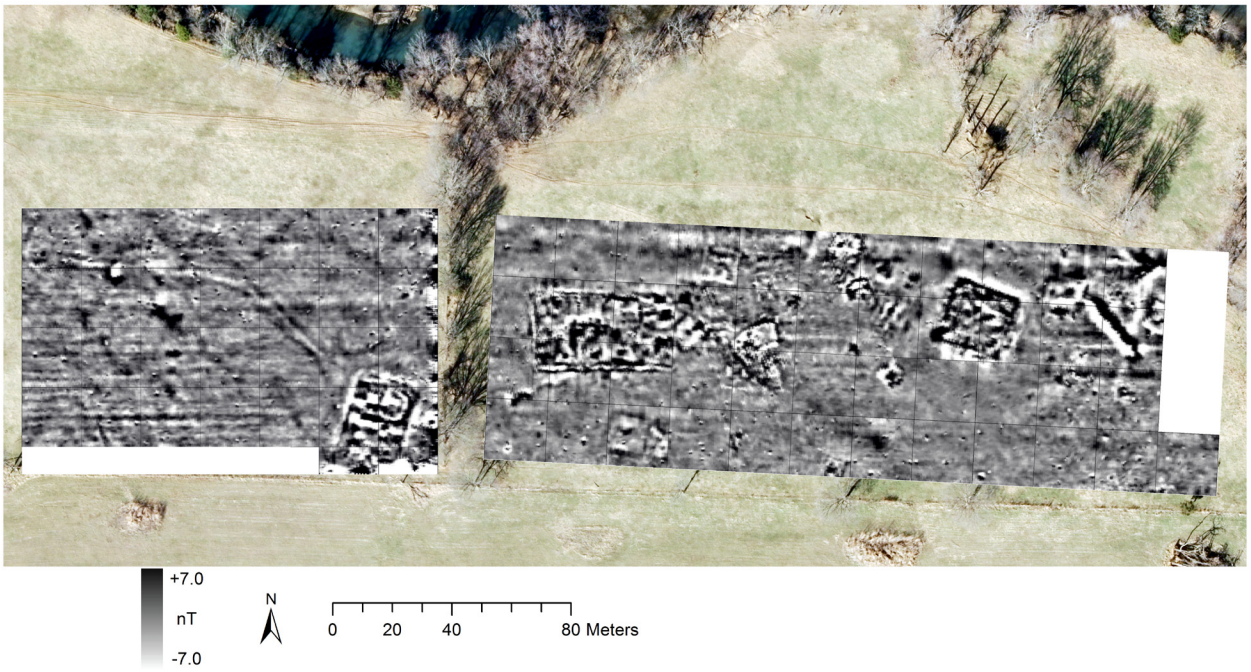

Figure 2. Results of magnetic gradiometry survey (after Sullivan and McKinnon 2013:75).

in this article. To accomplish this, aerially acquired imagery was processed in photogrammetric software. Color imagery was obtained over the northeastern section of the site using a Nikon D600 DSLR camera with 24.3 megapixels and a 35.9x24.0 mm sensor. The camera was fixed on a Cinestar 8 unmanned aerial vehicle (UAV) by way of a gimbal, which allowed the camera to maintain a fixed position by pivoting independently of the pitching and rolling of the UAV. The camera's intervalometer was set to take one picture per second. In conjunction with the rate of image collection, the height, speed, and transect spacing of a predetermined GPS-guided flightpath ensured sufficient overlap of the images needed for alignment in post-processing.

Twelve ground control points (GCPs) were evenly distributed across the survey area to both aid in image alignment and to allow for georeferencing. The locations of the GCPs were mapped using a real-time kinematic (RTK) global navigation satellite system (GNSS) survey. Two Leica GS15 receivers and a CS15 controller were employed in the survey with one receiver acting as a base station and the other as a rover. During RTK survey, the rover quickly and accurately measures its position in relation to the base station by receiving a correction signal from the base. Measurements recorded by the rover at the Collins site yielded a horizontal accuracy of 2 cm after post-processing.

Agisoft PhotoScan software was used to process the images into a single, georectified orthophoto. A DEM was then generated and exported as a GeoTiff for use in a GIS. Figure 3 shows the resulting DEM for the northeastern section in addition to the DEM from the northwestern section presented in Sullivan et al. (2015:129).

DEM Derived Products

The newly acquired DEMs allowed for the production of an updated site map. The updated map, displaying the most current size and position of each of the mounds, is shown in Figure 1. The georectified, high-resolution DEMs were imported into ArcMap and draped over orthoimagery downloaded from USGS The National Map. A contour layer with a contour interval of 0.25 m was generated based on the DEMs. The boundaries of Mounds B, C, and D were digitized using the contour layer and then converted to shapefiles. The extent of each mound boundary is located at 395.5 m HAE (height above ellipsoid). This boundary was chosen based on visual analysis of the DEM as well as from the ground.

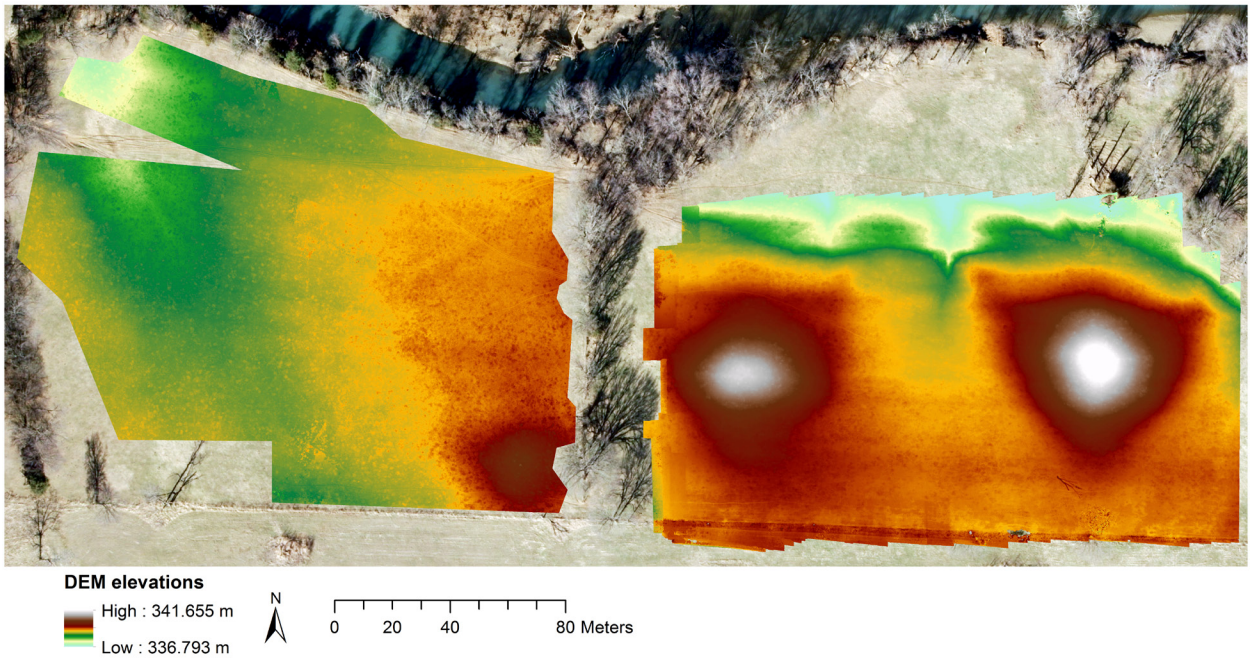

Figure 3. DEM of the survey area across the northern portion of the Collins site.

In the 1980s, Kay et al. (1989:136) mapped the size and orientation of the five mounds. Since access to the southern section of the site – by land or by air – is currently prohibited, it was not possible to resurvey Mounds A and E for the purpose of mapping. The southern mounds were placed on the map in Figure 1 by rubbersheeting the Kay et al. map to the base orthoimagery. This method worked well as the barbed wire fences in the map could be matched to the fences on the imagery. Although the fence extending diagonally through the southern section of the map is no longer present, soil marks left on the surface are easily visible in the imagery. After rubbersheeting the map, Mounds A and E were digitized and converted to shapefiles. Measurements of mound dimension were made as a final check of the accuracy of the rubbersheeting. Kay et al. (1989:137) gives a diameter of 51 m for Mound A, which matches the diameter of the Mound A shapefile. Specific measurements for the five mounds have not been given in previous publications. The GIS generated map layers make for easy measuring of mound parameters. Measurements for each of the mounds including area, diameter, and height are given in Table 1.

Ground-penetrating Radar Survey

Based on reports from excavations at other multi-mound archaeological sites in the region (Bell 1972; Kay et al. 1989; Kay and Sabo 2006), it is suspected that one or more of the mound structures visible in the magnetic gradiometry data from Collins is a charnel house similar to that found at the Harlan site on the westernmost

Mound	Max Elevation (HAE)	Height (m)	Perimeter (m)	Area (m2)	Diameter N-S (m)	Diameter E-W (m)
A	N/A	~3.00	156	1837	50	51
B	341.66	2.16	191	2550	58	57
C	340.90	1.40	183	2430	62	56
D	340.25	0.75	102	783	32	33
E	N/A	~1.00	98	726	33	30

Table 1. Mound measurements at the Collins site (elevation given in meters above the WGS84 ellipsoid; perimeter, area, and diameter given in planar measurements).

border of the Ozark Highlands in northeast Oklahoma (Sullivan and McKinnon 2013). Harlan-style charnel houses exhibit two primary characteristics that should, in theory, be identifiable in geophysical data. First, charnel houses were burned to the ground in accordance with a ritual cycle. This characteristic is identified in the high magnetic gradiometry values for the structural footprints associated with the Collins mounds, which suggests that the structures were burned. Second, after the ritual destruction of a Harlan-style charnel house, the remains were capped over with soil and a new structure built over the same location. Magnetic gradiometry returns a two-dimensional view of variations in the magnetic field of the near-subsurface making it difficult to determine feature depth. Therefore, ground-penetrating radar, which facilitates three-dimensional imaging of the subsurface, was used over Mounds B, C, and D to determine if multiple building episodes could be distinguished within distinct layers of the mounds.

Methods

The survey employed a Geophysical Survey System, Inc. SIR 3000 single-channel ground-penetrating radar system outfitted with a shielded 400 MHz antenna to acquire data over the three mounds in the northern portion of the site. Ground-penetrating radar is an active method in which an antenna transmits radio waves into the ground and then measures the time it takes for the energy to be sent back to the surface (Conyers 2013). When the radio waves encounter a material with a relative dielectric permittivity (RDP) that is different from the surrounding soil matrix, the waves are reflected back to the surface at a different rate. Once the RDP is known, the two way travel time of the signal can be converted to distance allowing the depth of subsurface features to be calculated. Variations in the amplitude of the returned signals are recorded along a two-dimensional, vertical, reflection profile. A single reflection profile may be used for analysis of the subsurface; or multiple, closely spaced profiles may be collected within the survey area. Multiple reflection profiles can then be aligned in processing software to produce a three-dimensional dataset which may be horizontally "sliced" revealing features across the survey area at various depths.

The magnetic gradiometry data collected by Sullivan and McKinnon (2013) guided the placement of the GPR survey grids. Profiles in each survey grid were collected unidirectionally from the south to the north along transects spaced at 0.5 m intervals. Collecting data in the same direction along each transect reduces reflection errors in the data by maintaining the antenna orientation with respect to the ground (Conyers 2013). Each profile extends the length of the entire survey grid (rather than breaking up the grid into 20 x 20m segments as is done with other geophysical methods) to reduce trace misalignment and edge discontinuities (see Ernenwein and Kvamme 2008). The location of the GPR grids was measured in real world coordinates with an RTK GNSS survey using the same methodology as described above for the aerial survey. After post-processing, the measurements recorded by the rover yielded a horizontal accuracy of 2 cm.

During processing of the GPR data, time zero correction was set on each profile to obtain a more accurate estimated depth. Hilbert transform was applied to evaluate the trace envelope enabling a more representative form of the reflected events to be produced (Jol 2008) as well as allowing the data to be thinly sliced (Goodman and Piro 2013). RDP was estimated through hyperbola fitting to convert two way travel time to depth (migration was not performed in order to keep all acquired data within the dataset). Next, the profiles were sorted into a grid and the z-plane was gridded using the inverse distance to a power algorithm through an isotropic search radius based on the trace envelope extracted by the magnitude data after the Hilbert transform. In this manner, three-dimensional data for each mound were generated into several slices along the z-axis. The surface terrain was then taken into account by using the DEMs in an attempt to topographically correct the reflection profiles.

Two forms of topographic correction were attempted when making the slices. The first method preserved an absolute depiction of depth, but negatively affected the parameters needed for interpolation, rendering the slices useless. The second method warped the amplitude slices against the modeled surface. This method yielded much more useful images, but caused different depths to be displayed simultaneously. Visualizing the data in this way is analogous to the

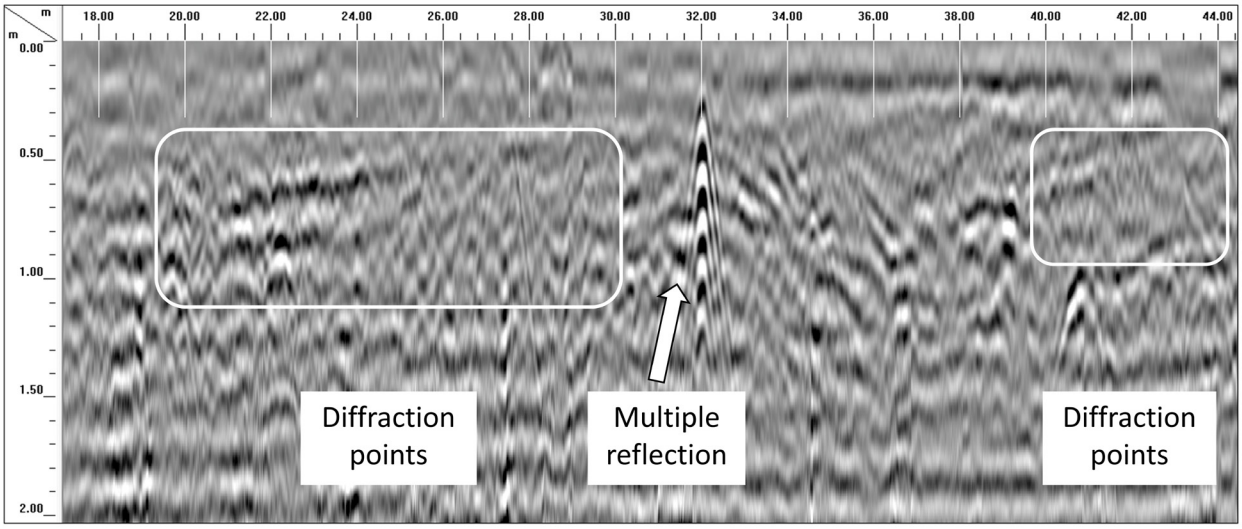

Figure 4. Section of Profile 66 (after time zero correction and background removal) over Mound B displaying many diffraction points and one multiple reflection over meter 32.

slices having an azimuthal projection as the slices are "flat" rather than portraying a curved surface. Therefore, although a true topographic correction could not be made with the available data, the "pseudo" correction was useful for visually interpreting the processed GPR results. Each amplitude slice presented below contains a layer of data between 2 and 4 cm thick, allowing the features present in the data to be easily visible providing a wider context of the data. Note that in the slices, locations of high amplitude are represented as white and areas of low amplitude are displayed as black.

Before discussing the results of the processed data, two striking features should be mentioned regarding the GPR profiles acquired over all three of the mounds. First, the high number of diffraction points, or points where there is bending of the radar wave, throughout the profiles makes it difficult to differentiate distinct layers in the data. Second, multiple reflections (MRs) can be seen within many of the profiles (Figure 4).

Multiple reflections occur when radar waves encounter a highly reflective material causing the energy to reflect off of the material, travel back to the ground surface to be reflected again from the ground-air interface, back to the reflective material, and then back again to the surface (Conyers 2013:57). Although we are not certain of the cause of the MRs in the Collins profiles, one potential explanation is the presence of post molds. Post molds are likely composed of a soil matrix with less cohesion than that of the soil matrix surrounding them causing the post molds to retain a larger quantity of water or air. The increased quantity of water or air trapped in these locations could generate multiple reflections patterns in the profiles. Burrows or pit features may also cause the same phenomenon. We have plotted the multiple reflections on each amplitude slice in an attempt to correlate them with the features seen in the slices. All MRs are represented in the same way, as points; and all are plotted over each slice – regardless of their size and depth – as the interpolation algorithm used during processing causes them to fade away, rendering the placement of the depth for each difficult.

The processed and sliced GPR data were imported into a GIS using the grid coordinates acquired through the GNSS survey to position the data over the base orthoimagery. Figure 5 shows the orientation of each GPR grid. In the figure, the grids are draped over the magnetic gradiometry data layer displayed at 40 percent translucence. Mound boundaries are shown in white to show the positioning of the data in relation to the mounds.

Mound B Results

The Mound B GPR grid is composed of 121 profiles collected along the y-axis over a survey area of 60 x 60 m. Slices were generated in 4 cm increments along

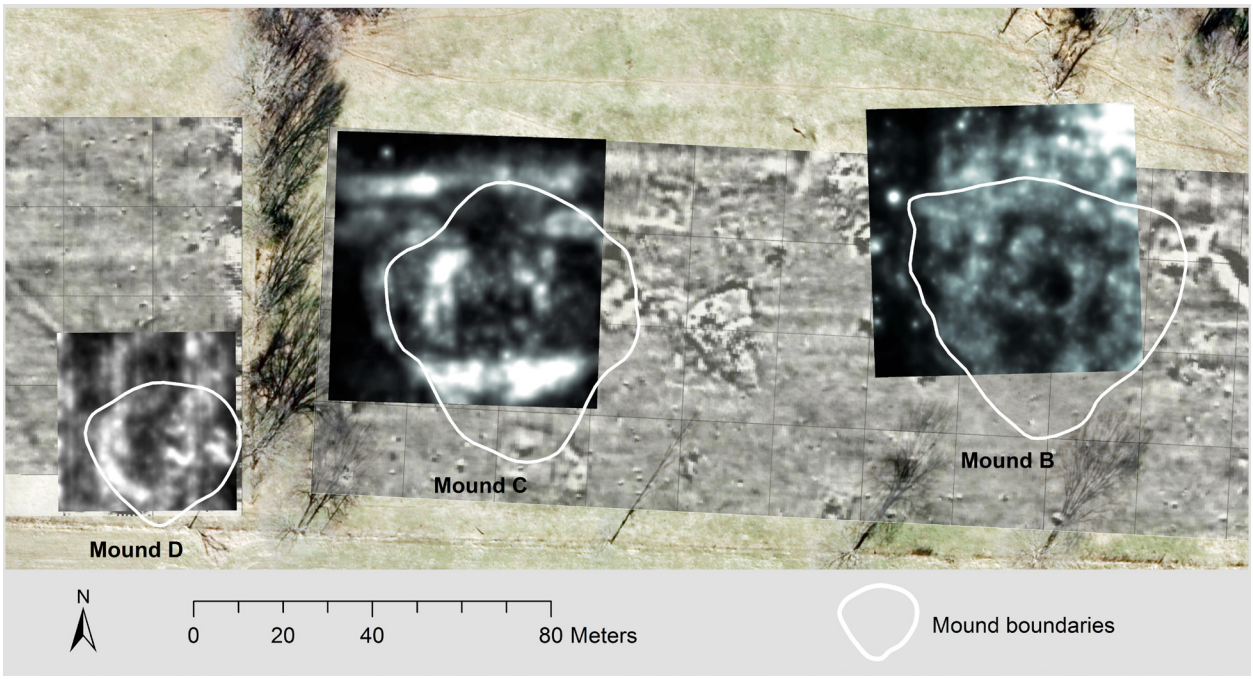

Figure 5. Location of the GPR survey grids in relation to the magnetic gradiometry data and orientation of the mounds.

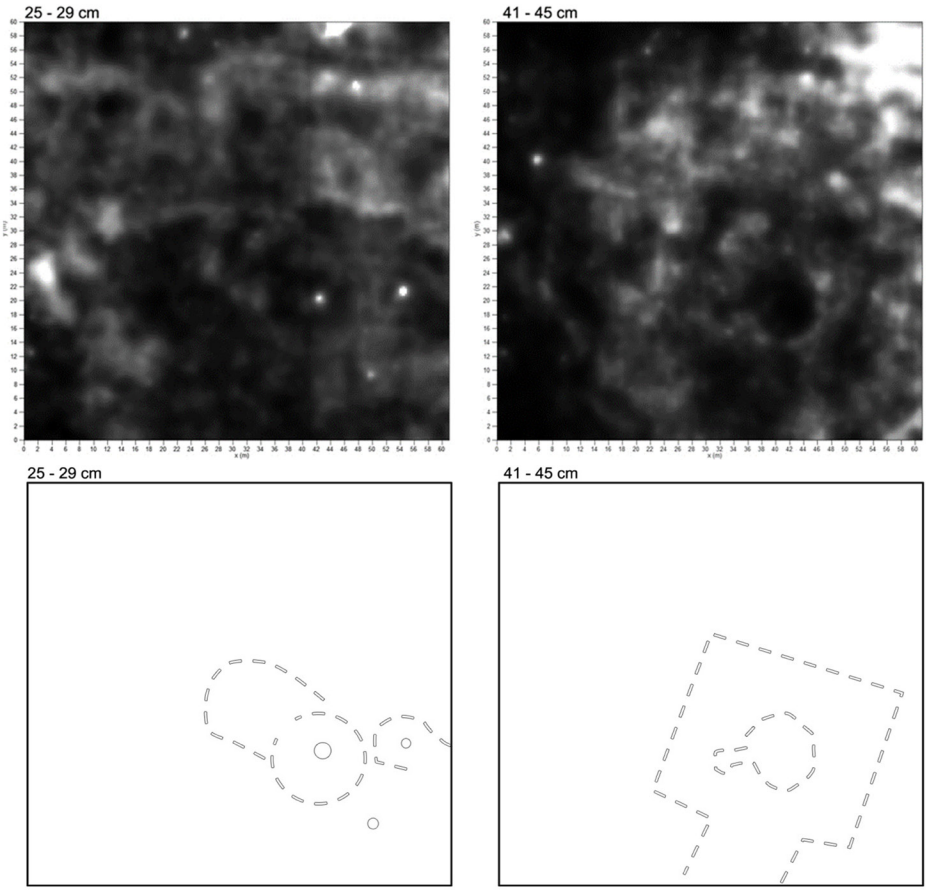

Figure 6. Amplitude slices at different depths over Mound B (top). Features drawn over the slices at the given depths on Mound B (bottom).

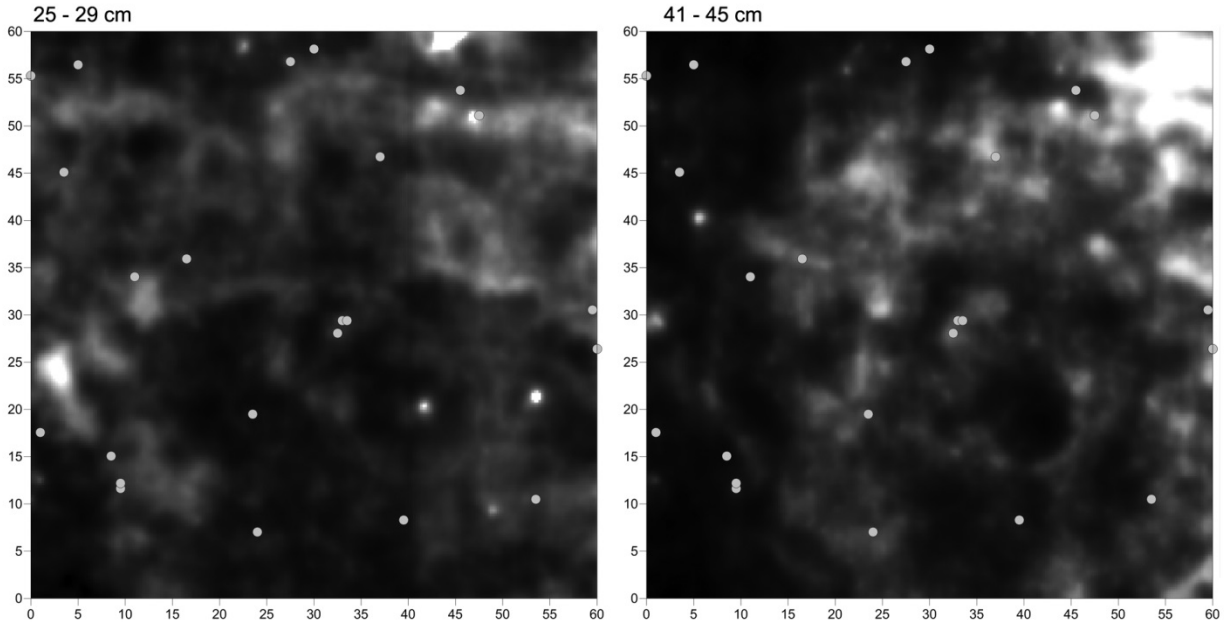

Figure 7. Multiple reflections plotted over the Mound B amplitude slices.

the z-axis. Two slices depict what appear to be two different archaeological contexts or layers in the data (Figure 6).

The first layer, between 25 and 29 cm in depth, shows a circular feature flanked by two other features. The circular feature is positioned perfectly in line with the apex of the mound. It appears interrupted in its northwest face from which it annexes to a contiguous feature. Three features appearing as white dots in the data are visible in the southeast quarter of the grid. The second layer, ranging from 41 to 45 cm, also exhibits a circular feature centered with the apex of the mound. It is roughly 10 m in diameter and articulates to a small annex to the west. The circular feature appears within a distinctly square feature, which measures approximately 20 m per side. The square feature opens to the southwest with two linear parallel features, each approximately 7 m long, extending to the southwest (see Figure 6). The context of this deeper layer appears down to 60 cm in depth, after which the data turns to static.

Multiple reflections were plotted over the slices to determine whether they correlate with the features described above. A small cluster of three MRs at the center of the surveyed area seem to be related to the annex of the circle like feature in the first layer. Some of the MRs appear to be related to the square feature, while several MRs occur off-mound (Figure 7).

Mound C Results

The Mound C GPR grid is composed of 121 profiles collected along the y-axis over a survey area of 60 x 60 m. Slices were generated in 2 cm increments along the z-axis. Mound C contains the richest data of the three mounds surveyed. Four layers appears to contain different contexts within the mound (Figure 8). The first slice, ranging from 48 to 50 cm, depicts a large rectangular feature, the eastern boundary of which likely lies just beyond the survey area. The middle of the north and south faces of the feature seem to be interrupted.

At 74-76 cm (see Figure 8), there is a smaller rectangular feature also exhibiting interruptions in its north and south faces. A series of high amplitude events are present within the feature and continue with depth as seen in the slice taken between 83 and 85 cm. This deeper layer does not portray the right angled feature corners visible in the more shallow contexts.

The final layer, between 101 and 103 cm in depth, displays a small, high amplitude, "U" shaped feature in the middle of the survey area (see Figure 8). This feature was only spotted after plotting the multiple reflections (Figure 9) as the MRs seems to be closely related to this feature. In addition, just to the east of the "U" shaped feature, a feature comprised of low amplitude areas and somewhat resembling an "X" shape

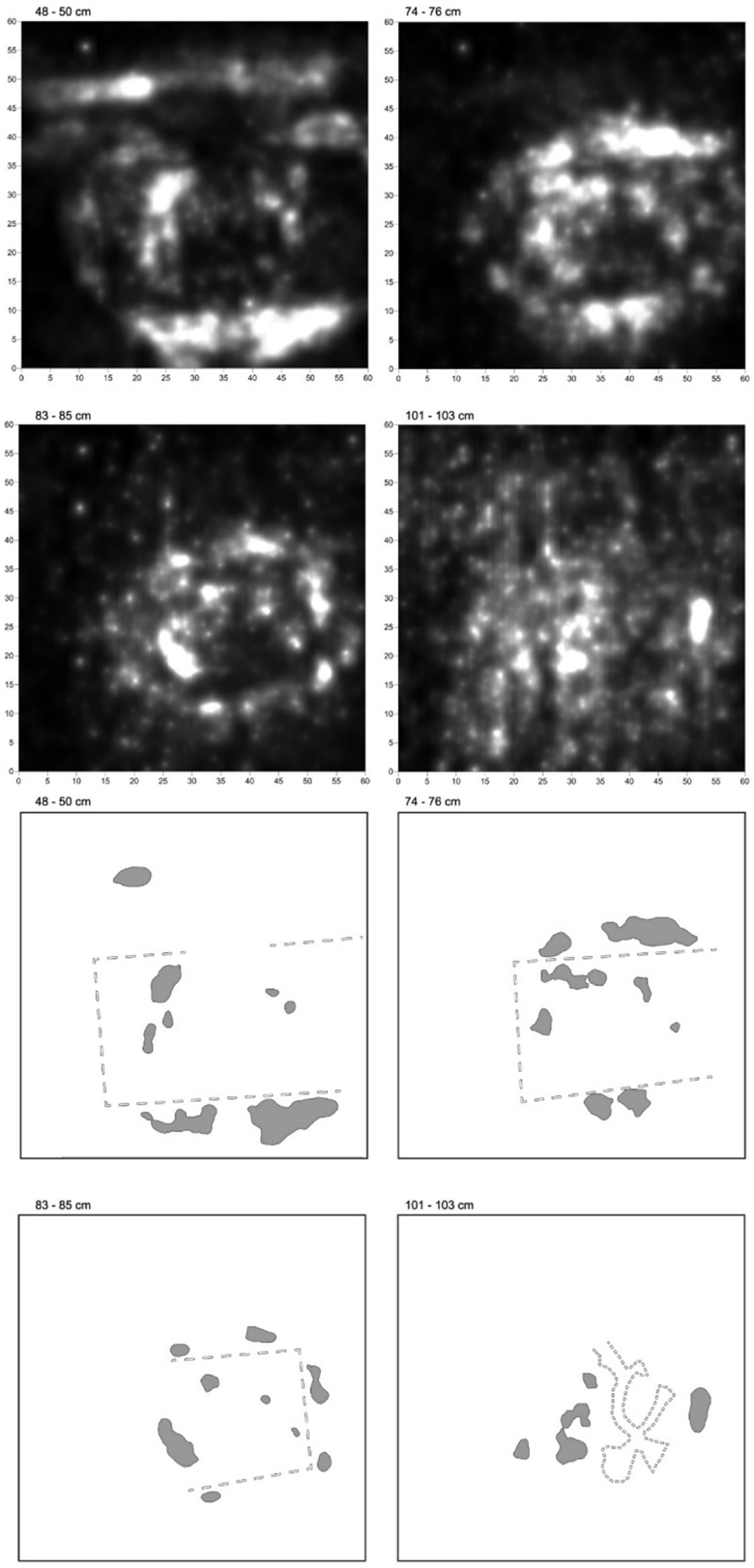

Figure 8. Amplitude slices at different depths over Mound C (top two rows). Features drawn over the slices at the given depths on Mound C (bottom two rows).

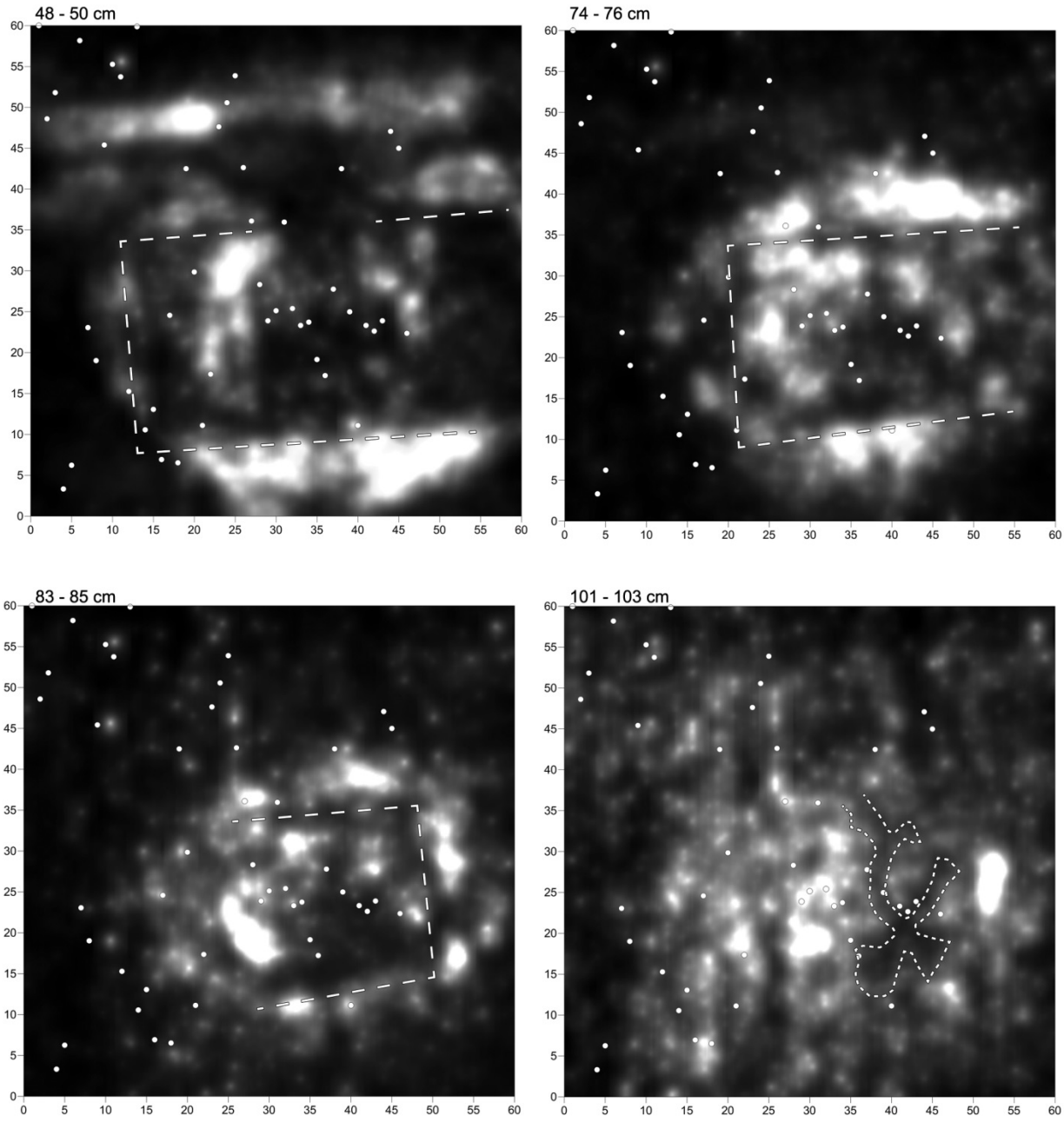

Figure 9. Multiple reflections and features plotted over the Mound C amplitude slices.

is present (see Figure 8). This feature also seems to be related to a series of the MRs (see Figure 9).

Mound D Results

The Mound D GPR grid is composed of 81 profiles collected along the y-axis over a survey area of 40 x 40m. Slices were generated in 3 cm increments along the z-axis. This mound yielded the simplest data of the three mounds surveyed with only one layer presenting an interesting archaeological context.

Between 87 and 90 cm in depth, a half circle is formed by areas of high amplitude to the west and south, while a smaller area of high amplitude appears directly to the east (Figure 10). Between them, an area of low amplitude forms another "X" like feature resembling the one found in the deepest context of Mound C, although the feature is not as clearly rendered in the Mound D

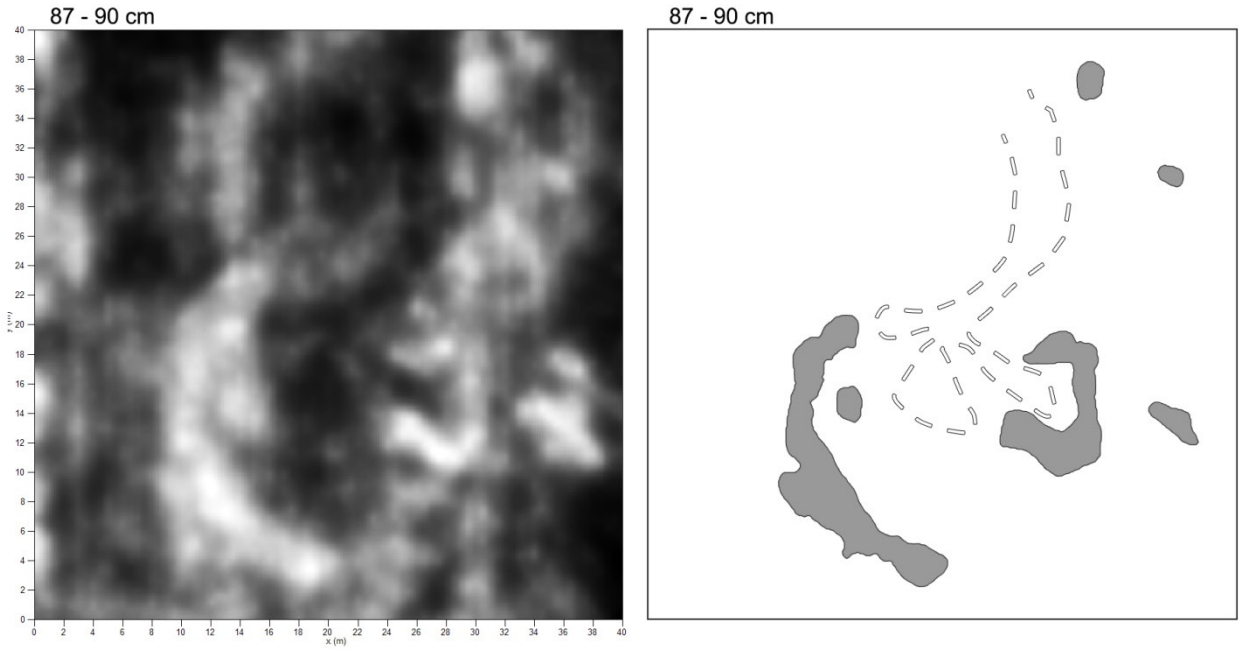

Figure 10. Amplitude slice from Mound D (left). Features drawn over the slice at the given depth (right).

data. A series of the MRs also appear to be closely related to the feature (Figure 11).

Discussion

A number of studies addressing architectural variation among Caddo archaeological sites identify the use of "specialized" buildings (Harrington 1920; Kay and Sabo 2006; Perttula 2009; Perttula and Rogers 2007; Rogers 1982; Schultz 2010; Spock 1977; Trubitt 2010; Walker 2009; Webb 1940). Specialized buildings are recognized by attributes such as extended entranceways, partitions, being unusually sized or shaped, and being associated with mounds. The structures associated with the mounds at the Collins site possess most of these characteristics and there is little question that they fall into the category of specialized buildings. However, understanding how the structures at the Collins site were used is less clear. In an attempt to understand the structural features in the Collins data, interpretation was facilitated by integrating the GPR data with the DEMs, the newly produced mound boundaries, the magnetic gradiometry data, and the orthoimagery in a GIS.

Mound B

Two different contexts seem to be evident in the amplitude slices from Mound B. However, teasing out distinct layers in the data, which might represent multiple construction episodes, is difficult as there does not appear to be thick layers of fill between potential episodes of construction. This makes it difficult to identify distinct layers within the profiles. Therefore, it is unknown if the features visible in each of the amplitude slices are concomitant (see Figure 6).

Starting with the deepest context of the Mound B GPR data, shown in the slice from 41-45 cm, a square structure is immediately apparent. A large extended entryway articulates the structure to the southwest. A circular feature of low amplitude centered within the structure likely represents a prepared floor. One of the MRs plotted in Figure 7 is positioned in the southwest corner of the structure, potentially representing a corner post.

In the shallowest context of the Mound B GPR data, three white circles representing areas of high amplitude in the southeast quarter of the slice are interpreted to be post molds. The prepared floor from the previous layer continues into this shallower context. One of the post molds is centered within the prepared

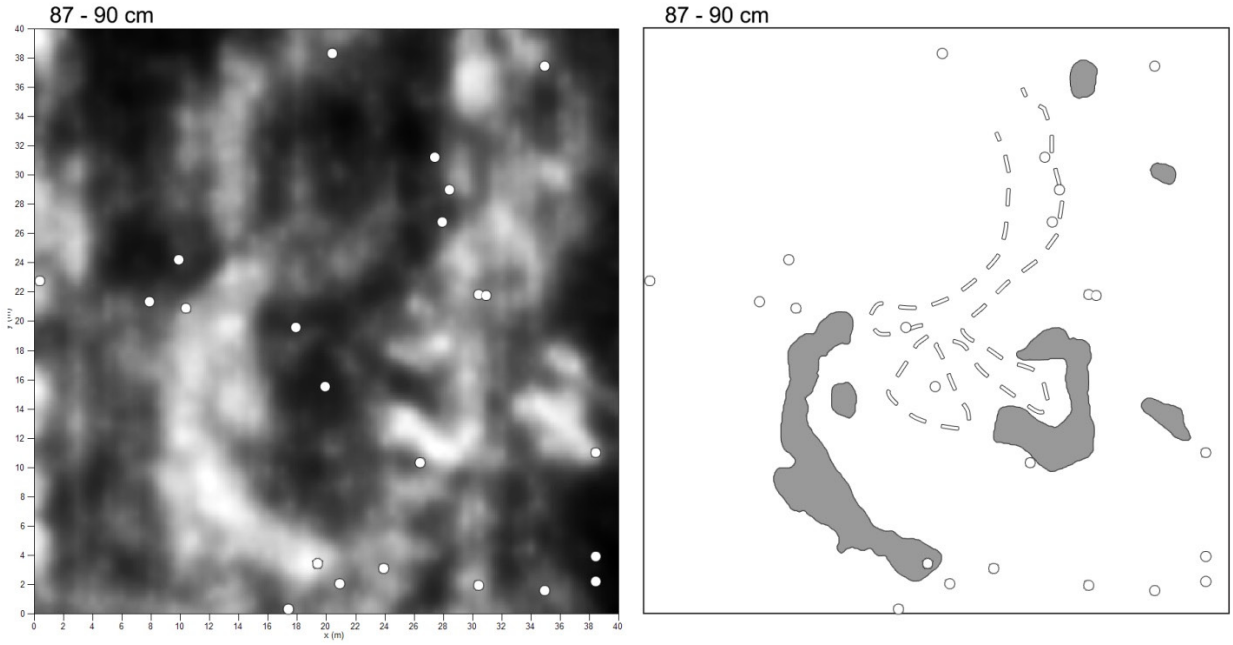

Figure 11. Multiple reflections plotted over the Mound D slice (left) and over the drawn features from Mound D (right).

floor, which in turn is roughly centered within the square structure suggesting that the post is a center post. Although walls are no longer evident in this layer, based on the positioning of the structure seen in the deeper layer, the two other post molds may be corner posts. Three MRs are grouped within the annex extending to the northwest of the prepared floor. These may be post molds associated with internal architecture.

It seems likely that the features present in the amplitude slices from Mound B represent charnel house architecture like that found at the Harlan site (Bell 1972). Harlan-style charnel houses have also been uncovered during excavations at the two other multi-mound civic-ceremonial centers in northwest Arkansas, the sites of Goforth-Saindon and Hunstsville (Kay et al. 1989; Kay and Sabo 2006). The Collins Mound B structure has a number of characteristics associated with Harlan-style charnel house architecture. The structure is perfectly square and has an extended entranceway opening to the southwest. A southwestern facing extended entranceway is keeping within a tradition identified by Kay and Sabo (2006: 44) in which "entryways oriented generally to the southwest, thus aligned with the winter solstice sunset" are pointing toward the direction symbolically associated with death.

Mound C

The GPR data from Mound C suggests that there are at least two, possibly three, different occupational layers containing structural elements present within the mound stratigraphy. The deepest context, as shown in the slice from 101-103 cm, exhibits what are interpreted as four post molds represented as four small circles of high amplitude organized in a "U" shaped pattern. Each of the four circles corresponds with multiple reflections present in the profiles, further supporting the interpretation that they are post molds. Directly to the east of the post molds is an area of low amplitude resembling the shape of an "X". There is not enough contextual information to identify this feature; however, it is possible that it represents an area of compacted soil. It is possible that it may be associated with a structure due to a series of MRs dotted along its perimeter.

Structural features become more evident when moving up to the middle context of the mound stratigraphy, as shown in the slices from 83-85 cm and 74-76 cm. In the slice from 74-76 cm, the shape of a structure measuring approximately 20 x 35 m takes form. The structure appears to have openings, which may represent entrances, in the middle of its north and south faces. These openings lead to areas of high

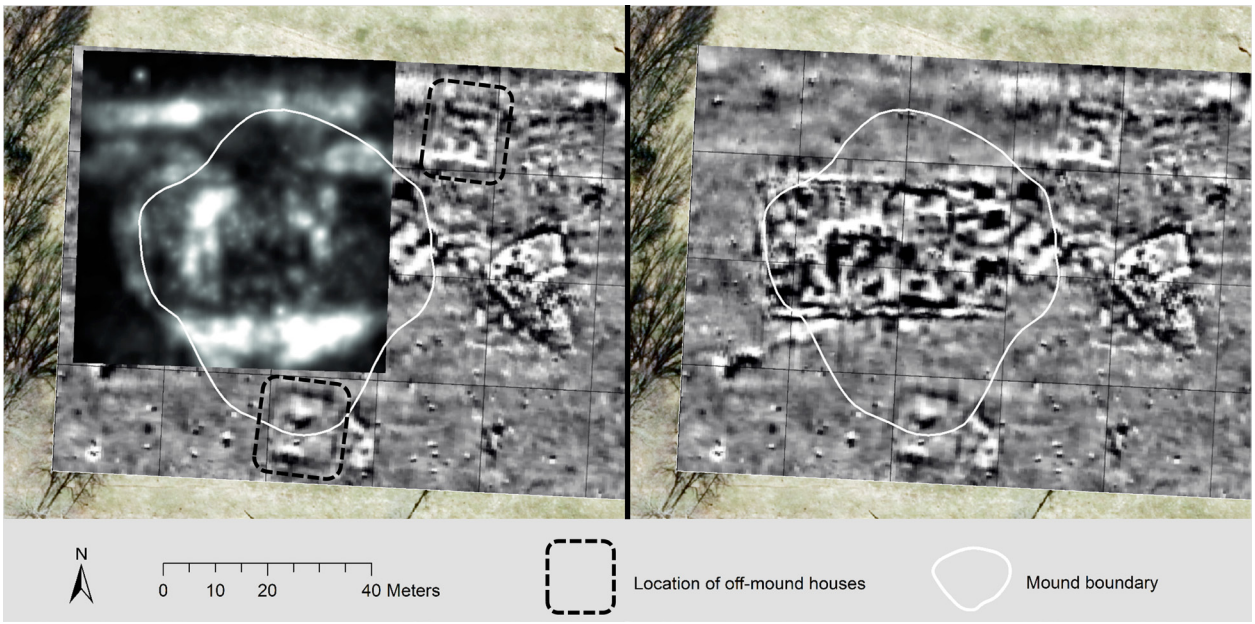

Figure 12. Side by side comparison of GPR and magnetic gradiometry data from Mound C. On the left, GPR data is draped over magnetic gradiometry data along with locations of off-mound houses mentioned in the text. Magnetic gradiometry data only in the imagery on the right.

amplitude within the structure, possibly representing internal architecture. Many of these areas of high amplitude continue in the same locations in the slices from 83-85 cm, 74-76 cm, and 48-50 cm.

The shallowest context of Mound C stratigraphy, as shown in the slice from 48-50 cm, clearly exhibits a rectangular structure larger than the structure from the middle context, measuring approximately 23 x 45m. This structure also appears to have entrances on both its northern and southern faces. The opening on the southern face corresponds to a feature in the magnetic gradiometry data that has been interpreted as an extended entryway (Sullivan and McKinnon 2013).

Regretfully, we are missing GPR data for the eastern boundary of Mound C, which might help in interpreting if there was an entryway on the east face of the structure. The magnetic gradiometry data from this mound (Sullivan and McKinnon 2013) shows an architectural feature exhibiting an unusual orientation on the easternmost part of the mound (see imagery on right side of Figure 12). In the magnetic gradiometry data, it appears that this unusual architectural feature is attached to the eastern face of the primary structure on the mound and that it may offer an entrance into the primary structure. Because magnetic gradiometry survey returns a two-dimensional view of variations in the magnetic field of the near-subsurface, it is difficult to determine the depth of the feature. And with the easternmost part of the primary structure missing from the GPR data, we are not able to determine if the smaller feature is indeed an unusual architectural feature associated with the primary structure or if it represents the remains of a square house concomitant with a different layer of occupation.

Also apparent in the magnetic gradiometry data are at least two small, square structures located adjacent to the mound (see Figure 12). Due to their low magnetic values, it does not seem that these smaller square structures were burned, and their sizes are appropriate to be houses. Each house is located near an entrance to the structure on the mound as seen in the GPR data. One possible interpretation is that the large structure associated with the shallow context of Mound C was used for a purpose that would require regular tending to by one or more officials who resided in the adjacent houses. Ethnohistoric accounts of the Hasinai Caddo by Spanish missionaries Fray Francisco Casañas de Jesús María and Fray Isidro Felis de Espinosa during the late seventeenth and early eighteenth centuries describe such a practice. At the temple of the xinesi, or the fire temple, a perpetual fire was maintained by the xinesi, or high

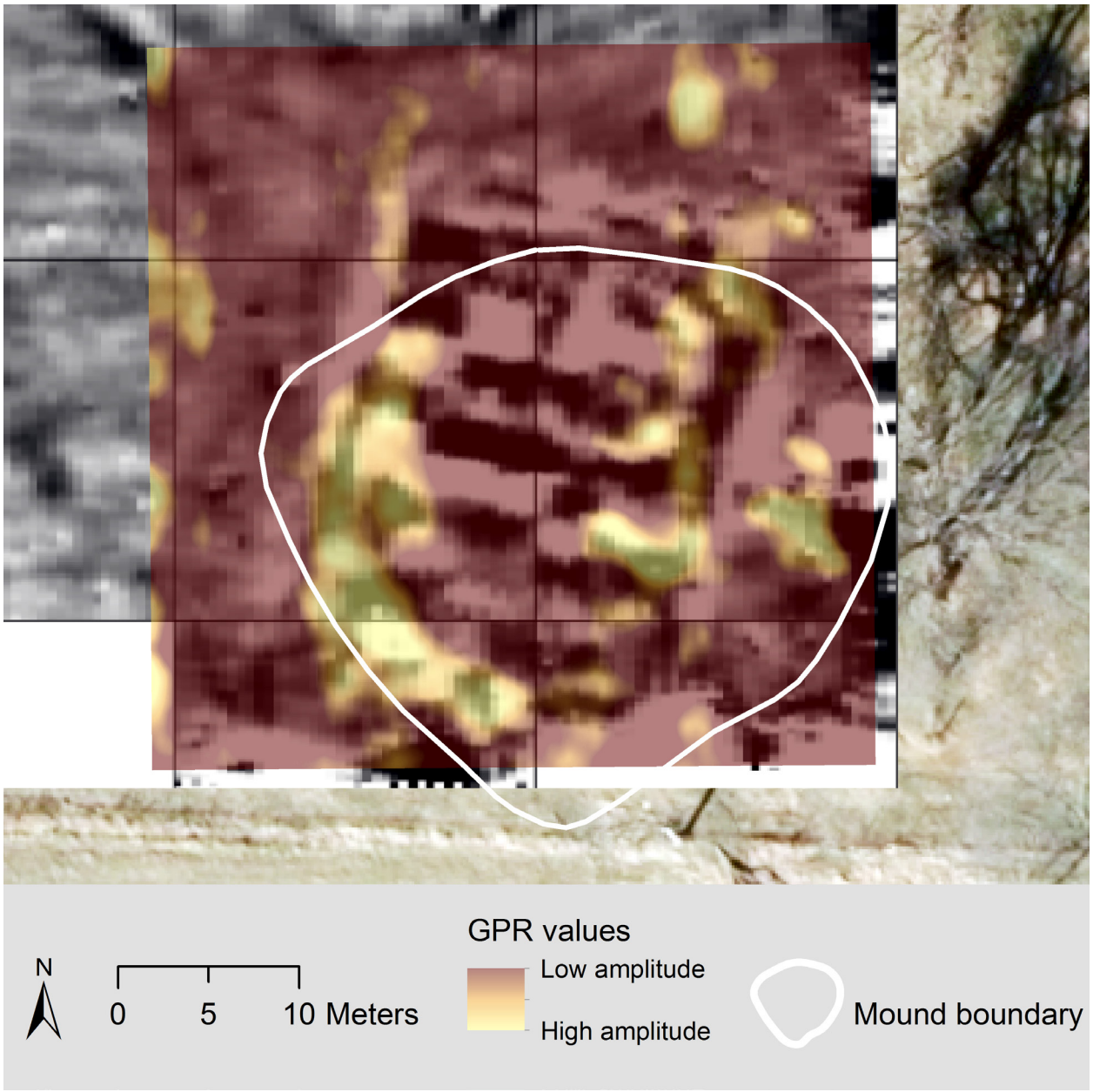

Figure 13. GPR data from Mound D displayed at 50 percent translucency and draped over the magnetic gradiometry data.

priest (Hatcher 1927). According to Casañas, the xinesi lived "about a hundred paces away" (Hatcher 1927:292) from the fire temple in a house which was much smaller than the fire temple (Hatcher 1927:290).

An additional interpretation regarding the architecture associated with Mound C is that it consists of a large enclosure containing an internal structure. This interpretation was first suggested by Sullivan and McKinnon (2013); and, although difficult to prove without excavation, it seems possible based on the recent GPR data. The potential for these structural elements to represent a charnel house is furthered as areas of high amplitude in the GPR slices from 83-85 cm, 74-76 cm, and 48-50 cm continue in the same locations throughout the slices. Multiple sources from sites containing Harlan-style charnel houses report the same orientation for post molds and walls used in successive building episodes (Bell 1972; Kay at al. 1989; Kay and Sabo 2006).

Finally, it should be noted that a historic road extending west to east across the northern part of the GPR survey is visible in the amplitude slice from 48-50cm. The road is also visible in the magnetic gradiometry data (Figure 12) although can no longer be seen from the ground surface.

Mound D

Mound D is the smallest of the three mounds in both diameter and height. Only one layer of the data, illustrated in the slice from 87-90 cm, provided an interesting archaeological context (see Figure 10). The features most apparent in the amplitude slice appear to be circular in nature. However, when overlaying the amplitude slice onto the magnetic gradiometry data, the circular features actually correlate to the linear structural features in the magnetic gradiometry data (Figure 13).

Although it is not known what the "X" like feature of low amplitude may represent (see Figure 10), it is interesting to note that a comparable feature seen in the deepest context of Mound C is roughly the same size and exhibits a similar orientation. Similarly, both of these features have a series of MRs associated with their peripheries (see Figures 9 and 11). Other than making basic descriptions of the features present in the geophysical data from Mound D, it is difficult to provide further interpretations based on the data available.

Conclusions

The use of inquiry-based archaeogeophysical survey over the northern section of the Collins site has yielded information that would otherwise be unattainable given the restriction on excavation at the site. Ground-penetrating radar provides a complementary dataset to compare against previously acquired magnetic gradiometry data and reveals a number of new structural features over the mounds. A number of the structural attributes found in the architecture on Mound B are comparable with those found in Harlan-style charnel houses. The presence of a Harlan-style charnel house at the Collins site supports the idea of a shared ideology, traditions and ceremonialism among the contemporaneous peoples living in the western Ozark Highlands.

It is likely that multiple episodes of construction took place over Mound C. The structure most prominently visible in the geophysical data may represent a special use building tied to priestly activities. Its large size, which is larger than structures reported at other mound sites in the region, suggests communal or ceremonial use.

The geophysical data presented in this article highlights the potential wealth of information that the Collins site holds for understanding the nature of ceremonialism and social organization in the northern Caddo area.

Acknowledgements

This research was supported by the Arkansas Archeological Survey and the Center for Advanced Spatial Technologies at the University of Arkansas. Adam Weiwel and Autumn Cool collaborated with aerial imaging. Bill and Mary Shofner graciously provided access to the northern portion of the site. Special thanks are owed to the numerous volunteers who generously gave their time to assist with the surveys. Without them this research would not have been possible.

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Current Research:

Ceramic Production and Distribution during the Formative Caddo Period: A Stylistic and Provenance Investigation of the Arkansas River Valley

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The Formative Caddo Period (A.D. 850-1100) of eastern Oklahoma was marked by dramatic material and ritual changes, culminating in the construction of aggregated villages and ceremonial centers (Girard et al. 2014). Formative Caddo groups are notable for their highly complex and ritually-charged ceramic vessels that were unlike anything archeologists have seen in the American Southeast (Bell 1984). Tracing the rapid development and spread of this early fine ware assemblage across a variety of social, ritual, and mortuary contexts is key to understanding the shared religious and ritual traditions of the pre-Columbian Arkansas River valley and surrounding Coastal Plain drainages. Yet despite nearly 60 years of archeological research, insight is still lacking into the organization of Formative Caddo ceramic production and the mechanics of exchange between the northern and southern Caddo areas.

While archeologists have shown Formative Caddo fine wares were locally produced in the Red River valley and surrounding Coastal Plain drainages (Girard et al. 2014:27-28), they have assumed that Caddo people in Arkansas River valley and Ozark Plateau locally produced them (Bell 1984). However, they are not recovered from the same contexts across both Caddo areas. Formative Caddo pottery is commonly found in both domestic and ritual contexts at Coastal Plain sites (Bell et al. 1969; Bohannon 1973; Burton 1970; Rohrbaugh 1972, 1973; Wyckoff 1965, 1967, 1968) but are restricted to ritual contexts at ceremonial centers on the Ozark Plateau (Bell 1972; Brown 1996; Schambach 1982, 1988, 1990, 1993). The ritual contexts in which Formative Caddo ceramics are recovered are also quite different. At Coastal Plain ceremonial centers, such as George C. Davis in Texas and Crenshaw in Arkansas, Formative Caddo ceramics were deposited in off-mound, on-mound, and mortuary contexts. Yet, at ceremonial centers of the Ozark Plateau, such as Spiro, Harlan, and Brackett in Oklahoma, Formative Caddo ceramics were deposited exclusively in mortuary contexts. The marked contrast between Formative Caddo pottery use and deposition between the northern and southern ceremonial centers provides insight into the development of Formative Caddo ritual practices and traditions. It suggests there may be fundamental differences in the ritual programs of the northern and southern Caddo areas.

To examine the emergence and spread of these traditions, I am conducting a regional-scale study of the production and distribution of Formative Caddo pottery in the northern and southern Caddo areas. This project has two major components. First, it involves the analysis of clay chemical composition of 264 fine ware sherds from five ceremonial sites in the Arkansas River Basin (Figure 1). I applied for and was granted a National Science Foundation Dissertation Improvement Grant to pay for Instrumental Neutron Activation Analysis (INAA) on these sherds. Once the INAA is completed, I will compare the Arkansas Basin results with previously generated elemental sourcing data from the Coastal Plain region (Perttula and Selden 2013). Secondly, this project involves a stylistic analysis (i.e., following Plog's [1980] and Early's [2012] research on style) of the forms and designs on 199 fine ware vessels to understand their overall design grammar and structure. The sites to be studied include Spiro, Harlan, Norman, Reed, and Brackett in the Arkansas River drainage and Crenshaw, Boxed Springs, George C. Davis, and Mounds Plantation in the Gulf Coastal Plain region (Figure 2). I hypothesize that either (1) Formative Caddo fine wares found in the Arkansas River basin were imported from the Red River valley and surrounding Coastal Plain drainages, where they were fabricated, or (2) Formative Caddo vessels were manufactured in the Arkansas River Basin, but intended use was restricted for mortuary

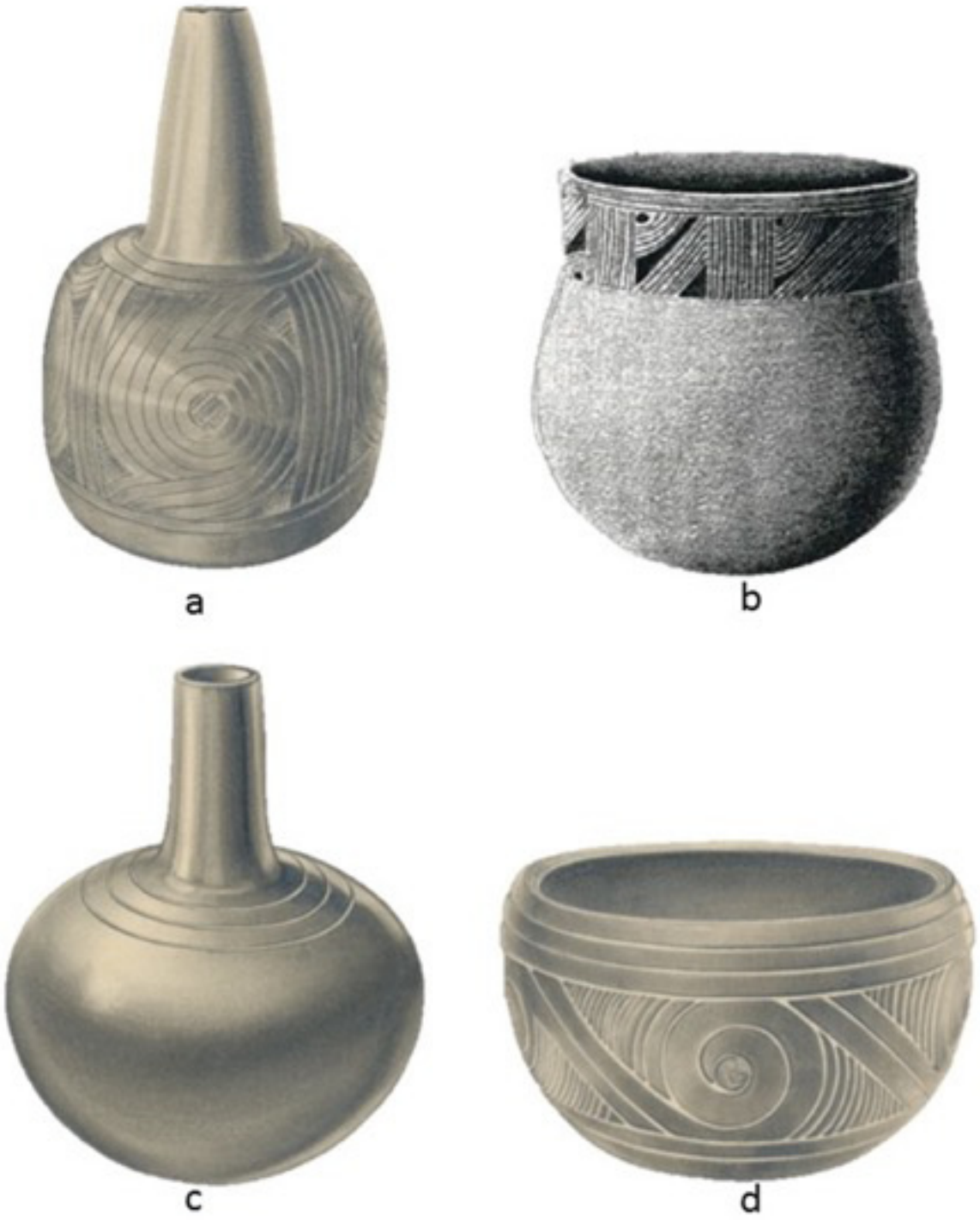

Figure 1. Formative Caddo ceramic types selected for study: a, Spiro Engraved; b, Holly Fine Engraved; c, Hickory Engraved; and d, Crockett Curvilinear Incised.

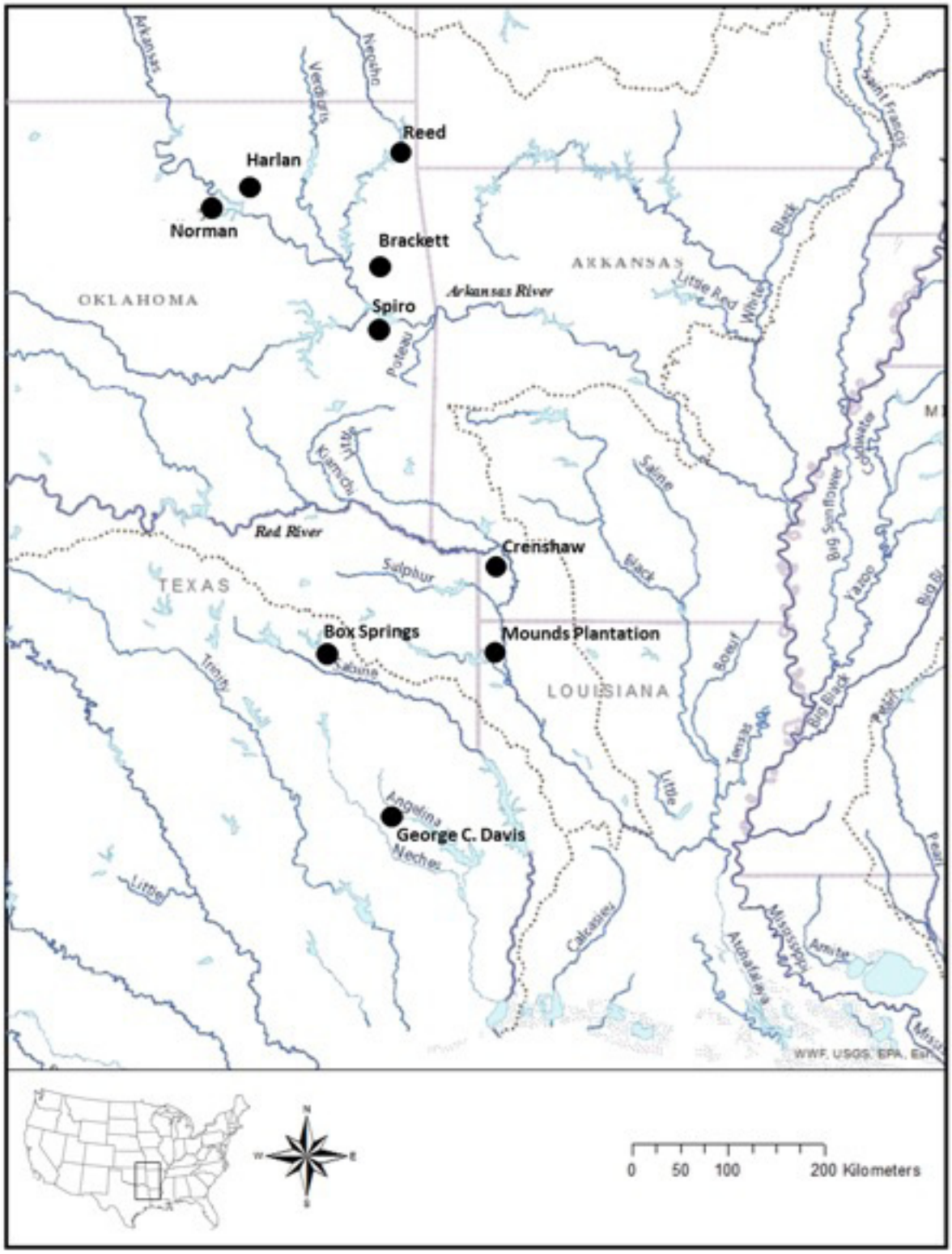

Figure 2. Sites selected for research in eastern Oklahoma and southern Caddo area.

purposes. Whether the first or second hypothesis is supported by this research, it will determine whether this is a single or separate communities of practice, and will have major implications for how we view the integration of these communities and the origins of Caddo ritual traditions.

Ritual Mode of Production, Distribution, and Communities of Practice

If Formative Caddo fine wares were used strictly for mortuary purposes at every major ceremonial center in the northern Caddo area, who made them and what prompted their exchange? Caddo archeologists have not assumed a significant degree of craft specialization during the Formative Caddo period (Girard et al. 2014) because traditionally the idea of specialization for ritual use and wide-scale distribution is thought to be present in more developed or ranked societies (Van Keuren et al. 1997). In fact, craft specialization in societies with an emerging organizational complexity have been primarily attributed to economic or political factors, such as risk avoidance, population increase, or aspiring charismatic leaders (Bell 1984; Blitz 1991; Netting 1990; Price and Brown 1985; Renfrew 1982; Wills 1992; Wilson 1999). An alternative to these models is the "ritual mode of production" in small scale or middle-ranged societies (Spielmann 2002, 2008). This approach argues that intensified craft production and distribution in small-scale groups is a social response to an amplified demand by individuals and communal ceremonial obligations (Spielmann 2002:195). Intensified craft specialization in small scale groups is not so much about meeting the demands of subsistence. Instead, it is about meeting the demand for "socially valued goods" that were used for ritual purposes. Central to this premise is an emphasis on the community in which these socially valued goods were produced and then distributed "as they fulfill ritual obligations and create and sustain social relations" (Spielmann 2002:196-167).

Sassaman (2004:39), when examining the origins and spread of pottery in native North America, reasoned that ritual demand for pottery for ceremonial and mortuary purposes "may have led to increased demand for vessels in general." Saunders and Wrenn (2014) studied the ritual modes of production and distribution of a Late Archaic type called Orange pottery in northeast Florida. Although much more data was needed, their findings suggested that this early pottery may have been produced by potters strictly for ritual use and distribution across different drainages. Moreover, Miller (2014) investigated the ritual economy of bladelets from Hopewell earthworks. Miller's findings suggested that only a few craft specialists may have been responsible for the moderate production and distribution of the stone blades.

Another major thrust of this research is to theoretically frame it with communities of practice to achieve a more nuanced understanding of how and why different Formative Caddo groups emerged and interacted with one another. The theory of communities of practice offers a way to recognize past communities' capacity to be different, and at the same time be socially and ritually connected through a system of social networks that were constituted and maintained by the production and distribution of specific objects (Joyce 2012). A community of practice is defined as a group of experienced producers and apprentices who participate in the learned production of a shared material enterprise (Minar 2001a, 2001b; Stark 2006; Van Keuran 2006). A regional stylistic and INAA study by itself may not necessarily imply more fine-grained scales of organization of pottery production. However, it would seem logical that if one of the primary goals of one or more community of potters was to produce formative fine wares in quantities so that they could be exchanged with northern Caddo groups who utilized them in significantly different ways, then this comparative study would effectively demonstrate a broad but necessary understanding of the organization of pottery production and distribution by emphasizing separate communities of practice.

Motivated by this research, I ask whether northern or southern Caddo communities of potters might have been involved in the production and distribution of Formative Caddo pottery for mortuary use at Arkansas Basin ceremonial centers. Once production locales are determined through INAA, it may show that this mode of ritual production and distribution was an integral way in which Formative Caddo groups created ceremonial obligations and maintained long-

distance relationships with one another. To understand distinct Formative Caddo communities of practice in time and space, one must first have a clear understanding of the social and ritual contexts of ceramic production and distribution (Fenn et al. 2006). Archeologists have a clearer understanding of the organization of pottery production and distribution in the southern Caddo area (Perttula 2013a; Selden 2013; Selden et al. 2014), but still lack the insight necessary to understand pottery production and distribution in the northern Caddo area. Before we can truly recognize more fine-grained scales of pottery production and distribution in the Caddo area, such as household and community scales of production (e.g., Abbott 2009), we first need to untangle the roles of ritual production and distribution by considering the cultural region in its entirety (Renfrew 2001).

Concluding Remarks

By integrating multiple lines of ceramic evidence and considering these finer-scale data in regional contexts, this study will shed light into the intersections of production, distribution, exchange, and ideological dynamics during the Formative Caddo period. Archeologists have not only shown the major archeological implications by highlighting contextual differences in ceramic use and the ritual motivations for production and exchange in a region with small scale societies (Wallis 2014; Wilson 1999), but they have also made known the power of using INAA as a salient method to understand the organization of production and distribution that emphasized unique perspectives of social interactions and ritual practices (Levine et al. 2015; Wallis et al. 2010). This project thus seeks to understand Caddo ritual motivations of formative fine ware production through a detailed INAA and stylistic study that will distinguish which communities of potters produced them across the region. In other words, I will be able to show how the same pottery types mattered differently among separate groups of the Caddo. Whether northern or southern groups produced formative fine wares, this study will add to our current understanding of early Caddo development. Finally, this research will have major implication for how we interpret emerging Caddo ritual practices and traditions, and potentially point to a much larger regional exchange between separate groups of the Caddo much earlier than is currently accepted.

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Current Research:

Recent Documentation of Ceramic Vessels and Other Funerary Objects in the Titus Phase Cemetery at the Tuck Carpenter Site, Camp County, Texas

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Recently, we had the opportunity to complete the documentation of Late Caddo period Titus phase ceramic vessels and other funerary offerings from the Tuck Carpenter site (41CP5) in the Big Cypress Creek basin in Camp County, Texas (Figure 1). This portion of the funerary assemblage from the site has been in the hands of R. W. Walsh since the 1960s. Unable to properly care for the assemblage, he recently donated his collection to an anonymous individual, who graciously allowed us to fully document these funerary offerings.

The Tuck Carpenter site (41CP5), on Dry Creek several miles from its confluence with Big Cypress Creek (see Figure 1), is perhaps the best known Titus phase cemetery in the Big Cypress Creek basin in East Texas. This is due to the careful analysis and reporting of the recovered funerary offerings and remains from 45 burials excavated by Robert L.Turner and R. W. Walsh between 1963-1967 (Turner 1978, 1992). More than 95 percent of the graves had the bodies of single individuals laid in an extended supine position on the floor of the pit, but two burial features (Burials 21 and 23) had two individuals placed side by side in the burial pit.

The Tuck Carpenter site is a large community cemetery that was apparently used for the interment of Caddo peoples for a considerable span of time in the fifteenth to the seventeenth century A.D. The burials were laid out in an east-west direction in a number of rows (Turner 1978:Figure 3) (Figure 2), amidst an existing midden deposit. A wide assortment of funerary offerings were placed in the graves, including 402 ceramic vessels, eight ceramic pipes, four ceramic ear spools, two wood ear ornaments, one sandstone ear spool with a copper plate covering, one sandstone ear spool, 57 Talco arrow points, 19 Maud points, 55 Bassett points, 57 Perdiz point, one arrow point of unidentified type, one large chipped biface or Galt biface (Thurmond 1990:Table 23) of non-local Central Texas chert (Thurmond 1990:144), one biface fragment, seven celts, one metate, four manos, four abrading stones, two polishing stones, one chipped gouge, deer mandibles, deer beamers, clay pigment masses, one marine shell columella bead, turtle carapaces, and mussel shells (Turner 1978:12-49). Perttula et al. (2010) documented 200 ceramic vessels from the Turner collection from the Tuck Carpenter site, along with four ceramic elbow pipes, while Perttula et al. (2014) documented another 14 vessels in the Turner collection; the provenience of two of these vessels is not known.

There are another 65 ceramic vessels in the Margaret Hinton collection from the Tuck Carpenter site (Perttula et al. 2012). The provenience of these vessels in burial features is unknown, but they were likely obtained from looted burials obtained by unknown individuals. Such looted burials were plotted by Turner (1992:Figure 2) as being in the northern and eastern parts of the cemetery.

The Walsh collection from the Tuck Carpenter site includes 175 ceramic vessels, three ceramic elbow pipes, 45 arrow points of the Perdiz, Bassett, Maud, and Talco types, one large Galt biface made from a Central Texas chert, a single petaloid celt of Ouachita Mountains greenstone, four deer bone beamers (see Turner 1978:Figure 10b-e), and 29 unmodified mussel shell valves from two burial features.

Including the Walsh collection with other known collections from the Tuck Carpenter site, a total of 452 ceramic vessels have now been documented from at least 45-50 burial features at the site (see Turner 1978, 1992). These vessels include utility wares (26.8 percent of the vessel assemblage), fine wares (67.5 percent), and plain wares (5.8 percent); more than 98 percent of the vessels are tempered with grog. Among the different

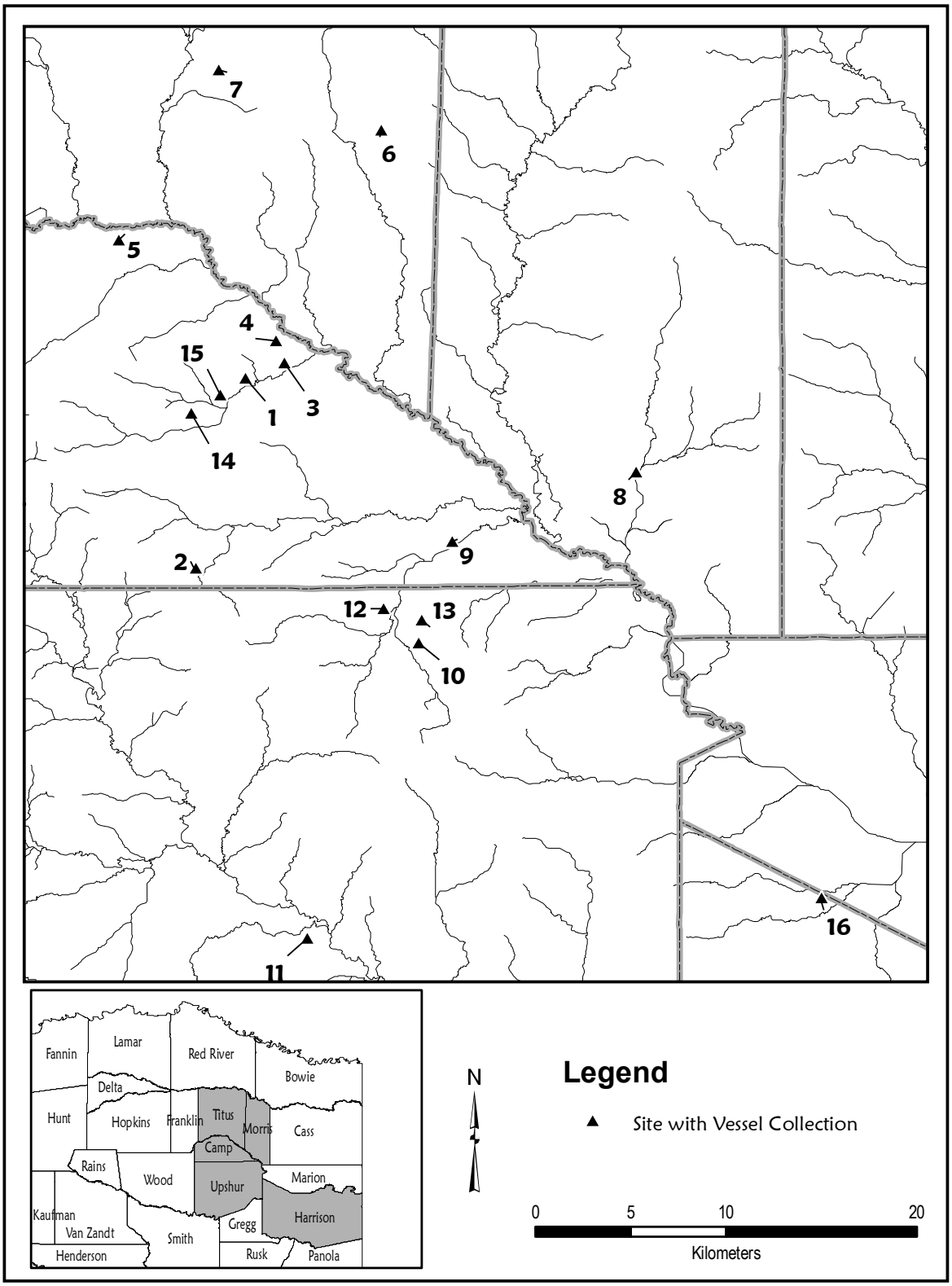

Figure 1. Location of sites with documented vessel collections in the Big Cypress Creek basin in East Texas, including the Tuck Carpenter site: 1, Tuck Carpenter; 2, Johns; 3, Harold Williams; 4, Guest; 5, Horton; 6, Alex Justiss; 7, Keith; 8, Lone Star Lake; 9, Rumsey; 10, Keeling; 11, Moughon; 12, Graydon Adkins #1; 13, Graydon Adkins #2; 14, Lineburger;15, Pug Wilson; and 16, Patton.

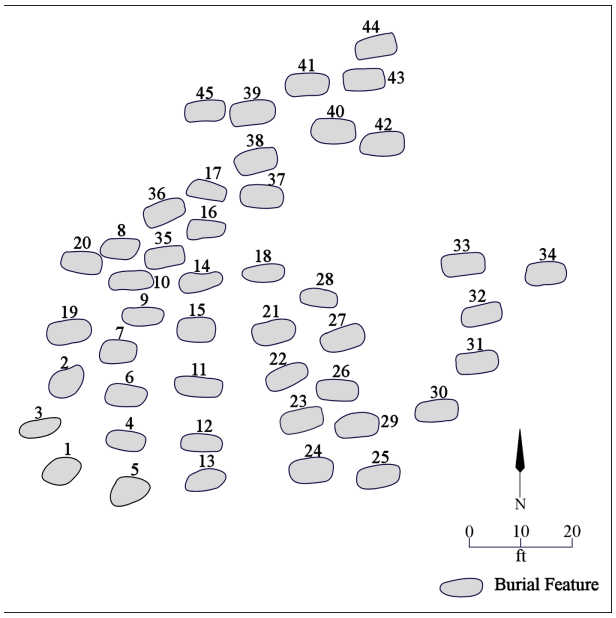

Figure 2. Plan of the cemetery at the Tuck Carpenter site.

wares and identified decorated types, the most common utility wares are Harleton Appliqued, Mockingbird Punctated, Maydelle Incised, and Bullard Brushed jars. The most common fine wares are Ripley Engraved, var. Carpenter and Ripley Engraved, var. Galt, but also present in burial features are other Ripley Engraved varieties, Avery Engraved, Hood Engraved, Johns Engraved, Simms Engraved, Turner Engraved, and Wilder Engraved vessels. These are carinated bowls, compound bowls, bottles, bowls, effigy bowls, jars, and ollas. Red or white pigments were rubbed in the engraved lines on 48 percent of the fine ware vessels.

The most distinctive of the vessels in the Walsh collection is an engraved effigy bowl from Burial 27. It is a large effigy bowl that represents an abstract human head and body, with a broad tab tail (Figure 3). The hollow effigy head has an appliqued nose (32 mm in length and 17.5 mm in width) and two small openings at the base of the node. To the sides and below the nose are two circular appliqued nodes (16-18 mm in diameter).

The opening of the bowl sits on the body mid-section, and there is a single circular engraved line around the opening; there are small (4.1-5.0 mm in diameter) suspension holes above and below the opening. On either side of the body are three sets of cross-hatched engraved diamond elements with a red pigment rubbed in the engraved lines. The broad rectangular tail or platform below the bowl opening has

Figure 3. Effigy bowl (Burial 27, Pot 14) from the Tuck Carpenter site.

a central appliqued ridge (see Figure 3) and two sets of engraved hook arm elements that do not meet, such as are seen on Wilder Engraved vessels.

The distribution and co-association of specific ceramic types and varieties with specific arrow point types indicate that burial features with Perdiz arrow points date early in the Titus phase use of the Tuck Carpenter cemetery, followed by burial features with either Bassett or Bassett/Maud points, and then last by Talco arrow points. Bounding the temporal interval of the different cemetery episodes of use suggests the following: (1) the earliest burial features, with Perdiz points and a variety of ceramic vessel types, likely date from ca. A.D. 1430-1500 (Perttula 2012:374); (2) the burial features with Bassett points date after ca. A.D. 1500 (see Kelley 2012:411), and those with Bassett and Maud points likely date from ca. A.D. 1500 to ca. A.D. 1600, or thereabouts; and (3) the burial features with Talco arrow points likely date after ca. A.D. 1600, and may date as late as ca. A.D. 1680. There is a single radiocarbon date from the Tuck Carpenter site: A.D. 1590 + 60 from charred logs in Burial 10 (Turner 1978:98). Burial 10 is one of Turner's Late Component burials, generally associated with Talco arrow points and Ripley Engraved, var. McKinney vessels. The Late Component burials—those with Talco arrow points and Ripley Engraved, var. McKinney vessels—are clustered only along the eastern and western margins of the cemetery (Figure 4), suggesting they were the youngest burial features in the cemetery.

The majority of the burial features, in the core of the cemetery at Tuck Carpenter, may date from as early as ca. A.D. 1430 to around ca. A.D. 1600. The latest burials at the margins of the cemetery (see Figure

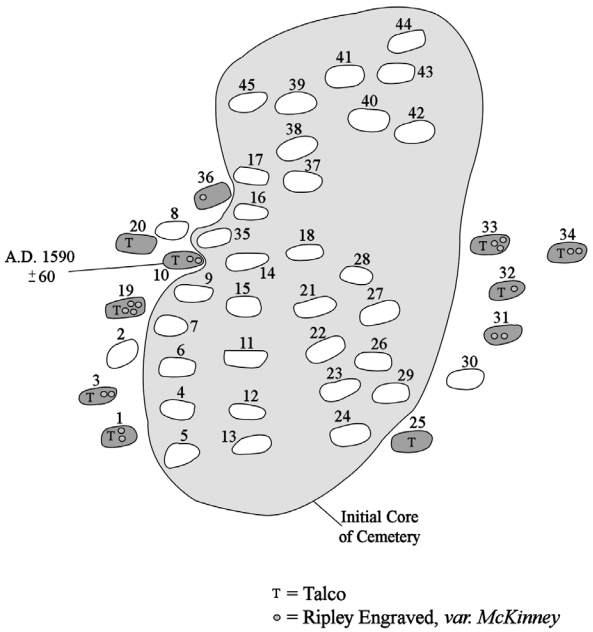

Figure 4. The core area of the Tuck Carpenter cemetery and the location of Late Component graves along its margins.

4) may date to a generation of use between ca. A.D. 1600-1680, and have Talco arrow points and Ripley Engraved, var. McKinney vessels. The Group 4 and 5 elite or high status burials identified by Fields et al. (2014:Table 7.13) from the Tuck Carpenter site (Burials 2, 19, 23, 27, 31, and 40) all occur in the core of the cemetery in burial features primarily dating after ca. A.D. 1500, but none date clearly too much of the 17th century. Burial 40 is estimated to date from ca. A.D. 1430-1500 because of its Perdiz arrow point funerary offerings.

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Current Research:
Current Research in the Upper McGee Creek Drainage, Oklahoma

James Briscoe
Briscoe Archeology

In recent years the Choctaw Nation has acquired a roughly 80 square mile ranch in the western edge of the Winding Stair Mountains of southeastern Oklahoma (Figure 1). The land is currently a working ranch and timber management area. Choctaw Forestry manages timber activities and range management with the intention of returning the land to an oak savanna setting. Active logging of pine and selected hardwoods and on-going controlled surface burns are included in Forestry activity on the ranch. The project is supported by the Choctaw Nation Historic Preservation Department, which is responsible for the inventory and protection of the cultural resources found on the property.

Archeological surveys were conducted in the McGee Creek Reservoir area in the 1970s and 1980s (McGuff 1980; Perttula and McGuff 1993) and a wide range of significant cultural resources were located in the reservoir area, less than 10 miles south of the ranch. Only one previous survey was conducted on the ranch property, by the Oklahoma Conservation Commission in the 1980s (Brosowske and Vehik 1999) ahead of construction of an upland flood control reservoir. Significant archeological resources were recorded. Since very little was known about the ranch property itself, it was presumed that this portion of the McGee Creek drainage would also have a similar archeological importance.

The ranch is primarily mountainous with steep ridges, narrow to wide bench terraces (Figure 2), and generally flat and narrow floodplains along McGee Creek on the southern half and Brushy and Peaceable Creeks along the northern edge of the property. At the present time, archeological investigations have been confined to Atoka and Pittsburg Counties, Oklahoma. Approximately half of the land is heavily timbered and half is brushy pasture. Extensive outcrops of chert gravels are found throughout the area, both on slopes and along drainages. Briscoe Archeology is also

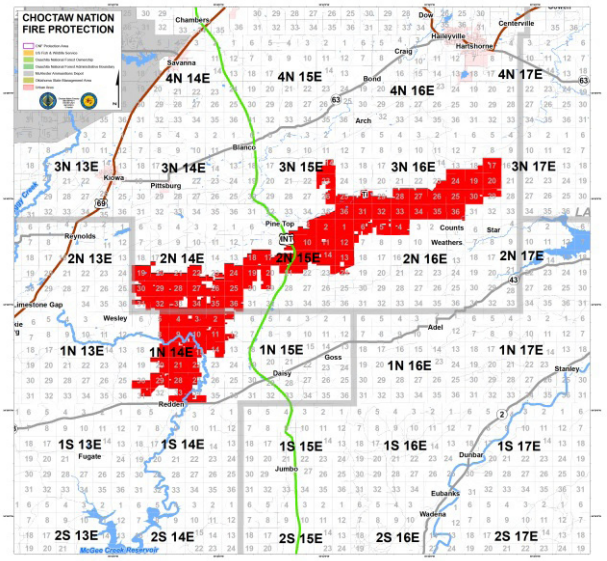

Figure 1. The Winding Stair Property. Daisy Ranch (current study area) has been designated for the portion west of the Indian Nations Turnpike (green line). Ti Valley Ranch has been designated for the portion east of the turnpike.

working with the Oklahoma Geological Survey to map and identify important lithic resources in the area.

Briscoe Archeology was contracted to begin large scale surveys on the property in 2015. So far approximately 14,000 acres have been covered (Briscoe 2015, 2016a-2016d, 2017a-b). Special attention is being placed on a 60 m-wide corridor along proposed fire fuel breaks and fence lines. Interior areas are covered by surface reconnaissance along transects of about 20-30 m intervals, walked in an ambling zigzag pattern. Around 400 archeological sites have been recorded so far.

Prehistoric sites ranging from Paleoindian through the Woodland Fourche Maline periods are common, with Fourche Maline black earth middens prevalent along major and minor stream terraces. Several large midden mounds were located along McGee Creek, suggesting that a large population occupied the area during the latter portion of the Late Archaic and possibly Early Woodland periods. Smaller encampments and activity areas are generally located

Figure 2. Typical mountain scenery of a feeder stream in the McGee Creek drainage.

on or near lithic resource areas and seasonal springs throughout the mountains (including ridge tops and ridge line benches). A basic pattern of substantial prehistoric camps/villages located along streams or along the ridgetops, surrounded by smaller camps or activity areas, has been observed.

Thus far, however, no Caddo era sites or artifacts have been recorded during the survey. The absence of evidence for Caddo occupations in this portion of the mountainous uplands may relate to the nature of a surface survey (intensive shovel testing was not performed due to a lack of soils and extremely rocky conditions), but is more probably an indication that areas this far from arable bottom lands were seldom visited or used by Caddo peoples. A similar conclusion was reached by Perttula and McGuff (1985, 1993:114) for the McGee Reservoir area, where only temporarily occupied Caddo localities were found.

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Current Research:

Current Research at Arkansas Archeological Survey's Henderson State University Research Station

Mary Beth Trubitt and Chelsea Cinotto
Arkansas Archeological Survey

During 2017, the Arkansas Archeological Survey celebrated its 50th anniversary with a series of website postings (http://archeology.uark.edu/who-we-are/50moments/), a forum at the annual meeting of the Arkansas Archeological Society, and a symposium at the annual Southeastern Archaeological Conference in Tulsa. In addition, the Survey made strides in documenting and archiving its history and collections. The Survey's Henderson State University (HSU) Research Station in Arkadelphia continued to inventory curated artifact collections and scan older paper records and color slides. Trubitt and Cinotto, assisted by volunteers during weekly Archeology Lab Days, are updating the station's curated collections database with artifact counts and weights, and using identified diagnostic artifacts to revise temporal information in the AMASDA state site files database. We are also adding new information on novaculite projectile point distributions to the "Arkansas Novaculite" website (http://archeology.uark.edu/novaculite/index.html) database (Figure 1). Ultimately, the novaculite distribution map will be expanded to create maps for each time period.

This attention to the station's curated collections inventory has sparked several new projects. We inventoried over 10,000 artifacts from 1973 testing at the Spanish Diggings site (3GA48) in Garland County, the largest of the Ouachita Mountains novaculite quarries (Etchieson and Trubitt 2013; Trubitt 2017a). Novaculite debris from this quarry can now be compared with excavated samples of chipping debris and in-process pieces from other quarries and habitation sites. Diagnostic dart points (Marshall and Gary, *var. Gary*) indicate use of the quarry at least during the Middle and Late Archaic and Early Woodland periods (ca. 6000-200 B.C.).

Cinotto researched the 1973 salvage excavation at the Caddo Hills site (3MN22) in Montgomery County.

Figure 1. Novaculite projectile points and chipped lithics from 3HS35 inventoried and added to the "Arkansas Novaculite" website database (ARASHSUD_N18776, photo by Chelsea Cinotto).

Figure 2. Braden Incised jar rim reconstructed from sherds found in the pit at the Caddo Hills site (3MN22) (ARASHSUD_N20019, photo by Chelsea Cinotto).

Nineteenth-century artifacts from the site were featured in an exhibit on HSU's campus. A pit feature with minimal disturbance and intact stratification contained quantities of ceramic sherds, lithic debris, and animal bone from Caddo period use of the site. Cinotto's detailed analysis of the ceramic sherd assemblage revealed that 86 percent of the sherds had shell temper and 30 percent were decorated. Based on the typed sherds (Figure 2), the pit dates to the late A.D. 1400s to 1500s. Ceramic deposition indicates the pit was filled with midden material. The decorated sherds had similarities with those found at the nearby Standridge site (3MN53), as well as with the ceramics at Dragover (3MN298), Adair (3GA1), and Poole (3GA3).

Trubitt completed re-analysis of 1973-1974 test excavations at the Hedges site (3HS60) in Hot Spring County, a Caddo mound center in the Ouachita River valley. Diagnostic arrow points (Figure 3) and pottery, as well as a new AMS date (Trubitt 2012), indicates construction, use, and burning of a series of buildings adjacent to the main mound during the Late Caddo period, Social Hill phase (ca. A.D. 1500-1650). Trubitt is currently writing a book manuscript comparing Hedges with Hughes (3SA11), a contemporary mound site in the Saline River valley about 30 km to the northeast. Past excavation at Hughes also uncovered residues of burned structures next to the main mound. At both sites, the buildings were burned at termination, unlike ordinary houses. In contrast to burned structures buried with "clean" earth that resulted in mounds, these structures were covered with midden containing quantities of ceramic sherds, chipped stone debris, and pieces of

Figure 3. Bassett and Maud arrow points from Hedges (3HS60) excavations (ARASHSUD_N16998, photo by Mary Beth Trubitt).

Figure 4. Engraved bottle (unprovenienced) from the JEC Hodges Collection documented in 2017 (ARASHSUD_N23824, photo by Chelsea Cinotto).

animal bone. The book incorporates interpretations about timing and activity patterning at these ancestral Caddo communities.

Analysis and interpretation of the 2013-2014 Society Training Program excavations at the Dragover site (3MN298) continues, as we are using architecture, foodways, and material culture to interpret social identity and community interconnections in the Ouachita Mountains. Trubitt is incorporating Instrumental Neutron Activation Analysis results of ceramic sherds from Dragover and from WPA excavations at Adair (3GA1) to characterize the local pottery in the upper Ouachita River drainage. A brief report on results of a survey conducted at the Edwards 1 site (3MN2831) as part of the 2013 Society Training Program was completed (Trubitt 2017b). Incorporating results from recent major excavations at Dragover and at Jones Mill (3HS28) as presented in numerous public talks, Trubitt is drafting a short book on Ouachita Mountains archeology intended for the Survey's popular series. The *What's for Supper?* book for children, created by members of the Ouachita Chapter of the Arkansas Archeological Society based on excavations at Dragover, can now be viewed as a pdf on the Survey's website (http://archeology.uark.edu/learn-discover/classroom-materials/).

Trubitt and Cinotto, assisted by volunteers, are nearing the end of a long-term project to document pottery vessels in the Joint Educational Consortium's Hodges Collection, curated at Henderson State University (Figure 4). Detailed descriptions of some artifacts in the collection, excavated in the 1930s-1940s by Thomas and Charlotte Hodges and by Vere Huddleston, have been published in the *Caddo Archeology Journal* (Trubitt 2017c; Trubitt and Evans 2015), and additional publications are planned. In September 2017, the Joint Educational Consortium transferred a set of human remains and associated artifacts to the Arkansas Archeological Survey, where they will undergo the NAGPRA inventory and notification process at the Survey's Coordinating Office in Fayetteville under the direction of Ann Early and Jerome C. Rose.

New fieldwork at the Survey's HSU Research Station was limited in 2017. Responding to inquiries

by landowners and local agencies, we recorded new archeological sites in Garland, Hot Spring, and Saline counties. Trubitt and Cinotto advised the City of Hot Springs on upkeep, access, and preservation of the Pest House or City Cemetery (3GA1061). The location of a "pest house" or city quarantine facility constructed in response to the 1895 smallpox epidemic, this site was used as a cemetery for victims of that epidemic as well as for poor residents and unidentified visitors who died in the city during the twentieth century. In the spring of 2017, Trubitt, Cinotto, and 11 local volunteers photographed and mapped depressions indicating numerous unmarked graves, the few gravestones and funeral home markers, and plantings and historic objects across the five acre cemetery (Figure 5). A final report (Trubitt and Cinotto 2017) included recommendations for cemetery preservation.

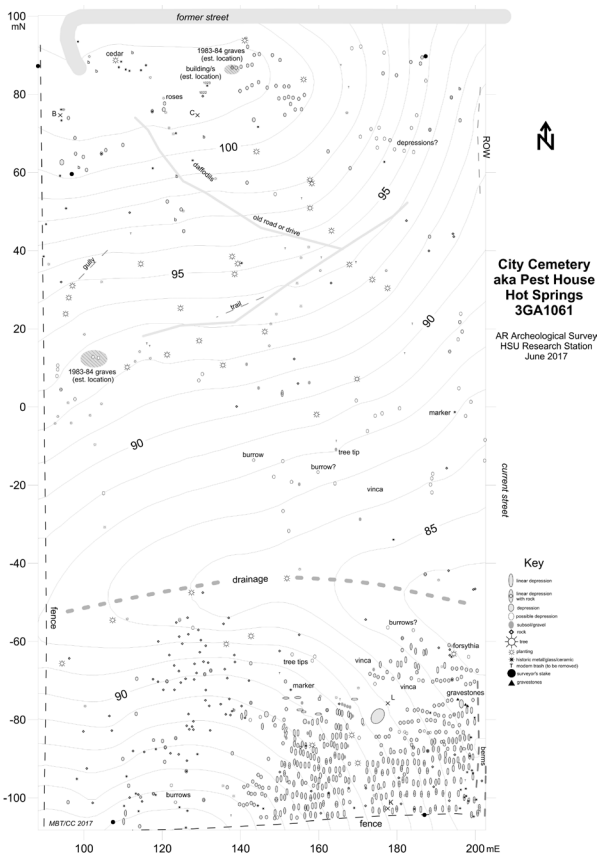

Figure 5. Topographic map of the Pest House Cemetery (3GA1061) showing grave depressions and other cultural features (map by Mary Beth Trubitt and Chelsea Cinotto).

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Current Research:

Toward a Collaborative Development of a Truly Comprehensive Multi-State Material Culture Database

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University of Central Arkansas

Throughout the past several years, I have been compiling, with the help of several Caddo researchers, a comprehensive multi-state database primarily composed of whole Caddo vessels from published excavations, private collections, and archaeological reports. At present, the database contains over 13,000 vessel entries from over 500 sites ranging from a single vessel recorded at a site to hundreds (Figure 1). Over the years, the database has evolved to contain, where applicable, attribute fields on type, variety, motif designs (largely using the Glossary of Motifs published in the Spiro shell engravings [Phillips and Brown 1978:145-56] and by others [Gadus 2013:219]), collegiate assignment, form, temper, decorative method (incised, brushed, etc.), context (burial #, site #, intra site location), pigment, archaeological phase, collector, repository, associated photographs, and reference citations. The database is managed using Microsoft Access where data are imported into ESRI ArcGIS and spatial analyses can be conducted.

This is a continual, and perhaps never-ending, work in progress where attribute fields are added, types are vetted, and new sites are included. In some cases, "Caddo-like" vessels from sites outside the Caddo Archaeological Area, or Caddo Homeland, are included in order to evaluate social interaction and exchange of ideas. Through this process, some initial insights into landscape scale social interactions and interregional relationships using this growing comprehensive database have been explored.

For example, I have used earlier versions of the ceramic database to evaluate spatial relationships of specific ceramic types (McKinnon 2011). This initial study used 284 vessels to evaluate the distributions of temper, form, and decorative treatment of Foster-Trailed Incised, along with select Cowhide Stamped and Keno Trailed vessels (Figure 2a). Using spatial statistics, seven "outlier" vessels were identified that suggested

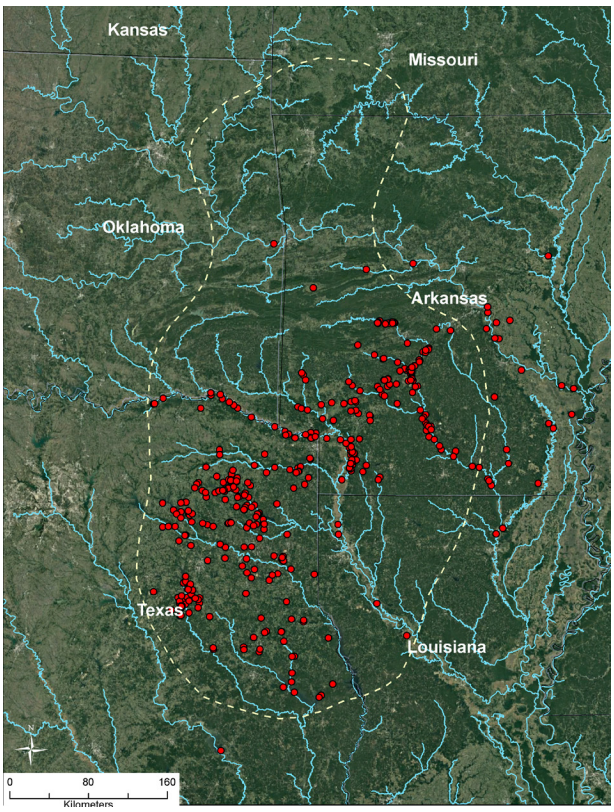

Figure 1. Current distribution of archaeological sites represented in the database.

contact with communities beyond the defined Caddo Homeland. A second study focused on the distribution of a select ceramic design or motif – the "rayed circle" – represented on types such as Avery Engraved, Belcher Engraved, and Hempstead Engraved (McKinnon 2016a). A total of 150 vessels containing variations of the rayed circle were spatially evaluated, which revealed distinct clusters across the landscape and a possible corridor of exchange between communities as expressed in design variation (Figure 2b). Each of these studies establishes a set of hypotheses to test as the database grows, spatial queries become broader, and new questions develop.

These preliminary case studies were productive and demonstrate the value of the spatial analysis

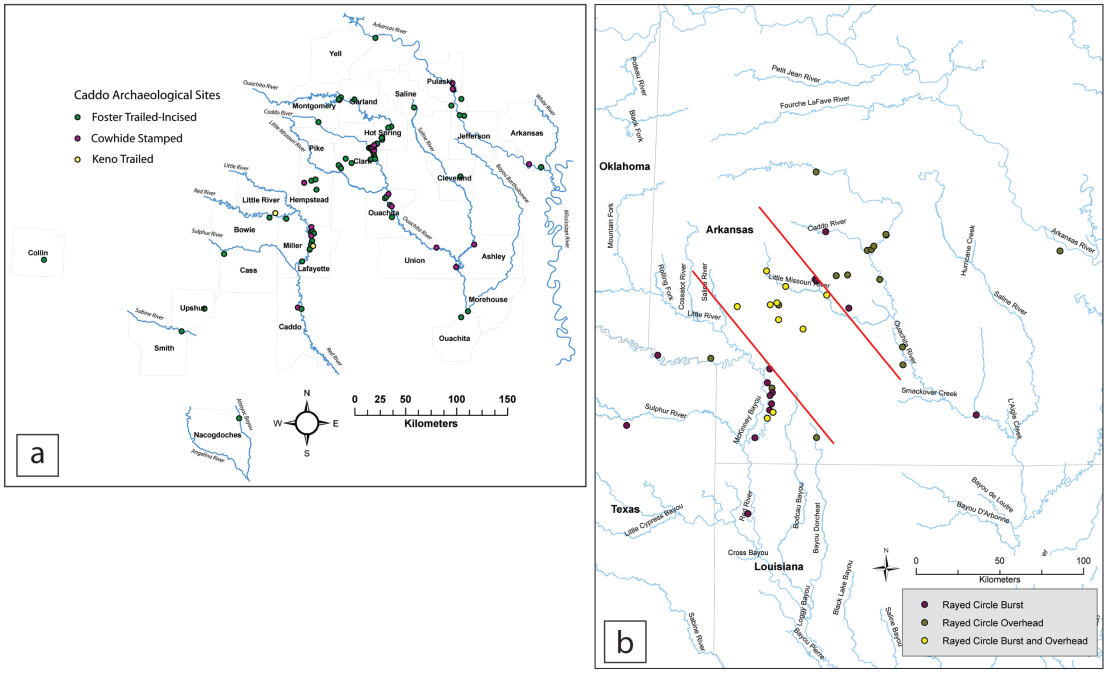

Figure 2. Distribution maps produced from the (a) Foster-Trailed Incised (McKinnon 2011:Figure 4) and (b) rayed circle (McKinnon 2016a:Figure 9) analyses.

of material culture that expands beyond traditional evaluations tied to river valleys and state boundaries. This type of distributional analysis provides a more complete evaluation of the interaction and exchange of ideas by Caddo peoples within the Caddo Homeland and with neighboring populations. While this database began and has grown to include whole ceramic vessels, the power of a GIS is the ability to integrate and overlay other spatial data to evaluate patterns. For example, I have been adding additional material culture items to the database from non-ceramic distributional studies, such as zoomorphic pendants (McKinnon 2015) and dog burials (McKinnon 2016b). When overlain, co-occurrences of material culture and the corresponding site relationships can be evaluated as representing distinct communities or "assemblages" that are "dynamic, transformative, and emergent through practice" (Harris 2004:79).

Moving forward, I intend to incorporate additional data such as instrumental neutron activation analysis, petrographic, and other quantitative attributes as they become available. To that end, I am putting a call out to researchers interested in helping build this material culture database by sharing databases, hard to find archaeological reports, or private collection information that have been compiled toward the shared

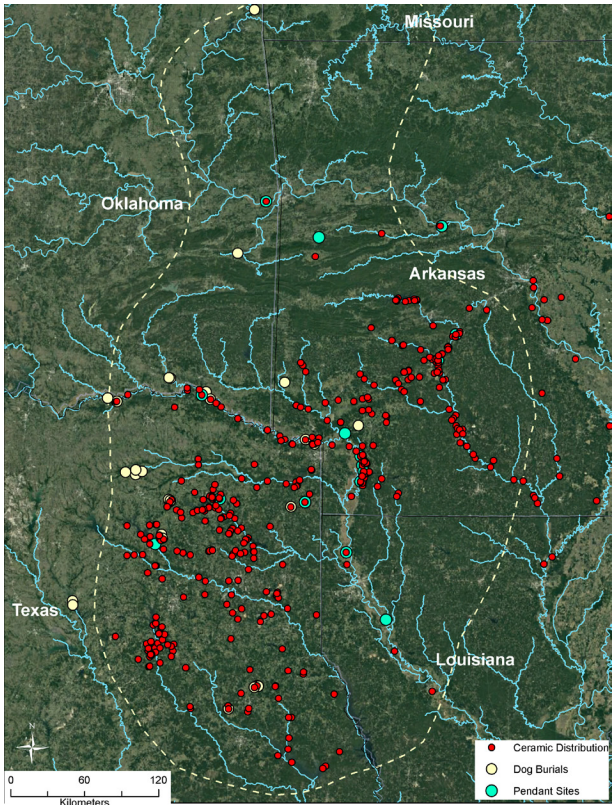

Figure 3. The distribution of ceramic vessels, zoomorphic pendants, and dog burials listed in the current Caddo material culture database.

goal of understanding Caddo interaction, identity, and ideological exchange. Through this, I hope for the collaborative development of a truly comprehensive multi-state material culture database.

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Report:
Abstracts from the 2017 Caddo Conference in Natchitoches, Louisiana

Jeffrey S. Girard
Pete Gregory
Northwestern State University

Adventures of the Mound Boys: The WPA Archaeologists of Eastern Oklahoma
Amanda L. Regnier

Between 1934 and 1942, the University of Oklahoma sponsored excavations at a number of Caddo mound sites in eastern Oklahoma. The excavations were funded by the Works Progress Administration to provide jobs in areas hit hard by the Great Depression. In this presentation, I use information from field notes, correspondence, and supervisor journals to reconstruct the lives of the "Mound Boys," the young, inexperienced field supervisors dispatched to rural Oklahoma to supervise massive field crews. Modern archaeologists will recognize many of the challenges the WPA archaeologists faced, and gain a new appreciation for technology

Printing the Past (3D Printing)
Curtis Desselles

The early natives of the Americas created objects using the technology of the the times. There were two concepts for creating objects. The first is called subtractive and the second is called additive. To create a projectile point, the native used the subtractive process. This process started with a substrate (flint) and the material was removed until the object was formed. The additive process involves starting with no substrate and then continually adding material until the object was formed. The additive process is the basis for 3D printing. 3D printing is analogous to creating a clay pot using the coil method. The nozzle of the 3D printer extrudes a filament made from plastic (PLA). The resolution of the filament can range from .003 mm to .1 mm in thickness. Each layer is added to the subsequent one until the object is formed. The 3D printer can only make an object that has been drawn using a CAD (Computer Aided Design) program or scanned from an object that already exist. With that said, a 3D printed object is only as good as the person who created the object.
The 3D printer can be invaluable in archaeology since it prints exactly what was scanned. Every imperfection is replicated and the material used by the 3D printer is cheap and durable. Artifacts that are fragile can be printed thus allowing the public to handle them without fear of damaging the object.

Excavations at the A. S. Mann Site (41AN201), Anderson County, Texas
David B. Kelley, Jon C. Lohse and Waldo Troell

Coastal Environments, Inc. conducted excavations at the A. S. Mann site in Anderson County, Texas under contract to the Texas Department of Transportation from May 2015 through July 2016. The work was performed to mitigate the impact of the widening of U.S. Highway 175 on the site. This paper will summarize previous investigations at the site and the preliminary findings of our recent research. We'll also discuss some of the directions that future analyses will take.

Edge of Empires: The Origin and Settlement of Louisiana's Neutral Strip
Dean Sinclair

This paper will explore the origin and settlement of the Neutral Strip, created in 1806 as a buffer zone between Spanish Texas and the territory acquired in 1803 by the United States known as the Louisiana Purchase. Transferred from Spain to France by Napoleon, and subsequently sold to the United States under Thomas Jefferson, the boundaries of the territory were poorly defined at best and, in the case of the western boundary,

completely undefined. Conflict quickly arose between Spain and the United States, with the Caddo as an intensely interested third party. The result was the creation of a buffer zone in which neither side would have authority. This situation would persist until 1821 and the signing of the Adams-Onis Treaty, which established the western boundary of the United States. The paper will also explore the settlers who inhabited the neutral ground, using data gleaned from the land claims records of 1824. The western boundary would not be fully "secured" in Louisiana until 1835, with the sale of the Caddo lands to the United States, amid early plans to remove the Great Raft on the Red River and fully open northwestern Louisiana to Anglo control and settlement.

Seed Bead Color Patterns for 18th/early 19th century Archaeological Sites in Northeast Texas and Western Louisiana
George E. Avery

Seed bead color patterns have been used in the American Northwest to distinguish the various American Indian groups (e.g. J. Gottfred, 1997, Seed Beads in the Northwest. Northwest Journal 4:2-9) and also in the Plains area [e.g. Stine et al, 1996, Blue Beads as African-American Cultural Symbols, Historical Archaeology 30(3):49-75]. Robert Turner, a veteran of numerous archaeological projects on 18th century sites in northeast Texas, told me that he had thought about using the color patterns of the seed beads recovered from these sites to investigate social groups. This presentation will update an earlier presentation that I did on seed bead color patterns in Northeastern Texas and Western Louisiana. It will include seed bead color patterns from Mission Dolores in Texas and Mission San Miguel in Louisiana.

Revisiting the 1984-1986 Arkansas Archeological Society and Survey Excavations at Holman Springs (3SV29), a Caddo Salt-Processing Site in Sevier County, Arkansas.
Carl G. Drexler and Fiona M. Taylor

Between 1984 and 1986, the Arkansas Archeological Society conducted excavations at the Holman Springs site (3SV29), in Sevier County, Arkansas, with the supervision and support of the Arkansas Archeological Survey. The data from that excavation are now being examined by the Survey's research station at Southern Arkansas University, in Magnolia. This paper gives a brief background on the project and relates our first steps in organizing and processing the data. This involves the identification and organization of the original excavation records, digitizing and mosaicking of the site maps, and oral history collection with those involved with the excavation.

Preliminary Results of GPR Survey at Spiro's Brown Mound
Scott W. Hammerstedt, Jami J. Lockhart, John Samuelsen, Amanda Regnier, George Sabo III, Tim Mulvihill, and Patrick Livingood

The Spiro Landscape Archaeological Project team recently conducted a ground-penetrating radar survey of the Brown Mound, a platform mound on Spiro's Upper Terrace. In this presentation, we discuss previous excavations into the mound and highlight some of the preliminary results of the survey.

The Caddo Grass House Project
Jeffrey M. Williams

A traditional Caddo grass house was built at Caddo Mounds State Historic Site near Alto, Texas during the summer of 2016. The fully functional grass house was constructed through a partnership with Caddo Nation elder Phil Cross and the Friends of Caddo Mounds. The Project included funding for a Caddo apprentice to work with Phil and the production of a documentary film that recorded the construction of the Caddo house from the identification and collection of raw materials through the final thatching. The new grass house provides Caddo Mounds State Historic Site with a tangible and visual foundation for interpreting Caddo lifestyle and culture. The Caddo house creates multiple opportunities for in-depth cultural exchange and offers supplemental historical reference of the Caddo people through the preservation and dissemination of Caddo knowledge about the skills required to gather the needed natural

resources and the processes of design and construction of traditional Caddo grass houses.

Colonoware and European Pottery from Late 18th and Early 19th Century Sites in Northwest Louisiana
Jeffrey S. Girard

This paper compares ceramic assemblages dating to the late 18th and early 19th centuries from different cultural contexts in northwestern Louisiana. The contexts include residences of French and Creole planters of the Bayou Brevelle and Rivière aux Cannes communities along Cane River below Natchitoches; French/Spanish/Caddo residences of the Bayou Pierre community in the uplands between the Red and Sabine rivers; and the Timber Hill Kadohadacho community near Caddo Lake (in Texas).

"Reclaiming Caddo Pottery Types-Culturally Relevant Names"
Jeri Redcorn

Caddo Pottery Types lack cultural relevance for Caddo people in almost every instance. As descendants of the people who created these ceramics, the Caddo should experience a closer connection and ownership of these artifacts. It seems Caddo Conference participants would be an appropriate body to begin a serious discussion on the possibility of changing type names to reflect Caddo culture and history.

Caddo Canteens: A Study of Certain Small Caddo Ceramic Vessels and Their Possible Use as Edge-Tone Aerophones
Jim Rees

This paper explores the possibility that a class of small Caddo ceramic vessels known as canteens may have been sound makers rather than containers. Although these vessels are rare and have a limited spatial and temporal distribution, they represent a discrete vessel form, one that appears to be unique among native cultures north of Mexico. However, they do resemble certain small ceramic flasks found in Mesoamerica as well as certain types of ductless edge-tone instruments found among various native peoples of South America.

Pottery Style and Technology in Arkansas's Upper Ouachita River Drainage
Mary Beth Trubitt

We can use several lines of archaeological evidence – from foodways, from material culture, and from architecture – to understand relationships between Caddo communities living in the Ouachita Mountains of western Arkansas between the mid-1300s and mid-1600s. Here, I focus on ceramics to study pottery-making practice, social identity, and regional interactions. Some aspects of pottery making, such as style and decoration, may have been intentional signaling or messaging of cultural identity. Other aspects, such as clay sources, temper recipes, or firing conditions, may have been unconscious habits or practices learned within a community of potters. In this paper, I compare ceramic sherds from two sites in the Upper Ouachita River drainage (the village at Dragover and the Adair mound center located about 15 miles downstream) using instrumental neutron activation analysis and technological and stylistic attributes. Comparisons are also made to the broader Ouachita Mountains region.

Raiding, Hides, Horses, and Salt: Evidence for Caddo Interaction with the Lower Mississippi Valley in Early Historic Northwest Louisiana
Paul N. Eubanks

By the late seventeenth century, the Caddo Indians of northwest Louisiana were known to have been important players in the salt, horse, and fur trades. However, the transfer of these commodities, especially to non-Caddo groups, was not always a friendly affair. In this paper, I will focus on several strategies that the Caddo of Louisiana may have employed to deal with the possibility of raiding from hostile groups. In addition, I will discuss how the threat of raiding, along with the salt, fur, and horse trades may have encouraged direct interaction with nearby groups from the Lower Mississippi Valley.

Silver Looking Good: Silver Ornaments the Caddo and their Neighbors
Pete Gregory and Dayna B. Lee

There is a dearth of silver ornaments associated with the historic Caddo Area until after the 1760's, a change in the sources and styles reflects the southeastern connections of the Caddo. Some of these stylistic shifts begin with changes in the colonial trade system and styles still popular with the Caddo and their neighbors come from the east and not the southwest. A brief historical background, and a discussion of the art, including some of the contemporary artistic traditions and their cultural connections.

The Caddo Drum
Phil Cross, Culture Preservation Officer, Caddo Nation of Oklahoma.

The drum of Caddo people at time of European contact and into historic and modern times will be discussed. Construction and size of the drum and materials used will be discussed along with the various drum beats that accompany various types of songs.


59th CADDO
CONFERENCE

Report:
2017 Caddo Culture Club Activities Report

Michael Meeks III
Caddo Culture Club Chairman

Founded in 1988, the Caddo Culture Club is a non-profit organization devoted to the preservation of Caddo tribal songs and dances. The Caddo Culture Club was the first known group established to help preserve the songs and dances of the Caddo Indians. As a Caddo organization, we find it very humbling being able to perform the very songs and dances that their ancestors once performed.

Over the past year we've taken part in many different events, activities and functions. The following are some of the different events and functions that the Caddo Culture Club participated in during the year 2016:

59th Annual Caddo Conference

In 2017, the 59th annual conference was held in Natchitoches, LA, on the campus of Northwestern State University. We performed various Caddo songs and dances and honored various individuals throughout the performance.

Caddo Culture Day @ Caddo Mounds State Historic Site

In April 2017, the Club was part of a large delegation of Caddo tribal members to attend the annual Caddo Culture Day celebration at Caddo Mounds State Historic Site near Alto, TX. This year's event included the opening and dedication of a traditional Caddo Grass house constructed by Caddo elder Phil Cross, apprentice Chad Earles and a bevy of volunteers. It was a wonderful day of celebration to see this structure dedicated on some of the original homelands of the Caddo people!

25th Annual Caddo Culture Club Dance

In June, the Caddo Culture Club held its 25th Annual Dance at the Caddo Nation Dance Grounds. The event began with the Turkey Dance and Flag Song, followed by a meal for all who were in attendance. The evening session saw various Caddo social dances and intertribal songs being performed and different individual honored throughout the night. We are always happy to see a large attendance at our annual dance and we are looking forward to our next annual dance in 2018!

26th Annual Clara Brown Dance

In September, the Caddo Culture Club served as singers for the 26th Annual Clara Brown Dance held at the Caddo Nation Dance Grounds. The event began with the Caddo Turkey Dance, followed by an evening meal and Caddo Social Dancing. We saw many people in attendance and always look forward to participating in this dance.

Multi-Cultural Celebration at NASA - Johnson Space Center

In early November 2017 several of our Club members traveled with other Caddo Tribal members to take part in a multicultural celebration at NASA'S Johnson Space Center in Houston, TX. The group performed for a crowd and was treated to a tour of the grounds during their stay in Houston.

Co-hosting Opportunities

In the past few months we have been fortunate to serve at various powwows as event co-hosts. Some of the events that we participated in were the Oh Ho Mah Society Benefit Powwow, Esa Rosa Descendants Powwow, and the Comanche Homecoming Benefit Dance.

Parade Exhibitions

This past year we participated in a few parades and exhibited some of our traditional songs. In August we performed during the Annual American Indian Exposition parade in Anadarko, OK; and in November we were invited to perform with the Southwestern Oklahoma State University Native American Student

Association (SWOSU NASA) in the SWOSU Homecoming Parade in Weatherford, OK.

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None of these events would have been possible without the participation and dedication of all our club members. Since its establishment our club has been open to all who want to join in the hopes of learning and preserving the songs and dances of the Caddo Tribe as our parents, grandparents and so on would have wanted us to do. This club has been in existence for almost thirty years and it is my hope that it will be in existence for thirty more years and beyond!

The Caddo Culture Club would like to thank the Caddo Conference Organization and all of its members for their long-continued support and inclusion of our annual report in the Caddo Conference Journal.

The Caddo Culture Club would also like to give a special thank you to the Caddo Nation of Oklahoma and its Tribal Council members. In 2016 we were given a new and larger drum to help facilitate our singers at different events and functions. This is greatly appreciated and it will certainly allow us to accommodate more singers at our Caddo dances!