WARFARE AND THE MATERIALIZATION OF DAILY LIFE AT THE MISSISSIPPIAN COMMON FIELD SITE

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Meghan Elizabeth Buchanan

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ABSTRACT: As a period of relative peace associated with the founding of the Cahokia polity dissolved around AD 1150-1200, Mississippians living at Cahokia constructed fortifications, large portions of the population left the city, and walled compounds at the nearby East St. Louis site were destroyed in a large-scale conflagration event. Analyses and interpretations of the evidence for violence and warfare in the Mississippian Midwest have traditionally focused on the most overt manifestations of those phenomena: fortified community spaces, physical traumata, and symbols of violence like warriors, weapons of war, and severed body parts. However, historic and ethnographic accounts of peoples' lives and experiences during periods of war highlight that violence during politically and socially tumultuous times impacted the daily practices of wide swaths of people living in these societies. Carolyn Nordstrom (1997) advocates the telling of "a different kind of war story," one that focuses on human experiences, tragedies, and creativity in light of threats of danger.

The Common Field site was founded by people leaving the Cahokia region during this period of political fragmentation and escalating violence. Shortly after settling at the site, the inhabitants constructed a fortification. A later catastrophic conflagration resulted in the burning of hundreds of structures, the destruction of a community, and the complete abandonment of the site. In this dissertation, I propose a theoretical and methodological framework for studying the intersections of violence and daily practices in archaeological contexts through an exploration of micro-scale actions (such as those enacted in histories of practices and embodied knowledge of technological processes) and macro-scale regional histories and practices in order to elucidate the multiple contexts and effects of violence and warfare in the past and their impacts on peoples' lived experiences. The data from Common Field demonstrate that the inhabitants of this site were engaged in processes of hybridity (with regards to ceramic technological practices and decorative techniques), moved resource procurement practices away from riverine contexts, and oriented themselves in new ways towards other regional communities and the supernatural realm.

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Table of Contents

List of Tables

List of Figures

Chapter 1 – Introduction to the Research

"…we must confront violence head on, place it squarely in the center of the lives and cultures of the people who suffer it, precisely where they themselves find it."
Robben and Nordstrom 1995:3

Life in the 13th and 14th centuries in the Eastern Woodlands would have been dramatically different than prior centuries. As palisades were constructed around villages throughout the region, daily practices would have been reconfigured and renegotiated in a changing world where life outside of defensive walls was dangerous. Large polities in the region fragmented as political alliances grew contentious and groups splintered off to create new villages and alliances. Mississippian Period violence and warfare have been a topic of archaeological discussion ever since early researchers noted depictions of human-bird hybrids holding decapitated heads and found evidence of large fortifications beneath the modern ground surface. Yet, warfare in this research has always been distanced from the daily lives of the majority of Mississippian peoples. Archaeologists have argued over whether warfare was real or relegated to the cosmological realm, "real" war or "ritual" war, and how warfare factored into the development and dissolution of complex societies in the Pre-Columbian Americas, but up until this point we have little handle on how violence and warfare impacted the day-to-day actions of the people living in these palisaded communities.

Abraham Lincoln is thought to have lamented the "awful arithmetic" of war, referring to the number and scope of casualties that come about as a result of violent conflict. This sentiment highlights the disconnection between archaeological research on warfare and the realities of war as it is and was practiced on battlefields, in villages, and in peoples' daily lives. As Robbens and Nordstrom remind anthropologists in the quote above, we must be able to situate our understandings of violence, warfare, and their impacts in the lives of the people who experience them. Not in far off military institutions, not solely in the lives and practices of political leaders, not only in the realm of mythical heroes and warriors, because none of these categories exist outside of the practices and experiences of people living in warscapes.

Anthropologist Carolyn Nordstrom (1997) advocates telling “a different kind of war story;” one that highlights human experience, tragedy, and creativity in the face of endemic warfare. Such an approach to the anthropology of violence and warfare explores the recursivity between daily practices and the large-scale historical processes of change. It is my intention to tell a different kind of war story with regards to the spread of violence and the daily lives of people living in the Mississippian Period Midwest at the Common Field site. Drawing on a multiscalar approach that tacks between regional contexts/historical processes and daily practices, I ask was Common Field destroyed in a violent act and if so, what were the impacts of endemic violence and warfare on the daily practices of the Mississippian peoples who lived at the Common Field site in southeastern Missouri? What were the histories of political fragmentation and settlement in the Mississippi River Valley? This research draws on my recent excavations at the Common Field site and on a reanalysis of ceramics collected by the University of Missouri in 1980 (currently housed at the University of Missouri Museum of Anthropology).

1.1 Research Orientation

Archaeological analyses of violence and warfare have traditionally sought to understand their causes and effects on the evolution and collapse of societies. This research often focuses on some of the more overt manifestations of warfare, namely weaponry, defensive structures, and war-related iconography in order to understand the connections between societal evolution and scales of violence. However, war is not (and was not) isolated to casualties or acts of physical harm; the consequences and impacts of war affected soldiers and civilians alike. More recently, anthropologists and archaeologists have emphasized social experiences in times of war (Lubkemann 2008; Nordstrom 1997, 2004; Nordstrom and Martin 1992; Nordstrom and Robben 1995; Scheper-Hughes and Bourgois 2004; Nielsen and Walker 2009a). Rather than seeking universal models of human behavior these recent approaches seek to understand the interdigitation between political, social, and religious institutions and practices and individual lived experiences (i.e. the recursive interplay between structure and agency). In this dissertation I seek to understand the ways in which violence and warfare impacted the daily lives of the people living at the Mississippian Period Common Field site in east-central Missouri, circa A.D. 1200-1300. In particular, I explore how both micro-scale actions (such as those enacted in histories of practices) and macro-scale regional histories can elucidate the multiple contexts and effects of violence and warfare in the past and their impacts on peoples' lives.

The Common Field site is one of very few Mississippian sites with unambiguous evidence that violent conflict took place at the terminus of the site's inhabitation. Long thought to be an unoccupied civic-ceremonial center (Adams et al. 1941; Chapman 1980; Keslin 1964), a major flooding event in 1979 revealed the presence of hundreds of burned structures, a palisade, nearly complete ceramic vessels, and articulated human remains across the site (Ferguson 1990; O'Brien 1996; O'Brien et al. 1982; Trader 1992). My reanalysis of the ceramics from the 1980 University of Missouri surface collection (see Chapter 8) demonstrates that the Common Field site was contemporaneous with the Moorehead (A.D. 1200-1275) and Sand

Prairie (A.D. 1275-1350) Phases at Cahokia Mounds, the largest Pre-Columbian site north of Mexico and the largest Mississippian polity. Based on these ceramic similarities, it appears that many of the people who lived at Common Field likely had migrated from the American Bottom floodplain where Cahokia, the East St. Louis mound center, and numerous Mississippian mound centers, villages, and farmsteads were located.

The period leading up to and during the Moorehead Phase at Cahokia was characterized by considerable social and political upheaval as Cahokians constructed a palisade and large portions of the population left this ancient center (Benson et al. 2009; Dalan et al. 2003; Milner 1998; Pauketat 2004; Pauketat and Lopinot 1997). During the same period, walled compounds at the East St. Louis site were caught in a large-scale conflagration event and site was abandoned (Fortier 2007; Pauketat 2005). Further north and east, people living in the Illinois River Valley built palisades around their villages (several of which were later burned) and there is evidence of interpersonal violence in burial assemblages (Milner 1999; Milner et al. 1991; Steadman 2008). The overall picture that emerges from this time period is one of political fragmentation and escalating violence.

Warfare in the Midwest is often fraught with issues of evidential ambiguity; weapons of war are also the tools of agriculture, houses burn due to accidents and ritual cleansings, iconographic depictions of violence may represent sacred/supernatural beings, and palisades have been interpreted as having uses other than protection from violence. The most compelling evidence for Mississippian Period violent encounters is skeletal trauma. Scalping marks, missing body parts, and blunt force trauma in skeletal assemblages from the Illinois River Valley provide some of the clearest evidence for interpersonal conflict. However, this reliance on human remains as primary evidence for violence is problematic. The most glaring problem in using human remains as the primary indicator of violence is that much of the trauma that can lead to death leaves no skeletal markers, and it can be difficult to differentiate between intentional and accidental trauma (Walker 2001). These two issues combined can lead to an underrepresentation of the scale of violence in the past.

While Lawrence Keeley's (1996) groundbreaking archaeological work has done much to dispel the myth of the peaceful past by deconstructing the conflicting theories of Thomas Hobbes and Jean-Jacques Rousseau, anthropological and archaeological theorizing has continued to be fraught with tensions between these oppositional legacies (see Chapter 2). Today, much archaeological research on warfare is still colored by the theories of both Hobbes and Rousseau although rather than seeing the past as either peaceful or violent, violence has become entangled within socioevolutionary frameworks in which different levels of society practice different kinds and scales of warfare (Carneiro 1970; Earle 1997; Milner 1998; Otterbein 2004; Pinker 2011; Service 1962, 1975). Thus, those living in less complex societies practice sporadic and opportunistic violence, and those living in complex societies engage in planned, large-scale conflict. Ultimately, the intention of these researchers is to understand why violence and warfare happen, why humans kill each other, and why we commit atrocities. In contrast, I seek to understand how violence was enacted and how it affected peoples' daily activities. It is no longer sufficient to simply document instances of war and violence (Thorpe 2003; cf. Nielsen and Walker 2009b; Pauketat 2009). Instead, we must situate violence within historical and social contexts. Similarly, Campbell (2009) suggests that the focus on overt manifestations of violence has led many to "miss the crucial fact that violence is a relationship and therefore fundamentally immaterial (or perhaps more accurately, inter-subjective)." In other words, relationships and meanings of violence are embodied in the materiality of practices and not necessarily attributable to universal laws of human behavior (*sensu* Pauketat 2001). This dissertation joins a growing corpus of archaeological research that emphasizes the hows of the past (the practices and historical processes) rather than attempting to uncover universal laws (Alt 2010a, 2012a; Dobres 2000; Fowler 2004; Fowles 2013; Lightfoot et al. 1998; Meskell 1998; Pauketat 2001; Pauketat and Alt 2005). In doing so, I demonstrate that violence leaves visible and measurable impacts on daily life when other lines of evidence may be lacking or clouded with ambiguity.

To that end, I advocate the use of historical-processual principles to the study of Midwestern violence and warfare and draw on theories of materiality, communities of practice, and culture contact (Chapter 2). Timothy Pauketat's historical-processual approach (2001) takes an active stance on the past; practices, rather than reflecting larger processes or systems (subsistence, kinship, etc.), are historically situated, generative actions. In other words, "practices *are* the processes" (74) that are recursively shaped by and shaping of other practices. Theories of materiality advocate that these practices and the materials, objects, and relationships that unfold from them are not inert representations (Meskell 2005; Miller 2005). What is needed in such a historically situated, materiality-based approach are ways to understand how practices were enacted, negotiated, and changed over time and at multiple scales (regional, communal, individual).

Understanding regional practices as well as local traditions of consumption and production of objects and materials can allow us to uncover the tensions between learned practices and choice (Pauketat and Alt 2005; see also Meskell 1998). In order to understand these tensions and changing geneaologies of ceramic and food procurement practices at Common Field, I draw on the following: Marcia-Anne Dobres' rethinking of the *chaîne opératoire* (technological or operational sequence) in order to connect technological patterning and social relationships (see also Dietler and Herbich 1998) as well as theories of materiality which link how humans make themselves and others (including non-human agents) through materials and objects (Appadurai 1986; Buchli 2002; Hodder 2012; Kopytoff 1986; Küchler 1993; Meskell 2005; Miller 2005; Mills and Walker 2008); theories of bodily movement, memory, learning, and communities of practice (Kamp 2001; Lave 1990; Lave and Wenger 1991; Mauss 1973; Wallaert-Petre 2001); and theories concerning culture contact and the creation of new ways of being, referred to as hybridity (Alt 2006a, 2006b, 2008, 2012a; Bhabha 1994; Silliman 2013).

Violence and warfare rarely exist in a vacuum. They are not restricted to battlefields or far-away places and as much of the evidence from the Pre-Columbian Midwest suggests, violence was often enacted in the very villages that people lived in. Prior to heightened events of conflict, long periods of time may be preceded by stresses such as restricted access to foods and other goods, movement can be prohibited, and people may fear their own neighbors. As Nordstrom points out, "violence reverberates across personal and social landscapes in ways that move beyond the sheer physicality of harm" (1997:125). In combining theories of materiality, learning, embodiment, and culture contact, I seek to examine what Lubkemann (2008:1) refers to as the "social condition of war," in which war is seen "as a transformative social condition and not simply as a political struggle conducted through organized violence."

Thus, the social condition of war is implicated in the interactions, negotiations, and material practices of people living in warzones.

The Common Field site was occupied for decades prior to the attack that decimated the village and resulted in its abandonment and thus provides a case study for understanding the impacts and consequences of violence and warfare prior to physical conflict. This kind of study necessarily requires a multi-scalar approach that tacks back and forth between regional contexts and smaller scale analysis of genealogies of practices. Through a detailed analysis of the remains of daily activities at Common Field recovered from my excavations and University of Missouri Museum of Anthropology collections and comparison to other sites in the region, I answer the following questions in this dissertation: Q1) What is the history of political fragmentation and resettlement in the Mississippi River Valley and how did relationships between people at Common Field and other nearby polities change over time? Q2) Was the destruction of Common Field the result of violence and if so, how did people at Common Field conduct quotidian activities like food and ceramic production, residential and site spatial organization, resource procurement, and disposal of materials during this period of escalating violence? I hypothesize that if violence impacted peoples' daily lives, then such impacts would be manifested in overt sociopolitical relationships (palisade construction, weaponry, trauma, reduction in trade relations), the creation of new (local) identities and practices such as the creation of new ceramic types, styles, and technologies, and changing procurement and cooking strategies.

In order to answer these questions, I proposed a magnetometry survey of Common Field and the excavation of several structures, pits, and a portion of the palisade. My research aimed to determine 1) the timing of the occupation and destruction of the site through stratigraphy and radiocarbon dating, 2) determine changing practices related to ceramic production, faunal acquisition and distribution, food consumption, and other communal activities, 3) document the locations and relationships between structures and the palisade, and 4) compare genealogies of practices at Common Field, Cahokia, East St. Louis, and other contemporaneous sites.

Common Field was occupied for a short period of time, less than 75 years, following the migration of inhabitants from the American Bottom. Initial occupation of the site did not include the construction of a palisade; the erection of the palisade came shortly after the initial occupation. Within the palisade walls, people engaged in public ceremonies and quotidian activities. After leaving the American Bottom, they enacted practices that are recognizably Cahokian, but decidedly different. I contend that these differences in practices are evidence that the inhabitants of Common Field were simultaneously occupied with leading their lives, creating and maintaining identities separate from those performed at Cahokia, and dealing with the limitations and stresses of residing in a region disrupted by political fragmentation, warfare and violence.

1.2 Organization of the Dissertation

The following three chapters (Chapter 2, 3, and 4) lay out the background information necessary in order to situate this dissertation within anthropological/archaeological, regional, historical, and analytical contexts. Chapter 2 provides an overview of anthropological and archaeological theoretical approaches to the study of violence and warfare. In this chapter I include a discussion on definitional problems concerning violence and warfare, the connections between violence and social evolutionary typological categories, and current anthropological and archaeological research concerned with issues of causality and those that emphasize history and practice. This chapter also presents middle range theories of violence and warfare, connecting archaeological data with human practices as they have been described in archaeological literature. Additionally, I lay out my own expectations for the impacts of violence on daily practices, drawing on theories of materiality, embodiment, and communities of practice.

Chapter 3 provides the Midwestern Mississippian historical contexts and a discussion of the evidence for violence and warfare in the Midwest. In addition to long term regional trends in violence (Paleoindian through Mississippian Periods), I discuss the Mississippianization of the Midwest, the *Pax Cahokiana*, political centralization and fragmentation in the American Bottom, and the spread of violence post A.D. 1150. In my discussion of violence in the Midwest I focus on archaeological evidence for violence from the Mississippi and Illinois River Valleys and southeastern Missouri, a region that was eventually abandoned during the 14^{th}-15^{th} century and refered to as the 'Vacant Quarter' (Williams 1990). I also discuss ethnohistoric and ethnographic regional evidence for violence, focusing on the reports of warfare by members of the DeSoto *entrada*, Francis LaFlesche's account of the Osage war and peace ceremonies, and accounts of Native American prophet movements. Following this, I provide a description of Common Field's regional environmental contexts and past archaeological research conducted at Common Field and nearby related sites (Bauman site, Saline Locality, St. Mary burial mounds) in Chapter 4.

The next four chapters (Chapter 5, 6, 7, and 8) cover the methods and results of my research. Chapter 5 lays out the primary methods used for the magnetometry survey, excavation procedures, laboratory practices, and the methods utilized for the faunal and ceramic analyses. For the faunal materials, I cover the kinds of primary data collected, taphonomic biases, and the methods used to quantify assemblage composition (diversity of fauna present) and the intra-site distribution of deer body parts (food utility indices, anatomical units, skeletal completeness). Ceramic analysis methods include primary data collection and rim analyses (rim shape indices and angles). Chapter 6 discusses the results of the magnetometry survey and the analysis of features from my excavations. For the magnetometry survey I explain the results, verification of anomalies, and interpretations of the survey. The feature analysis includes an examination of feature contents and possible feature uses. Additionally I discuss the combined implications of the magnetometry survey and feature analysis for overall spatial organization at Common Field.

Chapters 7 and 8 review the results of the results of the faunal and ceramic artifactual analyses and includes a discussion on human remains, special use artifacts, radiocarbon results, and a summary of other artifacts recovered during my research at the site. The ceramic analysis includes excavated materials and my reanalysis of the materials collected from a 1980 surface collection. The results of the faunal analyses will be discussed and compared to contemporaneous sites in the Midwest (Cahokia, East St. Louis, Kincaid Mounds). The results of the ceramic analysis will similarly be compared to contemporaneous sites.

My interpretations of the above analyses will be discussed in Chapter 9. I will discuss overt evidence for violence at Common Field, the evidence for the impacts of violence on daily life in terms of subsistence and ceramic practices, and evidence for regional interactions and their implications for political alliances or antagonism. Additionally, I will propose vessel construction and use *chaîne opératoires* for the Common Field ceramic assemblage. Finally, I discuss the implications all of these interpretations have on our understandings of the abandonment of the 'Vacant Quarter' and the spread of violence to other regions. Chapter 10 will conclude with a summary of results, implications for other areas of research, and propose ideas for future research.

1.3 Project Significance

This dissertation project has significance for archaeology and broader anthropological research. Within archaeology my research will contribute to studies of materiality and embodied knowledge (Lave 1990; Mauss 1973; Maynard et al. 1999; Meskell 2005; Miller 2005; Wallaert-Petre 2001). My emphasis on genealogies of practices as theoretical and methodological underpinnings of my research provides the means to understand how warfare impacted people's lives. While many archaeological analyses of warfare focus on the overt manifestations of violence like palisade construction, weaponry, depictions of warriors, and interpersonal traumata (Dye 2009; Emerson 2007; Milner 1999), few engage in analyses of the materialities of domestic life under times of violence. I ask how histories of practices changed during politically and socially tumultuous times in the Pre-Columbian Mississippi River Valley. This study will illuminate changing practices in how people engaged with materials within multiple domestic contexts during a period of escalating political fragmentation and spreading violence. Being able to problematize and integrate the connections between the materialities of daily life and larger-scale political and social changes is fundamental for understanding the ways in which people in the past and the present make and contest histories and culture. Furthermore, but focusing on the daily lives of the many (rather than a small number of political elites), we add to the richness of voices and experiences that shaped the past and the present. Perhaps most importantly, the results of my research provides archaeologists with an alternative means for assessing the presence and impacts of violence through analyses of the most frequent artifact classes (ie. the debris of daily practices associated with household activities). When other means of assessing the presence and effects of violence are missing, ambiguous, or contradictory, focusing on the materials resulting from daily practices provide alternative lines of evidence as well as connect the materialities of daily life with larger regional histories of violence, warfare, political reconfiguration, religious movements, and abandonments.

More broadly, this research has implications for anthropology and other disciplines. We live in a world in which the violence of warfare is often omnipresent in people's lives. Following a 20th century colored by so-called "world" wars, political destabilization and violence in post-colonial countries and post-communist Soviet Bloc regions, and entering a 21st century with U.S. wars against amorphous enemies like "drugs" and "terror," anthropologists have an important role to play in understanding the lived experiences of the people who are impacted by these violent acts. Many anthropologists have met these challenges head-on, exploring the intersections between warfare, domestic abuse, food insecurity, fear, and the creation of new social and political systems (Nordstrom 1997; Nordstrom and Martin 1992; Robbens and Nordstrom 1995; Scheper-Hughes and Bourgois 2004; Whitehead 2004). Archaeologists, with access to artifactual evidence spanning hundreds of years across large regions, are in a position to explore long-term changing political interactions, the politics of domination, dissent and resistance, and the materialization of daily life as warfare was happening without having to be present in a warzone. My research will examine how warfare impacted people’s daily lives before, during, and after episodes of violence. Such attention to the daily lives of people during times of war may in the future be of use to government and non-government aid and relief organizations as they determine how best to approach helping people recover during and after periods of violence.

Chapter 2 – Theoretical Perspectives: Anthropological and Archaeological Approaches to Warfare and Violence in Daily Life

Anthropology has an uneasy history regarding the study of violence and warfare. The foundations of the discipline are rooted in violent and colonial enterprises. Anthropologists continue to debate whether warfare is the result of culture or biology and definitional issues about what actually constitutes both violence and warfare abound. Despite this long disciplinary history of studying violence and warfare and their roles within societies, there has been little attention paid to the ways in which they intersect with the daily practices enacted by people living during periods of violence. Yet, ethnographies of regions plagued by violence and warfare demonstrate that these events impact a multitude of people; violence begets more violence, people reorder their lives, some communities fall apart and others coalesce, religious practices are engaged in novel ways, etc. Warfare is not simply an external force of culture change; it is recursively entangled within social lives and daily experiences.

In order to address the intersections between warfare and daily practices from an archaeological perspective, I discuss several topics in this chapter. First, I provide a brief overview of the history of anthropological theorizing on violence and warfare in Section 2.1, including a discussion of how war has been defined, different "types" of warfare, and the connections between war and peace. Second, much of this early theorizing about warfare has led archaeologists to develop middle range theory linking together theory and probable archaeological correlates and evidence in order to identify warfare in the past, which I describe in Section 2.2. In the final part of this chapter (Section 2.3), I bring together recent anthropological and archaeological research on the social dimensions of warfare along with theories of hybridity, embodied knowledge, and technological production in order to hypothesize a new middle range theory linking together anthropological theory and archaeological expectations related to the impacts of warfare on daily practices.

2.1 Theorizing Warfare

2.1.1 Violence and Warfare in Anthropology

Early anthropological and archaeological research on warfare was, and in many cases continues to be, informed by two contradictory philosophies concerned with the "natural" state of humanity. In describing the original state of humans, English philosopher Thomas Hobbes (2013 [1651]) argued that early humankind was in a perpetual state of violence: "No arts; no letters; no society; and which is worst of all, continual fear, and danger of violent death; And life of man, solitary, poor, nasty, brutish, and short" (57). In Hobbes' view, by entering into social contracts and surrendering certain desires to central authorities, humankind could overcome their constant state of "warre." This perspective places human history as a linear progression, with the primeval state as chaotic and violent, and modern nation-states as bastions of reason and order. This position does not negate the capacity of nation-states to go to war; rather they can, and did, go to war when covenants and treaties between states are broken.

In contrast to Hobbes, Enlightenment philosopher Jean-Jacques Rousseau posited that the natural state of humanity was one of equality and compassion. Rousseau's ideas about humanity are still reflected in the French national motto, "*liberté, egalité, fraternité*," (liberty, equality, brotherhood) adopted during the French Revolution and the overthrow of the monarchy. According to Rousseau

> "The first person who, having enclosed a plot of land, took it into his head to say this is mine and found people simple enough to

> believe him was the true founder of civil society. What crimes, wars, murders, what miseries and horrors would the human race had been spared, had some one pulled up the stakes or filled in the ditch and cried out to his fellow man: 'Do not listen to this imposter. You are lost if you forget the fruits of the earth belong to all and the earth to no one!'"
>
> (Rousseau 2013 [1754]:23)

Individual ownership and central authority figures separated from the needs and concerns of ordinary people are what created the boundaries and distances between the bonds of kinship and brotherhood present among non-state peoples. In other words, "Man is born free, and everywhere he is in chains" (Rousseau 2013 [1762]:1). In contrast to Hobbes then, history is not a linear progression and states/civilization are the root cause of violence, warfare, and misery.

Violence and warfare were central to the colonialist enterprises that not only gave rise to the discipline of anthropology, but also many of the subjects and categories that underlie anthropological research (modernity, civilization, primitive, etc.) (Ferguson and Whitehead 1992; Gosden 2006; Pels 1997; Scheper-Hughes and Bourgois 2004). Viewing non-Western peoples as brutal savages was adopted by imperial and colonialist governments in order to justify their violent subjugation of colonized nations and peoples (Ferguson 1992; Ferguson and Whitehead 1992; Keeley 1996; Taussig 1987). Many early anthropologists conducted their research at the behest of colonizing governments who sought ways to control subject populations (Asad 1991; Deloria 1969; Kuper 1996; Sibeud 2012). Ethnographies provided these governments with detailed information on the political and social organizations of peoples around the world. Frequently missing from these ethnographies is any mention of colonial violence perpetrated on people or the relationships between colonial subjugation and outbreaks of violence among/between peoples. Radcliffe-Brown (cited in Riches 1986) saw physical violence employed by the state as governance, not violence.

Franz Boas, considered by many the father of American anthropology, advocated that anthropologists record the lifeways of quickly disappearing "primitive" peoples. He believed there was an inverse relationship between violence and social complexity; hunter-gatherers fought among themselves over territorial disputers, whereas larger social groups engaged in peaceful economic interactions (Boas 1912). Echoing Hobbesian ideas about the relationship between violence and the state, Boas saw the law, order, and social cohesion of states as pacifying factors. Boas's work was important in demonstrating that the propensity for violence was not inherent in any particular racial group, thus aiding in dispelling centuries of racist ideology. Boas's position is largely teleological, although optimistic; as long as nations continued to grow (and people share some kind of solidarity with other members of the nation) and make laws that favored unity rather than exacerbate differences, warfare would be abolished.

Despite the early Hobbesian emphasis on the brutality and primitiveness of non-Western peoples during colonial enterprises, Keeley (1996) argues that anthropologists salvaged the Rousseauian Noble Savage by arguing that tribal peoples practiced stylized, non-violent, primitive warfare. This argument was possible because military historians downplay the impacts of war and many of the ethnographers writing about various groups arrived at their research sites after colonial governments had engaged in "pacification" campaigns. Such rewritings of histories and ignoring of colonial histories also led to a "pacification of the past" (Keeley 1996; *contra* Otterbein 2000, 2004) in which many societies are seen as not having engaged in conflict of any real consequence or impact (Holm 2004). Keeley (1996) argues that this “pacification of the past” has led many to overlook or deny evidence of violence and warfare in the archaeological record and instead attribute it to other causes.

Archaeologists have long focused on the perceived associations between warfare and sociopolitical type (bands, tribes, chiefdoms, states). Turney-High (1971) and von Clasewitz (cited in Keegan 1996) distinguished between “primitive” and “civilized” (modern, or total) warfare, a distinction that continues to be used today. “Civilized” warfare is rule governed, instituted for political reasons or gains, and because it is practiced by states, wars typically involved considerable bloodshed and high mortality rates. “Primitive” warfare is chaotic, capricious, battles were of little political consequence, and there were few deaths. These distinctions between “primitive” and “civilized” warfare emphasize the hierarchical, centralized nature of modern nation states, and the perceived lack of political complexity among kin-based societies. Warfare in these “primitive” societies is seen as a causal factor in social evolution (Carneiro 1970; Milner 1998, 1999; Otterbein 2004; Service 1962).

Within the archaeological study of what have been called ‘chiefly’ societies, warfare has been tied to the inevitable rise and fall of polities. Chiefdoms are typically defined as having a centralized political system with hereditary, ranked offices and lineages, and fill the gap between egalitarian societies and states (Anderson 1994; Carneiro 1970; Earle 1997; Milner 1998; Peebles and Kus 1977; Service 1962, 1975). Service (1962:141) proposed that warfare played an important role in the evolution of chiefdoms as tribal societies competed and went to war against each other. Thus, warfare is suggested to have played a role in the development and consolidation of chiefdoms, as bellicose leaders conquered and were able to protect new lands, and “powerful leaders *imposed* themselves on the population by dint of their military prowess and exploits” (Carneiro 2010:145, emphasis in original). This ability to command militaries and to compel the general populace to acts of labor would have signaled political power to other leaders. While offices were hereditary and ranked, military endeavors would have allowed successful warriors an avenue for increased status (Carneiro 1970:735). The collapse of chiefly societies in turn, would be brought about through continued competition between chiefdoms, through internal divisions among subordinate lineages and regional leaders, and/or overextension (Anderson 1994: 28-31; Milner 1998:170-171). Following collapse, there may be reorganization into smaller chiefly communities which would start the cycle of expansion and collapse again (Anderson 1994). Under certain conditions, collapse would be avoided and some chiefdoms would continue to consolidate and expand, eventually evolving into states with hereditary elites and new upper class of warriors and their kin (Carneiro 1970).

In such evolutionary models, violence is a means for enhancing prestige, taking captives, and accumulating land and resources. Success in warfare has thus also been tied to reproductive fitness (Chagnon 1968), a model also supported by primate behavioralists (Stanford 1999; Wrangham 1999). Such models have been criticized for their androcentrism (Slocum 1975) and lack of cultural and historical contextualization (Albert 1990; Ferguson 2001; Ferguson and Whitehead 1992). As Holm (2004:155) points out, these models of evolutionary progression frequently put Native American warfare on the “lowest step of an ‘evolutionary ladder’”, despite historical evidence that they engaged in practices that fit the definition of “civilized” warfare. Otterbein (2004) critiques some earlier approaches, arguing that by focusing on warrior classes and individual warriors, we miss what he believes should be the real unit of analysis for understanding the role of warfare in societies: military institutions.

Perhaps most problematically, these evolutionary approaches assume that there is a singular set of sociopolitical structures (bands, tribes, chiefdoms, states) and that the more complex and hierarchical societies arose out of homogenous, egalitarian societies. Such approaches not only negate the complexity of egalitarian societies, they elide the multiple manifestations and pathways to complexity (some of which may have no longer been in practice during the writing of early ethnographies), and the historical circumstances (*ie*. colonialisms) under which early ethnographic societies were recorded (Alt 2010a; Pauketat 2007). In other words, evolutionary approaches relegate history, agency, and practice to the background of an unstoppable unfolding of social progression (Pauketat 2007).

In contrast to social evolutionary approaches to the study of warfare and drawing on an historical-processual approach to archaeology (discussed below in Section 2.3), I argue that in order to understand warfare as an historically transformative process, anthropologists have to tack between multiple scales and lines of analysis. In addition to military organizations and warriors, we also have to understand how violence and warfare impact people off the battlefields. There has been little discussion on how warfare impacts people off of battlefield, how it relates to other kinds of violence, or the relationships between war and peace. Warfare and daily life do not exist in isolation from each other. In order to understand big histories and culture-making, we have to explore the many ways that politics, religion, violence, warfare, and daily practices were articulated in multiple places, and at different times.

2.1.2 What is War? Peace? Definitions and Types

There are numerous definitions for violence and warfare, often reflecting the theoretical influences of their authors. Many accounts of warfare do not define their primary concept because warfare is seemingly unambiguous; war is war. However, when social scientists do define warfare, their different definitions belie its underlying ambiguity. German-Prussian military theorist Carl von Clausewitz suggests that "War…is an act of violence to compel our opponent to fulfill our will," with the ultimate goal of disarming one's enemy (cited in Keegan 1993). Definitions of warfare utilized by anthropologists often emphasize physical confrontation between discrete groups. For example:

> "I define war as planned confrontations between organized groups of combatants who share, or believe they share, common interests. Such groups represent political communities or factions that are prepared to pursue these interests through armed and violent confrontations that might involve deliberate killing of opponents. Such killing is seen as socially acceptable and even desirable (i.e., it is not murder)…but one of the participating groups, usually the attacker, seeks to maintain the status quo or, more often, to achieve an advantage in power relations."
>
> (Webster 2000:72)

> "Here warfare simply refers to situations where separately constituted and spatially discrete groups of people engage in armed, often planned, potentially lethal, and culturally sanctioned confrontations that advance the shared interests of the members of separate communities that take part in the fighting."
>
> (Milner 1999:106)

> "…we define warfare as socially organized armed combat between members of different territorial units (communities or aggregates of communities)."
>
> (Ember and Ember 1992:248)

These three definitions have several shared emphases. First, they highlight heightened instances of armed conflict; warfare is battle and physical conflict. Second, these conflicts are planned or organized, frequently with an associated military hierarchy and leadership. And third, warfare takes place between discrete social units, with the ultimate goal of advancing the goals of one of the units. Clausewitz wrote his definition following the battles of the Napoleonic Wars in the early 1800s (Keegan 1993) and this influence in his definition is still visible in anthropological theorizing some 200 years after his death. Clausewitz's definition, as well as those above, was largely informed by modern warfare contexts. Great wars fought in Europe (War of the Roses, Napoleonic Wars, World Wars, etc.) frequently took place on battlefields or against fortified positions as armies engaged in combat to advance political agendas.

On the opposite end of the violence spectrum, or in contrast to warfare, would be peace (Raaflaub 2007). Much like warfare, peace proves to be a difficult term to define and is often associated with the cessation of periods of warfare. Yet, even during periods of named peace (*Pax*), warfare could continue on the fringes of polities (Barton 2007; Connell and Silverstein 2006; Ferguson 1992; Rosenstein 2007); polities could exact tribute from conquered enemies (Hassig 2007); violent events and spectacles were used to socialize people to fear their leaders/gods, create cultures of terror, or normalize violence (Kyle 2007; Lekson 2002; Macleod 1998; Taussig 1987); structural violence can take the form of institutionalized inequalities and violence against personhood (Farmer 2004); and marginalized people can fight back against dominant social orders in numerous ways (Fanon 1961; Scott 1985, 1990, 2009). Rather than peace being the contrast of warfare, the two concepts are interdigitated, linked together with various kinds of violence. Definitions of warfare, like those discussed earlier, that emphasize physical conflict, discrete fighting groups, and military hierarchy and organization overlook the other kinds of violence that become instantiated in peoples' lives as communities are displaced, friends and family are killed, and social ties are torn apart. Both war and peace are inherently relational (Nordstrom 1998); experienced and perceived by individuals and groups of individuals within their own cultural and historical frameworks.

Keeley's (1996) suggestion that the past has been framed as mostly peaceful has been aided by anthropologists differentiating between types of warfare, most specifically the differences between what are referred to as primitive and modern (also called "civilized" or "real") warfare. The distinction largely derives from early analyses of warfare practices from non-Western peoples following colonial subjugation. Otterbein (1999) suggests that Keeley's "pacification of the past" is due in part to the definition of "primitive warfare" which downplays the scale and impacts of prehistoric warfare. He further argues that in order for early cultural relativism to take root, it had to be premised in the notion that non-Western people had to be perceived as "gentle and benign, not savage and brutal" (1999:797), a position that may have been adopted by students of Boas (especially Ruth Benedict) but one that seems at odds with Boas's (1912) own theorizing about the connections between war, peace, and the state (see above).

Definitions dichotomizing modern and primitive warfare emphasize the rationality, organization, hierarchy, and high death counts from modern warfare contexts (Keeley 1996; Turney-High 1971). In contrast, primitive warfare is seen as less rigidly organized, lacking military leadership or specialized military ranks, and resulting in fewer deaths. In addition to these two primary types of warfare, some have noted a third kind, ritual war. Typically associated with societies that engaged in primitive warfare, ritual war may be "treated like a game" and allows rival polities to "identify the most courageous individuals from two given groups" (Guilaine and Zammit 2005:27). Ritual war is governed by more rules and conventions than primitive war and significantly fewer deaths.

These definitions separating primitive/ritual warfare from modern/real/civilized war have introduced uneasy assumptions, overlooked important aspects of warfare, and created distinctions where none may exist. The first problem is the assumption that the realms of religion and ritual are separate from politics and economics (Webster 2000:72-73; Quilter 2002:167). Ritual and politics both have roles to play in practices of violence and warfare. The United States wars in Iraq and Afghanistan would fall clearly into the definition of modern warfare. However, to overlook the religious and ritual aspects (on both sides of the confrontations) would be to ignore large parts of the motivations behind the war, violence against Muslims in Western countries, the outbreak of sectarian violence in Iraq, and the spread of politico-religious upheaval throughout the Arab world. Similarly, while the iconography of warfare may appear to depict highly ritualized warfare, one cannot ignore the political, economic, and social impacts of, for example, Moche captive-taking and sacrifice (Quilter 2002) or the associations between the Maya ballgame and large-scale conflicts (Webster 2000). Thus, many of the characteristics used to differentiate between primitive/ritual war and modern warfare are false and create distinctions where there are none.

The second problem with the differentiation between warfare types is that they tend to minimize or ignore the impacts of violence within communities. The most common way to minimize the impacts of warfare is to focus on death counts; the greater the death toll (as a proportion of the total population), the greater the impact (e.g. Pinker 2012). This leads researchers to downplay the consequences and effects of warfare in primitive/ritual war settings (low death counts), while emphasizing the historically transformative nature of wars in modern (but not prehistoric) contexts. Finally, these definitions position warfare as something outside of everyday life; war takes place on battlefields and involves specialized classes of warriors. However, as I discuss below (see Section 2.3) warfare is far from separate from daily life as civilians produce foods for soldiers, get caught in the cross fire, lose loved ones, restructure their lives to deal with reduced mobility and access to goods, are uprooted and displaced, witness acts of violence, become captives and slaves, or integrate displaced peoples into their communities. In other words, war is a social experience; far from being relegated to battlefields, warfare can infiltrate many aspects of daily life. As such, traditional anthropological and archaeological research on warfare that emphasizes typologizing warfare, the connections between warfare and the evolution of sociopolitical complexity, and the roles of elites and warrior overlook the impacts and effects of violence on the daily lives of people living in beleaguered communities.

2.2 Middle Range Theory, Part I – Archaeological Evidence for Warfare

Several categories of artifacts and architecture have been used consistently by archaeologists as evidence of warfare: settlement patterns, burnt settlements, defenses, weaponry, iconography, and osteological trauma. Many of these categories can be considered 'overt' evidence of warfare since their most parsimonious explanation is that they led to, resulted from, or depict acts of warfare and violence. However, as is often the case with historical processes and archaeological evidence, there may be multiple interpretations of events and evidence. In Chapter 3 (Section 3.3), I discuss these same evidential categories but with specific reference to Mississippian Period cases.

2.2.1 Settlement Patterns

The placement and construction of settlements can be done in such a way as to take advantage of naturally occurring defenses in the landscape. Settlements can be built atop high points on the landscape to take advantage of viewsheds or to make it difficult for attacking forces to move up slope. Settlements may be built along bluff edges so that the shear backdrop forms a natural defense. Settlements can also take advantage of natural water barriers (islands, meanders, peninsulas) for another line of protection. Others have argued that settlements patterns that have smaller villages clustered around larger palisaded villages or cities are evidence that inhabitants of the smaller cities were able to seek shelter at the larger settlement (Dye 2009:12-13; Webster 2000:74-75).

Buffer zones are uninhabited regions between communities or polities that constituted unsafe zones and early warning systems (Dye 2009; LeBlanc 1999, 2006). These may be large regions that are lightly patrolled and monitored, but left devoid of crop lands. Buffer zones would allow for some protection of crop lands within protected territories (home lands) since attacking enemies and would have to cross through large swaths of uninhabited lands first, increasing the possibility that they would be spotted and advanced warning could be given to people in danger of being attacked.

2.2.2 Defenses

Defensive structures, including palisades, ditches, embankments, and walls, can involve different scales of construction based on the kind and intensity of warfare practiced (Keeley

1996). Labor investiture for palisade construction can be extensive in societies that needed to defend against armies (Arkush and Stanish 2005; Milner 1999; Webster 2000); peoples that were confronted with smaller war parties may have invested less time and energy in their protective structures. Fortifications can be simple, consisting of a single wall surrounding a village, or they can be elaborated with bastions, parapets, false doors, and trick entries (Arkush and Stanish 2005; Keeley 1996; Milner 1999). Parapets are elevated platforms located within palisade walls that allow defenders to fire upon enemies but also provide protection. Bastions are structures that project from the palisade walls and allow for flanking fire along the wall; these structures are typically evenly spaced in order to provide overlapping fire.

Ditches and embankments can serve a similar function as palisades, providing an elevated location for defenders and lowering the position of attackers. Ditches may also fill with water, becoming muddy, and impeding the movement of attackers. Embankments and ditches can also be paired with palisades, forming a primary line of defense prior to reaching the walls surrounding the city. Other kinds of walls, including long barrier walls (like the Great Wall in China) and smaller isolated walls can be used for protection. Long walls cut off access to and provided barriers for certain regions. Smaller walls can be used to impede the approach of attackers and serve as protective barriers for small groups of defenders (Arkush and Stanish 2005; Brown Vega 2009).

Discussion about walls can be complicated by disagreements over whether walls were used as defensive structures against enemies, as protection for sacred spaces, or for social and political control (Schroeder 2006). These disagreements are built upon a false either/or premise; either walls are defensive or they are ritual. Brown Vega (2009) argues that defensive fortification walls constructed at Acaray in Peru included the construction of ritual objects into the walls, providing both physical and spiritual protection (see also Arkush and Stanish 2005).

2.2.3 Weaponry

Weaponry is often divided into two primary categories: shock and missile weapons (Keeley 1996). Shock weaponry requires contact between two opponents. Examples of shock weapons can include clubs, axes, swords, spears. Keeley (1996:49) considers shock weapons to be more effective than missile weapons due to their accuracy with regards to aim and force. However, their range is limited to the reach or thrust of the individual carrying the instrument. Missile weapons, which can include arrows, darts, stones, atlatls, and other thrown instruments, can reach further distances but may be impacted by improper release, firing angle, and weather (especially wind). Armor and shields are not always mentioned in analyses of weaponry, but constitute an important component of armaments none the less. Such objects are intended to protect warriors from both missile and shock weapon attacks.

The difficulty in interpreting these implements archaeologically comes from their frequent dual usage for war and quotidian activities. Missile weapons can be used for killing enemies as well as killing food. Some shock weapons double as farming and land clearing implements, although many are specialized for hand-to-hand combat (swords, maces) (Keeley 1996:50). Interpretation of weaponry (and defensive objects like shields) is impacted by issues of preservation. Wooden shafts from missiles and thrusting spears do not preserve except under special depositional circumstances. Metal weaponry and armor can rust and disintegrate over long periods of time, especially in acidic soils. Shields and armor made from cloth and animal skins rarely preserve.

2.2.4 Iconography

Depictions of weapons and violent acts are an indirect line of evidence for warfare and conflict. Wari and Moche pottery from South America are decorated with images of human sacrifice and combat while artifactual and bioarchaeological evidence corroborate that such events actually happened (Arkush and Tung 2013; Hill 2003; Tung 2012). Wall carvings at Zapotec site of Monte Albán were initially interpreted as dancers (and subsequently named *danzantes*), but were later reinterpreted as mutilated and slain captives, some of whom are named individuals (Coe 1962; Marcus and Flannery 1996; Redmond and Spencer 2006). In other instances, depictions of violent acts and objects are interpreted as representations of supernatural or mythic events (Dye 2009). Webster (2000:93-94) also cautions that depictions of war and writings regarding accounts of war are frequently written by the winners and imposed on the losers. Interpretation of iconographic and written sources must be evaluated with these limitations/restrictions in mind. However, despite these biases, iconography should not be regarded as epiphenomena since, as seen above, they may depict real events and have great importance for the people that make, view, and interact with them.

2.2.5 Trauma

Osteological evidence is considered one of the strongest lines of evidence for warfare and violence (Walker 2001). In order to assess whether or not skeletal trauma was the result of violent conflict, analysts have to rule out other etiologies such as non-violent trauma (simple broken bones or accidents) or taphonomic and/or cultural biases (Walker 2001:Figure 2). For example, Collier (2013) noted that despite archaeological and iconographic evidence for increasing violence, most of the skeletal trauma in a sample of Early and Late Roman Iron Age burials from Denmark was attributable to occupational or accidental mechanisms rather than violence. Cut marks on skeletal elements from the Aztalan site in Wisconsin have been interpreted variously as evidence for cannibalism, mortuary processing, and interpersonal conflict; a detailed comparison of expected correlates for each of these practices led Rudolph (2010) to the conclusion that intergroup hostilities (specifically scalping, trophy taking, and blunt force trauma) were the most likely explanation of Aztalan bone modification.

Osteological correlates (Arkush and Tung 2013; Collier 2013; Milner 1999; Milner et al. 1991; Rudolph 2010; Wakely 1997; Walker 2001; Zimmerman 1997) for violent conflict can include: blunt force trauma, evidence of mutilation (trophy taking, dismemberment), embedded projectiles, catastrophic mortuary profiles, and method (or lack) of mortuary interment. Any one of these may be a possible line evidence of violent conflict; the presence of several provides for a much more compelling case that cannot be explained by other mechanisms. Further, Klaus and Tam (2009) argue that skeletal evidence of biological stresses provide a line of evidence for a different kind of violence, the systemic violence of postcontact Colonialism, complicating what constitutes violence and what constitutes evidence of violence.

2.3 Social Dimensions of Warfare; Theories and Bridging Arguments

In the previous sections, I have provided an overview of some anthropological approaches to the study of warfare and highlighted how many of them create an artificial gulf between warfare (as practiced by elites and warriors) and the daily lives and practices of the majority of people living in past societies. In the remainder of this chapter, I highlight some of the more recent anthropological and archaeological research on the intersections between violence, warfare, and daily lives. Drawing on this research and theories related to hybridity, learning and embodied knowledge, and technological production, I propose a new middle range theory that will begin to bridge the analytical gap between warfare and its impacts on practices materialized in the archaeological record.

2.3.1 Ethnographies of Warscapes

Definitions of violence and warfare presented earlier in the chapter highlight some of the problems, oversights, and contradictions used within anthropology and archaeology. In contrast to research that posits violence as an innate dimension of human biology and evolution, many cultural anthropologists view "violence as a socially and culturally constituted manifestation of a deconstitutive dimension of human existence" and avoid giving exact definitions so as to acknowledge the many ways in which violence can be manifested and in order to avoid presenting certain manifestations as universals (Robben and Nordstrom 1995:6).

In order to avoid some of the definitional issues associated with "warfare" and in order to adequately encapsulate the wide-ranging impacts of warfare and its associated violence, Carolyn Nordstrom (1997) prefers to conceptualize war torn regions as "war-scapes." Within warscapes "…local and transnational concerns are enmeshed in the cultural construction of conflict that is continually reconfigured across time and space. Each person, each group brings a history that informs action and is negotiated vis-à-vis the various other histories of those with whom they interact" (Nordstrom 1997:37). In contrast to traditional definitions of warfare that are characterized by discrete moments of conflict, warscapes are spaces in which boundaries are fluid and blurred, multiple groups of people come into contact, and outcomes are not predetermined. Within warscapes, there is no clear demarcation between battlefields and homes or between moments of conflict and daily practices (see also Walker 2010).

What does daily life look like in a warscape? During the civil war in Mozambique, Lubkemann argues that "everyday social existence in war-time Machaze was not just a matter of coping with violence, but, as in peacetime, it was centered on the pursuit of a complex and multidimensional agenda of social struggles, interpersonal negotiations, and life projects" (2008:13). In recounting the experiences of several people living in Sri Lanka during a period of intensive warfare, Walker (2010) notes how people strive for normalcy and routinization through daily activities while at the same time finding ways to live in a world where the possibility of death was a daily occurrence. One woman planted a tree to mourn her dead son and incorporated tree tending into her daily routine; this allowed her a way to plan for a future (continuing her routine each day, watching the tree grow) as well as publicly mourn during a time when such expressions were typically silenced and punished. Other forms of dissent and resistance to violence may be hidden in the prosaic actions of daily life (Scott 1985, 1990).

In other examples, life is altered dramatically by warfare. Karen villagers in Burma adopted subsistence strategies that would allow them to escape state detection and flee quickly if they needed (Scott 2009:181-182). Scott (181-207) argues that shifting agricultural practices (relying on different kinds of crops and supplementing with hunting and foraging) might also be characterized as "escape-agriculture" because they rely on products that grow in diverse environments, have high yields, may evade detection (in the case of root crops), are easy to store and transport, and can be abandoned for long periods of time. Scott suggests that the introduction of maize to southeastern Asian facilitated escape-agriculture since it allowed people to cultivate less accessible regions, a pattern also practiced in the New World following European contact and Native American demographic collapses. In the Nejapa region of Mexico, King and Zborover (2015) noted the presence of large ceramic vessels on mountain top sites. Planning long term water and food storage would fit in well with Scott's escape agriculture. Hollenback's (2012) research on the impacts of smallpox epidemics and catastrophic demographic loss among the Hidatsa (a situation perhaps similar to the kinds of impacts warfare might have) showed that potters had to make different choices when constructing vessels due to the loss of certain kinds of technological and decorative know-how and as a smaller number of potters had to keep up with demand for vessels.

Historic accounts of Native American practices also shed light on the impacts of living during periods of warfare and violence. While many of these accounts are lacking in details specific to daily practices, they may provide contextual clues none the less. Religious and revitalization movements are frequently associated with life in warscapes as people contended with social and political upheavals that for many people necessitated renegotiations with spiritual worlds or brought together groups of people with different religious practices. Revitalization movements are cited as indigenous responses to the imposition of colonial rule and violence in Mexico (Gosner 1998; Spores 1998) as was the pan-Indian Ghost Dance (Kehoe 2006; Stoffle et al. 2000). Puebloan peoples of the Southwest have stories regarding the origins of kachinas (Lekson 2008); they believe that kachinas and humans lived side by side at a place referred to as White House until improper behaviors by humans led to violence and warfare between the two parties. Lekson (2008:200) argues that this story and the origins of kachina religious practices are related to the history of events that took place at the sites of Chaco Canyon and Aztec as well as played a role in the spread of violence throughout the Four Corners region. Calumet ceremonialism in the Eastern Woodlands has also been tied to periods of warfare and peace-making in the past (Brown 1989; Hall 1997); the calumet itself was a symbolic arrow (adorned with feathers and other sky/war symbols) that was added to pipes as a stem (Hall 1997).

Like the anthropological approaches to warscapes, archaeological research on past societies is moving away from top-down models that emphasize politics, economics, and religion as realms that structure war, to theoretical perspectives that seek to understand the multiple social contexts and experiences of living in times of violence and warfare (Alt 2008; Brown Vega 2008; DeBoer 2008; Cameron 2008; Cobb and Giles 2009; Habicht-Mauche 2008; Martin 2008; Nielsen and Walker 2009b; Pauketat 2009; Peregrine 2008; Walker 2009; Wilson 2012). These practice-based approaches explore how daily life and institutions (or systems) are mutually constituted.

2.3.2 Middle Range Theory, Part II – Hybridity, Embodied Knowledge, and Technological Production

In this section, I bring together the ethnographic and historic evidence regarding how people lives their lives during periods of endemic violence and warfare with archaeological theories concerning how and why people engage with materials and make objects. In particular, I draw parallels between Nordstrom's warscapes and archaeological theories regarding hybridity in culture contact situations. I then turn to theories of learning and doing and hypothesize how peoples' embodied practices during periods of sociopolitical change may be impacted. Finally, I outline my expectations, based on the previously discussed ethnographic and theoretical information, for some potential archaeological material correlates for the impacts of warfare on daily practices.

2.3.2.1 Theoretical Approaches

Theories of hybridity have been in use by biological anthropologists and archaeologists for some time. Silliman (2013) warns that archaeologists must be clear about how they are defining hybridity since it can be used to imply many different kinds of social, material, and biological processes. Many archaeological analyses use hybridity in a biological sense. Within archaeology, stylistic/decorative/morphological traits of objects are seen as analogous to biological traits. Thus, in situations of culture contact, certain material culture traits are adopted or modified and others may be replaced over time or immediately discontinued. And like biological traits, some of these artifactual traits are positioned as dominant/recessive depending on whether they were produced by a dominant (colonizing) society or a passive (colonized) society. Problematically, these approaches ignore human agency and creativity in contact situations. For example, Delaney-Rivera (2007) suggests that ceramic vessels from the Schild mortuary site in the Central Illinois River valley have evidence of mixed Late Woodland and Mississippian characteristics. She explains that these trait mixtures were the result of Mississippian men moving into Late Woodland communities and marrying local women. What she does not explain is why women, traditionally thought to have been potters, would have adopted shell temper from their husbands, people typically not associated with having a role in ceramic production. In other words, material hybridity in Delaney-Rivera's scenario is the same as biological hybridity and human agency plays no role.

In contrast to the biological approach to hybridity, Bhabha (1994) proposes that hybridity arises in multicultural and contact contexts, frequently resulting in new forms of human and material interactions (cf. Appadurai 2000; Gupta and Ferguson 1992). Bhabha argues that as different groups of people come together and are confronted with their differences, interstitial spaces are opened. He suggests that the negotiation of those spaces results in the performance of identities in ways that are continually emergent in between the past and the present (1994:2, 313). This perspective complicates typical notions of progress by framing hybridity as a process in which creativity and innovation can take place.

Drawing on Bhabha's definition of hybridity, Alt (2006a, Alt 2006b, 2008, 2012a) has argued that processes of hybridity were in effect as diverse groups of people came together with the early founding of the Cahokian polity and its rural outposts. She suggests that "hybridity points us to moments and places where the usual sensibilities are altered such that innovation can occur" (2006a:29). In contrast to concepts of like creolization and syncretism, in which new forms borrow from existing parts, hybridity conveys something more. Hybridity in Alt's examples involved mixing practices in some cases and instances of new practices and material forms in other cases. Much like Nordstrom's warscape, hybridity conveys a sense of flux, negotiation, and blurred boundaries between groups of people with different histories and practices (cf. Ingold's 2006, 2008 concepts of entanglement and meshwork). Thus, it is appropriate to conceive of warscapes as spaces in which groups of people are confronted with difference, where sensibilities are altered, and where innovation can occur. In this sense, warscapes are spaces rife with hybridity.

Hybridity provides some insights into when and why culture change may occur. Another question that arises is why and how do some practices change and while others persist (Lightfoot and Martinez 1995; Lightfoot et al. 1998)? Some changes can be directed from the top down through political edicts, laws, or threats of physical harm. One attempt to understand how materials were made and why changes occurred is through analyses of the *chaîne* *opératoire*. The *chaîne opératoire* is an attempt "describe and understand all cultural transformations that a specific raw material had to go through," (Sellet 1993:106) highlighting the physical actions and mental processes in the technological production of an object. Early attempts to describe *chaînes opératoires* focused on a series of steps connecting raw material to finished product. A number of scholars (Dobres 2000, 2010; Harman 2010; Ingold 2010; Ingold and Hallam 2007) argue that such approaches are premised upon notions of rationality and rule governance rather than taking into account human creativity, the negotiations between people and materials, and the sociopolitical contexts of production. Dobres (2000:83) suggests that "the making and using of material things necessarily implicates the simultaneous making and remaking of social actors, society, and traditions, as well as their contestation and negotiation." Rather than revealing predetermined object forms or mental templates about object constructions, the *chaîne opératoire* in Dobres' formulation is a complex negotiation between people (including their histories and sensibilities), materials, creativity in the processes of creation, and the sociopolitical milieus in which human/material interactions take place[1]. Elucidating the *chaîne opératoire* (or multiple *chaînes*) requires tacking between multiple scales including micro-scale practices such as individual practices of technological production and macro-scale regional histories and practices (Hendon 2006; Pauketat and Alt 2005).

According to Mauss (1973), people use their bodies within societal frameworks wherein social order was embodied and expressed daily through bodily movements and actions, what

[1] One of the major critiques of the traditional *chaîne opératoire* is that the primary focus has been on the procurement and manufacture stages, not on post-manufacture use. A frequently used alternative is the "life history approach" (Hollenback 2012; Schiffer 1976; Skibo and Schiffer 2008) which explicitly address post-manufacture. However, an analysis of a *chaîne opératoire* does not necessarily have to end with manufacture; as the quote from Dobres (2000:83) above shows, usage plays an important role in her retheorizing of the *chaîne opératoire*.

he referred to as *techniques du corps* (techniques of the body). The body is a site of embodied collective memories that factor into the construction, production, and use of materials, objects, spaces, and places. Similarly, Bourdieu (1977), drawing on Mauss, argued that embodied dispositions (*habitus*) were largely unconscious, although they could be both reproductive (doxic or structural) and/or generative (agential). They both argue that as people learn how to do and create things they to use their bodies in routinized and habitual ways.

Such learning can take place within communities of practice (Crown 2002; Kamp 2001; Lave 1990; Lave and Wenger 1991; Maynard et al. 1999; Minar 2001), groups of people who learn together or particular traditions of doing and making that are taught among groups of people (kin groups, corporate groups, interest groups, etc.). This does not mean that practices are static. Even as people learn how to make things in certain ways, they are still able to impart creativity. Ethnographic and ethnoarchaeological examples of ceramic production demonstrate that practices related to motor-skills and embodied memories of how to do something tend to be conservative to change. Dietler and Herbich (1998) demonstrate that Luo potters used grog temper for ceramic production despite the presence of better locally available tempering agents. They posit that potters continue to use grog due to "historically molded inclinations toward action of the *habitus*" (235). In contrast to this habituated practice, those same potters would frequently experiment with decorative motifs. Wallaert-Pêtre's (2001) research among Cameroonian potters highlights the differences between learning and doing in closed and open communities of practice. Within closed learning situations there would be very little variation in stylistic or construction methods since there is structured knowledge exchange and dissemination and knowledge may be restricted to a few individuals. In open learning situations there can be many potters who share knowledge openly; in these situations, potters tend to be creative in decorative and manufacturing techniques, although they are more conservative when shaping their pots. Hollenback (2012:132) suggests that closed systems are more vulnerable to disruption in demographic disaster situations since the loss of people would result in the loss of their highly structured teaching and learning systems. In the case of Wallaert-Pêtre's (2001) and Dietler and Herbich's (1998) studies, there is conservatism in those actions most closely associated with the physicality of learning, the *techniques du corps* learned within communities of practice, practices that are largely unconscious or unrecognized and difficult to unlearn. The skills associated with the physicality of making pots may take a generation or more to change (Arnold 1998:357-358). This pattern has also been noted by Southwestern archaeologists who are able to trace the movement of peoples in the past by following ceramic practices related to the making of pots rather than stylistic attributes (Clark 2001; Neuzil 2008).

When interpreting how things are made, archaeologists must attend to individual agency and the largely unconscious rules or practices guiding how things are made and how they look (ie. "structure") while at the same time remembering that such rules do not exist outside of humans enacting them (Dobres 2000; Joyce and Lopiparo 2005; Pauketat 2001, 2004). This perspective falls under what Pauketat (2001) refers to as an historical-processual approach to archaeology. In this theoretical framework practice, process, and materials are inextricably intertwined. Within Pauketat's (2001, 2004) historical-processual approach culture is a participatory process and artifacts and spaces embody those processes. *Chaîne opératoire* and *techniques du corps* reveal much about the processes of culture making at a number of different scales.

Within spaces in which hybridity takes place, new forms, ways of doing, and ways of engaging may develop new forms. However, even when new forms arise people still bring some of their embodied dispositions and sensibilities to the processes of making things. In situations of hybridity people experience tensions and must negotiate between habitual, actions learned among communities of practice and changing relationships between people, materials, and practices. This tension is not a one-way process; changing sociopolitical engagements can impact practices and vice versa (Dobres 2000; Roddick 2009; Roddick and Hastorf 2010). Roddick and Hastorf (2010) argue that a shift in ceramic shaping and stylistic practices at the Middle and Late Formative transition in the Taraco Basin coincided with subtle shifts in food practices focused on communal consumption of food and drink. Certain practices in this historical and cultural context reference shared memories of pasts and practices while at the same time shaping new social and political interactions.

2.3.2.2 Hypotheses and Expectations

Considerable evidence exists that warfare and other kinds of violence existed in the past and that such events had profound impacts on macro-scale regional histories (see Chapter 2 and 3). However, due to this focus on the macro-scale and due to the historical legacies of anthropological and archaeological theoretical frameworks, warfare has been premised as something that only impacts the lives of a few people rather than the lives and practices of the many. Jones (2001:71-72) cautions that if archaeologists only work "within a narrative framework that only attends to the macroscale, our interpretations will tend to be restricted to this scale of analysis. If our analyses attend to the microscale, then our analyses may also be able to inform us about processes that occur at greater scales." What is needed is a multi-scalar approach to the study of warfare that takes into account the histories of war torn regions as well as the micro-scale genealogical of practices of daily lives. Such an approach, rather than assuming that warfare always occurs in the same way in certain types of political organization, tacks between scales of analysis in order to understand how micro-scale actions and macro-scale histories are recursively shaping of each other (Joyce and Lopiparo 2005; Pauketat and Alt 2005).

Within warscapes, practices are in flux as people contend with changing sociopolitical relationships, yet at the same time, peoples' practices shape lives and those lives influence the events and impacts of warscapes. As new worlds open up in socially and politically transformed warscapes, tensions arise in practices as people engage others in their differences while at the same time relying on the their embodied knowledge and technological know-how of how to do and make the world around them.

In order to understand the events that took place during a period of increasing warfare and eventual abandonment in the pre-Columbian Midwest, I chose to focus on the Common Field site in southeast Missouri, a catastrophically burned village with clear ties to the fragmenting Cahokian polity in the American Bottom and ask the following questions: Q1) What is the history of political fragmentation and resettlement in the Mississippi River Valley and how did relationships between people at Common Field and other nearby polities change over time? Q2) Was the destruction of Common Field the result of violence and if so, how did people at Common Field conduct quotidian activities like food and ceramic production, residential and site spatial organization, resource procurement, and disposal of materials during this period of escalating violence? I hypothesize that, contrary to previous research that has focused predominantly on the roles and motivations of elites, warfare would have had an impact on the lives and daily practices of the majority of people living at places like Common Field.

Based on the previously discussed ethnographic, ethnohistoric, and theoretical perspectives discussed previously, I have a number of expectations as to the potential material correlates to answer my proposed questions. I will note at this point that these expectations are not meant to be prescriptive; this is not a check list of cultural traits that are meant to be checked off and once one has reached half of the categories that means warfare had an impact on peoples' lives. Warfare had and continues to have an impact on peoples' lives. The issues at hand are whether or not they are visible archaeologically and what kinds of impacts these practices would have had on broader regional histories. Thus my goal in these final paragraphs is not to offer specific material correlates. Instead I aim to suggest particular conditions relating to daily and regional material practices that can arise during periods of escalating and endemic warfare. These suggestions are not meant to be exhaustive; undoubtedly other regions, time periods, and contexts will have variations on these conditions.

Assembling all of the information discussed this chapter, what kinds of impacts would warfare have had on daily practices that would be visible in the archaeological record? At the macro-scale, we should expect to see the reconfiguration and renegotiation of regional interactions as some polities fragment, as others come together and form new alliances, and as groups of people migrate into new regions. Some of these interactions would result in contentious interactions and conflict. Other interactions would have been marked by ceremonies and celebrations aimed at bringing groups together and solidifying new relationships. Feasting is commonly seen as a way of solidifying group membership through the consumption of shared substances and the participation in communal ritual/religious events (ie. Dietler 1996; Dietler and Hayden 2001; Kelly 2001; Pauketat et al. 2002). The coming together of groups of people would have also impacted daily practices (see below) and resulted in hybridities. Alternatively, regional interactions could be marked by isolationism as communities attempted to avoid conflict with others. Isolation may include a lack of trade, exploitation of predominantly local resources, and site location in relatively inaccessible or easily defendable places.

At the regional scale, changes in practices may also include new subsistence and religious practices. As suggested by Scott (2009) certain subsistence practices lend themselves to situations where people may have to flee quickly. This can include the planting of crops that require little attention or the hunting and gathering of foods in places that escape detection or allow people cover to hide. Additionally, there may be evidence of long term storage techniques aimed at stockpiling foodstuffs and hiding it away from potential attackers (see King and Zborover 2015). Historic accounts of indigenous groups during colonial situations also indicate that many groups turn to the spiritual world during times of violence and flux. Religious revitalization movements attempted to change the world through certain kinds of ritual practices (Gosner 1998; Pauketat 2013a; Spores 1998; Stoffle et al. 2000). During times of war, when people may have wanted to either end or affect the outcomes of battles, a number of new religious practices may emerge. These practices could include feasting, the use of religiously charged objects/animals/materials, sacrifice (e.g. Swenson 2003), and the introduction of new religious referents, symbols, and iconography some of which may explicitly reference warfare and violence (see Chapter 3 for an example of Osage religious practices related to warfare).

At the micro-scale, we may see the tensions between the practices that people learned and the changing sociopolitical contexts in which those practices took place. Within warscapes/hybrid spaces, practices were in negotiation. Attending to the *chaînes opératoires* of practices can reveal changing interactions between people, landscapes, materials, and the practices associated with different steps in technological production. In ceramic production, this may include people having to turn to using other materials to make objects while still relying on their know-how of making and doing (see Chapters 5 and 8) (e.g. Hollenback 2012). It can also include rapid changes in superficial design steps like decoration, while maintaining those practices related to the physical dispositions like clay preparation and shaping of vessels. Food practices can change over time as people have to deal with uncertainty in terms of where to hunt, food insecurity can impact consistent access and availability of foods, and food can be used as a political weapon (Davis 2000; Macrae and Zwi 1992; Messer et al. 1998; Scott 2009). Zooarchaeology provides another method to study micro-scale impacts of warfare by analyzing changes in taxonomic diversity, hunting strategies, resource procurement, and the multiple uses of animal products (see Chapters 5 and 7).

2.4 Summary and Conclusion

Early theories of warfare have focused on the relationships between violence and political complexity. Arguments over the origins of warfare have vacillated between theories that posit violence as an inherent part of human nature and those that highlight the relationships between warfare, violence, and the development of complex sociopolitical formations; the latter position continues to hold sway within anthropology. For decades researchers have named what they see as different types of warfare and debated the role of warfare and violence in the rise and fall of societies. These perspectives, and their emphasis on political entities, have resulted in models of past violence that are biased in favor of male elites and warriors. Evidence of violence and warfare has relied on material correlates that tend to be ambiguous on their own, but make a compelling line of argumentation when multiple correlates are present.

Rather than focusing on the actions and motivations of a small subset of societies (elites and military personnel), in this project I question how warfare impacted peoples' daily lives and conversely, how peoples' practices influenced the spread of warfare. In order to understand how violence may have effected how people made their lives and the objects in them, I have argued that it is helpful to conceive of regions experiencing endemic violence and warfare as warscapes. Within warscapes, different groups of people come into contact and practices are negotiated as differences are engaged. Warscapes are spaces in which hybrid practices, objects, and ways of being are brought into existence. Some of these practices may be entirely novel (new object forms, new decorative techniques, new ways of governance, new social organization) or may reveal the tensions between learned, habituated actions and changing relationships with the ways that people engage with materials, objects, spaces, and other people. To that end, I have suggested a new middle range theory, linking together theories of warscapes, hybridity, and *chaîne opératoire* and proposed possible situations or conditions that could arise living in a warscape. These propositions are not meant to be prescriptive; rather they are meant to highlight several realms of social life where the impacts of warfare may have had consequences for daily practices that may be visible archaeologically.

Chapter 3 – Historical and Regional Contexts

In this chapter I explore the regional historical contexts of the research area. First, I review historical and cultural trends prior to the Mississippian Period, noting instances of violence. In the second section I discuss regional developments during the Mississippian Period, focusing on the origins and the eventual fragmentation of the Cahokian polity in the American Bottom floodplain located near modern day East St. Louis, Illinois. The historical developments of this region are critical for understanding the subsequent events that took place at Common Field and the spread of violence throughout the Midwest following the prolonged abandonment of Cahokia. The final section of this chapter discusses common lines of evidence used to interpret Mississippian Period violence and warfare, drawing on artifactual and historical documentation from the Eastern Woodlands and the Plains.

3.1 Pre-Mississippian Lifeways and Violence

In this section I discuss some of the long-term trends in violence and social organization in the time periods preceding the Mississippian Period (Figure 3.1). My intent is provide general trends and some examples, but this discussion is not exhaustive (see Dye 2009 for an in depth discussion of changes through time) nor does it address local variations in material culture, subsistence patterns, or violent practices. Instead, this section is intended to set the historical stage for the practices and processes of violence seen during the Mississippian Period. A general note on regional chronologies and temporal designations: while I address instances of violence throughout the southeastern United States in this section, I make use of recently

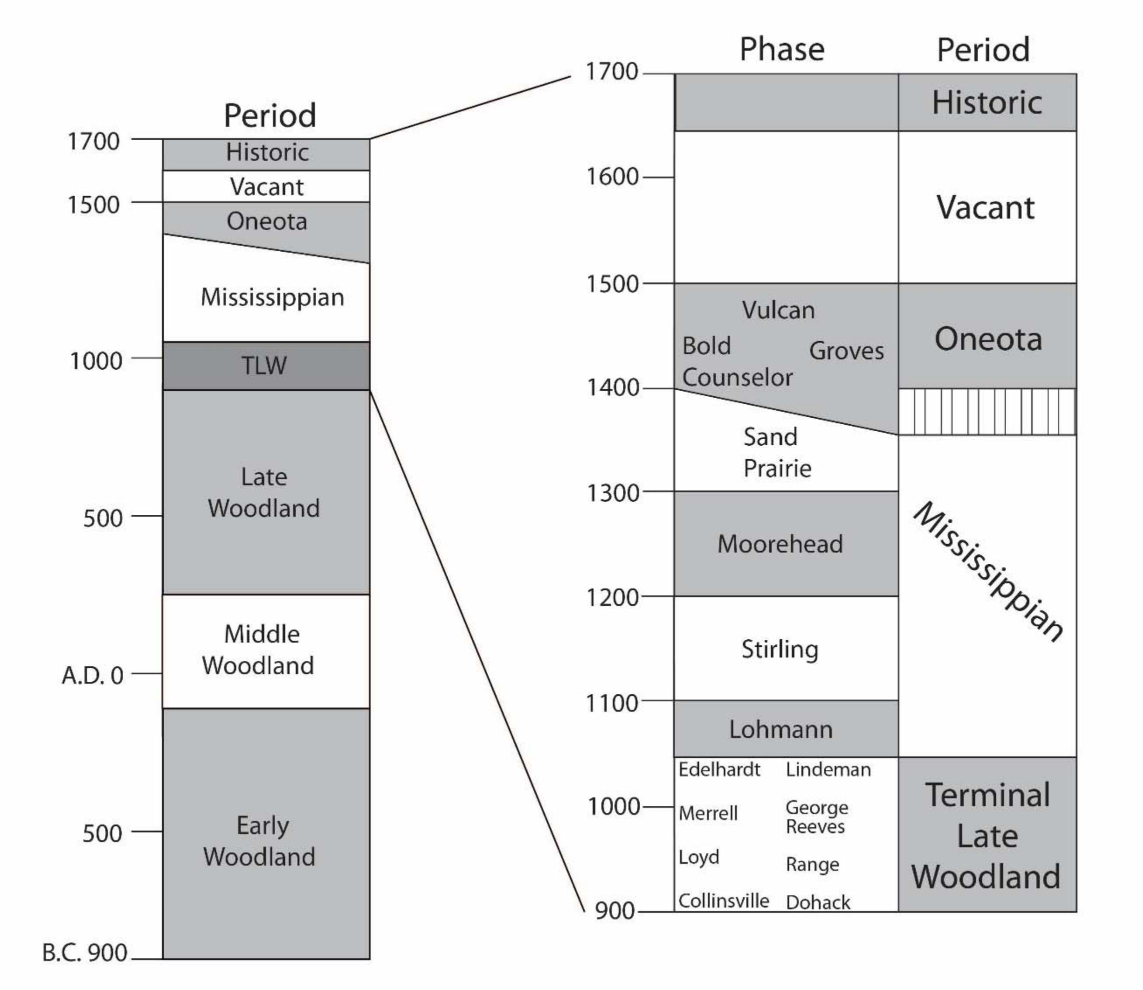

Figure 3.1. Chronology of the culture-historic periods in the Eastern Woodlands from the Early Woodland Period through the Historic Era. The offset portion of the chronology is American Bottom specific and based on Fortier et al. 2006.

published, revised, and calibrated radiocarbon dates from the American Bottom region (see Fortier et al. 2006). The American Bottom datasets are some of the largest, well-dated materials in the US, are geographically proximate, and historically related to my research area. Other geographic regions may have similar or slightly different age ranges associated with time periods.

There is little evidence of interpersonal violence during the Paleoindian through Early Archaic Periods, although it has been argued that the distribution of hypertrophic (or exaggerated) Dalton spear points is evidence of regional exchange and alliance networks (Dye 2009). During this time period population levels were low and people practiced mobile hunting and gathering. The coalescence of Early Archaic macrobands may have developed as a response to resource unpredictability (Sassaman 2010). At least two individuals from the Early Archaic site of Windover in Florida have evidence that they experienced traumatic death (Dickel 2002; Dickel et al. 1988). One male had an antler tine projectile embedded in his iliac (with no evidence of healing) and was missing his cranium and first cervical vertebra. Another adult male had two healed fractures: a fractured left ulna, and a fracture to his orbital floor, likely due to an impact from an antler tine point.

With the evidence for increasing population size and part-time sedentism during the Middle (5700-4000 B.C.) and Late Archaic (3400-900 B.C.), there is also increased evidence for violent confrontation. Much of this evidence comes from the Shell Mound Archaic in the Green River area (Mensforth 2001; Smith 1996). An increase in conflict is thought to be connected to resource competition, changing subsistence and material practices, and negotiating changing cultural landscapes through the creation of some of the earliest mound constructions and formal cemetery spaces (Sassaman 2010). In the Green River Shell Mound sites of Indian Knoll, Carlston-Annis, and Ward, there is evidence of trophy taking (decapitation, dismemberment, and scalping), inflicted injuries (penetrating wounds from sharp implements), and depression fractures (Mensforth 2001, 2007). The Late Archaic Cherry site in the Tennessee River Valley had five individuals (out of a total 49) with embedded projectile points and one of the mass burials at the site may have been the result of raid (Smith 1996). Evidence of trophy taking and embedded bone points to inter-group feuding and raiding (Mensforth 2007; Milner et al. 2009) and demonstrates the antiquity of these practices. Hypertrophic weaponry is also occasionally included in burial assemblages during this time (Dye 2009). Bodies and body parts with evidence of violent trauma recovered from the base of shell mounds may have been enemy sacrifices that were used to sanctify mound construction events (Claasen 2010).

Following Late Archaic evidence for trophy taking and raiding, there is little evidence for violence during the Early Woodland Period. The Early Woodland is characterized hunting and gathering, the cultivation of indigenous plants, widespread use of pottery, and diminishment of long distance trade. Despite a lack of evidence for violence during these times, Dye (2009) suggests that there was still widespread raiding, but that small, mobile foraging groups may have been able to form alliances in order to lessen regional hostilities and cooperate in light of resource unpredictability due to climate change. A possible exception to the lack of evidence for violence, several Early Woodland Adena sites in the Ohio River Valley have earthen embankments and ditches, although these have been interpreted as ritual enclosures (as have later Hopewell constructions) (Clay 1998).

During the Middle Woodland Period, peoples throughout the Midwest constructed earthen works and enclosures, referenced solar and celestial events through these constructions, engaged in long distance trade, and developed rich iconographic traditions. The archaeological culture during the Middle Woodland Period is referred to as the Hopewell culture, although recent research in the region has highlighted locally distinct material culture and symbolic systems leading many to interpret Hopewell "culture" as numerous regional interaction spheres and peer polity systems (Abrams 2009; Carr and Case 2005). In the interaction sphere model, earthwork sites served to unite dispersed communities through ritual (especially mortuary) activities, mediated and facilitated by councils of leaders (Carr and Case 2005). There was an increase in violence during the Middle Woodland Period in the form of trophy taking (Seeman 1988, 2007). Seeman notes that numerous skulls and mandibles from this time period have evidence of intentional modification in the form of drilling, polishing, and cutting. Some material culture from sites in Ohio also hint at trophy taking; several mica objects were crafted in the shape of disarticulated hands and feet and at least one example shows a human figure missing its head, hands, and feet (Lepper 2004).

Late Woodland Period culture areas have been described as “good grey cultures” due to perceived homogeneity in material culture throughout the region. The introduction of the bow and arrow around A.D. 600-800 resulted in an increase in the number of skeletons with embedded arrow points in burial assemblages (Blitz 1988; Emerson 2007; Milner 1984a). Much of the archaeological research on Late Woodland sites in Missouri have focused on rock shelters and mortuary mounds to the exclusion of habitation sites (Adams 1941, 1949; Chapman 1980; O’Brien and Wood 1998). Early Late Woodland sites in southeast Missouri appear to be small (based on surface scatters) whereas later Late Woodland sites, like the Range site in the American Bottom, were larger and more densely populated and there was an overall increase in site density in places like the American Bottom (Betzenhauser 2011; O’Brien and Wood 1998). While there is an increase in arrow-related skeletal trauma during this period, there is little evidence for palisade construction in the Midwest (Emerson 2007). Hilltop enclosures located in the Shawnee uplift area in southern Illinois and western Kentucky were once thought to be defensive structures ("stone forts"), although their overall lack of height and often completely open rear entrances make this proposition unlikely (Dye 2009). At large Terminal Late Woodland habitation sites like Range in the American Bottom, there is no evidence for fortification construction. Evidence of regional trade and exchange as well as the wide-spread appearance of discoidals ("chunkey stones") and pipes is suggestive of relatively peaceful, possibly religiously motivated, inter- and intragroup interactions (Fortier and Jackson 2000).

Despite a lack of palisades during the Late Woodland Period, there is evidence of violence-based skeletal trauma. In addition to the bow and arrow related deaths noted above, several lines of evidence point to politically or religiously sponsored/motivated violent trauma and violent iconography. Paintings on the walls of Picture Cave I in Missouri (dated to approximately A.D. 1000 through AMS dating of the charcoal used to make the pictographs) include depictions of individuals interpreted as supernatural beings holding stone maces and bow and arrows, wearing armor, and the decapitated heads of slain enemies (Diaz-Granados and Duncan 2000; Diaz-Granados et al. 2001).

3.2 The Mississippian Midwest

The trends of increased aggregation and horticulture were continued and intensified during the Mississippian Period. With the onset of the Mississippian Period, mound construction, wall trench architecture, shell tempered pottery, vessel form diversity, and long-distance trade became common place. Much of what we know about the American Bottom and the Mississippian Period in the Midwest comes from large-scale salvage and cultural resource management projects. In particular, highway construction projects in East St. Louis like the

Federal Alignment Interstate 270 (FAI-270) project conducted by the Illinois Transportation and Archaeological Research Program (now called the Illinois State Archaeological Survey) resulted in the excavation and mapping of large portions of sites, as well as the recovery of artifacts that lead to regional chronological (Figure 3.1) and material cultural syntheses (see Bareis and Porter 1984; Emerson et al. 2006; Fortier et al. 2006; Pauketat 2002).

Early archaeological research looked to regions outside of the Midwest to explain Mississippian origins and presence at Cahokia. Mesoamerica, the lower Mississippi River valley, and the Caddoan region have all been hypothesized as possible origin points for Mississippian culture (Freimuth 1974; O'Brien 1972; Porter 1974; Vogel 1975). In these perspectives, the development and spread of Mississippian culture was a result of external forces (for example, Porter 1974 suggests Mesoamerican traders) and their long term interactions with local Late Woodland populations living in the region.

Beginning in the 1970s and 80s, the development of evolutionary models emphasized in situ development of Mississippian chiefdoms, citing violence and competition as prime factors in the institutionalization of social stratification and political centralization (Dickson 1981; Gibson 1974; Larson 1972). While there is little evidence for violent competition over resources at the beginning of the Mississippian Period at Cahokia, Kelly (1991) has argued that the presence of extralocal raw materials (salt, galena, hematite, chert, copper, steatite, pipestone, catlinite) and trade items recovered from American Bottom sites, as well as Cahokian-made items recovered from distant sites, demonstrates that Cahokia grew as a result of evolutionary mechanisms.

More recently, researchers have emphasized that the beginning of the Mississippian Period was a historic disjuncture rather than a gradual evolutionary development (Alt 2010b; Emerson 1997a; Pauketat 2004, 2007). The use of "Emergent Mississippian" for the phases prior to the Mississippian Period exposes an evolutionary emphasis; Fortier and McElrath (2002; see also Betzenhauser 2001; Fortier et al. 2006) have advocated changing to the designation "Terminal Late Woodland" in order to reflect the dramatic changes that took place during Cahokia's "Big Bang" (Pauketat 1997, 1998, 2002). These historical processual approaches (*sensu* Pauketat 2001), focus on the historically contingent processes of culture making, negotiation, and contestation. In other words, rather than asking *why* Cahokia came to be (on the basis of reductionist models of human behavior), they ask *how* particular peoples, places, practices, materials, and objects were entangled and disentangled across space and time (for example, Alt 2006a, 2006b, 2008, 2010a, 2010b, 2012a; Baires 2014; Baltus 2014; Pauketat and Alt 2004, 2005).

3.2.1 Lohmann Phase – A.D. 1050-1100

The Mississippian Period began in the American Bottom ca. A.D. 1050 during what has been called the "Big Bang," a period of rapid reorganization and increase in political scale and complexity (Alt 2010b; Emerson 1997a; Pauketat 1994, 2004, 2007) (Figure 3.2). Rather than long term social evolution and adaptation to floodplain environments (*sensu* Smith 1978, 1990), the beginning of the Mississippian Period was marked by dramatic changes. Dispersed Late Woodland settlements throughout the floodplain were reorganized as people moved to large political centers. At the city of Cahokia, the earlier Terminal Late Woodland settlement was rapidly dismantled, the spatial orientation of the city was reorganized, a city-wide organizational plan was implemented, and construction began on earthen mounds and plazas (Alt et al. 2010; Dalan et al. 2003; Emerson 1997a; Fowler 1997; Holley et al. 1993; Milner 1998;

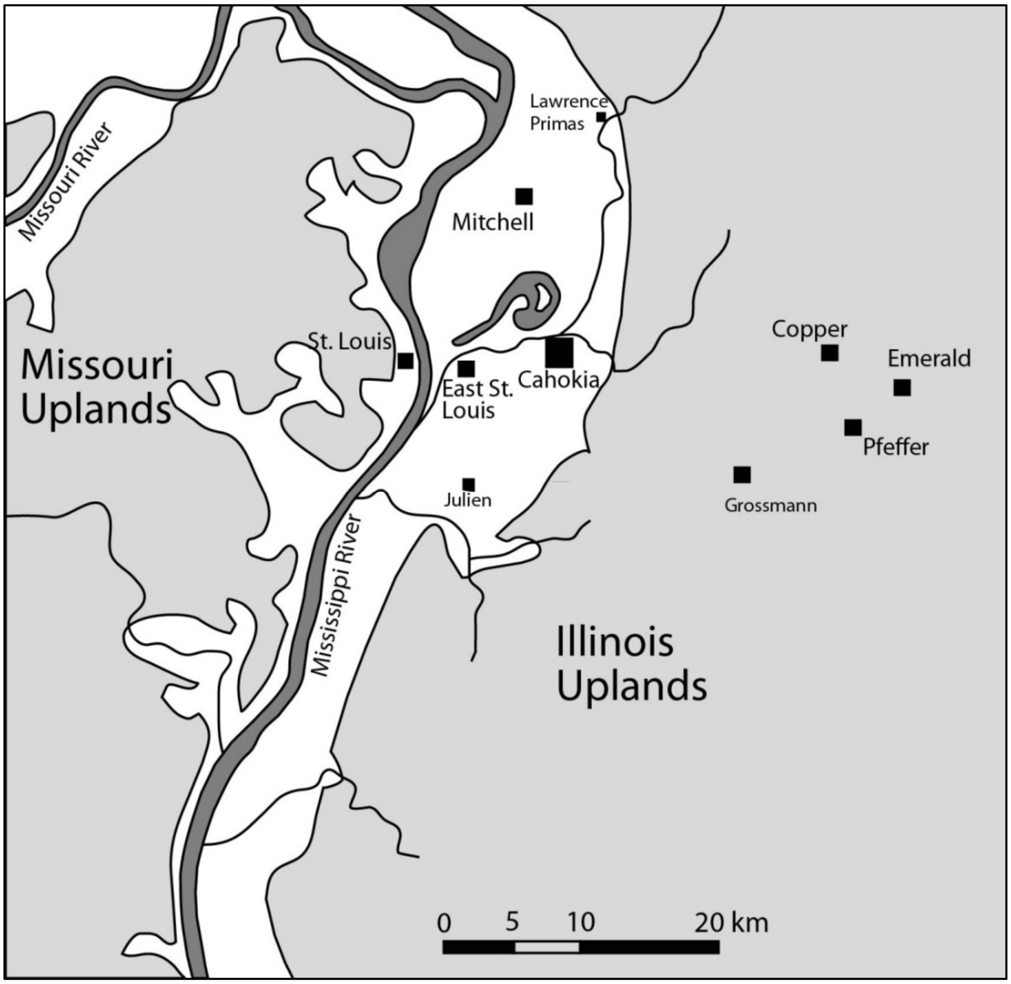

Figure 3.2. The American Bottom and some of the sites discussed in this and other chapters.

Pauketat 1994, 2004). The city plan incorporated a quadripartite organization, orientation of architectural elements to a Cahokian grid (approximately 5 degrees off of north), the construction of a causeway, and the emplacement of monumental marker posts, all of which cite celestial and solar phenomena (Baires 2014a, b; Fowler 1997; Pauketat 2012). This reorganization also involved the establishment of a rural countryside in the American Bottom as many Terminal Late Woodland sites were abandoned and others were downsized into small hamlets, farmsteads, and nodal ritual sites (Betzenhauser 2011; Emerson 1997a, 1997b; Kelly 1990; Milner 1998). In the adjacent uplands, numerous farming villages were established and at least one large village, the Grossmann site, served as a Cahokian administrative and ritual center (Alt 2001, 2002, 2006a, 2006b, 2010b; Pauketat 2003). Recent research at the Emerald Mound site has documented that the entire site was an elaborate lunar shrine complex that predates and is contemporaneous with Cahokia's founding. This has lead Alt and Pauketat (2014, 2015) to suggest that Emerald may have been foundational to Cahokia and to the establishment of Cahokian religion.

In addition to Cahokia, large villages (or cities) were established at East St. Louis and St. Louis with a series of mounds linking the areas. Together, these cities have been considered the "central political-administrative complex" (Pauketat 2004) although there are additional mound sites in the floodplain (Horseshoe Lake, Mitchell, Lunsford-Pulcher). Pre-Mississippian villages were replaced by small farmsteads and "nodal" sites that served as religious, economic, and social gathering points or homesteads for important families (Emerson 1997a, 1997b). There were also numerous villages and farmsteads settled during the Lohmann Phase in an area referred to as the Richland Complex, located in the uplands to the east of the American Bottom. Alt (2001, 2002, 2006a, 2006b, 2010b) and Pauketat (2003) have argued that these communities were comprised of resettled American Bottom farmers and immigrants from southwestern Indiana ("Yankeetown") and southeastern Missouri ("Varney") based in part on the presence non-local materials, objects constructed following other regional traditions, and atypical architectural practices.

Several major changes in ceramic practices took place at the beginning of the Lohmann Phase and the Mississippian Big Bang (Figure 3.3). Terminal Late Woodland ceramic assemblages were dominated by conical jars, bowls, and stumpware with cordmarked or smoothed surfaces and tempered with grog, grit, chert, limestone, shell, or combinations of materials. While shell temper is present in some assemblages, the adoption of shell tempering in the region was an uneven process and accounted for less than half of ceramic assemblages in the American Bottom (Emerson and Jackson 1984; Kelly 1991; Pauketat 1998). Around A.D. 1050, shell became the dominant tempering agent, accounting for 90% (or more) of the vessels from Cahokia's ICT-II (Holley 1989) and Tract 15A (Pauketat 1998). Shell is also the most common tempering agent at upland sites (Alt 2001, 2006a, 2006b). More vessel types were created during the Lohmann Phase (jars, seed jars, bowls, beakers, bottles, hooded water bottles, juice presses, stumpware), cordmarking was used less frequently, and smoothed surfaces were sometimes polished or slipped with red paint. Additionally, there was a change from conical vessels to more globular jars with angled and everted rims and angled shoulders.

Food practices in the region were also transformed. Mississippian agricultural production of maize and domesticated starchy seed plants (chenopod, little barley, maygrass, sunflower, erect knotweed) coincides with a reduction in nut consumption (Lopinot 1997). The Lohmann Phase is also associated with an increase in mammal consumption, particularly deer, and a decrease in aquatic taxa (L. Kelly 2000, 1997). Kelly argues that the increase in deer consumption was a means for feeding the large Cahokian population more efficiently. Based on the distribution of deer body parts present in American Bottom assemblages, Kelly has further argued that elite contexts have higher proportions of high and medium utility elements than

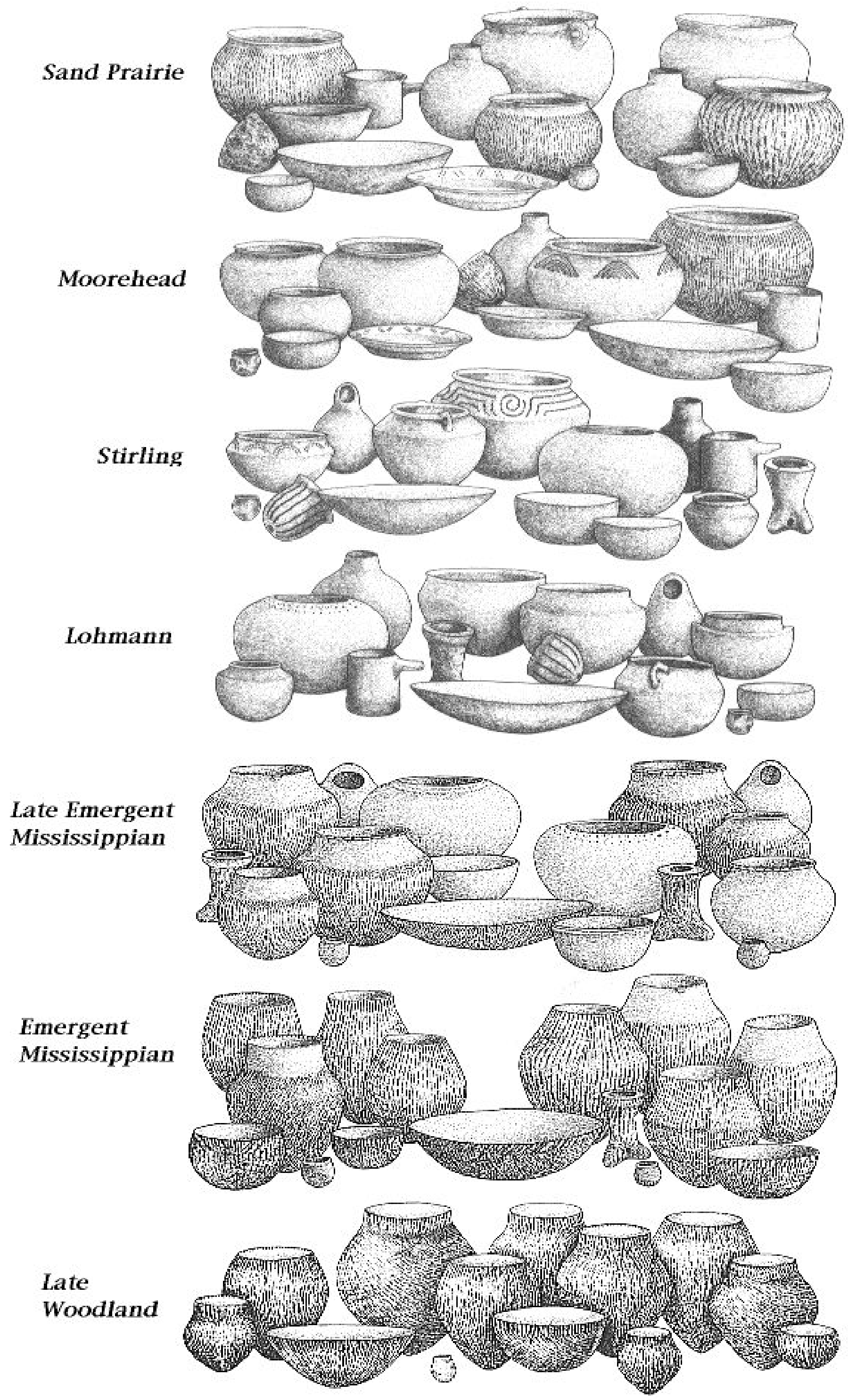

Figure 3.3. Changes in typical American Bottom ceramic assemblages through time (Milner 1990:Figure1.8 and 1.9, modified by http://www.museum.state.il.us/RiverWeb/landings/Ambot/).

non-elite contexts, indicating a possible tribute system. The provisioning of higher status individuals was present during the later phases of the Terminal Late Woodland as well (Holt 1996; L. Kelly 1991).

Population estimates during the Lohmann Phase vary between those researchers who see the American Bottom as comprised of loosely tied together aggregated kin groups and those who see Cahokia/East St. Louis/St. Louis as urban centers (contrast Alt 2010b, 2012; Emerson 1997a; Milner 1998; Muller 1997; Pauketat 2004, 2007). The generally accepted population estimate for Cahokia during the Lohmann Phase is 10-16,000 people (Pauketat and Lopinot 1997). Milner (1998) estimated a much lower maximum population of 5-8,000 people, but his estimates are based on a 100-year Lohmann Phase rather than 50 years. When this discrepancy is corrected, Milner's population estimate falls within a similar range as the Pauketat and Lopinot estimate (Pauketat 2003). Additionally, there may have been another 3,000-7,400 people living in the Richland Complex by A.D. 1100 (Pauketat 2003:53).

In contrast to evolutionary models that implicate factional competition and warfare as prime movers in developmental complexity, there is little evidence for widespread violence or conflict during the Lohmann or Stirling Phases. Instead, this early part of the Mississippian Period in the Midwest was characterized by *pax Cahokiana* (Pauketat 2004). The distribution of objects laden with religious meanings as well as utilitarian items may have indicated the exchange of prestige items, the spread of religious movements (and the movement of pilgrims), the adoption of kin, or some combination of the above (Emerson et al. 2008; Hall 1990; Pauketat 2004, 2013b). Part of this early peace at Cahokia involved large-scale, public events aimed at integrated diverse populations into new, Cahokian lifeways (L. Kelly 2000, 2001). One large pit adjacent to the plaza (buried beneath Mound 51), was rapidly filled with feasting and crafting debris including high/medium meat bearing deer elements, swan carcasses (missing their wing elements), tobacco seeds, celt debitage, and magico-ritual pigments (Pauketat et al. 2002). The Emerald site would have also been an important component as it served to bring together the cosmos (especially lunar associations), religious practices, immigrants, and local populations (Pauketat and Alt 2014, 2015).

Outside of the American Bottom, interactions between Cahokians and Late Woodland populations appears to have been mostly peaceful as traders, envoys, proselytizers, and pilgrims came to and left the American Bottom for places like northern Illinois, northern Iowa, southern Wisconsin, southern Minnesota, central Illinois, and the Illinois River Valley (Benden et al. 2010, 2011; Conrad 1991; Emerson 1991; Farnsworth et al. 1991; Finney and Stoltman 1991; Gibbon 1991; Green and Rodell 1994; Harn 1991; Millhouse 2012; Pauketat et al. 2015; Theler and Boszhardt 2000; Tiffany 1991; Wilson 2012). Radiocarbon dates and excavations at the large Mississippian centers of Kincaid and Angel along the Ohio River also point to an early Mississippian presence (Butler and Welch 2006; Monaghan and Peebles 2010). An exception to these largely peaceful interactions may be the site of Aztalan in southern Wisconsin. Sometime after A.D. 1050, a fortified village and Mississippian wall-trench structures were constructed atop earlier settlement and earthen mounds (Goldstein 1991; Goldstein and Richards 1991). The construction of a bastioned palisade at the beginning of the Mississippian occupation indicates a concern with protection from antagonistic neighbors; the presence of violent trauma in skeletal populations demonstrates that this was not an unfounded fear (Rudolph 2009).

While many of the regional and local interactions during the *pax Cahokiana* were not typically colored by armed confrontation or overt violence, there is evidence for violent actions during the Lohmann Phase at Cahokia (in addition to the possible violence at Aztalan). At Mound 72, located at the southern edge of Cahokia proper, over 270 individuals were interred in a series of mortuary performances that involved the processing of bodies, sacrifices, display of human remains and sumptuary goods, and eventual burial (Brown 2006; Fowler et al. 1999; Pauketat 2008, 2010). In one of the burial pits beneath Mound 72, 39 men and women were lined up along the edge of the pit and executed by clubbing or arrowshot (Rose 1999). In another pit, 53 dead women were deposited in two rows and two layers. Just adjacent to the pit of women were four decapitated, handless men. Additionally, there is isotopic and dental data from some of the Mound 72 burials indicating that female sacrificial victims had a high maize diet compared to elite males who had high protein diets (Ambrose et al. 2003); such signatures of unequal access to certain dietary goods was a possible form of structural violence (Alt 2012b). Once thought to represent the burial of one of Cahokia's early chiefs (Fowler et al. 1999), archaeologists now emphasize the display of the central burial as a mythic tableau (Brown 2006) and the newly formed relationships at Cahokia forged between the living and the deceased (Pauketat 2010). Recent DNA analyses and additional isotopic research of the burials in Mound 72 is calling some of these interpretations into further question as they complicate what is known about the sex and places of origin for individuals interred in the mound (Hedman and Hargrave 2014). Similar mortuary events and burials may have also taken place at other mounds at Cahokia and in the American Bottom (Pauketat 2010) like Rattlesnake Mound (Baires 2014a, b) and Wilson Mound (Alt and Pauketat 2007).

Articulated human arms and legs have also been recovered from features at Cahokia's Tract 15A, ICT-II, and sub-mound 51 as well as the Grossmann site (Alt 2010b, 2012b). The deposition of human remains in residential features is an atypical practice and may have been war trophies. Human sacrificial victims have also been recovered from post pits at Cahokia and East St. Louis. These practices (anomalous body parts, sacrificial victims, and unequal dietary access) continue throughout the Mississippian Period at Cahokia. Like other documented periods of *pax* (*pax Romana, pax Chaco, pax Colonial*), violence in the Cahokian heartland was not vanished; instead, violence was displaced to other areas (like Aztalan) or to certain segments of society and categories of people (immigrants, commoners, victims) as part of the pacification process.

3.2.2 Stirling Phase – A.D. 1100-1200

The Stirling Phase is considered Cahokia's climax. While the population at the city of Cahokia dropped during this phase, mound construction continued at Cahokia and East St. Louis, and habitation at East St. Louis was intensified (Fortier 2007; J. Kelly 1997; Pauketat 2005a). Rather than overall population loss, people were reorganized into other villages and mound centers in the American Bottom (like East St. Louis and Mitchell) and some groups may have moved into the Illinois and Spoon River Valleys (Emerson 1997a; Harn 1991). Several mounds and villages, like Blake Mound and Dampier, were also constructed along the Missouri River in St. Louis County, Missouri (Harl et al. 2011); Harl et al. argue that Dampier was a market and civic/ceremonial site. Upland farming sites were abandoned during the late Stirling Phase (Alt 2006a, 2006b). Ceramics constructed during this phase are predominantly shell tempered and plain, although red, brown, and black slipping is present. Vessel types are similar to those seen during the Lohmann Phase.

Several groups of distinctive Cahokian items were widely distributed during the Stirling Phase. Ramey Incised pottery, decorated with falconoid and thunderbird imagery, was dispersed throughout the Midwest and down the Mississippi River (see Pauketat 2004: Image 6.1). Pauketat and Emerson (1991) have interpreted these vessels as ideologically meaning laden containers that blend Upper and Lower World symbolism, intended to spread Cahokian religious practices and political authority. Flint clay figurines produced at Cahokia were also distributed throughout the Mississippi River Valley and the Spiro/Caddoan region (Oklahoma) (Emerson et al. 2003). Female figurines recovered from the BBB Motor and Sponemann sites were buried and in some cases, destroyed (Emerson 1997a, 1997c). These female figures are depicted engaging in supernatural events such as hoeing the back of a serpent, carrying gourds/medicine bundles, growing plants (corn) from their bodies, making a basket/bundle, and carrying serving trays. Masculine figurines are found outside of the American Bottom and typically depict more ominous motifs (Emerson et al. 2003). Two Cahokian figurines/pipes from Spiro Mounds (Conquering Warrior and Resting Warrior) and the Guy Smith figurine from Illinois are depicted wearing protective coverings and padded head wraps. These male figurines appear to be wearing standardized fighting regalia and may indicate a class of military specialists (Emerson 2007).

Palisade construction in the American Bottom was started during the Stirling Phase. Many of the structures excavated at East St. Louis during highway right of way mitigation are interpreted as elite residential compounds and storage huts surrounded by a palisade (Fortier

2007; Pauketat 2004, 2005a). During the latter half of the Stirling Phase the storage buildings were destroyed in a catastrophic conflagration leaving behind smashed vessels, caches of shelled maize, and an assortment of tools. At Cahokia, a bastioned palisade was constructed around the central mound and plaza area around A.D. 1175 (Iseminger 2010). There is no evidence that Cahokia was ever attacked, though the palisade was rebuilt multiple times over the next 100 years.

Violent mortuary performances like that recorded at Mound 72 continue into the Stirling Phase. At Wilson Mound in the American Bottom, there were a number of violent sacrificial burials (Alt and Pauketat 2007). One woman either died, or was executed, during child birth and buried with the fetus still in utero; her finger and toe bones also appeared clenched as if she died in pain (237). A second female burial had her head removed and placed in her removed left thoracic cavity. This woman also had a possible puncture wound in her scapula and there was an infant buried atop her body. Numerous bundle burials were also recorded during the Wilson Mound salvage work. A large number of human burials were reported during the destruction of Powell Mound (Ahler and DePuydt 1987), and while the exact nature of those burials are unknown, they may follow the patterns seen at Mound 72 and Wilson where burial contexts included both burials and sacrificial victims.

There is some evidence of interpersonal conflict in mortuary assemblages from the Illinois River Valley dating to the Eveland Phase (A.D. 1000-1150). Four decapitated males had their heads replaced with pots at Dickson Mounds, recalling the headless males found in Mound 72 (Conrad 1991). This minimal evidence of violent death and a dispersed settlement pattern lacking palisades, suggests that there was a lag between the incipient violence at

Cahokia and other regions. The ceramic assemblage from the early Eveland Phase occupation at the Lamb site further indicates that people living at Lamb attempted to construct some of their vessels in ways that emulated Cahokian styles while at the same time maintaining traditional Late Woodland ways of preparing and sharing foods (Bardolph 2014). Taken together, the data from Lamb and Dickson seem to conform to what we might expect from a region on the peripheries of a larger polity and engaging in processes of hybridity (see Chapter 2): evidence of local emulation of highly visible and politically salient artifacts (Ramey Incised pots), maintenance of traditional quotidian practices (food preparation), and politically or religiously sponsored, heightened violent events.

3.2.3 Moorehead Phase – A.D. 1200-1300

The Moorehead Phase is typically considered a period of considerable decline in the American Bottom. During this period, mounds were capped and construction ceased by the end of the phase. Within the palisade walls, Moorehead Phase structures are found in areas that were previously plaza (Alt et al. 2010). At Tract 15A (west of Monks Mound), a ritual area was converted back into a residential neighborhood (Pauketat 1998). Population density in the American Bottom dropped to a few thousand (Milner 1998; Pauketat and Lopinot 1997) and rural nodal sites were greatly reduced in number and size (Emerson 1997a). Some mound and village sites, like Mitchell and Emerald, continued to be used for religious activities, but their overall populations dropped dramatically (Pauketat 2013a). Moorehead Phase sites are less common than those from the proceeding phases and are located at least 10 kilometers away from Cahokia (Betzenhauser 2007). Small farmsteads in the floodplain like Julien, Lawrence Primas, Old Edwardsville Road, Auburn Sky, and Crowley are all unpalisaded comprised of a few structures, associated features and are commonly located along bluff edges (Betzenhauser 2012; Betzenhauser and Zych 2008; Jackson and Millhouse 2003; Milner 1984b; Pauketat and Woods 1986). People living at these unprotected sites may have sought refuge in some of the larger villages that did have fortifications like Olin. Most of these sites do appear to have been attacked, although at least one domestic structure at Lawrence Primas was burned and a number of complete ceramic vessels and stone tools were recovered from the floor (Pauketat and Woods 1989). Wall trench structures increased in overall floor area over time, but Moorehead Phase structures are generally square-shaped rather than the rectangular shape present during the Lohmann and Stirling Phases. Additionally, large storage pits are found inside of structures rather outdoor, communal storage seen in earlier phases (Mehrer 1995). Faunal remains recovered in the American Bottom region show continued reliance on deer, unequal access to portions of deer carcasses, and an increase in the exploitation of aquatic resources, especially fish (L. Kelly 1997).

Other parts of the American Bottom were turned into mortuary complexes, with large stone box grave cemeteries present at East St. Louis Stone Quarry, Florence Street, and Kane Mounds. Once thought to be a Sand Prairie Phase phenomenon, new dates from these sites now place them at the late end of the Moorehead Phase (Emerson and Hargrave 2000).

Ramey Incised pottery created and distributed during the Stirling Phase was produced in fewer numbers during the Moorehead Phase. Cordmarking on the exterior of jars, a surface treatment common during the Late Woodland Period, was once again present in vessel assemblages. New vessel forms included long-rimmed plates and everted-rim bowls, both often incised with linear designs and nested triangles referred to as Wells Broad Trailed and Wells Fine Incised (Vogel 1975).

Evidence of increased crafting from Cahokia's East Plaza and increased differentiation in household inventories (especially access to restricted, prestige goods) has been interpreted by some as evidence for a second Cahokian climax (Hamlin 2004; J. Kelly 1997; Kelly 2006; Kelly et al. 2008; Trubitt 2000, 2005). Trubitt (2000, 2005) argues that these changes were a result of shifts in elite political strategies, possibly related to competing chiefs (see also Milner 1998). She notes that higher status households during the Moorehead Phase engaged in shell working practices, whereas lower status households had less evidence for shell working than they had in previous phases. Following the construction of the palisade around the central precinct of Cahokia, several smaller mound and plaza areas were decommissioned and a new plaza was constructed in the East Plaza area. Mound 34 (in the East Plaza) was constructed on top of what has been interpreted as a copper workshop and the possible origin site of the Classic Braden iconographic style (Brown 2007; Kelly 2006; Kelly et al. 2008). In addition to shifting elite political strategies (as advocated by Trubitt), crafting and feasting debris from Mound 34 is seen as additional evidence for a second political and religious apogee at Cahokia.

In contrast, Baltus (2014, 2015; Baltus and Baires 2012) argues that there was an intentional break between the Stirling and Moorehead Phases as Cahokians disentangled themselves from earlier practices and objects and engaged in terminating/renewal events involving the destruction, burning, and deposition of objects and places. There is also a considerable reduction in the diversity of magico-sacred objects, materials, and ritual architecture recovered from Moorehead and Sand Prairie Phase households (Betzenhauser

2007). The performance of communal ritual ceremonies and region-wide crafting activities that once served to unite and integrate Lohmann and Stirling Phase communities were scaled down or restricted to elite households at Cahokia. In this perspective, crafting, feasting, mound capping episodes, and increased ritualism are not related to a second climax, but instead indicate attempts to reengage the cosmological realm in the face of mass emigration, population reorganization, and the spread of violence throughout the region. The restriction of crafting and ritualism to Cahokia and a breakdown of the interactions between Cahokia and rural farmsteads are evidence of decline and disjuncture, not a second climax.

Around the Stirling/Moorehead transition, following the construction of the palisade at Cahokia, palisade construction was initiated at contemporaneous Mississippian sites. Palisades are up by A.D. 1200 at Kincaid and Angel, although in both cases the palisades are reconstructed later encompassing much smaller areas (Butler 1991; Butler et al. 2011; Peterson 2010). There is no evidence that either one of these large Mississippian centers ever suffered from a violent attack.

In the Illinois River Valley, the Orendorf (A.D.1150-1250) and Larson (A.D. 1250-1300) Phases roughly overlap the Moorehead Phase. Settlement D at the Orendorf site was situated along a restricted bluff finger, palisaded, and numerous structures were burned (Conrad 1991); earlier settlements at Orendorf were not palisaded. Human remains recovered from the Orendorf mound (contemporaneous with the palisaded settlement) have clear evidence of violent trauma, with 9% of excavated burials (25 out of 268 individuals) exhibiting evidence of scalping, blunt force trauma, and embedded projectile points (Steadman 2008). Steadman (2008) has argued that the demographic profile of victims recovered from Orendorf points to death via attacks by outsiders rather than ritual intragroup violence. Several pipes with Cahokian symbols may have been deliberately modified and disfigured (Butler 2010). Two of the pipes also depict human heads wearing some kind of headgear, reminiscent of the helmet worn by the warrior on the Guy Smith pipe. Data from Orendorf and the palisaded Larson site indicate that people living in the region experienced a period of escalating violence and isolation.

The Norris Farms #36 site in the central Illinois River valley was an Oneota cemetery that dates to approximately A.D. 1300 (Milner et al. 1991), roughly overlapping with both the Moorehead and Sand Prairie Phases. 43 of the 264 Oneota burials have evidence that they died violently. 21 individuals had lethal trauma indicators including embedded projectile points, blunt force trauma to the cranium, and possible arm and hand parry fractures. Multiple individuals were also scalped, decapitated, and/or had postcranial elements mutilated; at least five females appear to have been scalped and survived. Additionally, 30 individuals were damaged by scavenging canids, indicating that bodies were left exposed for some time prior to burial. Milner et al. (1991; Milner 1999) interpret this burial assemblage as the result of numerous small-scale attacks over an unknown period of time.

Several other burned sites in the Illinois River Valley like Lawrenz Gun Club and Star Bridge may also date to the Orendorf and Larson Phases, although these temporal designations are tentative pending further archaeological work (Conrad 1991). Violence in the Illinois River Valley is contemporaneous with Cahokian ex-migration as well as the movement of Oneota groups into parts of the river valley.

Much like the Illinois River Valley sites, a lack of radiocarbon dates from sites in southeastern Missouri makes their temporal designations problematic, but the few recovered radiocarbon dates indicate that Powers Phase settlements in the Western Lowlands were roughly contemporaneous with Moorehead and Sand Prairie Phase occupations at Cahokia, spanning approximately A.D. 1225-1350/1400 (O'Brien and Perttula 2002). The civic-ceremonial site of Powers Fort was palisaded and of the paired villages Turner and Snodgrass, the latter had a protective ditch. Beckwith's Fort (also known as Towosaghy) and Lilbourn, located in the Eastern (Cairo) Lowlands overlap in time with the Powers Phase settlements (Chapman et al. 1977). The palisaded village at Lilbourn contained numerous burials, including one individual buried with a hypertrophic mace made from Mill Creek chert. Beckwith's Fort had a series of complicated ditch, embankment, and palisade constructions. Smaller villages like Crosno and Mathews also had palisades and, in the case of Mathews, a seven foot high embankment, a 2 foot deep ditch, and a palisade set atop the embankment (O'Brien 2002).

3.2.4 Sand Prairie – A.D. 1300-1350 and the Vacant Quarter Hypothesis

During the 14th and 15th centuries, mound centers and villages in the central Mississippi, lower Ohio, Tennessee, and Cumberland River valleys were abandoned, constituting what Williams (1990) has hypothesized was a "vacant quarter" (Figure 3.4). While the exact timing of this phenomenon is debated (Cobb and Butler 2002; Morse and Morse 1983), archaeologists have continued to note a lack of datable materials and settlements from Williams' proposed Vacant Quarter. Palisaded villages like Powers Fort in southeastern Missouri were burned and abandoned by the early 15th century (Morse and Morse 1983; O'Brien 2002; O'Brien and Wood 1998; Price and Griffin 1979). Kincaid Mounds was abandoned and some inhabitants reorganized in interior upland regions only to abandon those settlements by the mid-15th century (Butler and Cobb 2012; Cobb and Butler 2002, 2006). Angel Mounds was similarly abandoned in the mid-15th century (Monaghan and Peebles 2010), with some former inhabitants moving further downstream to form new communities (referred to as Caborn-Welborn), some of which persisted into the Historic Period (Pollack 2004). The overall picture that emerges is one in which most large settlements were abandoned by the fifteenth century, with a number of smaller settlements lasting into the Historic era. During this period of reorganization and abandonment, much of the region may have still been used for hunting and travel, particularly along the Mississippi and Ohio Rivers.

Several causal factors have been implicated for this period of decline at Cahokia. The most commonly cited factors for the Cahokian decline are resource overexploitation and environmental degradation (Iseminger 1997; Woods 2004), climate change associated with the Little Ice Age (Cobb and Butler 2002; Milner 1998), chiefly cycling/internal sociopolitical factionalization (Milner 1998), or a combination of factors. Sand Prairie occupations in the American Bottom are sparse (Emerson 1997a) and there is some evidence for continued use of parts of Monks Mound at Cahokia (Benchley 1975). At least one individual buried at Cahokia during the Sand Prairie Phase had been scalped (Milner 1998). There is evidence that there was movement of Oneota peoples into the Illinois River valley and the American Bottom. Earlier syntheses of American Bottom archaeology suggested that the Oneota (or Vulcan) Phase came after Sand Prairie on the basis of several pits excavated at the Range site (Bareis and Porter 1984). However, as more Moorehead and Sand Prairie Phase sites are excavated, the connections between Mississippian and Oneota occupations in the region appear to be more complicated than a replacement scenario. Ceramics recovered from the Copper site have both Mississippian and Oneota attributes (Baltus 2014). As noted earlier, Wells Trailed and Incised designs introduced during the Moorehead Phase have typically been interpreted as generalized sun symbols, but more closely resemble Oneota-style depictions of thunderbird wings and tails.

Figure 3.4. The Vacant Quarter with the location of Common Field, Cahokia, and two Illinois River Valley sites (following Cobb and Butler 2002; Williams 1990).

Climate change and environmental degradation models are commonly cited as reasons for the Moorehead and Sand Prairie decline and abandonment in the American Bottom. Recent climatological research in the region indicates that there were several periods of prolonged drought during the Stirling Phase and the beginning of the Moorehead Phase (Benson et al. 2009). These periods of drought following a very wet and warm Lohmann Phase may have led to periods of food insecurity as decreased moisture led to poor maize growing conditions. Other cultigens grown during this time period may have been less effected by climate change (many are considered weeds today and grow under diverse environmental conditions), but it is unclear how much they contributed to daily consumptive practices. Following the periods of drought, the second half of the Moorehead Phase and much of the Sand Prairie Phase were characterized by another warm, wet period that should have facilitated productive maize agriculture again.

The evidence for environmental degradation is limited. Certainly the construction of buildings and multiple palisade constructions took their toll on locally available wood resources (Iseminger et al. 1990). Alluvial sediments deposited on the Goshen and Willaredt sites have led some to speculate that forest clearing and agricultural production resulted in increased runoff (Lopinot and Woods 1993; Woods 2004). Problematically, both of these sites lack radiocarbon dates and have few Mississippian artifacts that allow for temporal affiliation; Goshen does not even have a Mississippian occupation present. It is also unclear if the alluviation at these sites was periodic, persistent, or a single time event. Is this evidence of flooding due to environmental degradation or normal Mississippi River flooding? Additionally, large numbers of deer remains present at Moorehead Phase Cahokia indicates that there were still stands of trees (creating forest/agricultural interface areas) where deer would live and feed (L. Kelly 1997).

Milner (1998:126) has suggested that the gradual movement of structures to topographically higher places over time, with elevations increasing by a few centimeters to a meter over several hundred years, is evidence that there were either higher floods or wetter local conditions. However, as pointed out in the previous paragraph, there were long periods of time during the Stirling and Moorehead Phases when drought was the norm and the water table dropped, making persistent flooding an unlikely agent for shifting household locations.

Both climate change and environmental change are implicated in models that posit chiefly cycling for the abandonment of Cahokia as well as the abandonment of the Vacant Quarter (see Chapter 2). In these models, as crop yields dwindled and people suffered, the burden of blame was placed on political and religious leaders who were stripped of their authority as they were unable to maintain social and political cohesion (Anderson 1994; Milner 1998). Once the people living in these polities were sufficiently disillusioned with their politicos, they pulled up their lives, voted with their feet, and moved elsewhere to either join another polity or establish a new one. Dissatisfaction with ruling elites and movement to new regions may have led to outbreaks of violence. The Cahokian case is difficult to fit into a chiefly cycling hypothesis. As noted above, the cases for climate change and environmental degradation are based on little data and contradicted by recent climatological data. Secondly, there is evidence for violence prior to the construction of the palisade and migration out of the American Bottom, not only after Cahokia's collapse. And finally, it is unclear where Cahokians went after they left the American Bottom. Some moved up the Illinois River Valley; others established new villages like the one at Common Field. But the few instances where we can positively identify intrusive Cahokian or ex-Cahokian sites do not account for the vast numbers of people who left the American Bottom following Cahokia's political apogee or people who left the larger Vacant Quarter region. This situation leads to the following questions: where did Cahokians go? Why can we not identify them archaeologically? Did they intentionally change their lifeways and practices once they left the American Bottom? Why was the Vacant Quarter abandoned?

3.2.5 Evidence of Midwestern Mississippian Violence Summarized

Prior to the Mississippian Period, violence appears to have been sporadic with a spike in violence during the Late Woodland Period following the introduction of the bow and arrow. Depictions of supernatural violence are present in rock and cave art in Missouri and Wisconsin. These paintings have been interpreted as early representations of the character Red Horn (also referred to as He-who-wears-human-heads-as-earrings) or one of his sons. Most notably in the pictographs from Picture Cave in Missouri, Red Horn is holding a decapitated head, possibly from of one of four giants he defeated in a ball game (Hall 1997); an alternate interpretation suggests that the primary figure is Red Horn’s son holding his father’s head (Pauketat 2004).

The early part of the Mississippian in the Midwest experienced a period of relative peace. There is little evidence for large-scale armed confrontations even as Cahokian Mississippians moved into new regions and established contacts with Late Woodland peoples. However, this *pax Cahokiana* did not mean that there was a complete cessation of all kinds of violence. The institutionalization of inequality can be seen in patterns of faunal utilization and procurement from Cahokia that demonstrate some segments of society had greater access to high utility cuts of venison while lower status people were provisioning the elite. Similarly, immigrant and local populations living in the uplands may have been overseen by Cahokians at the Grossmann administrative outpost (Alt 2006a, 2006b). Violent public spectacles (ridge-top mound mortuaries) created connections between the living and the dead, emplaced the supernatural realm in This World, and highlighted that some people had the power to dictate life and death and mediate between worlds. Additionally, there appear to have been some violent encounters between Mississippians and Late Woodland peoples outside of the American Bottom, especially at Aztalan.

By A.D. 1150, the political climate in the American Bottom changed dramatically. Palisade construction at Cahokia and East St. Louis coupled with emigration of large numbers of people and the conflagration at East St. Louis point to significant changes in social, political, and religious organization in the American Bottom. Along with continued violent mortuary performances at Cahokia and Wilson Mound, similar mortuary displays took place in the Illinois River Valley at Dickson Mounds.

Following palisade construction and large demographic changes in the American Bottom, palisade construction began at other Mississippian mound centers and villages. Evidence of interpersonal conflict is present at sites like Orendorf and Norris Farms #36 in the Illinois River Valley. Numerous burned and/or fortified villages have been recorded in southeastern Missouri and the Illinois River Valley indicating that regional political tensions intensified. The increases in violence and the eventual abandonment of the region referred to as the Vacant Quarter have often been attributed to climate change and environmental degradation. However, recent climatological data call these propositions into question. By A.D. 1350/1400, Mississippian mound centers and villages (with a few exceptions) were abandoned throughout parts of the Mississippi, Ohio, Tennessee, and Cumberland River valleys.

In the final section below, I review some of the common types of archaeological evidence used to analyze Mississippian Period violence and warfare, drawing on research from the Midwest, the southeastern US, and parts of the Plains.

3.3 Archaeological Correlates of Mississippian Violence and Warfare

3.3.1 Iconography of Violence

Interpretations of iconography draw heavily on historically recorded accounts of Native American beliefs, practices, and lifeways. Some argue that the themes, motifs, and practices recorded among historic Native American groups have their roots deep in antiquity (Brown 1997; Hall 1997). Hall's (1997) *An Archaeology of the Soul* brings together historic accounts from throughout the Americas (including Mesoamerica) in order to explore the geographic extent of certain practices (particularly those related to adoption and world renewal ceremonies) as well as their possible temporal depth. However, as the Mississippian Period was a time of considerable change and Cahokia was inhabited by multi-ethnic groups, we should be wary of assuming any kind of static meaning through time or that all people living in Mississippian communities experienced and interpreted iconography in the same ways.

War-related iconography makes frequent appearances in Mississippian era art throughout the southeast, but it is much scarcer in the Midwest, especially during the beginnings of the Mississippian Period. As noted in sections above, petroglyphs and pictographs from the region, such as those from Picture Cave, depict mythic battles between culture heroes (Red Horn or He-who-wears-human-heads-as-earrings) and other-worldly beings (Diaz-Granados and Duncan 2000; Diaz-Granados et al. 2001). Weapons such as bow-and-arrows and handheld war clubs or maces make appearances in cave panels, as well as images of human body part trophies (heads, scalps, limbs). One of the petroglyph panels at the Millstone Bluff site in southern Illinois has images of falconoid figures, anthromorphs, bilobed arrows, and cross-in-circle motifs, all of which has been interpreted as a metaphor for the Upper World and the birdman being, and associated with aggression and warfare (Wagner et al. 2004). One male anthromorph from the central panel has a bilobed arrow in one hand and a cross-in-circle in his other as if he is holding it like a shield. The cross-in-circle/axis mundi motif links together all three panels, interpreted as representing the Upper World, This World, and the Below World. Both the Millstone Bluff panels and the Picture Cave pictographs link humans, falcons, sky imagery, and weaponry/warfare. Such associations are also seen in the Mound 72 burial complex; the central "birdman" burial on the shell-falcon cape, the four headless, handless men, and the burial of large numbers of arrows and copper-covered spears (possibly used to play the game of chunkey). These depictions of the Upper World and violence-related themes are also frequently accompanied by references to This World or the Below World.

Images found in the Southeastern Ceremonial Complex (SECC, also referred to as the Southern Cult, Buzzard Cult, and more recently, the Mississippian Ideological Interaction Sphere) include human warriors, human-bird hybrid figures, falcon-dancers, weeping eye motifs (also called falconoid eyes), chunkey players, scalps (bellows apron), and dismembered body parts (Brown 2007; Dye 2007; Reilly and Garber 2007) (Figure 3.13). Knight (1986; Knight et al. 2001) has argued that part of the Southeastern Ceremonial Complex is comprised of a warfare/cosmogony complex that depicts a charter myth (or myths) involving heroic beings. Since many of the depictions of war-related images appear on highly restricted objects (shell, copper, exotic stone) they have been interpreted as materials controlled and used by chiefly cultic institutions (Knight 1986; Peebles 1978).

Dye (2007) has argued that ceramic bottles with depictions of dismembered body parts from Moundville were used to serve healing medicines (particularly the Black Drink made from

Ilex species) following the return of war parties. The consumption of the Black Drink would have caused people to vomit, thus cleansing their bodies/spirits prior to and following violent engagements. Cahokian beakers, or bean pots, with rainbow/ladder and other sky motifs have recently been found to have residue from the chemical theobromine, found in the plant *Ilex vomitoria* (Crown et al. 2012) and *Theobroma cacao* (Washburn et al. 2014). These motifs, like those found on Ramey Incised pottery, are thought to support evidence for a fertility/world renewal cult at Cahokia, again balancing the Upper, This, and Below Worlds.

In a recent change to the approaches that emphasize the symbolic nature of depictions of warfare or elite access to such materials/knowledge, others have argued that Mississippian religious practices and related iconography cannot be divorced from the daily lives and experiences of elites and non-elites alike. Cobb and Giles (2009) argue that depictions of warriors, bird-man warriors, and dismembered body parts reveal Mississippian fears regarding bodily defilement during conflict and served as a kind of propaganda to convince men to become warriors[2]. They argue that "…Mississippian warfare can be seen as an experience that was simultaneously embedded in the day-to-day experience, elevated in metaphor and allegory, and played out in material culture" (Cobb and Giles 2009:108). In a similar vein, Alt (2008) argues that smoking pipes depicting bound captives, regardless of whether or not they were meant to show mythic events, had roots in the actuality that such events could occur to living people; Mississippians could and did take captives. Thus, while iconography may depict supernatural beings or myths they are entrenched in human practices and concerns.

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[2]Recently Zejdlik et al. (2014), drawing on the work of Brown (1982), argued that many depictions of warriors and birdmen had been assumed to be male, but many (especially those with visible mammaries) may have also been women.

3.3.2 Weaponry

Many of the weapons used by Mississippian peoples are indistinguishable from everyday tools and were likely used in multiple capacities. Arrows would have been used to kill animal prey and human victims; celts (stone axes) were used to fell trees and enemies. An exception to this pattern is the stylized Mississippian maces and sword-form bifaces. These weapons are depicted in rock art, copper plates, and shell objects and have been argued to be status markers due to their depiction on controlled or restricted material media (Brown 1976; Marceaux and Dye 2007; Peebles 1978). Maces are often very well made and traded over long distances. Depictions of supernatural beings wielding maces and bifaces have led some to associate the objects with elite impersonation of deities in performances of mythic charters (Marceaux and Dye 2007). In many cases, maces and swords are hypertrophic and thus likely not used in actual hand-to-hand combat. Aside from these hypertrophic weapons, it is difficult to pinpoint which objects from archaeological contexts were used for battle since weapons of war were frequently tools of everyday trades.

3.3.3 Palisade Constructions

The construction of palisades throughout the Midwest became more common after the erection of the palisade around the central portion of Cahokia and the burning of walled compounds at East St. Louis. Some have questioned whether these walls were intended to restrict access to sacred spaces (especially at Cahokia), or intensify and highlight social, political, and cosmological distances between groups of people (see Beck 2006). However, a number of features call this hypothesis into question. First, at both Kincaid and Angel, the initial palisade constructions appear to encompass the entirety or majority of the sites' habitation areas

(Butler et al. 2011; Peterson 2010). While there needs to be more research exploring whether or not there are more habitation areas outside of the palisade walls, there was substantial investment in protecting very large areas, at least initially, at these sites. It is only later in time that they experience periods of contraction. At Kincaid for example, the initial palisade encompassed the main mound group, the West Mound area, and an extensive mound complex on the eastern edge of the site (Butler et al. 2011). The early investiture in palisade construction appears to serve to protect the entire community rather than to restrict access or exacerbate social distances. Second, most Mississippian palisades feature projecting bastions. Cross-culturally, bastions are used by archers to fire upon enemies, and bastions are typically spaced at a standardized interval to allow archers on neighboring bastions sufficient overlapping firing ranges (Keeley 1996). Historic accounts of Mississippian warfare (see below) describe how warring polities would often try to breech their enemy's palisades in order to desecrate ancestral temples and shrines (Figure 3.5). Such accounts demonstrate that palisades may have multiple functions, but primarily served as defense.

Figure 3.5. "Setting an Enemy's Town on Fire," an engraving by Theodorus de Bry (www.csulb.edu/~aisstudy/woodcuts/0011.1335.html).

3.3.4 Trauma

Trauma is one of the clearest lines of evidence for violent encounters but like iconography, weaponry, and palisades, trauma may be fraught with ambiguity (Walker 2001). Since any single point of evidence may have multiple etiologies they must be integrated into their larger archaeological and historical contexts. As discussed in previous sections, there is considerable evidence for violent trauma over time in the Americas. At Norris Farms #36 there is evidence of sharp and blunt force trauma, some healed injuries, skewed demographic representation, and carnivore gnawing (Milner et al. 1991; Milner 1999).

While much pre-Columbian warfare is categorized as small-scale, violent trauma from the Crow Creek Massacre site in South Dakota demonstrates that violence could be operationalized on a large-scale as well. During the Initial Coalescent Phase (approximately A.D. 1300-1400), members of the Crow Creek community began excavating a defensive ditch around their village (Bamforth 2008; Willey and Emerson 1993; Zimmerman 1997; Zimmerman and Bradley 1993). Before they could complete the fortification the village was attacked. At least 486 individuals were recovered from the fortification ditch. Trauma present in the assemblage includes: scalping, decapitation, dismemberment, cranial fractures, broken teeth, throat cutting, tongue removal, possible parry fractures, and carnivore gnawing (Willey and Emerson 1993). When the entire assemblage is broken down by sex, males and females are in nearly equal proportions. However, when age intervals are added, males outnumber females 2:1 in the 15-34 age categories and females outnumber males 2:1 in the 45-59 year categories. There are several possible explanations for the lack of young/adult females: first, they may have been taken captive rather than killed; second, they could have somehow escaped the attack; third, the disparities in sex proportions might reflect the reality of the Crow Creek community; and finally, they could have been killed but not recovered, possibly due to their deposition in another, unexcavated area. The lack of older males may also have similar reasons as the younger females or there may be fewer old men because they had higher mortality rates as adults. It is thought that the Crow Creek people were massacred and the living community members returned to bury the deceased in the fortification ditch. During the time the massacre took place, there was considerable movement of people in the Plains, bringing Initial Coalescent peoples into contact with Initial Middle Missouri peoples. However, Zimmerman and Bradley (1993) also suggest that conflicts may have arose among Initial Coalescent peoples as populations grew and more arable land was needed for food production (see also Bamforth 2008).

Crow Creek is not a Mississippian site, nor was it attacked by Mississippians. However, it does demonstrate that large-scale violence was possible and did happen in the pre-Columbian Americas. The movement of peoples on the Plains post-A.D. 1200 may have been, in part, spurred by the movement of people out of the American Bottom and Mississippi valley (Henning 2005; Pauketat 2005b).

3.3.5 Historic Accounts[3]

[3] Throughout the Americas, archaeologists are faced with ethnohistoric problems. Even in regions where there are direct connections between archaeological cultures and known Native American tribes, many historic accounts of Native American societies and their practices were recorded after decades or centuries of devastating colonial contacts. The introduction of new diseases, technological changes, disruption of political and religious systems, new alliances, betrayals, and conflicts all had profound impacts on Native American lifeways (e.g. Jennings 2011). Dunnell (1991:573) argues that modern Native Americans are "a phenomenon of contact." Furthermore, Wobst (1978) warns against the 'tyranny of the ethnographic record,' citing the tendency of archaeologists to fit their data into ethnographic and ethnohistoric accounts of practices, a technique that ultimately flattens the variability of human practices. Thus, there is some danger in seeking certain ethnographic accounts that would seemingly 'fit' archaeological data. However, researchers in culture contact contexts are questioning just how distinct the divide between pre- and post-contact societies was (e.g. Lightfoot 1995; Lightfoot et al. 1998; Loren 2001) and whether (or how) to differentiate between culture contact and colonialism (Silliman 2005). They suggest that awareness of

Much of what is known, or we think we know, about the practice of Mississippian Period warfare comes from historic accounts of European encounters with Mississippian polities in the southeast, especially the de Soto *entrada*. While these documents provide invaluable accounts of the lives and practices of Native American peoples during the early Contact Period, these practices are often uncritically examined and projected back over hundreds of years, presenting a static, homogenous view of a single type of Mississippian warfare (Jennings 2011). This early contact period was a tumultuous time as Native societies had to contend with internal political instability, the spread of endemic diseases for which they had no immunities, and contact with new social, economic, and political systems introduced by European colonizers (Ethridge 2009; Hudson 1998; Jennings 2009).

The most well-known account of Mississippian warfare recorded by the de Soto expedition is the conflict between Casquin (or Casqui) and Capaha (or Pacaha) (Clayton et al. 1993). In this account, Casquin leads his soldiers in a surprise attack against the people of Capaha, killing indiscriminately, taking captives, destroying sacred objects and ancestral remains, and looting the leader's home. Several pre-contact Mississippian Period sites have evidence that they were sacked and looted, much like the account of battle between Casquin and Capaha. Both Towosaghy in southeastern Missouri and Etowah in Georgia appear to have had their central temples (or administrative buildings) burned and the contents pushed down the sides of their platform mounds (Chapman et al. 1977; King 2002). In another recorded violent encounter, de Soto took the leader Tascalusa captive, a battle broke out at the town of

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the biases in ethnographic sources and a balance between archaeological data and interpretation based on analogy is critical for understanding past cultures and for avoiding the essentialization of indigenous cultures as 'pristine' pre-contact and as purely the product of colonial encounters post-contact.

Mabila, and hidden Mississippian warriors engaged the Spanish troops (Clayton et al. 1993; Regnier 2014). This battle led to many deaths for both armies.

Following violent battles, captives would have faced even more violence. Among Native Americans of the Eastern Woodlands, captives were forced to endure physical and psychological torture in order to ensure their "social death" and possible resurrection (Peregrine 2008). While many captives were tortured and sacrificed, some that survived extreme torture may have been kept as slaves or adopted into communities to replace deceased members. In other instances, raids may have been conducted in order to capture women from enemy tribes (DeBoer 2008). In the Great Lakes region, Algonquin, Huron, and Montagnais villages formed alliances at various times to fight against the Iroquois (Hadlock 1947). In Illinois, historic accounts suggest that Illinois Indians who were responsible for the murder of the Ottawa war chief, Pontiac, were massacred (or starved to death) by the Potawatomi and Ottawa at Starved Rock although there is still debate over the veracity of these accounts (Walczynski 2007). In the Great Lakes region and the rest of the Midwest, warfare involved raiding and skirmishing, multi-ethic alliance building and confederacies, and large-scale warfare aimed at the destruction of enemies.

Historic accounts from the Great Plains also point out the roles and impacts of warfare among Native American tribes. Francis La Flesche's (1939) documentation of Osage war and peace ceremonies provide valuable insights on the religious, political, and social dimensions of warring among the Osage. He reported that the Osage preferred defensive rather than offensive war.

> "War was not thought of by the No^{n}'-ho^{n}-zhi^{n}-ga as desirable, for while the warriors of the tribe might triumph over their enemies in a single

> encounter of in a number of battlers the fear of attack in retaliation would always follow them while engaged in hunting the deer or chasing the buffalo, and the women would be in constant dread while working in the fields. War meant to them only malice, hatred, and death." (LaFlesche 1939:228)

War would only be conducted after a war leader received messages from Wa-kon-da (the Mysterious Power) delivered via animal messengers and spiritually charged "natural" phenomena (especially lightning bolts). It was only after long periods of fasting (by the war party) and feasting and after the proper conditions had been met that the Osage engaged in offensive war. Because they feared retaliation, the Osage aimed to wipe out their enemies during battles. Warriors killed in battle were brought back to their village, mourned through Fasting Rites, and buried along with trophies taken from killed enemies (La Flesche 1939:87). Those who were not properly mourned may not pass on to the spirit land and continued to inhabit the earthly realm.

In other Plains cases, raids may have been conducted in order to secure captives and sacrifices. The Skidi Pawnee Morning Star Ceremony required that a man receive a vision from the Morning Star, form a raiding party, attack an enemy village, and capture a girl to be sacrificed (Dorsey 1906; Linton 1926). Following four days of ceremonies, on the fifth day the sacrificial captive (who personified the Evening Star) was tied to a scaffold and shot with arrows as the Morning Star rose. A shell cup recovered from Spiro Mounds appears to depict a similar ceremony being conducted hundreds of years before the historic accounts.

The cases discussed above highlight several important points: first, there was no one way of engaging in violence or warfare; second, the scale and intensity of warfare in the Eastern Woodlands and Plains was variable and political/social groups were capable of practicing small- and large-scale violence; third, warfare impacted all people living in these societies, not only elites, warriors, or men; and finally, violence and warfare necessitated significant interaction with and intervention from the supernatural realm. Native American warfare related practices were complex, regionally diverse, historically contingent and historically generative processes.

3.4 Conclusions

The archaeological record demonstrates a long history of violence in the Americas although the scale and intensity of violent encounters fluctuate throughout time. Violent conflict is frequently invoked as both a cause and effect of political centralization in Mississippian societies. At Cahokia however, evidence points to a relatively peaceful beginning (with some violence on peripheries of Cahokian expansion and influence) circa A.D. 1050. By the mid-twelfth century, political and social alliances in the region appear to break down as palisades were constructed at Cahokia and East St. Louis and large numbers of people began leaving the American Bottom. Large-scale violent encounters are recorded in the Illinois River Valley and Southeastern Missouri during the thirteenth and fourteenth centuries. Climate change and environmental degradation are cited as causal factors in the regional spread of violence and eventual abandonment of villages in the Vacant Quarter. Problematically, recent climatological research calls into question the timing between climate change and violence.

Evidence of violence and warfare from other parts of the Mississippian world and adjacent regions demonstrate that violence had an important role in Mississippian religious practices, conceptions about masculinity, village spatial layouts, weaponry, etc. Rather than one single form of Mississippian warfare, archaeological and historic accounts suggest diverse practices and consequences as people had to contend with the threat of violence on a near-daily basis.

Chapter 4 – Local Contexts

In this chapter I discuss the physiographic and local archaeological contexts of the research project. The first part of this chapter describes the physiography of Le Grande Champ Bottom floodplain and its surrounding environs. The final section discusses prior work conducted at Common Field and nearby sites as well as a brief review of additional late Mississippian sites in the region (south of the American Bottom and north of the Big Muddy and Mississippi River confluence).

4.1 Environmental Context

The Common Field site is situated 3 kilometers south of Ste. Genevieve, Missouri in a portion of the Mississippi River floodplain called the Le Grande Champ Bottom, located some 80 kilometers south of St. Louis and more than 130 kilometers north of the Mississippi-Ohio River confluence (Figure 4.1). Le Grande Champ (the Big Field) Bottom is located in between the southern end of the American Bottom (which terminates at the mouth of the Kaskaskia River) and the northern end of Bois Brule Bottom (begins south of Kaskaskia Island) (Milner 1998). The floodplain is bounded on both the east and west by steep bluff edges ranging from 60-80 feet tall (Schroeder 2002). These bluffs are part of the eastern Ozark uplift area, formed half a billion years ago.

Within the floodplain, the movement of the Mississippi River and periodic flooding events has had positive and negative impacts. Annual flooding events deposit rich, agriculturally productive soils throughout the floodplain. As a result, Ste. Genevieve County often has some of the highest agricultural yields in the state of Missouri (United States Department of

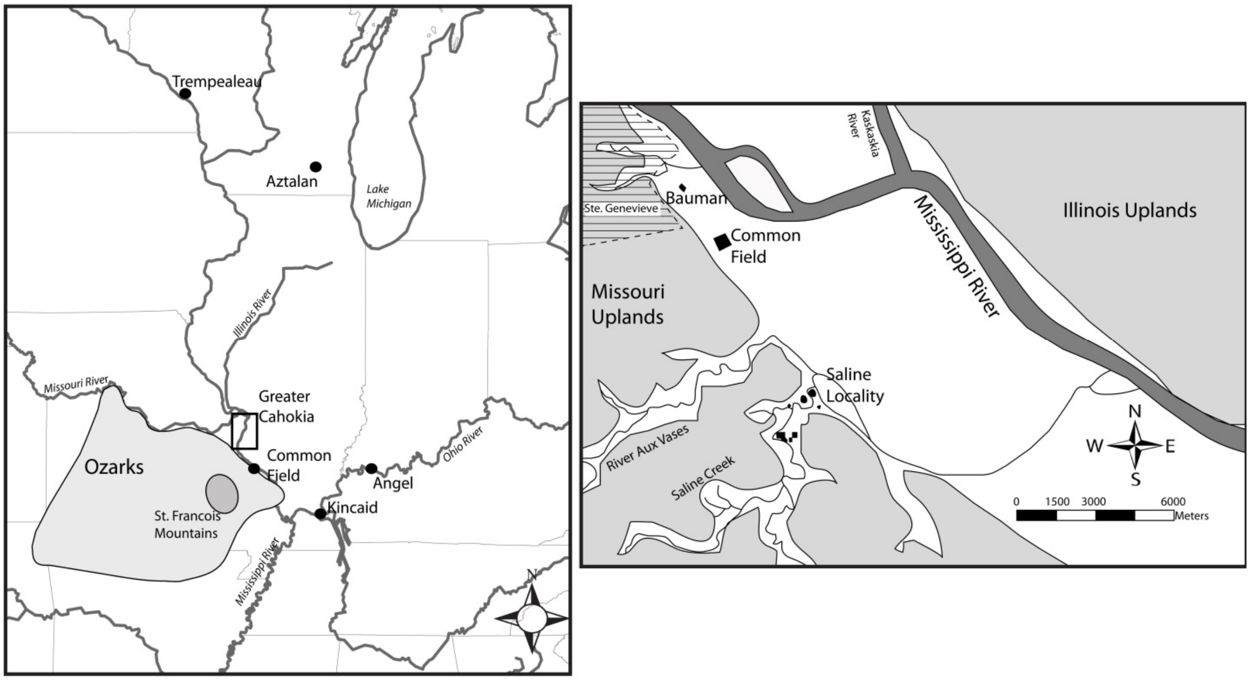


Figure 4.1. Regional and local map. (Left) Common Field in relation to several other Mississippian Period sites and the Ozarks. (Right) The Bois Brule Bottom with Common Field, Bauman, and Saline Locality sites noted. The modern town of Ste. Genevieve is located in the northwest corner of the map.

Agriculture, National Agricultural Statistics Service 2010). The continual deposition of soils can serve to protect archaeological sites. Several archaeologists considered the Common Field site to be a vacant center since very few artifacts were found on the surface (Adams et al. 1941; Chapman 1980); flood deposits had effectively buried pre-Columbian features so that they were not impacted by deep plowing over the centuries. However, as Norris (1997) points out, lateral movement of the river following the introduction of steamboats in the Mississippi Valley had severe impacts on Colonial villages situated near river banks. The original village of Ste. Genevieve was destroyed by the river during the nineteenth century. Similarly, the villages of Cahokia, Ste. Philippe, and Kaskaskia were severely impacted or destroyed. Flooding in 1979 and 1993 did significant damage in the Ste. Genevieve region. During the 1979 flood, a break in the levee resulted in the scouring of the alluvial overburden from the Common Field and Bauman sites, exposing features at both locations. The great flood of 1993 left much of downtown Ste. Genevieve underwater, damaging the extant historical structures in town.

The regional hydrological system is impacted by additional rivers and feeder streams. The Kaskaskia-Mississippi River confluence is located east of Common Field along the opposite edge of the Ste. Genevieve floodplain. Further up the Kaskaskia River, the Silver and Richland Creeks would have provided access to and from the upland settlements associated with Cahokia (Grossmann, Emerald, Pfeffer, etc.). Gabouri Creek, Saline Creek, and River aux Vases are all nearby freshwater sources. Both the Saline Creek and River aux Vases have cut steep valleys into the sandstone bedrock and created narrow floodplains. The pebble fill within these creek beds are comprised of highly polished, subangular local chert cobbles, quartz pebbles, siltstone, rhyolite, basalt, and granite. Within the Saline Creek, several salt springs seep into stream and soils, providing an easily accessible salt source. Freshwater springs are found along the Saline and Gabouri Creeks (Missouri Department of Natural Resources 2010).

The areas surrounding Common Field are comprised of several distinct physiographic regions, namely the Springfield and Salem (or Ozark) Plateaus and the St. Francois Mountains; taken together, these form large portions of the Ozarks (Ray 2007) (Figure 4.2). The Springfield Plateau, cut by the Mississippi River floodplain, is a karstic plain with carbonate bedrock (both limestone and dolomites) (Weller and St. Clair 1928). Much of this region is relatively flat with occasional gently rolling hills and small creeks and streams. Continual weathering of the limestone bedrock over millions of years has led to the development of sinkholes and caves throughout the region. These caves have been used by indigenous peoples in the area for

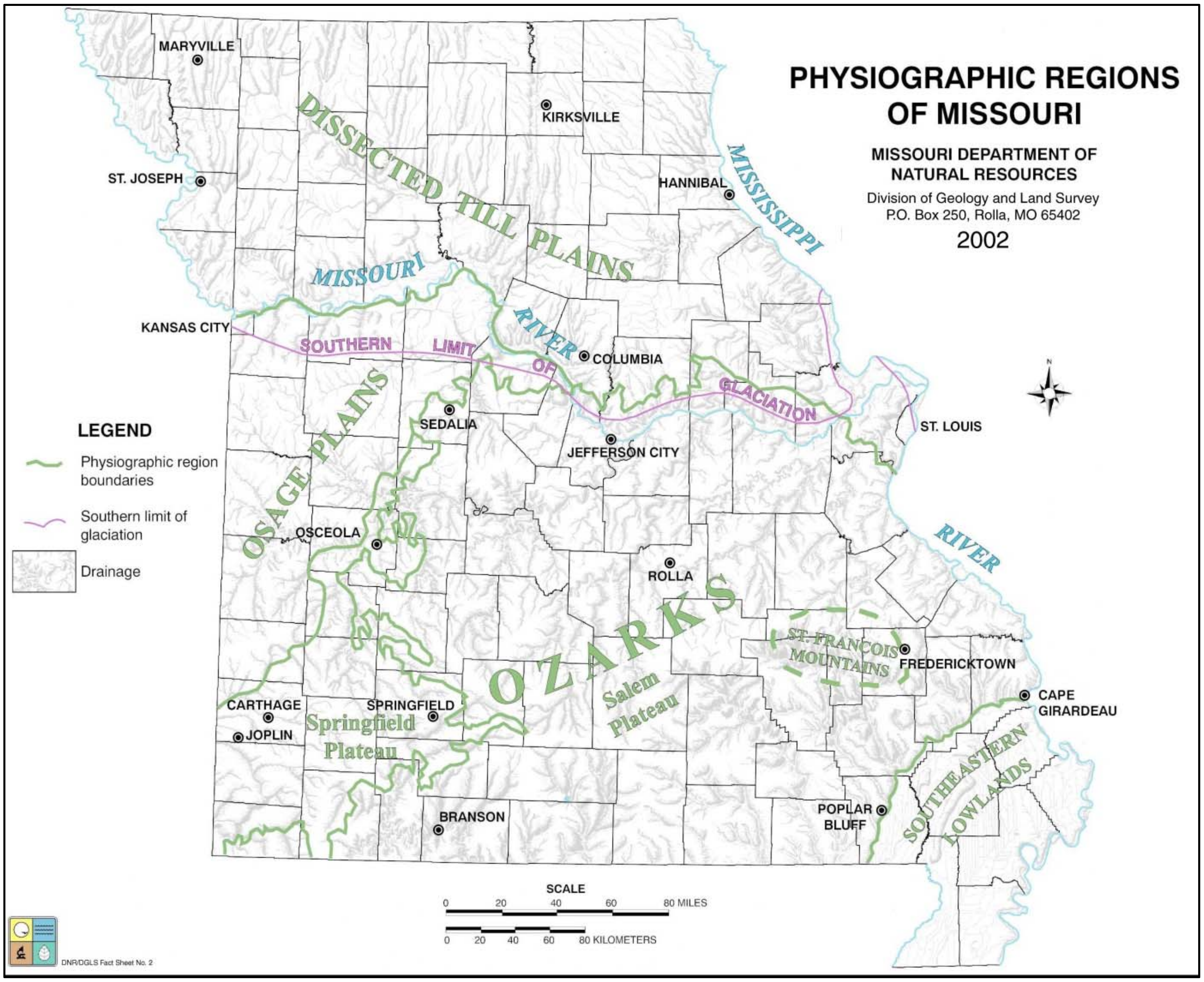


Figure 4.2. Major physiographic regions in Missouri (image produced by the Missouri Department of Natural Resources 2002) (accessed from http://www.dnr.mo.gov/geology/adm/publications/map-ShdRelief.pdf, 28 May 2013).

habitation and ritual purposes and many have petroglyphs and pictographs within (Diaz-Granados and Duncan 2000). One such cave (and associated freshwater spring), referred to as the Bushnell Ceremonial Cave, is located next to the Saline Creek.

In addition to sinkholes and caves, the Springfield Plateau is intercut with bands of chert. Burlington, Ste. Genevieve (also referred to as “root beer”), and Fern Glen cherts are all locally available in bedrock and alluvial sources (Ray 2007). Despite the destruction of portions

Figure 4.3. A thin vein of Ste. Genevieve chert visible in a bluff cut along Route 61, Ste. Genevieve, Missouri.

of the bluff to the west of Common Field for the construction of Route 61, thin veins of poor quality Ste. Genevieve chert are still visible in the bluff face (Figure 4.3). Cobbles of chert are also present along the beds of streams throughout the region.

Further to the west, the Salem Plateau completely encircles the St. Francois Mountains. The topography in this region is more pronounced than the Springfield Plateau karstic plain. Steep, rough hills and valleys are found throughout. Much like the Springfield Plateau, the Salem Plateau is cherty although it also has numerous quartzitic formations as well (Ray 2007). Gasconade, Roubidoux, Jefferson City, Everton, Joachim, Plattin, and Kimmswick cherts are all found in Ste. Genevieve County. The Roubidoux, Jefferson City, and Everton formations also have quartzite components.

The St. Francois Mountains located in the interior of Missouri. Early colonial documents refer to this area as *pays plein de mines*, or mining country (Schroeder 2002), highlighting the importance of the raw minerals and metals found throughout the igneous bedrock. Massive outcrops of granite, rhyolite, and basalt were used by indigenous peoples for the creation of chipped and ground stone implements. Hematite and galena are found in both the St. Francois Mountains and the Salem Plateau. Additionally, lead and iron ore are found throughout the St. Francois Mountains, and is reflected in the naming of Iron County (west of Ste. Genevieve County) and the city of Ironton.

Due to its position in close proximity to both floodplain and uplands, the inhabitants of Common Field would have been able to exploit wetlands, grasslands, bottomland forests, and upland forests. At present, much of the floodplain is tilled for agricultural crops (primarily corn and soybeans). *Le grande champ*, the big or common field, was divided into linear land sections called arpents (measuring approximately 192 feet and 6 inches wide, often a mile long) and marked with pecan trees, some of which are still present in the floodplain today (Franzwa 1998). Prior to European occupation, it appears that much of the floodplain was covered by grasslands with stands of trees located near river and creek edges (Schroeder 2002). Oak, cottonwood, sycamore, elm, hickory, maple, walnut, pecan, mulberry, and paw paw trees would have been found throughout the region. In the hillier regions west of the river, open stands of coniferous and deciduous trees were mixed with meadows. Red cedar trees could be found rocky outcrops in the Ozarks.

The Mississippi River and swampy sloughs would have provided people with access to fish, amphibian, reptile, and mollusk resources. Mammals range in size from small rodents up to large artiodactyls. Mammals that live in the region include coyote, fox (red and gray), raccoons, mustelids (weasels, badgers, otters), skunks, cats (bobcat and mountain lion), deer, bear, armadillos, rabbits, opossums, moles, bats, and rodents (squirrels and mice) (Schwartz and Schwartz 2001). While the pre-Columbian range of bison and elk are not known, both may have ranged over much of Missouri.

4.2 Archaeology in Ste. Genevieve County

Henry Brackenridge made one of the first written observations of the large earthen mounds situated in the Mississippi River floodplain known as the Ste. Genevieve Bottom. During his travels in the early 1800s, he noted that "In the bottom [i.e. the Big Field] there are a number of large mounds. Barrows, and places of interment, are every where [*sic*] to be seen" (quoted in Ekberg 1996:86). Much like the mounds at Cahokia, Brackenridge speculated that these earthen monuments were the work of a people who had come before the Native Americans who lived in the vicinity at the time of his writing (Brackenridge 1814).

In the late 1800s (pre-1870), eight shell gorgets were removed from mounds located outside of the town of St. Mary and were purchased by Yale University in 1871 (MacCurdy 1913). MacCurdy (1913:397) reported that one of the gorgets may have come from another location, but did not identify, or could not identify which. These gorgets, clearly Mississippian in age, were likely removed from burial mounds constructed atop a bluff edge overlooking the Mississippi River outside of St. Mary, Missouri. Among the designs on the gorgets are cross-in-circle motifs, two depictions of spiders, two chunkey players, and an unusual human figure

(Figure 4.4). Philips and Brown (1978) found it improbable that all of the gorgets recorded by MacCurdy came from the same archaeological association because they appear to derive from

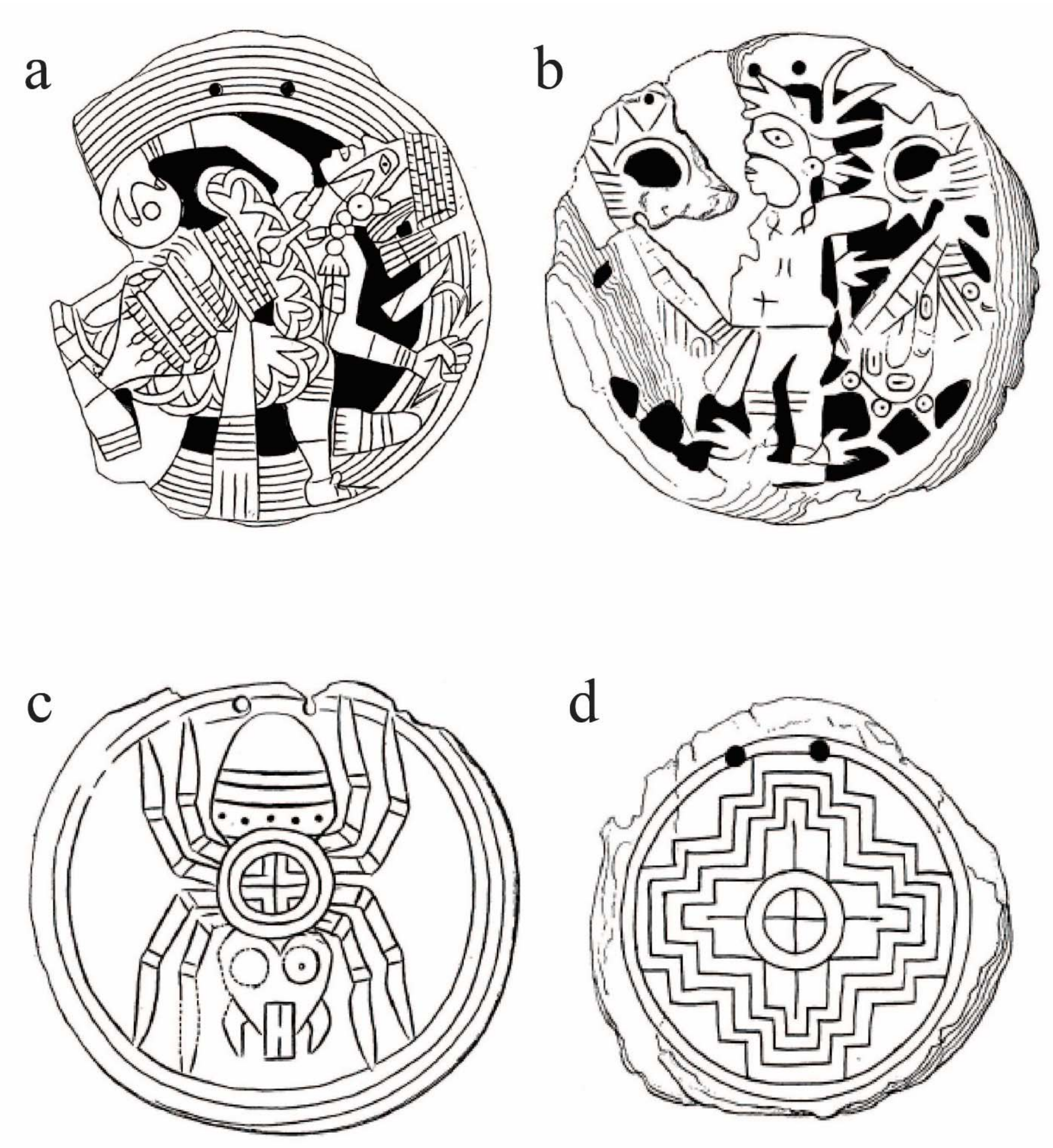


Figure 4.4. Shell gorgets from St. Mary, Missouri, purchased and documented by MacGurdy (1913). Gorget a (1913:Figure 70) depicts a chunkey player wearing a bellows-shaped apron; gorget b (1913:Figure 77) is the unusual human image; gorget c (1913;Figure 67)depicts a spider with a cross-in-circle motif in its cephalothorax; gorget d (1913:Figure 64) is a cross-in-circle motif surrounded by nested terraces.

eight different stylistic traditions. For example, they argue that the chunkey player gorget was made by the same artist who crafted the Sprio and Eddyville chunkey gorgets, while the unusual human gorget is in the Etowah Mound C-Dallas style (Philips and Brown 1978:179). Philips and Brown suggest that the unusual human gorget depicts a human/bird hybrid reaching through two sun or starbursts. Based on recent a recent reinterpretation of Dallas (also known as Hightower) style gorgets, Knight and Franke (2007) argue that some of these sun/starbursts are depictions of moths/butterflies.

In the early 1900s, Missouri historian Louis Houck commissioned Lewis M. Bean and D.L. Hoffman to locate mounds and villages throughout the state of Missouri (Houck 1908). Ceramics found along the Saline Creek were interpreted as a Nahua (Aztec) salt processing sites since it was believed that contemporary Native Americans in the region did not use salt. They also recorded the presence of mound groups outside of Lithium and St. Mary. For the Common Field site (referred to as the “Big Field” mounds at the time) Bean reported “One group [of mounds] are very fine – There has been found a great Many Arrow heads – Stone Axes Hammers and Some Pottery.” His sketch map of the site shows four mounds (Mound A, and possibly C, D, F) and records the height of Mound A as 20 feet, although Houck later changed this height to 25 feet (1908:76) (Figure 4.5).

4.2.1 Common Field (23SG100)

Little work was conducted at Common Field prior to the 1980s. The site is mentioned in passing by several sources (Adams et al. 1941; Bushnell 1914; Keslin 1964) but largely ignored due to the paucity of artifacts on the surface. This lack of artifacts on the surface led Carl Chapman (1980) to surmise that Common Field was a vacant ceremonial center related to sites in the American Bottom region. These early reports frequently disagree on the number of mounds at Common Field as well as the height of Mound A. In addition to Bean and Houck's estimates in the 20-25 foot range, Bushnell (1914) gave it a height of 15 feet, and Adams et al. (1941) estimated 30 feet, an estimation with which Keslin (1964) agreed. Similarly, there has

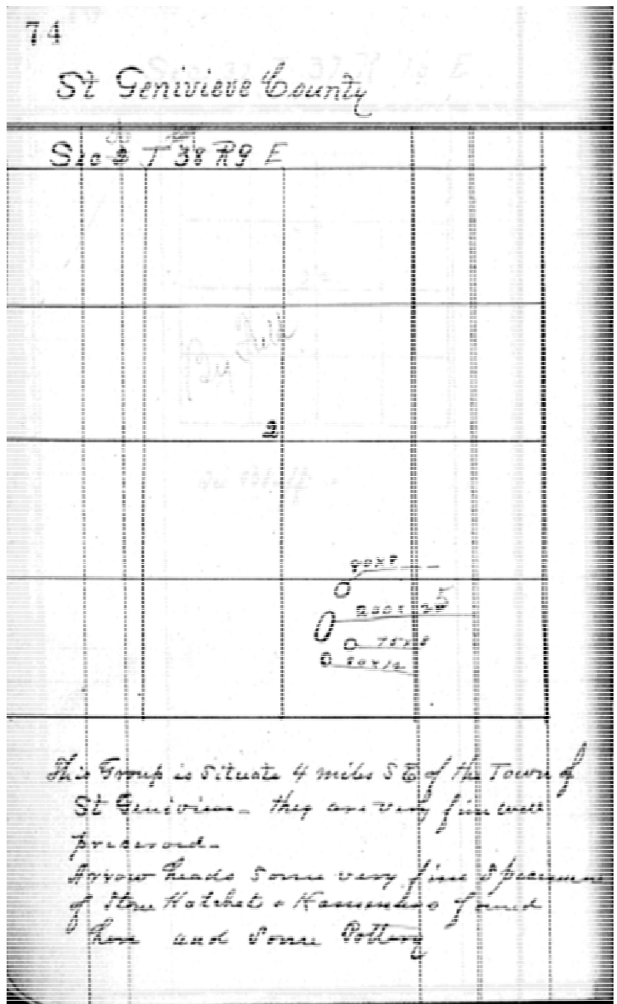


Figure 4.5. Common Field depicted in Lewis M. Bean's field notebook (image courtesy of Russell Weisman, personal communication 2012).

been disagreement over the number of mounds at the site. Bean's sketch map records four mounds and Adams et al. (1941) report eight mounds. As of 1980, six mounds were visible and

Mound A had been reduced to approximately 15 feet (O'Brien et al. 1982). One of the current landowners remembers his grandfather bulldozing the top of the mound and spreading the fill in order to facilitate agricultural production over the top of Mound A (Robert Roth, Jr. personal communication). Today, five of the mounds are still clearly visible, while a sixth mound (Mound D) has been largely plowed down, although a slight gentle rise is visible at the end of the ridge Mound D had been situated atop. U.S. Army Corps of Engineers (USACE) lidar from the site shows 5 mounds as well as the ridge, although Mound D is not clearly visible (see Chapter 6). There are also two borrow pits located west and north of Mound A.

During December of 1979, a levee north of the Common Field site was breeched by high Mississippi River flood waters. The breech effectively channeled rushing waters across the surface of the site. The flood waters scoured the plow zone and alluvial overburden (from previous floods) from large portions of the site revealing archaeological features, artifacts, and humans remains across the site. As the USACE took photographs of the levee damage, they took an aerial photograph of Common Field, providing documentation of the flood damage as well as the location of hundreds of archaeological features (Figure 4.6). A number of prominent features are visible in the photograph. First, numerous dark stains are visible, contrasting with the subsoil. These stains are Mississippian Period structures (domiciles, storage facilities, ritual and communal buildings), pits, and other features. Second, a light colored linear stain runs roughly east-west along the southern edge of the site and then takes an abrupt right angled turn north. Very few dark stains are located south this linear feature, indicating that it was likely the palisade. Third, several large, light colored areas mark the location of mounds on site. Fourth, a field located south of Mound A has few dark stains visible and could be a plaza or an area unaffected by the flood stripping. Fifth, the railroad tracks cut through a portion of the site; this could mean that an unaffected portion of the site remains. And sixth, a Mississippi River channel scar cuts through the northeastern portion of the site. It seems unlikely that this channel was active during the occupation of Common Field and since no features are visible in the scar (and the stain from the palisade terminates there), the channel was active sometime following the occupation of the site (*contra* O'Brien et al. 1982).

Archaeologists from the University of Nebraska and the University of Missouri-Columbia were contracted to conduct a surface collection at the site (Ferguson 1990; O'Brien et al. 1982; Trader 1992). The site had been plowed twice prior to archaeologists beginning their project, damaging vessels and disturbing many of the burials, but most of the artifacts remained close to their original location. The primary investigators of the project, in an effort to document intrasite variability, sought to document the site via aerial photography (black-and-white and false-color-infrared) and through controlled surface collection of several control blocks (Figure 4.7) (O'Brien 1996; O'Brien et al. 1982).

The surface collection and mapping of features was intended to test the results and interpretations of the aerial photography. O'Brien (1996) also contends that the purpose of this controlled surface collection was to document the effects of plowing on archaeological collections; high densities of artifacts in collection squares closely associated with soil stains would demonstrate that artifacts had not moved far from their original positions. An additional eight areas were chosen for surface collection for a total of 5624 square meters, or 3.3% of the

Figure 4.6. Aerial infrared (top) and color corrected image with overlay of Common Field following the 1979 flood (images courtesy of F. Terry Norris, U.S. Army Corps of Engineers, St. Louis District).

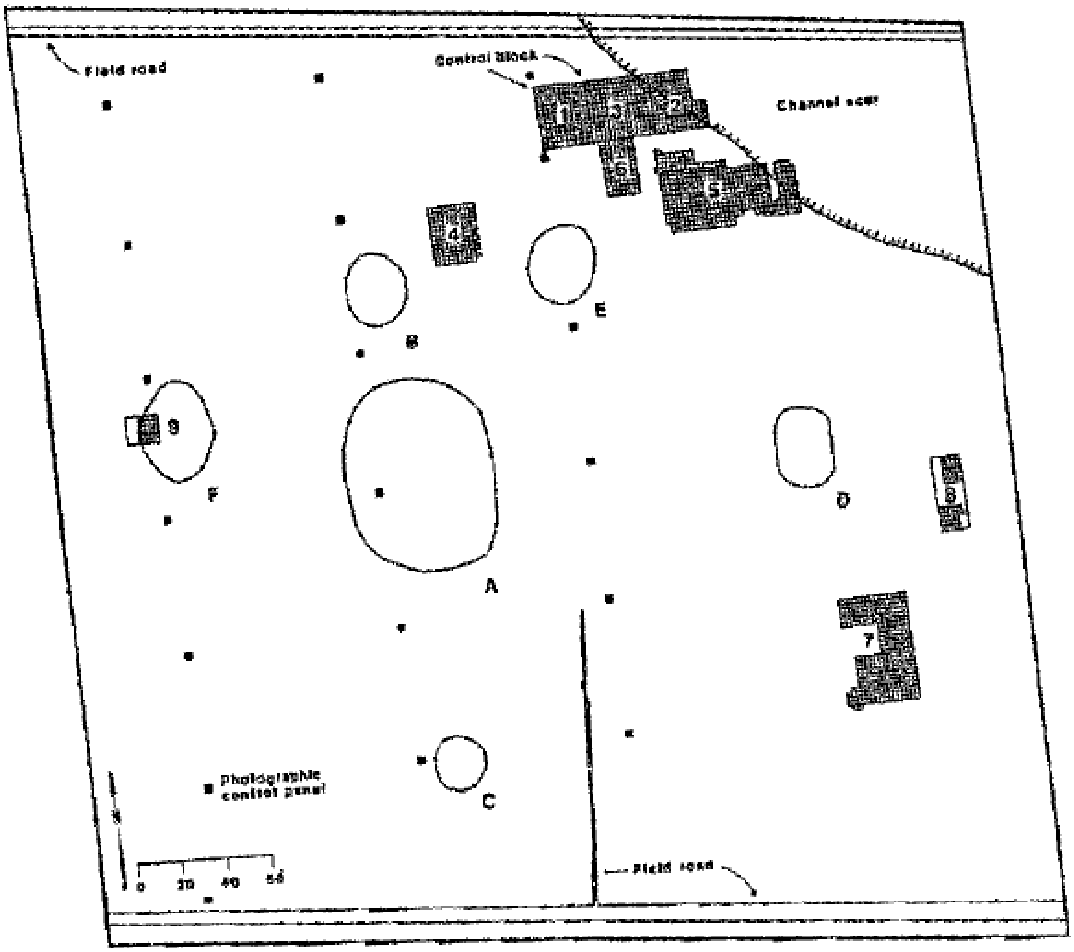


Figure 4.7. Controlled surface collection blocks (Ferguson 1990:Figure2); note that the north arrow refers to their grid north, not magnetic north.

total site (O'Brien 1996).

One 25 x 27 meter area (Block 1) was chosen for controlled surface collection (Figure 4.8). Within this control unit, at least four rectangular features (and probably more) with in situ charred posts are visible. Two of these structures measure approximately 6 x 8 meters. In addition to collecting artifacts in this area, researchers also excavated a 1 x 1 meter unit into the margin of Feature 4 in order to determine whether or not it was a residential building. During these excavations they encountered another in situ burned post at the margin of the

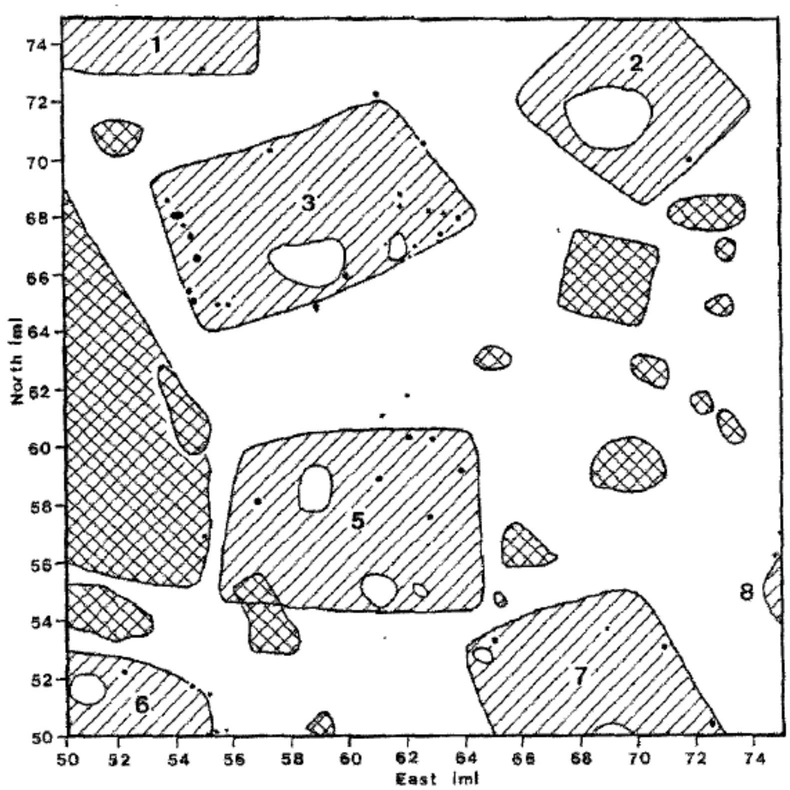


Figure 4.8. Control block showing possible structures (diagonal lines), burned posts (black), internal features (white), and other features (cross-hatching) (Ferguson 1990:Figure 3).

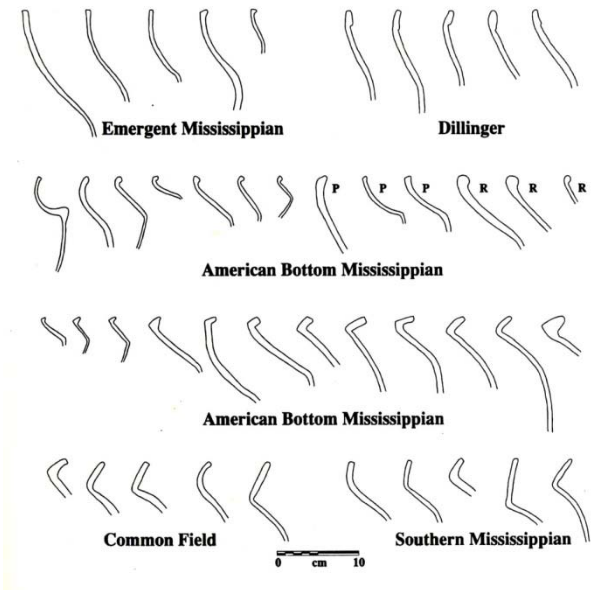
structure as well as a human skeleton. It is unclear what condition the human remains were in or how they were positioned. The University of Missouri Museum of Anthropology has 17 individuals listed in their NAGPRA database (last updated in 2007) (http://database.coas.missouri.edu/fmi/iwp/res/iwp_auth.html). Of those, 12 are adults (1 female, 11 sex unknown), 3 are subadults or infants, and 2 have unknown age and sex. Radiocarbon dates were recovered from Features 3 and 5. The uncalibrated date for Feature 3 is A.D. 1210 ± 70 (Beta-4998). Using OxCal v4.2.3 (Bronk Ramsey 2013) and the IntCal13 curve (Reimer et al. 2013) the calibrated 1-sigma range is A.D. 1214-1382 and the 2-sigma range is

A.D. 1155-1400. The uncalibrated date of the sample from Feature 5 (Beta-4997) is A.D. 1440 ± 60; the calibrated 1-sigma is A.D. 1325-1447 and the 2-sigma is A.D. 1296-1485.

Two Masters theses at the University of Missouri were completed on the ceramics (Ferguson 1990) and the lithics (Trader 1992) from the surface collection. Both theses demonstrated that there was a positive correlation between artifact density and the location of presumed features. Drawing on the type-variety system and vessel shape, Ferguson (1990) analyzed 6814 sherds (out of 14,104 total collected), 820 of which were rims. Of the rim sherds analyzed, 432 were not identifiable to type. Most of the types recorded by Ferguson date to Cahokia's Moorehead and Sand Prairie Phases, although she did analyze several types that are pre-Mississippian and several that are non-local (negative painted sherds, Matthews Incised, and Moundville Engraved).

On the basis of rim sherds collected by the University of Missouri, Milner (1998) has suggested that the Common Field assemblage represents a transition between more northern (Cahokian) and southern pottery traditions (Figure 4.9). He argues that Common Field jars have angular necks with rims that are longer and more vertically oriented than contemporaneous Cahokian jars, indicating a similarity with ceramic vessels found further south in the Mississippi Valley. Conversely, he maintains that Common Field plates have more in common with northern style plates due to the high percentage of decoration and lack of rim modification.

Today the surface collection from the 1980 project is curated at the University of Missouri Columbia Museum of Anthropology. In 2009, I was issued a loan of the ceramic and faunal materials associated with the Common Field site. There are no field notes associated or curated with the project collection. Many of the materials in the collection are missing their



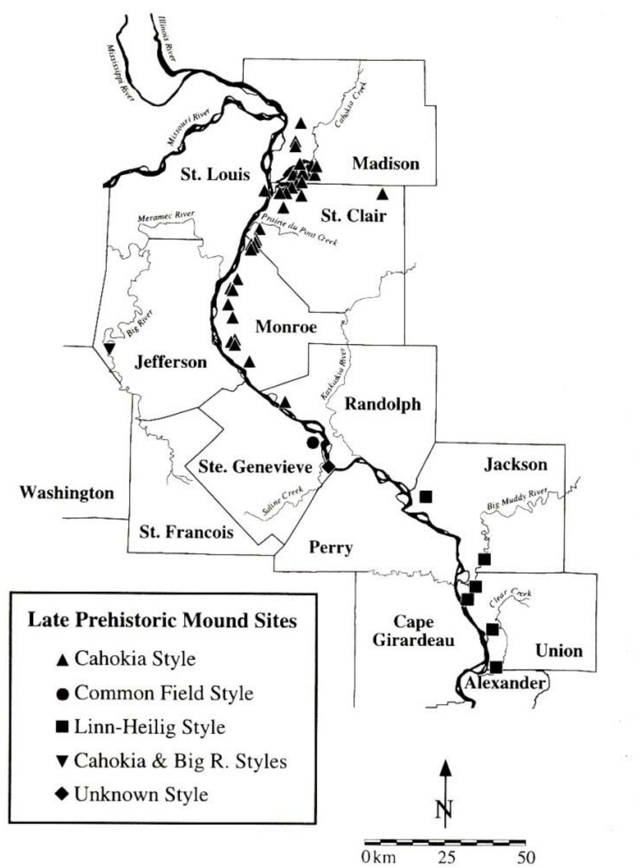


Figure 4.9. Rim profiles from Common Field, American Bottom, and Lower Mississippi River Valley as illustrated in Milner 1998 (Figure 3.2) and map showing the distribution of sites with Milner's (1998:Figure 3.1) proposed ceramic styles.

provenience information; often the only information present was the block number (and that information was frequently missing too). Ultimately, I decided to focus my energies on the ceramics since there were many rim fragments present which would aid me in dating the site and tracing connections with the technological and stylistic practices employed at other Mississippian sites (see results in Chapter 8). Many of the sherds illustrated in Ferguson's (1990) thesis are no longer in the collection. Ferguson notes that during her analysis there was a flood in the facility where the sherds were either being stored or analyzed and some of the materials were never found again. The faunal materials were not completely analyzed since provenience information was missing and there were no notes on how materials were collected and subsequently labeled. My initial hope was that I could correlate faunal materials to specific features, but features were not mapped in all collection units, provenience information was frequently missing, and when it was present, there was no explanation for the numbering system. Rather than providing a detailed perspective on differential faunal utilization, without provenience information I was left with a generalized picture of subsistence (largely deer remains with occasional aquatic resources like turtle and fish). There were two elements from bison present in the collection.

In 2010, I conducted the first excavations at Common Field since UMC's 1 x 1 meter excavation unit. Over the course of three visits to the site, I conducted a surface collection, magnetometry survey, and excavations that resulted in the recovery of materials from several completely and partially excavated houses, pits, and part of the palisade (see Chapters 5-8).

4.2.2 The Saline Locality

The majority of archaeological work conducted in Ste. Genevieve County has been focused on sites located along the Saline Creek, some 2 km south of Common Field (Figure 4.1). David I. Bushnell, Jr. (1914) conducted excavations at several of the Saline Creek sites under the auspices of the American Bureau of Ethnology. The ground surface throughout the Saline Creek region was littered with fragments of salt pan, sandstone, and limestone much of which had been burned. In his excavation trenches at what he determined was a village area, Bushnell encountered dense layers of ash, pottery, animal bones, stone tools (specifically Mill Creek hoes), and stone fragments. At a mound in the middle of the proposed village area, Bushnell recorded the presence of three burials in sandstone lined graves. All three burials were reported in poor shape due to exposure from plowing, but Bushnell was able to save the skulls. Another mound located atop the bluff (overlooking both the Saline and the former Mississippi River bed) had several more stone box graves plowed out of its apron. Burial one was a grave divided into two compartments, one containing a complete skeleton that had been disarticulated at the time of burial, and a second compartment containing a single skull. This additional compartment was not a later addition as both compartments share a single large slab of sandstone as a base. While Bushnell did not have an explanation for this unusual arrangement, it is possible that the skull in the second compartment was either an ancestor/heirloomed skulled, or an earlier burial that was removed/disturbed when the complete burial was interred. Alternatively, this may be a trophy skull acquired by the deceased during his lifetime. Decapitation is a frequent theme in Mississippian iconography (Brown and Dye 2007) and the 'Conquering Warrior' pipe from Spiro (but created at Cahokia) shows an armored warrior executing a captive through decapitation. Burial two contained two disarticulated skeletons. Burials three and four both contained multiple disarticulated skeletons. Several skulls and complete vessels were collected by Bushnell and sent back to the National Museum.

In addition to his excavations in the possible village the recording of the mounds and their exposed burials, Bushnell provides one of the earliest description of what is now referred to as the 'Bushnell Ceremonial Cave'. This cave and fresh water spring is located a short distance west of the Saline Creek and eventually feeds into the creek. The cave is approximately 12 feet wide and less than 4 feet tall. A deep channel has been carved through the middle of the cave floor by water and flanking both sides are 13 petroglyphs (Bushnell 1914; Diaz-Granados and Duncan 2000). Multiple cross-in-circle designs and avian images have been carved on the cave floor beyond the drip line. Bushnell suggested that the images were recent in origin (no more than 200 years old) since rushing water bearing sand would have obliterated older images. However, the images are still clearly visible on the cave floor nearly 100 years after Bushnell's report.

Bushnell ultimately decided that the sites in the Saline Creek region were created by members of the Illiniwek Confederation who lived in the region at the time of contact. However, the presence of salt pan, Mill Creek hoes, avian and cross-in-circle imagery in the cave, and stone box graves all point to a Mississippian presence in the region. Bushnell's photograph of one the graves also shows a Mississippian vessel with an everted rim (Bushnell 1914: Plate 54).

The Saline Locality was revisited in the 1950s as part of Richard O. Keslin's dissertation research, the results of which were published in a special issue of *The Missouri Archaeologist*

(Keslin 1964). Excavations were conducted at the Kreilich (23SG05), Cole (23SG07), Fortnight (23GS113), Cornucopia (23SG112), Copperhead (23SG75), and Bluff (23SG300, 23SG92) sites. Much like Bushnell, Keslin encountered thick deposits of burned ash and cultural materials overlain by flood deposits from the creek. Numerous fire and cache pits were noted including pits lined with large fragments of salt pan and whole mussel shells. Excavations at Kreilich demonstrate that the site was in use from the Late Woodland Period through the Historic Period. Most of the Mississippian Period pottery points to a Stirling and Moorehead Phase use of the site due to the presence of Ramey Incised pottery, vessels with rolled rims, bean pots, and fabric impressed salt pan. Similar results were found at the Cole site, with the addition of a feature used to manufacture salt pans (a shallow, hard-packed basin). At Fortnight, more Woodland and Mississippian pottery was recovered as well as shell beads and a child burial. Copperhead pottery replicates the patterns seen at the other sites. The Copperhead and Bluff sites are both burial sites with multiple stone box graves atop high areas overlooking the creek bed; one grave (Burial B) at Bluff was lined with salt pan rather than limestone or sandstone. Most of the graves at these sites have been heavily impacted through a combination of agricultural plowing and modern looting.

In contrast to Bushnell, Keslin clearly recognized that the sites in the Saline Creek were used by indigenous peoples and that the artifacts at the site indicated a connection with the Mississippian occupation of Cahokia. Keslin's excavations at Kreilich did not confirm Bushnell's suggestion that the area was a village and mound site. In fact, none of Keslin's excavations uncovered any architectural features, although large amounts of burnt clay (possibly daub) at Fortnight may indicate the presence of a habitation area nearby. The Missouri Department of

Transportation revisited the Saline Locality and mitigated limited test excavations in an unplowed area near Kreilich (designated MoDOTSG1) and Bushnell's village area (23SG04) (Eastman et al. 2002). Their excavations encountered two pit features and a postmold and they excavators suggest that these indicate a likely habitation area.

4.2.3 Bauman Site (23SG158)

Excavations at the Bauman site were conducted in 1983 following the destruction of portions of the site due to Mississippi River flooding in the winter of 1982-83 (Voigt 1985). A few Ramey Incised and Powell Plain sherds were recovered from the surface of the site, pointing to a Stirling Phase site use. However, the majority of decorated sherds recovered are Cahokia Cordmarked, red-slipped, and Wells Incised sherds, extending the site use and occupation through the Moorehead and Sand Prairie Phases. One uncalibrated radiocarbon date from the site dates the site to A.D. 1370-1470 (530 ± 50 B.P.) (Beta 8970). When calibrated using OxCal (Bronk Ramset 2013) and the IntCal13 curve (Reimer et al. 2013), the 1-sigma range is A.D. 1325-1437 and the 2-sigma is A.D. 1302-1449 (Figure 4.12). This range places the site largely within the Sand Prairie Phase and contemporaneous with the University of Missouri dates run at Common Field.

Faunal and floral remains from the site demonstrate that the Bauman inhabitants were getting most of their food from mixed terrestrial and aquatic sources typical of those that dominate floodplain regions (oxbow lakes, swamps, and small forest stands); some maize was also recovered. Primarily Ste. Genevieve and Burlington cherts were recovered (both available locally) as well as Kaolin and Mill Creek. A large number of basalt blanks and a cache of raw galena, both from the St. Francois Mountains region, were found in association with features.

Overall interpretation of the Bauman site is that it was a satellite community of Common Field. The high number of basalt blanks, unworked galena, and whelk shell columellae led Voigt (1985) to suggest that Bauman was Common Field's "port" where raw materials were imported and exported.

4.2.4 Other Related Sites

In addition to the Bauman, Saline Creek, and other sites described above, there are other Mississippian Periods sites are located near the Mississippi River valley. Two mound sites (11MO-B and 11MO-C) are 30 km north of Common Field. 11MO-B, the Offermann site, was recorded having two mounds (with extant, historic structures on their summits), stone box graves, and Sand Prairie Phase vessels (Milner 1998; Throop 1928). 11MO-C consists of 3 mounds located along Kidd Lake and the temporal affiliation is unknown. Further downstream from Offermann is the Wenger mound site (11R129), located approximately 20 km north of Common Field. Woodland ceramic sherds were recovered during surface collections (Schroeder 1997). There is a Middle Woodland village located nearby and the Wenger mounds may be related to that occupation. The Mathews mound site (11R123) is located 6 km downstream from Wenger. Three mounds are present and of the 230 sherds collected from the site, the majority of which are Late Woodland and Terminal Late Woodland (Schroeder 1997). Approximately 10% of the sherds are shell-tempered, indicating a small Mississippian occupation. The Roots site (11R17) is located due east of Common Field and situated along the Kaskaskia River floodplain, just before the Kaskaskia enters the Mississippi River floodplain (Conrad 1966; Kuttruff 1969). While much of the surface material appears to be Middle or Late

Woodland, one excavation unit at the site encountered a small, rectangular Mississippian wall trench structure, likely Lohmann Phase (based on shape and size).

Adams (1941, 1949) documented several sites in Jefferson County, Missouri along the Meramec River and its tributaries. Among those sites, at least two sites, Herrel and Long, have ceramic artifacts that place the site occupation in the Stirling and Moorehead Phases. The Boyce and McCormack cemetery sites both have stone box grave burials, placing those sites in the Moorehead Phase. Several other sites recorded during Adams surveys may also have Mississippian affiliations (and likely do), but without descriptions of diagnostic artifacts it is difficult to assign them to a period or phase with confidence.

Finally, several sites in Jackson County, Illinois have possible Mississippian affiliations. One mound (11J31) was incorporated into the Degognia Creek levee (Milner 1998:183); temporal designation is unknown. Other possible Mississippian sites are found in Jackson County near the Big Muddy River, some 60-70 km south of Common Field. Seven mounds are reported at 11J76; at least one of those mounds is recorded as having stone box graves (Milner 1998:184). The Twenhafel mound site (11J12) appears to be largely Middle Woodland although Late Woodland and Mississippian sherds have been recovered. Milner (1998:183) suggests that the Mississippian sherds "are unlike the Cahokia-style vessels of the American Bottom." The Illinois State Museum spent two summers excavating the site and while most of their focus was on the Middle Woodland aspects of the site's occupational history, Feature 18 (illustrated in Hofman 1979:36) was a Mississippian wall trench structure with burned timbers and artifacts (including a stone pipe and pottery trowel) were present on the floor. An uncalibrated radiocarbon date of A.D. 1400 ± 100 is recorded for Feature 18. More sites are present in Jackson County, but most only have a few Mississippian diagnostic materials.

4.3 Regional Settlement History Overview

During the Mississippian Period, few sites are located along the Mississippi River south of the American Bottom and north of the Big Muddy/Mississippi River confluence. Many of these sites were recorded and assigned temporal and cultural designations on the basis of materials collected from site surfaces. The above discussed sites frequently had Mississippian sherds (identified due to the presence of shell temper), but it is difficult to narrow the time frame to any particular phase. Many Late Woodland sites are found throughout the floodplain and tucked among the bluffs along smaller tributary streams, but the overall picture from the early Mississippian Period is that this region is largely depopulated. It seems highly likely that people living in this region moved to the American Bottom (or other political centers) during the Terminal Late Woodland and early Mississippian Periods. With the exception of a single Lohmann-like wall trench structure at Roots and Stirling Phase pottery (Ramey Incised and Powell Plain) from the Saline Locality, there is little evidence for intensive, early Mississippian occupation in the region. Stone box graves in St. Mary, the Saline Locality, along the Meramec, and 11J76 indicates that some parts of this region were transformed into mortuary sites during the Moorehead and Sand Prairie Phases, a pattern also seen in the American Bottom (Emerson and Hargrave 2000; Milner 1984a). The presence of a burned Mississippian structure at Twenhafel demonstrates that conflagrations were not isolated to Common Field, although it is unclear if the burning at Twenhafel extended to other features or if the event was intentional or accidental.

Pending more survey and excavation data, the Mississippian settlement pattern that emerges is thus: regional depopulation and reorganization elsewhere during the Lohmann and Stirling Phases (with the exception of the Saline sites and possible Roots) followed by habitation at Common Field and Bauman, the construction of mortuary complexes during the Moorehead and Sand Prairie Phases, and eventual abandonment.

Chapter 5 – Methods

Within this project, I seek to understand how living in a warscape and/or the threat of violence impacts peoples' daily activities. In order to assess those impacts, it was necessary to excavate several domestic contexts and a portion of the palisade. These particular contexts allow for the documentation of domestic spaces, the collection of objects associated with daily practices, and the collection of organics for radiocarbon dating. The timing of regional violence and the analysis of materials associated with quotidian activities that took place following the construction of the fortification are critical components to understanding the pervasive effects of warfare. In order to achieve these goals, a number of field and laboratory analyses were undertaken. In the first part of this chapter, I cover the field methods used during the 2010-2012 excavation seasons (Section 5.1). This includes a review of magnetometry and a discussion of the different excavation methods employed over each season. The results of these analyses provide an insight into the organization of domestic and ritual spaces at Common Field, architectural construction methods, and depositional histories. The second section of this chapter will briefly review the methods used in the lab for the cleaning and processing of artifacts collected in the field (Section 5.2). The third and fourth sections will go over the faunal (Section 5.3) and ceramic (Section 5.4) analytical methods used. Both the faunal and ceramic analyses illuminate the practices that were enacted and negotiated by the people living at Common Field.

5.1 Field Methods

5.1.1 Magnetometry

Magnetic gradiometry (or magnetometry) is a geophysical technology that is increasing being used in archaeological research (for example Betzenhauser 2011; Bigman et al. 2011; Butler et al. 2011; Hammerstedt et al. 2010; Hargrave 2011; King et al. 2011; Lockhart 2010; Lockhart et al. 2011; Maki and Fields 2010; McKinnon 2009, 2010; Perttula 2010; Perttula et al. 2008; Peterson 2010; Samuelson 2010; Walker and Perttula 2010). Magnetometry measures minute variations in the strength of the Earth's magnetic field. The ambient strength of the Earth's magnetic field ranges between 30,000 nT (measured in nanoteslas, or nT; 10^{-9} tesla) at the equator and 50-60,000 nT at the poles (Kvamme 2006; Oswin 2009). The magnetic signature of archaeological features can vary from the ambient background magnetic strength by as little as ±5 nT, thus instrumentation must be highly sensitive. Fired materials (hearths, ceramics, burnt structures), disposal of organic materials, and the modification of organically rich soils are all anthropogenic actions that can produce magnetic anomalies that differ from the Earth's magnetic field (Kvamme 2006; Sherwood and Kidder 2011). Iron also has a very strong magnetic reading that can produce a dipole anomaly (paired positive and negative anomalies); because pre-contact Native Americans did not typically use iron (although they may have made use of iron rich meteorite fragments), dipolar readings in magnetometry surveys frequently implicate the presence of iron objects and post-contact activities, although highly burned features (or features filled with highly burned materials) may also result in dipoles.

Because the goal of archaeological magnetometry is to assign magnetic anomalies to archaeological categories and features, reading and interpreting magnetic anomalies relies on analogy with ground-truthed results from other sites with similar anomalies and with regards to what is known about practices of construction, destruction, and deposition in the past (Aspinall et al. 2008; Gaffney and Gater 2003:110-111; Hargrave 2006). For example, a series of squared-shaped, positive magnetic anomalies would be difficult to interpret based on natural phenomena. Instead, based on prior excavations at sites, we do know that peoples frequently made structures in square and rectangular shapes.

For the magnetometry surveys conducted at Common Field I used a Bartington Dual Fluxgate Gradiometer. Fluxgate gradiometers record the differences in measurements made by paired sensors (separated by 0.5-1 meter) (Kvamme 2006; Oswin 2009). The Dual Fluxgate uses two sets of paired sensors in a cylinder separated by 1 meter (Figure 5.1).

Figure 5.1. The author using the Bartington Dual Fluxgate gradiometer during the Summer 2011 magnetometry survey. Mound A is visible in the right side of the photo, Mound C is the gentle rise to the left.

In order to determine the best transect settings for the surveys, I conducted a repetitive survey of the southeastern grid square during the Summer 2010 survey (see Chapter 6, Figure 6.7). The goal of this brief experiment was to weigh the tradeoffs of different transect sizes with regards to the clarity of data collected and the amount of time it took to collect. The three runs of the same grid square are presented in Figure 5.2. Three anomalies with high magnetism are circled in the image. In the 0.25 meter and 0.5 meter transect grids the two smaller anomalies are roughly square/rectangular in shape; the larger circle in the image contains a patch of high readings and two linear anomalies. All of these anomalies are less clear and may have been missed if the 1 meter transect was used for the entire magnetometry survey. The 0.25 meter and 0.5 meter transects give somewhat comparable results. However, it took 39 minutes to complete one 30 x 30 meter grid square at 0.25 meters, 15 minutes to complete at 0.5 meters, and 10 minutes to complete the square at 1 meter. Overall, the best compromise was conducting the survey with 0.5 meter transects, both in terms of the results and time to complete.

During the Common Field magnetometry surveys, 30 x 30 meter grid squares with 2 lines per meter (or 0.5 meter) transects were utilized. Since the results of the University of Missouri surface collection and the aerial photographs indicated that the site was destroyed in a catastrophic conflagration event, the presence of burned architectural materials and large ceramic vessels fragments should provide a different magnetic signature than the Earth's ambient strength.

The Summer 2010 survey grid was placed atop a low ridge running approximately north/south across the center of the site; the largely plowed down Mound D is located at the

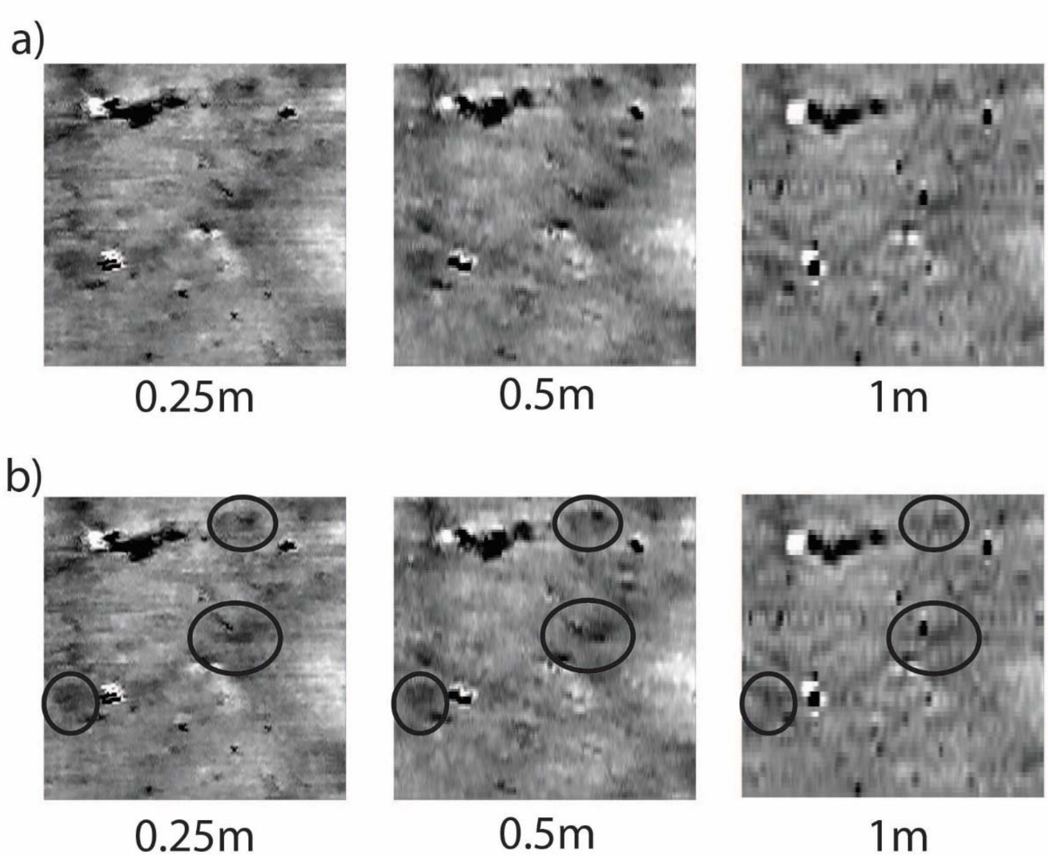


Figure 5.2. Results of the magnetometry experiment. Figure 5.2a is the processed results. Figure 5.2b has the three magnetic anomalies discussed in the text circled. All of the grid squares are 30 meters^2.

end of this ridge. The grid was placed along the southern part of this ridge adjacent to the shared Roth/McCann property line. At the time of survey the soybean crop varied from ankle to waist high. In the areas with low lying beans, the survey was not impacted. However, in the higher areas the sensors and my legs repeatedly got caught in the beans, resulting in poor results.

The Summer 2011 survey took place prior to machine stripping in August 2011. The intention of this survey was to locate the palisade and burned structures so that they could be revealed through backhoe stripping. There were once again soybeans planted in the field, but standing water from spring/summer flooding made planting impossible in low-lying areas. The survey grids were placed to take advantage of crop-less areas. However, rapid weed growth at the northern end of the grid resulted in similar conditions to those experienced in survey two in the high bean areas. The summer flooding at the site and construction at the nearby New Bourbon Port has changed the ambient magnetic susceptibility of portions of Le Grande Champ floodplain. Because of this, we had difficulty in locating an area to calibrate the magnetometer in the floodplain. Ideally, the magnetometer should be calibrated in an area with a reading of ±1nT - ±2nT. Readings from the Roth property in the floodplain consistently read more than ±5nT and testing in other areas would have required trespassing. We were able to find a magnetically quiet location in Pere Marquette Park on the north side of Ste. Genevieve. It is unclear why this area was consistently more magnetically quiet than part of the floodplain, but several parts of the park appeared to have been graded down to clay subsoil, which could have been less magnetic than soils impacted by modern activities. Due to daily fluctuations in temperature, we would transport the magnetometer to the zeroing site in Pere Marquette 2-3 times a day.

5.1.2 Soil Probe Survey and Surface Collection

In the summer of 2010 I implemented two ground surveys in order to locate potential areas for excavation. The first was a soil probe survey over part of the north/south ridge. Aerial photographs indicated the presence of numerous burned features in this location. It was my hope that if we systematically probed at a small enough interval we would encounter burned debris from one of the structures. The survey was 34 meters east/west and 20 meters north/south (see Figure 6.1). Probes were initially placed 2 meters apart, but later the interval was extended to 4 meters. Unfortunately, this survey was hampered by three primary factors. First, recent heavy rains had made the soils very wet and sticky resulting in samples getting stuck in the probe. Second, some soils at Common Field have high silt content, especially the plow zone. When these soils are probed they have a tendency to compress. Thus the probe may be pushed 10-20 centimeters below the ground surface, but the soil in the probe once it is extracted may be less than 5cm. Third, sometime after the 1979/80 flood, after the plow zone was scoured, another flooding event has deposited a layer of very dense clay over portions of the site. This clay layer is impenetrable by probe (and difficult to shovel and screen as well). For each soil probe conducted we recorded soil color, texture, and depth of probe. Charcoal was present in some of the probes, but not in amounts that would indicate the presence of a burned structure.

Following the problematic soil probe survey, I implemented a systematic surface collection survey over the same area as the probe survey. The surface collection area was 30x60m and located atop the north/south ridge running across the site (see Figure 6.4). The Roth/McCann property boundary (east of Mound C) was used as the western boundary of the collection area. The collection area was divided into 18 10x10m grids; each grid square was further subdivided into four 5x5m sections. Materials on the surface were collected and given a grid square letter and a zone number. For example, artifacts collected from the southwest zone of grid square F were designated Grid F, Zone 1.

Following the completion of both the soil probe survey and the surface collection, soil probe columns with charcoal or possible feature fills were mapped on top of the surface collection. Grid areas with daub that correlated with promising soil probes were selected as potential excavation areas. Charcoal, possible feature fill, and the presence of daub are all indicators that an archaeological structure was in the nearby vicinity.

5.1.3 Unit Excavations

Unit locations were placed based on the results of the soil probe survey and surface collection. All soils during excavation were removed by hand. The initial unit was excavated in arbitrary levels, but natural stratigraphy was used to guide later unit excavations. Agricultural plow zone was removed without screening the soil since any artifacts recovered would have been displaced from their original context. Plowing and flooding have had significant impacts on archaeological features and it is difficult to know how far artifacts have been moved from their primary context. While the plow zone was not screened, any artifacts encountered were collected and bagged together based on the unit from which they were recovered. All other stratigraphic layers were screened through ¼ inch mesh. Any features that were encountered were excavated following the methodology discussed in the next section.

5.1.4 Machine Stripped Excavations/Feature Excavations

Machine stripping and removal of the plow zone with a backhoe was implemented following similar practices in the American Bottom (Bareis and Porter 1984). Many archaeologists employ sampling plans like randomly placed test units in order to generalize about the human activities that may have taken place across the site. Bareis and Porter abandoned this strategy during the mitigation of the FAI-270 highway project. Their reasoning was twofold: first, machine stripping allows for the rapid removal of the plowzone and other overburden that typically represents the disturbed upper portions of buried archaeological features. Due to this disturbance, materials from multiple contexts can become co-mingled and their original contextual information is lost. Further, archaeological feature outlines can be difficult to define in these areas of mixing and only become clear once the disturbed portions are removed. Second, the removal of large areas of plowzone can reveal entire community plans, allowing for intra- and inter-community comparisons. Random sampling requires archaeologists to extrapolate human activities and lifeways from limited contextual and artifactual data. In order to answer questions about differential practices between households over time, I deemed it necessary to open large (larger than test pits) areas in order to excavate complete structures and to reveal some patterns of community organization (Figure 5.3).

Figure 5.3. Jeffrey Kruchten, Erin Benson, Timothy R. Pauketat, Meghan E. Buchanan, and Robert Roth, Jr. monitor the backhoe as it strips plow zone from Excavation Block 1 in 2011.

Structures were bisected along their short axis and pits along their long axis in order to expose the feature profile and any sub-fill features. The first half the feature was excavated as a single unit unless there were distinct fill zones present in which case soils from those zones were screened and artifacts bagged separately. Profiles were photographed and mapped at a 1:10 scale. The second half of a feature was excavated by depositional layer and artifacts and flotation sampled were collected for each zone. Structure floors and sub-fill features were photographed and mapped at a 1:20 scale after both halves had been removed. A selection of postmolds in structure floors were bisected and mapped in profile (1:10 scale). Window cuts were placed in wall trenches and mapped in profile (1:10 scale). All feature, postmold, wall trench zones, and the sterile subsoil were described by texture (silt, clay, loam, sand, or a combination) and color (using the Munsell soil color chart).

All fill from feature contexts (as well as sub plow zone soils from unit excavations) were screened through ¼ inch mesh. Mesh size is a hotly debated topic among archaeologists and especially among zooarchaeologists who need to balance optimal recovery of materials with budgetary, analytical, and environmental constraints (James 1997; Schaffer 1992; Schaffer and Sanchez 1994). It has been noted by many that smaller mesh size allows for the recovery of taxa from small body-size classes (Cannon 1999; Zohar and Belmaker 2005) although others argue that while smaller mesh size may increase NISP and MNI, it does not necessarily result in an increase in the number of identified taxa (Gargett and Vale 2005; Vale and Gargett 2002). Small taxa are useful for understanding resource exploitation, resource depression, and paleoclimatic changes in micro and macro environments. However, choice in mesh size can be impacted by a number of factors including research questions, amount of time and money available, and soil conditions. At Common Field, much of the soil is a mixture of clay and silt and often this silty clay can clog mesh. In addition to this being highly inconvenient (and time consuming), the amount of pressure necessary to force this soil through the screen can be particularly damaging to fragile materials like ceramics and faunal remains. Scheiber and Reher (2007) describe a mix of collection methods at the Donovan site including in situ mapping of large animal bone and nested water screening. Mixed methods of ¼ screening of soil matrix from features and targeted collection of soil samples for laboratory flotation are commonly used in the Midwest. Collections from older excavations were often not screened or floated. Today, the Illinois State Archaeological Survey employs field collection methods that include handpicking of artifacts during excavation and the removal of bulk samples of feature fill for flotation. At Common Field, I used the most common artifact collection method in the region, ¼ inch mesh screening in the field (Figure 5.4) and the collection of 10-20 liter soil samples from different depositional layers for flotation. Throughout my results chapters I will be referring to materials that were recovered from the ¼ inch mesh, not the flotation samples (unless specified).

5.2 Laboratory Procedures

Artifacts were washed and sorted at the field house (the Keil Schwent House/Foundation for Restoration of Ste. Genevieve office) and in the Eastern Woodlands Laboratory at Indiana University. Lithic materials were cleaned using a soft-bristle toothbrush to remove excess dirt and a water laden sponge to remove the rest. Ceramic and faunal materials were similarly washed using a soft sponge so as not to damage them. Exposed ceramic edges were further cleaned with the soft-bristled toothbrush so that temper could be analyzed. In all cases, care was taken to not damage artifacts through excess pressure or water logging. This will aid in their continued preservation and will allow for residue analyses in the future. After artifacts were washed, they were allowed to dry completely in a low humidity environment prior to being bagged.

Figure 5.4. Elizabeth Konwest and Sheena Ketchum screen feature fill through ¼ inch mesh.

Artifacts were initially sorted by rough material class (chert, limestone, sandstone, ceramics, fauna) and placed in clear, 4 mil polyethylene bags. Bags were labeled on the left half with the site number, provenience, date collected, and collector's initials; the bag number was labeled in the upper right corner. The material identification was written at the bottom of the bag. As analyses were conducted, artifacts were sorted into more refined categories, bagged by those categories, and then placed back into the larger, outer bag.

Burned organics recovered from secure contexts were wrapped in foil in the field. Once they were returned to the lab, several were selected for radiocarbon dating. Selected carbon samples were sent to the Illinois State Geological Survey for dating.

5.3 Faunal Analysis

All primary data recorded for the faunal analysis was directly entered into a Microsoft Access database. The data recorded included: provenience (and bag number), class, taxon, element, portion, aspect, side, fragment size (deer only), type of break (deer only), degree of epiphyseal fusion, modifications (human, animal, and natural), number of fragments, and weight (to the nearest 0.1g). Specimens were identified as a particular taxon based on morphological similarities with extant comparative specimens (O'Connor 2000:36-37; Reitz and Wing 2008:154). In some cases, specimens that could not be identified to the taxonomic level of species were identified to the level of genus or family where applicable. When definitive assignments could not be made, bone fragments categorized by class and size (large, medium, and small mammal), or placed in an unidentifiable category. The Integrated Taxonomic Information System (www.itis.gov/) was used to standardize common and scientific names[4].

Fragment size was scored on the basis of the degree of completeness (complete, ¾ complete, ½ complete, ¼ complete, less than ¼ complete) (Scott 1982, 1983; Kansa and Campbell 2002). The degree of completeness can provide information concerning the processing of animal remains for the purposes of cooking practices (Scott 1982) and the extraction of marrow and bone grease (Binford 1978; Munro and Bar-Oz 2005). In the Eastern Woodlands, the extraction of marrow from deer long bones would have been an effective way

[4] ITIS does not consider Canis familiaris (domestic dog) to be a valid species name (see Lapham 2005:48). To that end, they were simply categorized by their genus, Canis.

to obtain a fat resource (Madrigal and Capaldo 1999). Types of breaks will include modern (archaeological and curational breaks), regular spiral, irregular spiral, and dry break fractures (Outram 2002; Reitz and Wing 2008; Shipman et al. 1981). Fracture type may indicate when a bone was broken as well as how it was broken, thus providing clues concerning bone processing and depositional history.

5.3.1 Taphonomic Biases

Taphonomic biases are a large concern in analyzing and interpreting zooarchaeological assemblages. Artifactual materials may be affected by any number of cultural and natural processes prior to excavation by archaeologists and may be further impacted due to collection, curation, and research decisions (Lyman 1994, 2008; O'Connor 2000; Reitz and Wing 2008). Thantic processes (those that bring about the death of an animal and the deposition of its remains) may provide information about culling, butchery, hunting, processing, distribution, and the use of meat, bone, tooth, and shell products at archaeological sites. The following sections will address several techniques for assessing and quantifying some of those processes. Perthotaxic (movement and destruction of bone prior to incorporation into a deposit), taphic (physical and chemical agents that impact bone following deposition), and anataxic (the exposing and redeposition of animal remains) processes may all impact assemblages in ways that may provide misleading results for zooarchaeologists. Because of cultural and natural attritional processes, careful analysis of potential biases should be included in all zooarchaeological analyses.

Most perthotaxic, taphic, and anataxic biases fall under Behrensmeyer's (1978) weathering stages and were recorded during the collection of primary data. Other potential biases that fall under these processes include burning and animal destruction. Degrees of burning and different types of animal gnawing were also recorded since carnivore and rodent gnawing can significantly impact assemblages. Domesticated dogs at prehistoric Native American sites could have chewed on animal bones (particularly cancellous bone and bones rich in marrow), destroying recognizable features or completely obliterating bones (Binford 1981; Faith et al. 2007; Fisher, Jr. 1995; Hudson 1993; Lyman 1994:205-216; Reitz and Wing 2008:135-136). Similarly, rodents may also gnaw on bone in order to file their teeth. Fracture types can also be used to assess whether bone breakage came about before or shortly after an animal's death (spiral fractures), long after death, or as the result of modern handling (Outram 2002; Reitz and Wing 2008:169; Shipman et al. 1981). Although due to the internal structure of skeletal elements themselves, some kinds of bones will fracture differently than others (ie. long bones break differently than short bones like the scapula).

Quantitative assessment of bone attrition will be calculated by comparing deer element survivorship in the assemblage against Lyman's (1984, 1994) bulk bone density values. The idea behind this quantitative method is relatively straightforward; dense elements (and dense portions of elements) tend to survive taphonomic processes better than less dense elements. Comparing the survivorship of elements against their density values will indicate possible biases. The number of deer bones from Common Field will be converted into minimal animals units (MAUs; see explanation below) and compared against Lyman's bulk density values; Spearman's r (following Jackson and Scott 2003) and Kendall's T_b (following Welch 1991) will be used to quantitatively assess the correlation between Common Field MAUs and deer bulk density values. If there is a strong statistical correlation between survivorship and density, then the assemblage is biased from a preservation standpoint. Low correlation indicates that an assemblage has not been highly impacted by perthotaxic, taphic, and anataxic taphonomic processes.

5.3.2 Calculating Relative Abundances

Following the collection of primary data, standard zooarchaeological measures of relative abundance including the number of identified specimens (NISP) and the minimum number of individuals (MNI) can be calculated. NISP, also known as bone or fragment count, refers to the counting of the number of specimens in an assemblage that are attributable to a particular taxon (Lyman 1994, 2008; O'Connor 2000; Reitz and Wing 2008). While this measure is easily quantifiable (it is essentially an additive measurement), it is subject to several problems/biases. Lyman (2008:29-30) outlines eleven problems with NISP as well as ways to overcome some of these problems. One problem is that NISP is impacted by the degree of fragmentation in an assemblage and highly fragmented samples may skew NISP. Degree of fragmentation may be further impacted by differential preservation. Another problem with NISP is that some taxa have more skeletal elements than others and more identifiable elements than others. The most problematic issue with NISP is that it suffers from potential interdependence of remains. In other words, specimens may come from the same individual (and many likely do), which precludes the statistical requirement of independent data. Because of this problem of interdependence, Lyman suggests that "NISP is likely to provide an ordinal scale of measurement of taxonomic abundances at best" (2008:78) and cannot provide mathematically valid ratios. However, the majority of zooarchaeological analyses conducted on sites in the Midwest on Mississippian Period occupations report their results as NISP. In order to facilitate comparability, many of the results from my analyses are also reported as NISP.

MNI is a measurement that is derived from NISP. MNI refers to the smallest number of complete individual animals necessary to account for the skeletal specimens observed in an assemblage (Lyman 1994, 2008; O'Connor 2000; Reitz and Wing 2008). MNI is not as strongly affected by bone fragmentation or number of skeletal elements in a given taxa as NISP is, but it is tightly correlated with sample size. MNI has the tendency to over represent rare species and under represent species with fewer identifiable parts. MNI is also correlated with NISP such that when sample size or NISP increases, so does the MNI. Simply displaying both the NISP and MNI mitigates some of these problems and pointing out problems of over or under representation; in this respect, NISP serves as a maximum measure and MNI as a minimum. Furthermore, MNI overcomes the problem of species interdependence in NISP by determining numbers of individuals rather than fragments that may come from the same individual. The most pressing problem with MNI is the difficulty of dealing with aggregation; should MNI be determined by adding different MNIs at the provenience level or calculating the MNI from the entire site as a whole? Since a single skeleton may be broken into multiple segments and distributed across features, an exaggerated MNI may be possible if totals are only given by feature. Conversely, aggregating MNIs site wide can give an underestimate of the number of individuals brought back to the site. In order to counter this issue, I calculate the MNI for individual features and for the site as a whole, providing a range of potential MNIs.

Minimum animal units (MAUs) are used to assess taphonomic impacts. MAU is calculated by first determining the minimum number of skeletal elements (MNE) "necessary to account for an assemblage of specimens of a particular skeletal element or part (discrete item) or portion (multiple discrete items, such as all thoracic vertebrae in a vertebral column" (Lyman 2008:220). MNE is then divided by the number of times an element occurs in a specimen in order to derive the MAU.

5.3.3 Measures of Taxonomic Composition: Species Diversity and Subsistence Practices

Archaeologists often use the taxonomic richness or species diversity in an assemblage as a means for understanding differential access to certain taxa, differing communal identities, and as a measure of ecological diversity within a region. Within Mississippian studies, taxonomic diversity has been primarily used to differentiate between potentially elite and non-elite (commoner) assemblages based on the idea that elite people would have greater access to taxa for food as well as access to taxa that would be restricted from other segments of society (ie. animals considered powerful or sacred within religious practices) (Jackson and Scott 2003; Kelly 1997; for non-Mississippian examples see Emery 2003; Kirch and O'Day 2003; van der Veen 2003). At Common Field, taxonomic diversity may be revealing of peoples' ability to procure certain foodstuffs in the face of deteriorating sociopolitical relations in the region. Decreased use of taxa from certain biomes is highly suggestive of prohibitive food practices and/or reduced access to certain areas.

Taxonomic diversity will be presented in several ways. First, taxa will be quantified using measures of relative abundance (NISP and MNI). This allows for quick comparison of taxonomic proportional composition across proveniences at Common Field without any kind of complex quantification and facilitates comparisons with published data from other Mississippian Period sites in the Middle Mississippi, Lower Ohio, and Illinois River valleys.

Measures of heterogeneity and evenness can provide considerably more analytical rigor by taking into account assemblage size and the proportional representation of identifiable genera within an assemblage (Lyman 2008:192). Heterogeneity is the simultaneous measurement of richness (number of identifiable genera present) and how evenly distributed genera are in an assemblage (ie. their proportion). Heterogeneity (*H*) is calculated using the Shannon index (Lyman 2008:192; Reitz and Wing 2008:111; VanDerwarker 2010:68) where:

$$H = -\sum P_i (\ln P_i)$$

In this equation, P_i refers to the proportion (*P*) of a particular taxon (*i*), which is multiplied by the natural log of that proportion. Summing the total for all taxa generally results in a number between 1.5 and 3.5, with larger numbers representing greater heterogeneity and smaller numbers signifying homogeneity.

Evenness is a measurement of the distribution of individuals across taxonomic categories. Evenness is calculated as:

$$e = H / \ln S$$

where *H* is the previously calculated heterogeneity score, and *S* is the taxonomic richness (Lyman 2008:195; Magurran 1988). Lower *e* values are indicative of less even assemblages. As far as I have been able to determine, scores of heterogeneity and evenness have not been previously used in the Midwest. To that end, heterogeneity and evenness scores were calculated for Common Field and several other Mississippian Period sites (Cahokia ICT-II, Cahokia Tracts 15A and 15B, Kincaid, Old Edwardsville, and the Julien) where data were available.

Both heterogeneity and evenness provide a measure of how genera are distributed within an assemblage and allow comparison between sites. However, they do not reveal how similar or different the taxonomic composition of one assemblage is compared to another. To that end, indices of similarity (Sorenson's index) and difference (Jaccard's index) were used to compare the taxonomic composition at Common Field to the Mississippian sites listed above (Lyman 2008:186). Sorenson's index (S) is calculated as:

$$S = 100(2C) / (A + B)$$

where A is the number of taxa in assemblage A, B is the number of taxa in assemblage B, and C is the number of taxa common to both assemblages. Using the same variables, Jaccard's index (J) is calculated as:

$$J = 100C / (A + B - C)$$

There is an additional version of the Sorenson index that also takes relative abundances into account (Magurran 1988:96). The Sorenson's quantitative index (S_q) is calculated as:

$$S_q = 2_{cN} / (AN + BN)$$

where AN is the sum of all taxa from assemblage A, BN is the summed total of taxa from assemblage B, and cN is the sum of the lesser number of taxa shared in the two assemblages. For example, if A has 14 *Odocoileus* and 5 *Castor*, and B has 12 *Odocoileus* and 20 *Castor*, then cN would be ($12_{Odocoileus} + 5_{Castor}$). These three indices taken together provide an important view into the similarities and differences in assemblages that are not captured by species lists alone. Like measures of heterogeneity and evenness, indices of similarity and difference have not been used in the Midwest.

5.3.4 Deer Body Part Representation

Analyses of body part representation of deer remains have become standard practice for the interpretation of faunal remains at Mississippian Period sites (Buchanan 2007; Jackson and Scott 2003; Kelly 1997; Kuehn 2013; Scott 1982, 1983; VanDerwarker 1999; Welch and Scarry 1995). In addition to providing sustenance, food is used as a way to negotiate, transform, and create relationships through preparation, sharing, and consumption. Within hierarchically and heterarchically organized societies, certain kinds of foods (or parts of foods) can be used to create and maintain distinctions between social groups (sensu Bourdieu 1984), or may have their use restricted to certain groups or certain kinds of activities. In contrast to previous studies of fauna at Mississippian sites which have focused on hypothesized unequal distribution of taxa (and deer body parts) on the basis of status-related differences, I argue that fauna can be illustrative of other social forces, like warfare and violence[5] (see Chapter 2).

There are some differences between the methods used in the American Bottom (Cahokia Mounds and nearby sites) and the Lower Mississippi River Valley (Moundville and Lubbub Creek). Kelly (1997) uses food utility indices (FUI) as a means for grouping deer skeletal elements based on their associated meat, marrow, and grease yields. This analytical method was originally created by Binford (1978) who used a Modified General Utility Index (MGUI) in order to give numerical values to caribou skeletal elements on the basis of their relative meat, marrow and grease contributions. The MGUI was later condensed and simplified by Metcalfe and Jones (1988) who thought Binford's approach was overly complex and did not do a good job assessing the economic utility of skeletal elements in addition to their dietary contributions.

[5] I am careful to note here that unequal access to foodstuffs can be a form of structural violence. It has not been framed as such in literature concerning the Mississippian Period, but ethnographic sources (see Chapter 2) have demonstrated many times that systemic inequalities are violent forms of oppression and food is frequently used as a weapon to hurt and kill oppressed classes.

Metcalfe and Jones's Food Utility Indices (FUI) have been further modified by Purdue et al. (1989) who grouped the skeletal elements into high, medium, and low utility categories (Figure 5.5).

Kelly has continued to use FUIs in order to analyze the distribution of deer remains at elite and non-elite residences and neighborhoods at Cahokia. Kelly relies on percent NISP of deer remains from archaeological contexts and compares these proportions to the expected distribution of high, medium, and low utility elements (as NISP) in a complete deer (although in Kelly 2000 she uses MNEs for Terminal Late Woodland and the Lohmann Phase occupation at Cahokia's ICT-II and the Dunham Tract). High utility elements include the femur, tibia, astragalus, calcaneus, patella, and lateral malleolus; medium elements are vertebrae (excluding the atlas and axis), ribs, pelvis, humerus, radius, ulna, and metatarsals; low utility include the skull, mandible, atlas, axis, metacarpals, carpals, tarsals, and phalanges. Antlers and teeth were both excluded from the FUI analysis because they are non-food bearing elements and they can both be shed at various points in a deer's life. In order to facilitate comparisons between Common Field results and those presented for other Mississippian sites, NISP will be used.

There are some issues with the FUI categories. Kelly (1997) includes the astragalus, calcaneus, and lateral malleolus in the high utility category because they are butchery "riders"; they tend to remain attached to the high utility tibia during the field dressing of carcasses. However, the pelvis, which is often butchered as part of a unit along with the femur (Scott 1982, 1983) (and which can be difficult to disarticulate from the acetabulum of the pelvis) is considered a medium utility element. There may also be problems with the FUI units and the grouping of many low-density elements into the same category. Medium utility elements consist of the vertebral column, ribs, and the pelvis (in addition to the forelimb), all of which are low-density elements. Furthermore, the high utility elements are among the densest in the deer skeleton. These groupings could result in skewed interpretations particularly in those assemblages where density mediated attrition is a problem.

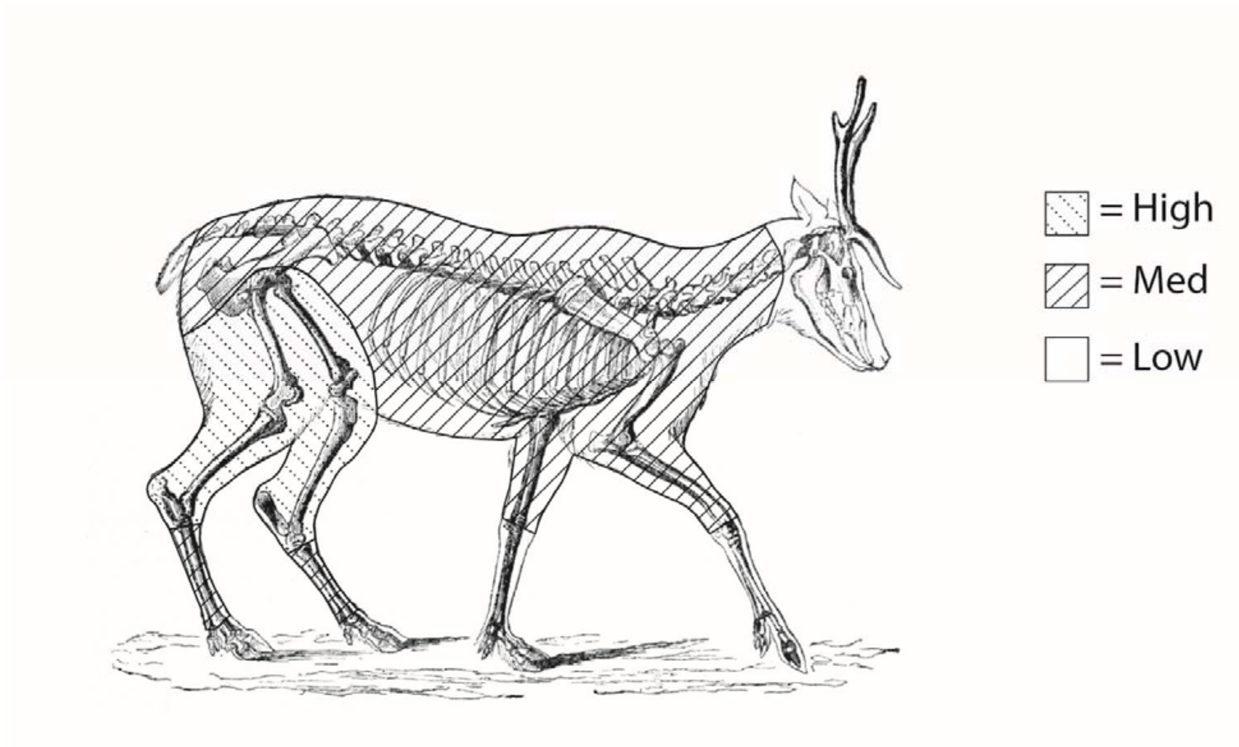


Figure 5.5. Portions of a deer by high, medium, and low utility.

In the Lower Mississippi River Valley, Scott (1982, 1983) and Jackson and Scott (2003) have taken a different approach to the analysis of deer skeletal elements. Scott (1982, 1983) groups parts of the deer into anatomical units on the basis of morphology and possible butchery techniques. The deer skeleton is subdivided into hindlimb (pelvis, femur, tibia), forelimb (scapula, humerus, radius, ulna), lower limb/feet (carpals, tarsals, metapodials, phalanges), axial (vertebrae and ribs), and skull units (Figure 5.6). Based on percent NISP and percent weight, she has compared the distribution of anatomical units within and between sites as a means for understanding elite provisioning and access to meat cuts across the Lubbub Creek Archaeological Locality and the close by Yarborough farmstead. This method reduces size of the analytical categories and mitigates some of the bone density problems identified with

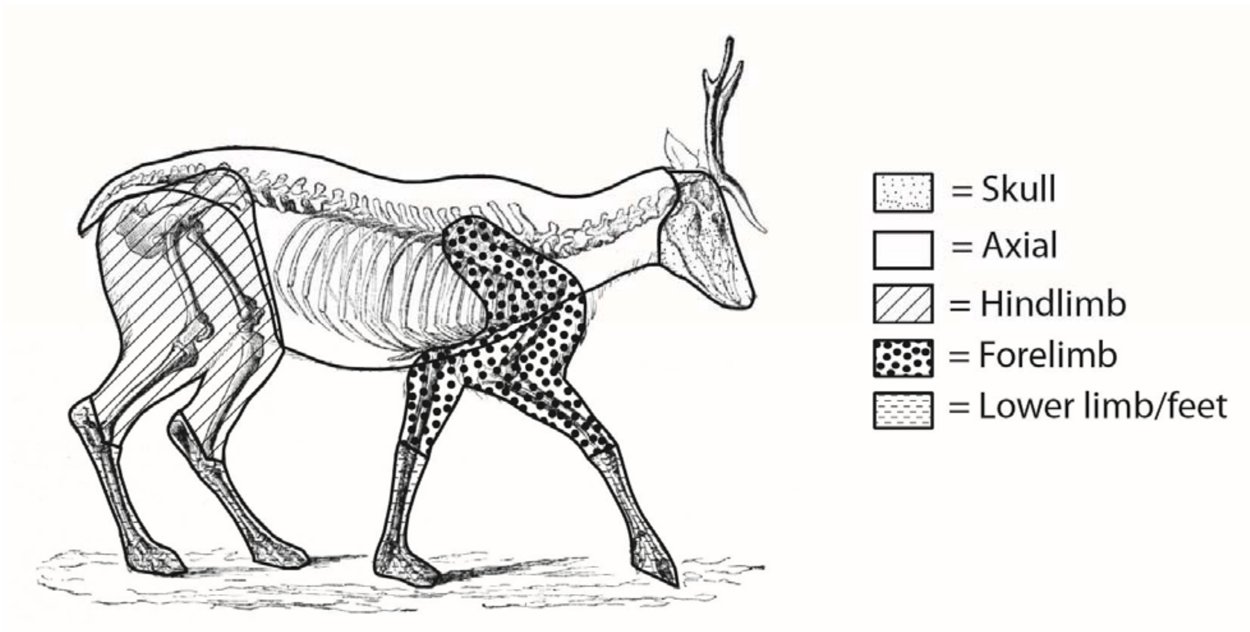


Figure 5.6. Deer anatomical units.

the FUI approach. This approach also avoids some of the connotative problems associated with FUI, namely designating some elements as having greater “utility” than others based on the maximized extraction of meat, marrow, and grease products. However, as Scott points out, while the axial skeleton is not associated with large amounts of meat, marrow, or grease, vertebral elements are often used to flavor broths and the small associated bits of meat may be used in stews and soups. Jackson and Scott (2003) have modified the anatomical unit approach in some of their more recent work on the faunal materials from Moundville. While deer elements are still grouped in broad anatomical categories, rather than relying on just NISP or bone weight, they have tallied deer bone fragments as minimal animal units (MAU). They also do this for individual deer elements and portions of elements. MAUs are typically derived by dividing MNE values for each element by the number of times that element/portion is present in a complete skeleton (Lyman 2008:233). Jackson and Scott then express these values as %MAU by dividing all of the MAU values by the greatest MAU value in order to normalize the values. Since most faunal analyses reported in the Midwest rely on NISP, deer anatomical units from Common Field will not be converted to MAUs.

5.4 Ceramic Analysis

I completed ceramic analyses of materials housed at the University of Missouri recovered from the 1980 surface collection[6] and all of the ceramics collected during my own surface collection and excavations (see Chapter 8). The data from these analyses will be used to do the following: provide an accounting of diversity of vessel types, rim shapes, decorations, and construction materials; provide data to compare with contemporaneous sites; and serve as the foundation for the development of possible *chaîne(s) opèratoire(s)* at Common Field (discussed in Chapter 9), highlighting the development, construction, use, and deposition of ceramics within the social, political, and economic context of regional violence and collapse. Aside from the development of the *chaîne opèratoire*, the ceramic analytical methods utilized follow Pauketat (1998:30-34).

5.4.1 Ceramic Analytical Methods

[6] All of the ceramics from Common Field currently housed at the University of Missouri Museum of Anthropology were loaned to me and analyzed in the Eastern Woodlands Archaeology Lab at Indiana University. The number of ceramics loaned to me differs greatly from the totals reported in Ferguson's 1990 University of Missouri Master's Thesis. It is unclear where the missing ceramics may be, although Ferguson does report that some sherds were lost when the facility was flooded; she does not report how many were lost.

Ceramics were initially sorted into three categories: fired clay materials/objects, vessel body sherds, and vessel rim sherds. All objects were counted, weighed to the nearest tenth of a gram, and entered into a Microsoft Access database. A few clay objects/materials were collected in the field and do not factor into traditional ceramic analyses, but they bear mentioning: a small clay ball was recovered during the surface collection and is likely an historic marble (the original Colonial Ste. Genevieve settlement was located approximately 1-2 miles east of Common Field); and two unfired lumps of clay were recovered from Feature 25, a large pit in the floor of Feature 22. Fired clay materials and objects includes untempered burnt clay and daub (clay with stick and grass impressions), as well as objects made from sherds like ceramic discs. No ceramic pipes, untempered pinch pots, or clay discoidals were recovered.

Body sherds were counted and weighed to the nearest 0.1g based on their temper and surface treatment. Treatments were noted for both surfaces of body sherds. In some cases it was possible to differentiate between interior and exterior surfaces; when this was not possible, surfaces were simply labeled as Surface 1 or Surface 2. Surface treatments included plain, cordmarked, smoothed over cordmarked, fabric impressed, black slip, brown slip, red slip, white slip, burnished, incised, and incised and slipped. Sherds that were too damaged to assess surface treatment were categorized as eroded. Tempering agents included shell, grog (crushed sherds), limestone, and combinations of tempers. The most common combinations of tempers were shell and grog. It was often difficult to differentiate between grog mixed with shell, grog made from shell tempered sherds, and grog made from shell tempered sherds mixed with shell. Because of this difficulty, sherds with combinations of shell and grog are lumped in my analyses, although an effort was made to differentiate in the database. When possible, the vessel type was noted. No sherds were excluded from the analysis based on size.

Most attention and analytic efforts were devoted to the documentation of rim sherds since these provide the most information about vessel type, shape, and size. Rims are also useful for determining temporal phase and regional traditions of construction practices. An attempt was made to refit rims with other rims and with sherds that appear to have come from the same vessel. Rim sherds were counted and weighed to the nearest 0.1g based on temper, surface treatment, and vessel type. In addition to the surface treatments noted for body sherds, there was also dark slip (unable to determine if black or dark brown), black and red slip, burnished and incised, burnished/incised/slipped, grey slip, smudged, smudged and burnished, smudged/burnished/incised, and negative painted. A rim form was filled out for each rim with the following information recorded: vessel type; orifice diameter and percent present; rim angle or lip bevel (depending on vessel type); lip form, thickness, length, shape, and modifications; cordmark and fabric orientation, twist, width of cordage, width between cords, number of twists impressions per 2cm; and evidence of use wear.

The vessel type (or vessel form) was based on the profile shape. Rims were oriented against a flat surface until no (or very little) light was visible along the interface; this is also how the rim angle and lip bevel were determined. Among the vessel types recorded at Common Field were jars, bottles, bowls, plates, pans, funnels, miniature vessels, cylinders, coarse wares, and indeterminate. When only a small portion of the rim was present, it was difficult to differentiate between vessel shapes and they were placed in an indeterminate category. For example, there were a number of rim sherds that appeared to have come from either small bowls, or served as vessel lids/caps for jars. Vessel types include restricted (jars and funnels), unrestricted (bowls, plates, pans, cylinders), and independent restricted (bottles) orifices (Shepard 1985:228-232).

An orifice diameter chart was used to measure the diameter of vessels and estimate the percent of the orifice present; orifice diameters from rims that represent less than 5 percent of the orifice are an estimate. Lip length (LL) is the longest chord through a vessel lip and lip thickness (LT) is the chord at a right angle to the lip length; the location of all measurements taken is noted on the rim forms and all measurements were done to the nearest 0.1cm using calipers. Wall thickness (WT) was measured below the lip. Where possible, these measurements were used to calculate lip protrusion (WT/LL) and lip shape (LL/LT) ratios (following Pauketat 1998:32-34).

Lip form is a description of the lip shape of the rim. Forms include rounded, flat (or squared), interior or exterior beveled, and extruded. Other lip modifications (or decorations) include handles (loop, bifurcated loops, strap, loop/strap combinations), lugs, (or small, attached nodes), and notches. None of the vessels have effigies attached to the lip. Vessel wall modifications are mentioned in the decorative descriptions. Incised lines include both trailed and engraved lines. Trailed lines have u-shaped impressions and were made while the clay was still somewhat wet; engraving takes place when the clay is much drier and have v-shaped incisions made with a pointed tool.

Use wear was noted when present since these can provide evidence concerning firing processes and vessel use. Sooting (the carbonaceous byproduct of wood and other fuel combustion) and oxidation discoloration on the base, rim, and sides indicates that vessels were used to heat food and/or liquids over a fire (Hally 1983:7-14). Pitting and abrasions on the interior of vessels provide evidence of scraping, stirring, or the heating of materials inside of the vessel (Hally 1983:14-20). The residue from burned foods and other heated materials (e.g. salt) can also be left on or absorbed into vessel walls (Beehr and Ambrose 2007; Reber and Evershed 2004).

5.4.2 Ceramic Chaîne Opèratoire

As discussed in Chapter 2, the *chaîne opèratoire* can be a powerful analytical and interpretive tool for understanding the steps taken to produce objects, choices made by creators, how the performance of certain technological choices is shaped by and shaping of social contexts in which actions are performed (Coupaye 2009; Dobres 2000, 2010; Knappett 2011); in fact, it might be better to conceive of multiple *chaînes opèratoires*. There is not a single methodology for reconstructing a *chaîne opèratoire* and some worry that applying a single method would result in a prescriptive sequence rather than a description of the probable choices made by actors during the construction, use, and discard processes. Much of the data recorded on rim forms speaks to various aspects of the choices and actions taken by the potters of Common Field, from clay selection to tools and materials used for decoration to the ultimate uses and disposal of vessels. Additional information regarding the construction of vessels was noted while other data were recorded on the rim forms. This includes presence of macroscopic inclusions in the clay fabric (particularly hematite), finger prints and impressions, coil breaks, evidence of slab construction, mends or repairs, etc. The rim data plus this additional information will be combined to create descriptions of the probable *chaînes opèratoires* in use at Common Field. Ultimately, these descriptions of possible choices and actions in the operational sequences can be used to generate and test other hypotheses about ceramic production at Common Field.

5.5 Summary and Conclusions

The surface collection, soil probe survey, and magnetometry survey were utilized to find excavation areas where there was a high probability of finding domestic contexts inside and outside of the palisade, as well as locating the palisade itself. In order to explore the effects of violence and warfare on daily practices, it was necessary to document and excavate multiple domestic contexts and to recover datable materials to understand the timing of the construction and destruction of Common Field. Magnetometry can also provide insights into unexcavated portions of the site including overall site organization and the presence and location of burned features.

Analysis of zooarchaeological and ceramic artifacts provide insight into the daily practices of people living at Common Field prior to the destruction of the site. The zooarchaeological analysis will is concentrated on discerning the patterns of taxonomic exploitation and the use and transport of deer body parts in order to understand the decisions people made about what to eat, where taxa came from, and how they were being butchered. The ceramic analysis is intended to explore the diversity of ceramic construction techniques practices utilized by Common Field potters as well as patterns of ceramic use. The data from this analysis will be used in Chapter 9 to develop a picture of Common Field *chaînes opèratoires.*

Chapter 6 – Field Results

In this chapter I discuss the results of surveys and excavations conducted over four separate field expeditions. Trips were made to Common Field during the summer of 2010 (surface survey, magnetometry, unit excavations), large-scale excavations and another magnetometry survey were conducted in the summer of 2011, and a final trip was made in the fall of 2012 to excavate a final feature. Section 6.1 of this chapter will cover the results of my controlled surface collection and soil probe survey from Summer 2010. Section 6.2 will be the results and analysis of the magnetometry surveys. Finally, Section 6.3 will discuss the results of excavations, including feature analysis (with artifact totals) and radiocarbon dates.

6.1 Soil Probe Survey and Surface Collection

Both the soil probe survey and the surface collection were placed along the Roth/McCann property line and approximately 30m north of Cottonwoods Road (Figure 6.1). The results from the soil probe survey were mixed. Due to seasonal flooding and a very large storm at the beginning of the summer 2010 season, soils were very wet and prone to clogging up the soil probe. The probes revealed that the plow zone was typically 15-20 cm deep, with rich, black soils (10YR 2.5/1 or 10YR3/1). The plow zone was often followed by a zone of mixed soils that included the plow zone and a clayier fill (10YR 3/2), and sometimes included flecks of charcoal. When probes contained charcoal, they were considered probable indicators for nearby archaeological features (Figure 6.2). It was often difficult to push the probe beyond the zone of mixed fill.

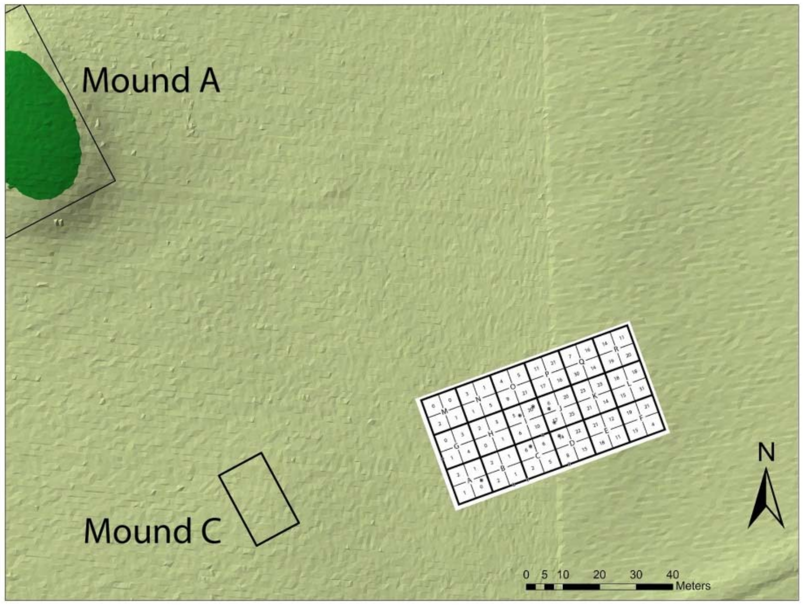


Figure 6.1. Location of the surface collection grid (seen in greater detail in Figure 6.3) with reference to Mounds A and C and Cottonwoods Road (southeast corner of the figure).

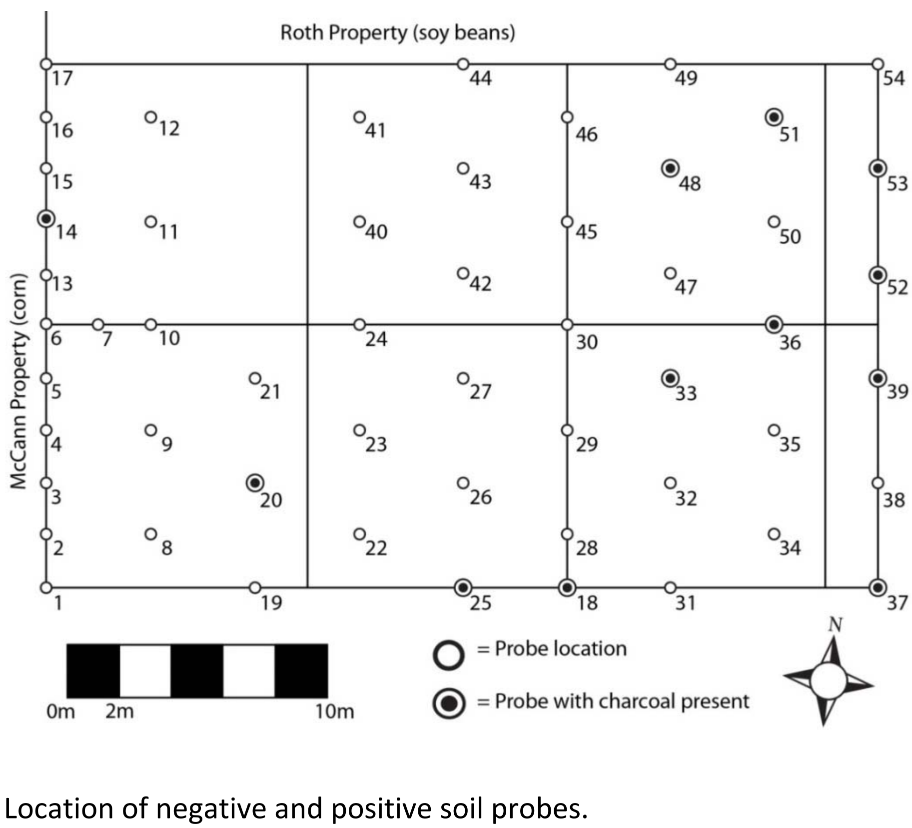


Figure 6.2 Location of negative and positive soil probes.

During the surface collection, the majority of the artifacts were recovered along the top of the north/south ridge. The majority of the artifacts recovered were lithics and ceramics, with smaller amounts of daub and fauna. Projectile point fragments were recovered from Grid F and R. Figure 6.3 shows the total number of artifacts found in each collection grid plotted along with the positive soil probes. Artifact classes recovered during the surface collection are summarized in Table 6.1.

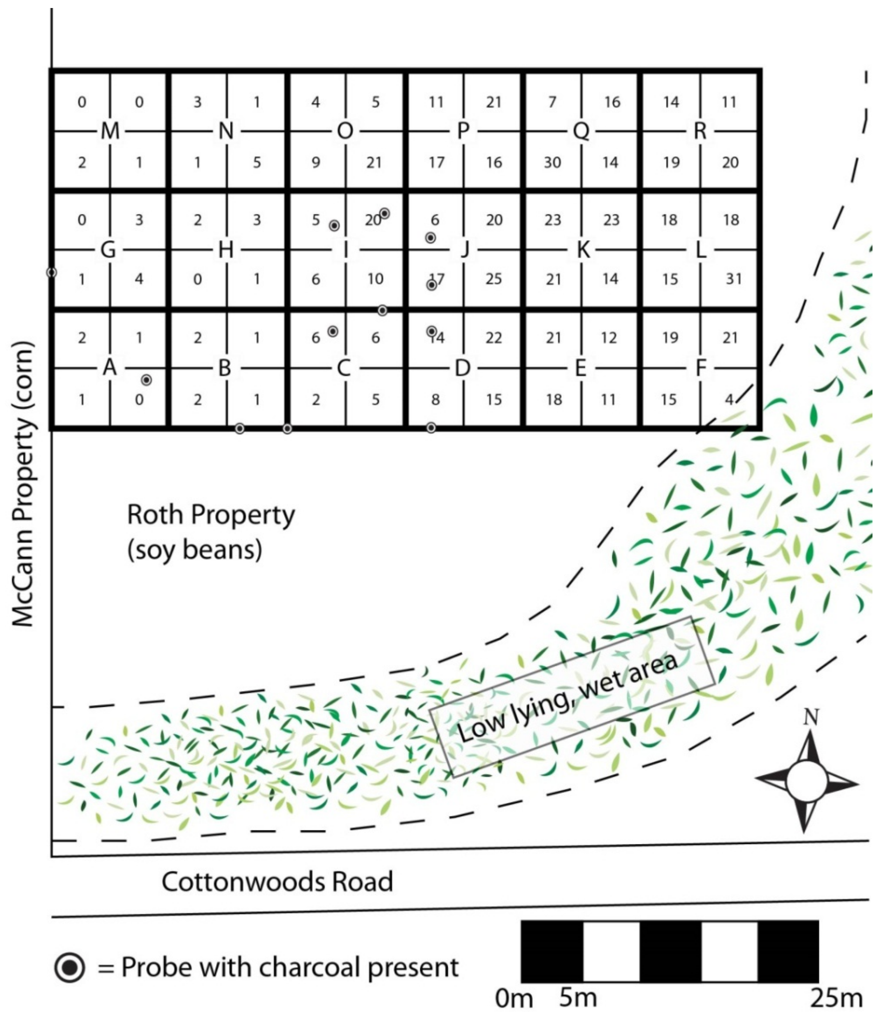


Figure 6.3. Map of surface collection and soil probe results.

Table 6.1 Artifact Assemblage Summary										
Provenience	Feature Type	Ceramics	Fauna	Tools	Lithic Debitage	Sandstone	Limestone	Pebbles	Burnt Clay	Daub
Surface/Backdirt	Surface collection	344 (1540.8g)	74 (169.5g)	12 (1177g)	316 (3164.1g)	77 (1786.4g)	46 (1032.6g)	31 (235.7g)	11 (24.6g)	1 (0.8g)
Unit 1, Fea. 8	Structure	122 (183.5g)	40 (42.2g)	1 (1.1g)	82 (151.7g)	37 (223.5g)	111 (68.9g)	62 (38.6g)	42(19.1g)	4 (1.9)
it 2 Complex, Fea. 1	Structure	350 (950.8g)	84 (42.3g)	3 (317.4g)	299 (1450.6g)	129 (1014.7g)	108 (681.4g)	116 (218.1g)	129 (104.9g)	4 (10.7g)
Fea 9	Palisade	95 (391.6g)	158 (123g)	0	71 (63.8g)	46 (48.5g)	13 (136.7g)	261 (186.5g)	49 (22.2g)	0
Fea 10	Structure	186 (566.7g)	159 (118.5g)	2 (228.8g)	106 (400.8g)	45 (902.2g)	17 (123.4g)	89 (82.6g)	45 (23.5g)	4 (5.1g)
Fea 11	Structure	50 (198.4g)	47 (11g)	0	24 (150.9g)	6 (102.8g)	9 (199.4g)	12 (6.4g)	25 (15.3g)	3 (2.1g)
Fea 13, 13b, PM1	Pit	87 (400g)	267 (122.9g)	3 (38.3g)	89 (403.3g)	38 (768.7g)	4 (292.7g)	13 (22.7g)	444 (449.1g)	16 (47.2g)
Fea 22	Structure	29 (118.6g)	14 (7.5g)	1 (18.4g)	26 (87.7g)	6 (54.6g)	3 (63.6g)	6 (3.9g)	12 (5.4g)	0
Fea 24	Post complex	1 (2.4g)	4 (0.3g)	0	1 (1.2g)	0	0	0	1 (1.6g)	0
Fea 25	Pit	402 (2337.4g)	506 (395.9g)	5 (230.2g)	261 (905.6g)	108 (701.2g)	19 (501.6g)	46 (82.3g)	192 (90g)	2 (5.3g)
Fea 26	Structure	89 (1802.1g)	157 (200.6g)	0	68 (218.3g)	23 (585.8g)	19 (1349.7g)	3 (1.4g)	44 (38.3g)	3 (5g)
Totals		1755 (8492.3g)	1510 (1233.7g)	27 (2011.2g)	1343 (6998g)	515 (6188.4g)	348 (4450g)	639 (878.2g)	994 (794g)	37 (78.1g)

6.2 Magnetometry

Two different magnetometry surveys were conducted at Common Field (Figure 6.4). The Summer 2010 survey was situated atop a ridge running roughly northeast/southwest, just to the east of Mound C and north of Cottonwood Road. Due to the promising results from the Summer 2010 survey, the Summer 2011 survey was in order to overlap the Summer 2010 survey and cover a larger portion of the ridge, forming a rough U-shape in order to avoid portions of the site that were covered in floodwaters and high weeds.

The Summer 2010 survey (Figure 6.5) shows two linear anomalies at a right angle in the northeast corner of the survey area. The right angle suggests that these signatures are from the walls of a structure and since the readings from the interior are weaker, this would indicate that the structure walls burned in the past; if the roof also burned and collapsed into the interior of the building, that debris may have been displaced via plowing following the 1980 flood. The walls themselves, set in deep trenches, would not have been impacted by plowing as much. There may be another burned structure located approximately 15m to the west. Several other possible features are circled in Figure 6.5; based on the general size and rectilinear shape, these features fit the typical characteristics of structures.

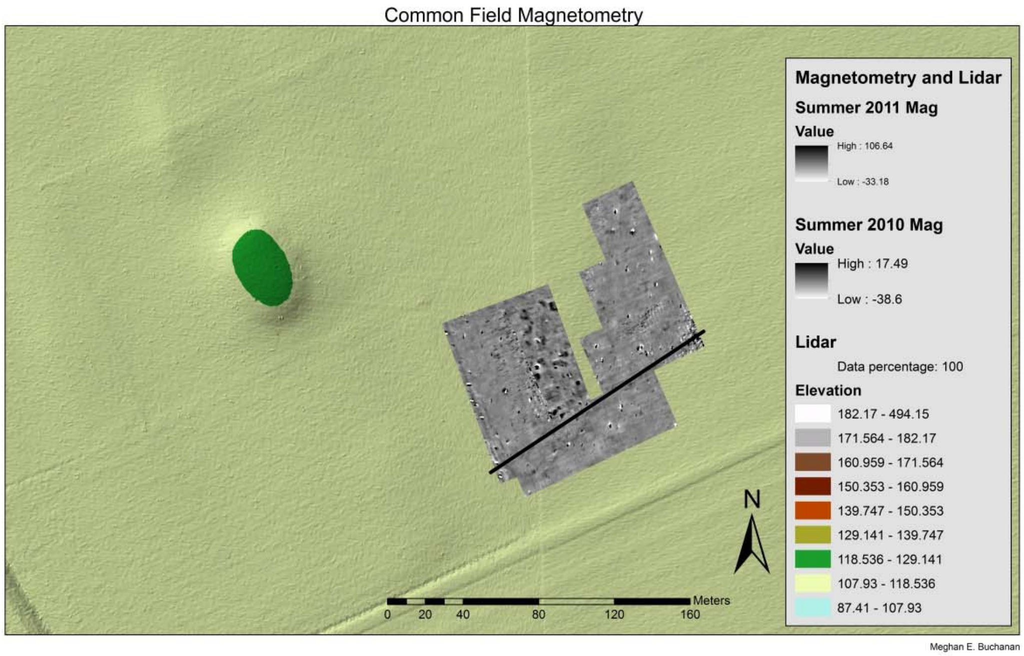


Figure 6.4. The location of both magnetometry grids with 2010 laid on top of 2011.

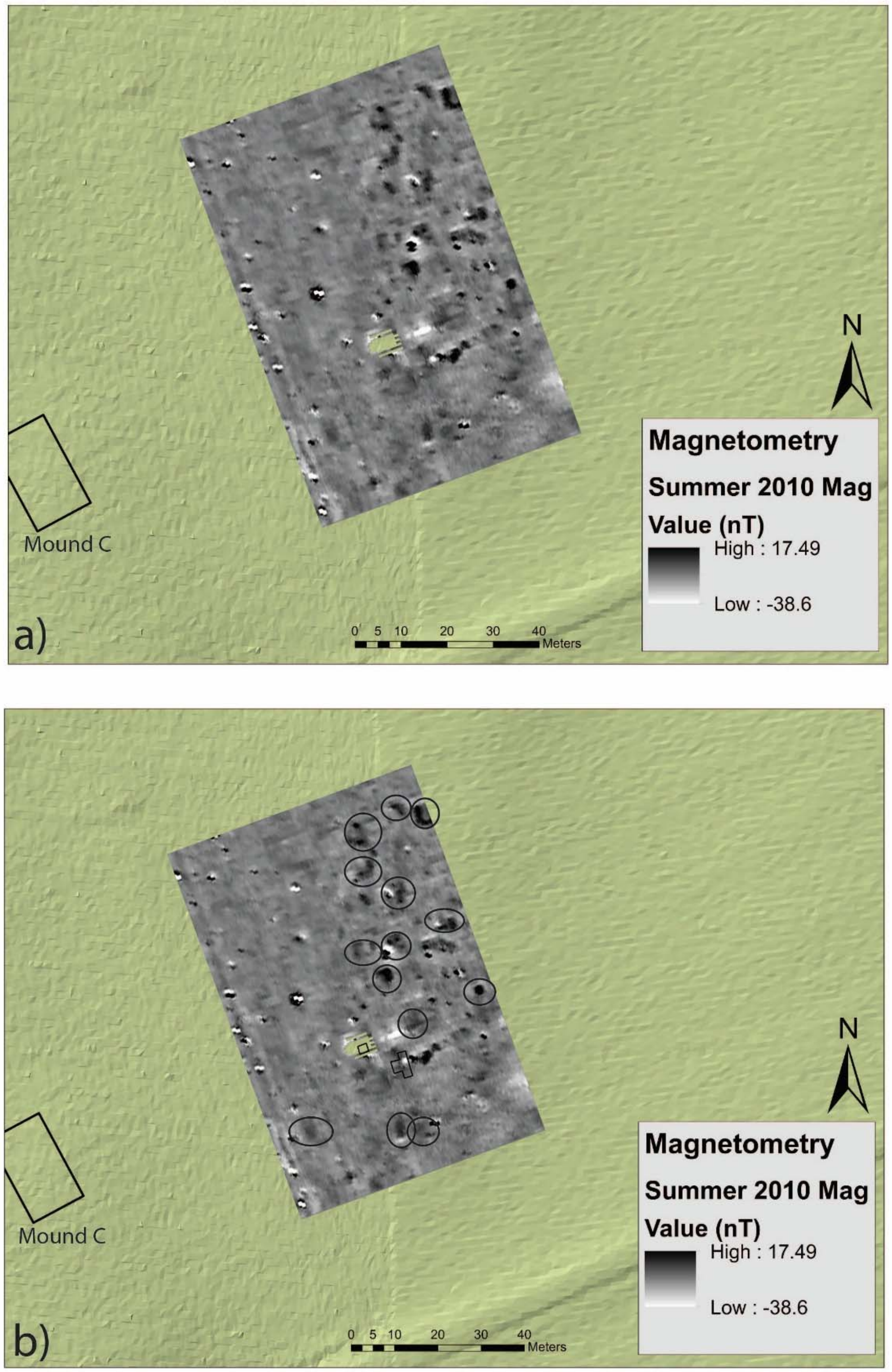


Figure 6.5. Image 6.5a shows the processed magnetometry results. Image 6.5b shows the locations of excavation units and the suggested locations of several possible features including houses/clusters of structures (circled).

Much of the western half of the Summer 2010 magnetometry survey area is magnetically quiet. No formal plazas have been identified at Common Field, however these quiet readings coupled with the location (south of Mound A, east of Mound C, and southwest of the plowed down Mound D) are highly suggestive of a cleared plaza space (Figure 6.6).

Figure 6.6. Lidar map of Common Field with hypothesized plaza areas depicted with a dashed line.

The results of the Summer 2011 magnetometry survey (Figure 6.7) was used to place excavation blocks. A line of small, highly magnetic features were targeted as the possible palisade. Just to the south of the line was a magnetic, rectangular feature. This area (Excavation Block 1) was selected for machine stripping since it would expose the possible palisade as well as a feature outside of the palisade walls (either a bastion or a house). Another high magnetic

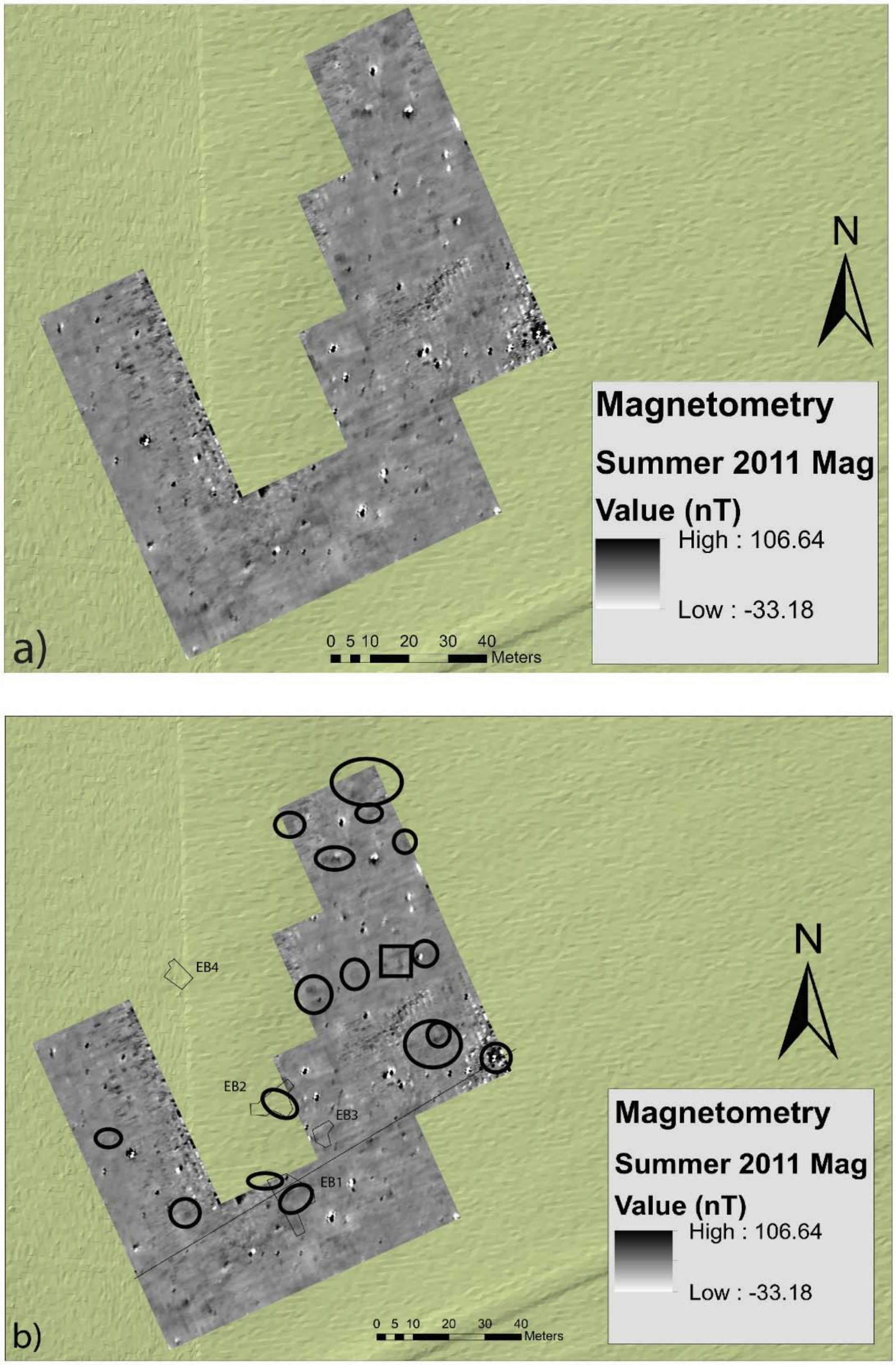


Figure 6.7. Image 6.7a shows the processed magnetometry results. Image 6.7b shows the locations of excavation blocks, the palisade, and the suggested locations of several possible features including the t-shaped anomaly (in the rectangle) and houses/clusters of structures (circled).

reading that looked like part of a rectangle was selected for machine stripping in order to expose another possible structure (Excavation Block 2). A cluster of high magnetic readings west of Excavation Block 1 and south of Excavation Block 2 was selected in the hopes that these were another structure. Other notable magnetic anomalies in the survey include several slightly magnetic rectangular features (structures?), two linear features that intersect (making a t-shape), and a highly magnetic cluster of features in the southeastern portion of the survey area, south of the palisade. This final area of interest is difficult to interpret due to the staggering in the readings; this area was under dense weeds and soybeans, causing the gradiometer to jostle while conducting the survey. I was unable to explore these additional notable anomalies due to landowner request to minimize crop damages and a lack of time.

6.3 Excavation Results

6.3.1 Unit Excavations (Summer 2010)

Excavation units were placed in locations where there were positive soil probes and daub present on the surface, both of which were indicative of possible structures (unit locations are shown in Figure 6.5). The first 2x2 meter unit was placed near the juncture of grids J2, I3, O4, and P1. The southeastern corner of J4 was selected as the location for the second 2x2m unit; this area had a large concentration of artifacts and, based off of measurements from the Army Corps of Engineers aerial photograph, appeared to intersect with a possible burned feature.

The upper 20-22 cm of Unit 1 was comprised of plow zone and a zone of mixed fill that was the result of modern plowing. Both Historic and pre-Columbian artifacts were recovered in the upper two zones; all artifacts from Unit 1 are summarized in Table 6.2 (one shotgun shell was noted in Level 2, but not collected). At approximately 21cm below the surface, there was a thin (less than 10cm) layer of highly compressed or dense silty clay (primarily clay). This fill was extremely difficult to dig through and contained very few artifacts.

Table 6.2 Unit 1, Feature 8

Provenience	Ceramics	Fauna	Tools	Lithic Debitage	Sandstone	Limestone	Pebbles	Burnt Clay	Daub	Other
Unit 1 fill	122	39	2	82	37	111	62	42	4	1 piece of iron ore, 3 pieces of galena, 1 crystal, and 7 Historics (1 machine cut nail, 6 clear glass)
Feature 8		1								
Total	**122**	**40**	**2**	**82**	**37**	**111**	**62**	**42**	**4**	

At the base of the unit was a single wall trench running north/south and several associated postholes (Figure 6.8); this structure was given the designation Feature 8. The wall trench and posthole fills were very similar to the surrounding subsoil, often only distinguishable by the presence of mottles and flecks of charcoal. The lack of difference between feature and subsoils is indicative of rapid infilling of features with subsoil. Typically, features that had been left open were used as garbage dumps and/or filled in through a mixture of natural and cultural processes have darker fill due to the modification of soils on living surfaces. Feature 8 may have been intentionally dismantled and filled in with sterile fill. The only artifact associated with Feature 8 was a single deer rib. A sample of subsurface clay was collected by Maura Hogan of Indiana University for compositional analysis.

Unit 2 is comprised of several 2x2m units (originally referred to as Units 2, 3, and 6) and one 2x2.7m unit (Unit 4/5), all located atop the north/south ridge. Using the depositional layers

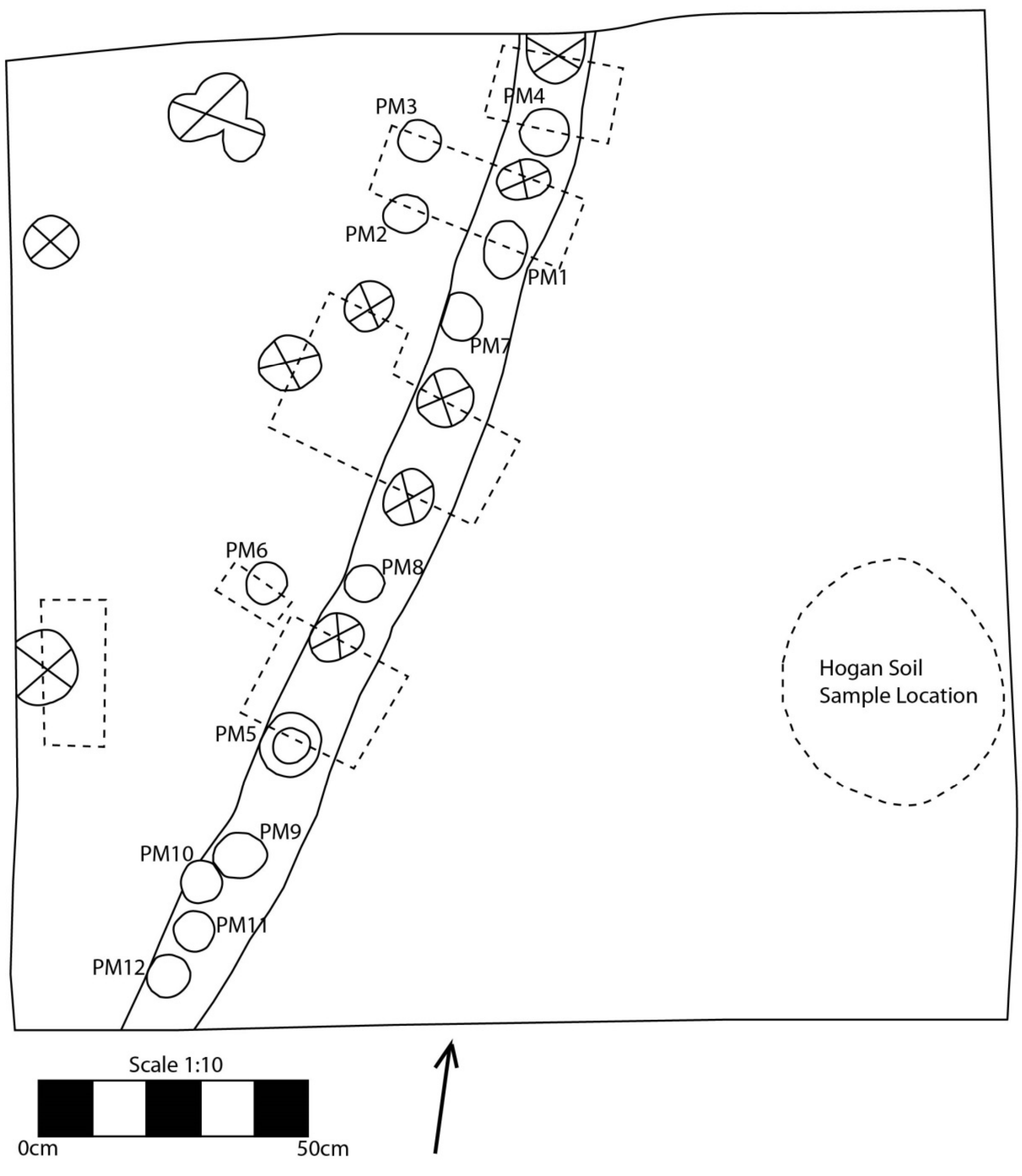


Figure 6.8. Plan view of Unit 1 and the Feature 8 wall trench and associated postholes.

from Unit 1 as a guide, excavation in the Unit 2 complex was conducted following stratigraphic layers rather than using arbitrary levels. The initial plow zone level (approximately 17cm deep) was followed by a layer of mixed fill (referred to as Interface, 8cm thick), followed by a layer of dense clay level (6cm thick) like that found in Unit 1. Numerous plow scars were visible in the clay layer. It is unclear when the clay layer was deposited onsite, but since burned structures are visible in this location in the USACE aerial photograph, and there are plow scars cutting through the fill, the most parsimonious explanation is that the clay level was deposited after 1980. Directly below the clay was feature fill, although the fill had been heavily impacted by plowing and was spread out, making it difficult to identify distinct feature outlines. After removing the plow zone, interface, and clay levels, seven possible features were identified (Figure 6.9); one was a possible house basin (Feature 1) with two interior pit features (Features 2 and 3), part of a feature visible in the northwest corner of Unit 4/5 (Feature 5), two medium sized posts (Features 5 and 6), and a linear feature (Feature 7) running roughly east/west at the southernmost end of the Unit 2 complex.

A 50cm trench was placed across Features 1, 2, and 3 in order to determine their veracity and depth. Sterile soil was encountered 5cm below the exposed surface. Multiple posts and a partial wall trench were present at the base of Feature 1. While there was not enough time to excavate the entirety of Unit 2 complex down to its base, the presence of the wall trench, postholes and a large pit (Feature 2) are highly indicative of a large house structure with an interior storage pit (see Features 22 and 26 discussed below). Feature 7 was originally thought to be the palisade trench, but the location is several meters farther north of the

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Unit 2 Complex

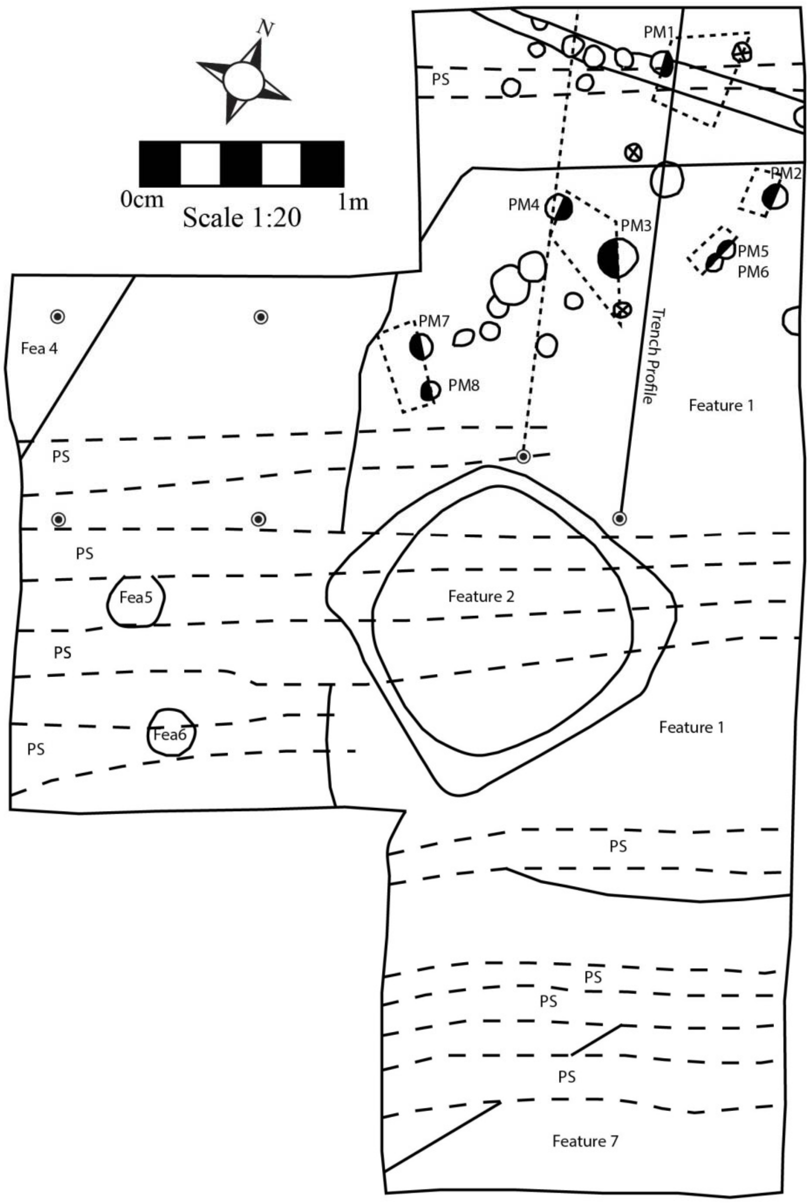

Figure 6.9. Plan view of the features present in the Unit 2 Complex. The linear features labeled PS are visible plow scars.

confirmed palisade trench (Feature 9; see below). However, it is possible that there are yet unconfirmed palisade constructions at Common Field.

Considerably more artifacts were recovered from Unit 2 complex and Feature 1 (Table 6.3) than were recovered from Unit 1 and Feature 8, again, supporting the contention that Feature 8 was intentionally dismantled and covered over. In contrast, Feature 1 still part of its artifact rich basin still intact beneath the layers impacted by agricultural plowing and mixing. One piece of burnt clay (1.6g) from Unit 3 was given to Rebecca Barzilai at Indiana University for destructive compositional analysis. Historic artifacts were present in some of the upper fill layers. A piece of porous rock was recovered in Unit 6; it has been tentatively identified paralava (also known as floatstone), a stone material from the northern Plains that floats down the Missouri River (Estes et al. 2010).

Table 6.3 Unit 2 Complex, Feature 1

Provenience	Ceramics	Fauna	Tools	Lithic Debitage	Sandstone	Limestone	Pebbles	Burnt Clay	Daub	Other
Unit 2	92	22	1	77	34	33	22	24		1 galena
Unit 3	113	31		83	40	22	35	49		3 Historics (clear glass)
Unit 4	60	10	1	60	27	29	19	15		1 Historic (plastic molded "wood" paneling)
Unit 5	18	2		20	3	6	4	3		
Unit 6	48	5	1	40	18	18	26	7	3	1 piece of paralava
Feature 1	21	24		19	7		10	31	1	1 piece of hematite
Total	**352**	**94**	**3**	**299**	**129**	**108**	**116**	**129**	**4**	

6.3.2 Feature Excavation Results

Excavation blocks (EBs) were placed based on promising magnetometry anomalies and in consultation with the landowners to minimize crop damages (see Figure 6.7). EB1 was placed to intersect a series of small, round anomalies arranged in linear fashion (trending roughly east/west) as well as a rectangular feature south of the linear feature. It was hypothesized that excavations in EB1 would encounter the palisade (the linear feature) and a structure outside of the palisade. EB2 was placed in order to expose the edge of a dark anomaly present in the magnetometry survey that was thought to be a burned structure. EB3 was placed for the same reasons as EB2. EB 4 was excavated during a return visit to the site in the fall of 2012. This block was placed near the northeast corner of the summer 2010 magnetometry survey in order to uncover several strong magnetic anomalies that looked like they might be burned wall trenches. All plow zone and disturbed fill was exposed using heavy machinery.

6.3.2.1 Excavation Block 1 (Figure 6.10)

Excavation Block 1 includes four features and associated architectural elements. Two structures (Features 10 and 11), a portion of the palisade (Feature 9), and a row of posts (Feature 24) were all located in EB 1. All of the artifacts recovered in this EB are summarized in Table 6.4.

Table 6.4 Excavation Block 1

Provenience	Ceramics	Fauna	Tools	Lithic Debitage	Sandstone	Limestone	Pebbles	Burnt Clay	Daub	Other
General Collection	23	17	1	8	2	3	1			
Feature 9	95	158	0	71	46	13	261	49	0	2 pieces of galena
Feature 10	186	159	2	106	45	17	89	45	4	1 piece of canel coal
Feature 11	50	47	0	24	6	9	12	25	3	1 piece of hematite
Feature 24	1	4	0	1	0	0	0	1	0	

Feature 9 is a linear feature running east to west. Approximately a quarter (1.2m) of the exposed area was excavated to a depth of 80cm. From the beginning of excavation there were numerous small, water worn pebbles and crushed pieces of limestone and sandstone present throughout the feature fill. In addition to the stone artifacts, many large pieces (>5cm) of burned wood were found in the fill. At 26cm below the machine scraped surface the faint outlines of four postholes were visible in plan, two of which were bisected and mapped in the

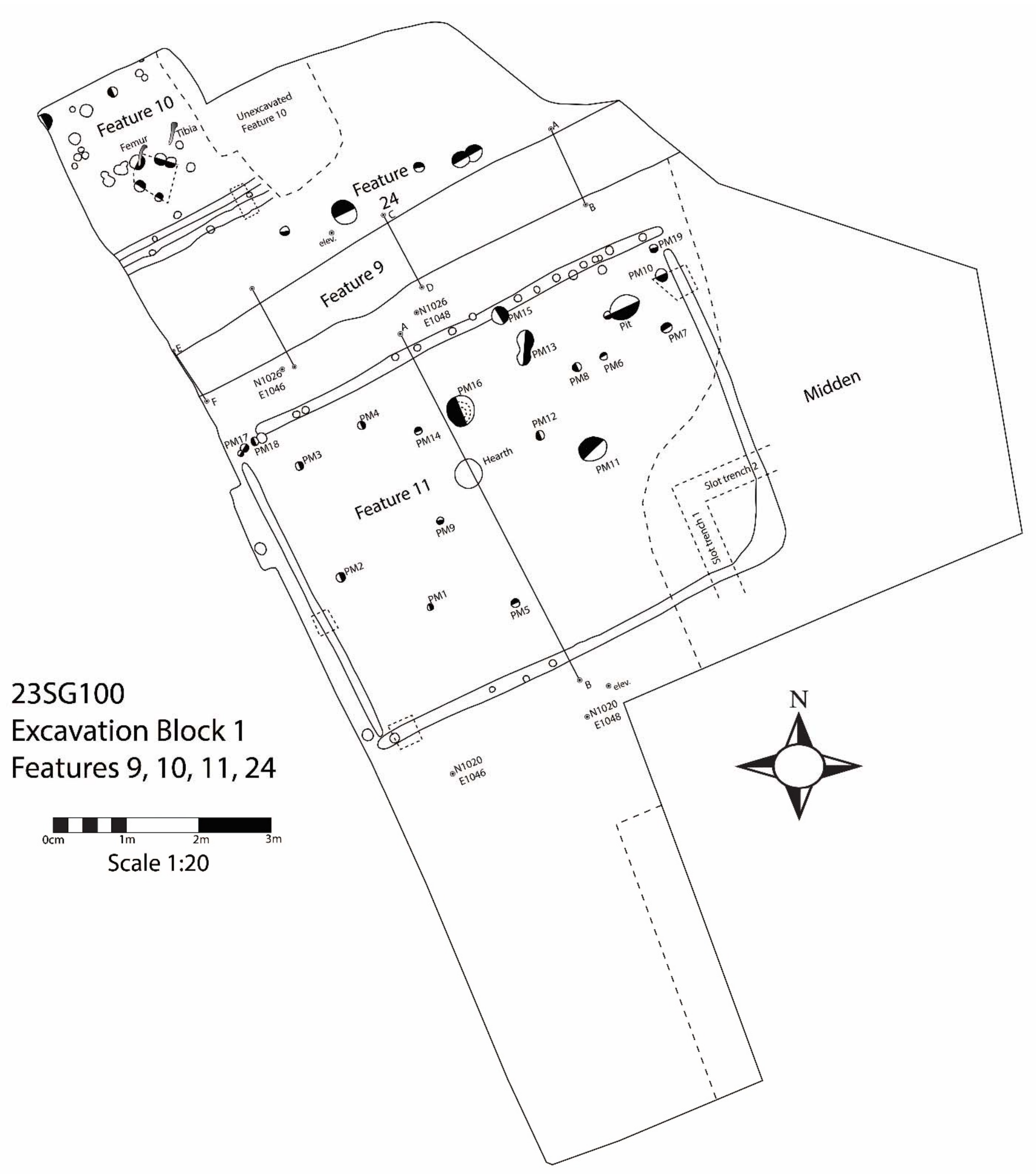

Figure 6.10. Plan map of features present in Excavation Block 1.

Feature 9 profile maps (Figure 6.11). The burned exteriors of several posts were noted, including the burned portion of the post visible in the east profile map of Feature 9. Burned materials were recovered and one piece (Feature 9, Sample 1, ISGS #6897) was submitted to the Illinois State Geological Survey (ISGS) for standard radiocarbon dating (Table 6.5; Figure 6.12). The uncalibrated date of 1010 B.P. ± 70 was calibrated with the IntCal13 curve (Reimer et al. 2013) using OxCal v4.2.3 (Bronk Ramsey 2013). The resultant 1-sigma range (68.3% probability) gives a date of A.D. 970-1152 and a 2-sigma range (95.4% probability) of A.D. 886-1205. This 319 year age range at the 2-sigma level makes it difficult to assess the age of Feature 9. Further, using a sample from what likely was part of a large post from the palisade means that this sample is subject to old wood biases (Schiffer 1986). When dating wood samples, the event dated is the growth of the tree ring. Thus, if this sample came from the inner portions of a log, the date may reflect early years in the tree's life; alternatively, if the sample was from outer rings, the date would reflect the tree's later life stages.

In order to counter the wide date range from Sample 1, a second sample was submitted to ISGS for accelerator mass spectrometry (AMS) dating. To avoid the old wood problem, a burned hickory nut shell was submitted since nut shells have a much shorter growth life (less than 1 year). This sample came from Zone B in Feature 9 and provided a much narrower date range. Sample 2 (ISGS #A2380) yielded an uncalibrated age of 745 B.P. ± 15 (Table 6.4; Figure 6.12). The calibrated 1-sigma range is A.D. 1265-1277 and the 2-sigma range is A.D. 1258-1283.

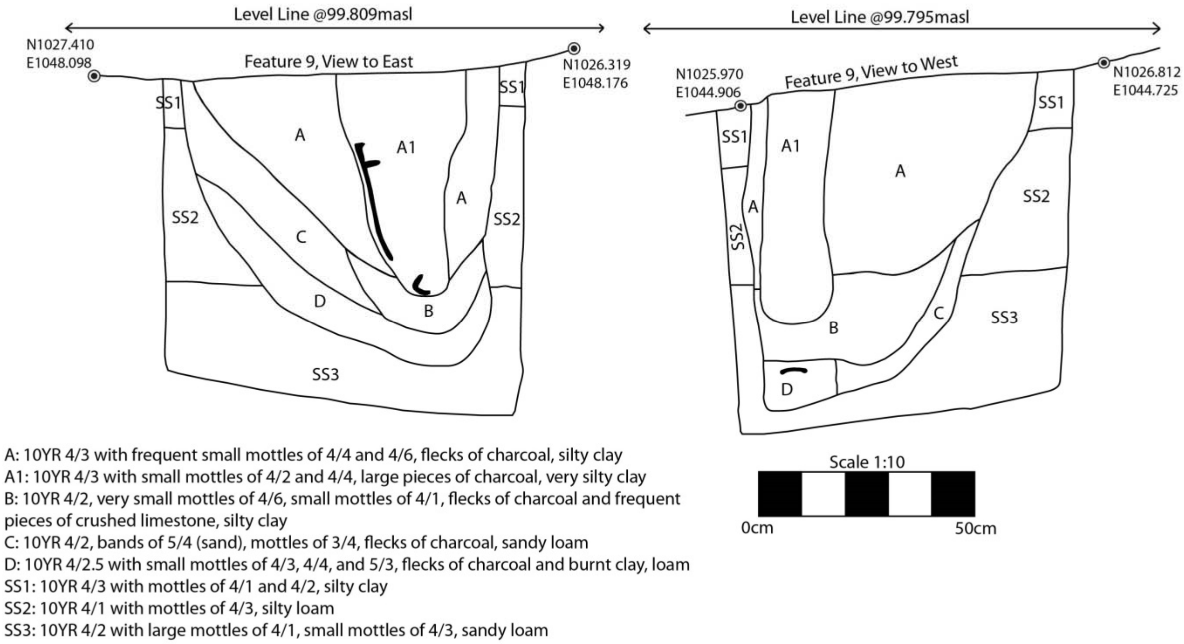

Figure 6.11. East and West profiles of Feature 9, the palisade trench.

Table 6.5 Common Field Radiocarbon Dates							
Sample	ISGS #	Provenience	Material	$^{13}C/^{12}C$	^{14}C Age	Cal Age 1 S.D.	Cal Age 2 S.D.
1	6897	Feature 9	charred wood	-26.2	1010 ± 70	A.D. 970-1152	A.D. 886-1205
2	A2380	Feature 9	charred nut shell	-23.6	745 ± 15	A.D. 1265-1277	A.D. 1258-1283
3	A2381	Feature 26	charred maize	-8.1	705 ± 20	A.D. 1275-1290	A.D. 1265-1300, A.D. 1370-1380
4	A2382	Feature 13	charred nut shell	-25.7	675 ± 15	A.D. 1282-1299, A.D. 1372-1378	A.D. 1278-1305, A.D. 1365-1385

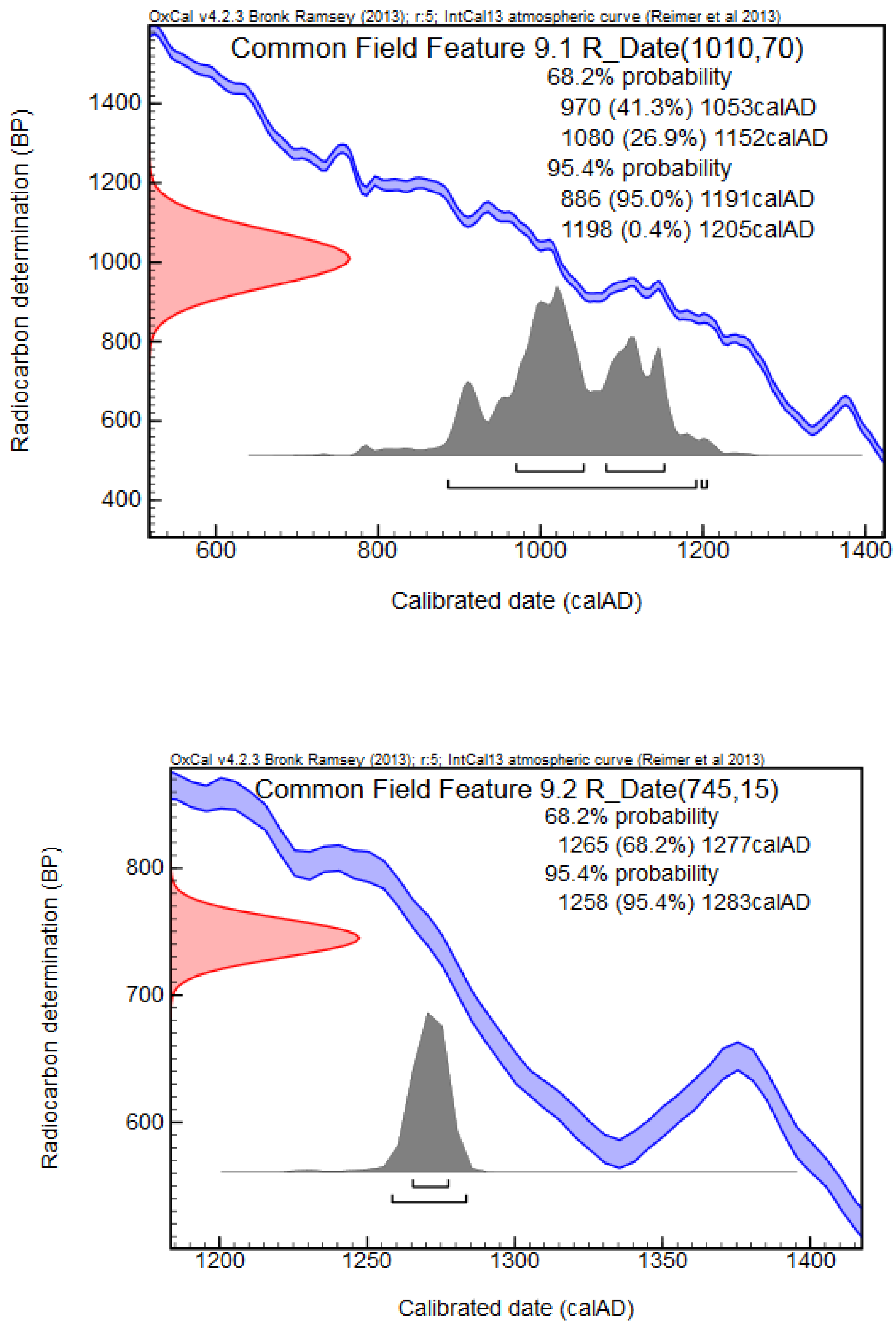

Figure 6.12. Calibration curve for Sample 1 (ISGS #6897) (upper) and Sample 2 (ISGS #A2380) (lower) from Feature 9.

A row of posts located north of Feature 9 were designated Feature 24. The use of these posts is unknown. Their size (diameter larger than 10cm) and close proximity to the palisade suggest that they may have been associated with the fortification, possibly as architectural support or as scaffolding for a platform. They do not appear to be part of a bastion.

Feature 10 is the corner of a structure present in the northwest corner of the excavation block; this feature was not completely excavated but portions of the floor were exposed. The southern wall was rebuilt twice and several patches of oxidized soil were present on the floor. Human remains were encountered in the basin fill of the structure, directly on the structure floor. There was no evidence of a formal burial feature (ie. no different fills demarking a discrete feature, no burial goods, no limestone slabs). The bones had been hit by the plows multiple times, disarticulating them from their original positions and exposing the bones to extra taphonomic processes at some point in the recent past (likely the 1979 flood and subsequent plowing). However, the elements present provide contextual clues about the original deposition of body. Portions of this person's lower limbs were present and heavily gnawed by carnivores (Figure 6.13). The patina present on the gnawed areas matches the patina of the rest of the bone indicating that the gnawing took place at approximately the same time as the original deposition. Puncture marks were visible in the distal right femur. The distal condyles and part of the distal shaft of the left femur had been completely destroyed by carnivore gnawing. The greater trochanter and most of the lesser trochanter were also gnawed away. Gnawing and scour marks were visible along the major muscle attachments of the femur shaft. The proximal and distal articular portions of the right tibia were also destroyed by

Figure 6.13. Drawing of human remains recovered from Feature 10. Inset photo shows part of the gnawing and patina from the distal end of the femur.

carnivore gnawing and like the femur shaft, scour marks were located along major muscle attachments. In addition to these elements, portions of a patella, radius, and multiple phalanges were encountered, often highly fragmentary or friable due to soil acidity and plow exposure in the past.

These remains appear to have come from a single individual who was left exposed to carnivores while there was still flesh adhering to the bone. The presence of carnivore gnawing demonstrates that the individual encountered in the structure was left exposed for an indeterminate amount of time. It seems unlikely that a deceased individual would have been exposed and available to dogs if the structure or nearby structures were still inhabited. The patches of oxidized soil and several postholes with evidence of burning indicate that the individual was left in the structure at approximately the same time the structure was burned (or shortly thereafter). Following the burning event, the deceased (or mortally injured) person was left in the structure, exposed, and was eventually destroyed by dogs before natural processes filled in the remainder of the basin.

Feature 11 was another wall trench structure although it was located south, or outside of the palisade. The structure is 6.62m by 4.82m (Table 6.6). There are no rebuilds of the walls and all of the architectural elements were filled in with a sterile fill remarkably similar to the surrounding subsoil. Little basin fill was present and was likely plowed out over the last several decades. Very few artifacts were present in the fill with the exception of one artifact and charcoal rich patch that was made through rodent bioturbation. The hearth in the center of the structure was filled with loose burnt clay. One large post (postmold 16) near the center of the structure was approximately 40 cm deep and would have served as a critical roof support.

Numerous smaller postholes were scattered throughout the structure. The architectural features in the southeast corner of the structure were difficult to discern due to a large,

Table 6.6 Structure Size			
Provenience	Length	Width	Area
Feature 11	6.62 m	4.82 m	31.91 m^2
Feature 22	6.56 m	3.94 m	25.85 m^2
Feature 26	4.54 m	3.4 m	15.44 m^2

amorphous fill zone. Two small trenches were excavated into this fill zone and the Feature 11 wall trenches were visible at the base. This fill zone is tentatively interpreted as a rich fill that was deposited after portions of Feature 11 were eroded away from this topographically lower area.

The lack of architectural rebuilds and the sterile fill together suggest that the structure was intentionally dismantled and filled in after the structure had been lived in for a short period of time. Abandoned house basins were frequently in filled by people living in nearby occupied houses (abandoned basins served as garbage pits) or through natural processes (water, wind, etc.) that would move artifacts into empty structure basins. The lack of artifacts in Feature 11 indicates that those processes did not take place. If the structure was abandoned around the same time or after the palisade was erected, the palisade would have created a barrier between discarded artifacts used by people living inside of the walls and the abandoned basin. The infilling of the structure with sterile soils may have also been an intentional act on the part of the inhabitants of Common Field in order to remove a fire hazard or hiding spot so close to the palisade.

6.3.2.2 Excavation Block 2 (Figure 6.14)

Three features were discovered in Excavation Block 2. Feature 22 is a large structure with an interior storage pit (Feature 25), both of which were excavated. Feature 23 is a small pit that was left unexcavated. All of the artifacts recovered from Features 22 and 25 are summarized in Table 6.7.

The walls of Feature 22 were rebuilt twice on the north and south sides, the east wall was rebuilt once, and the west wall was never rebuilt[1]. Most of the Feature 22 basin has been plowed away. The structure measures 6.56m by 3.94m. Few artifacts were present in the fill or on the structure floor. One large fragment of rhyolite was recovered; the source of rhyolite is the St. Francois Mountains region of the Missouri Ozarks. Like Feature 11, the wall trenches in Feature 22 were difficult to see and may indicate that the feature was intentionally dismantled and filled with sterile fill.

A large storage pit (Feature 25) was present in the floor of the east half of the structure. Feature 25 was part of a complex of pits, the rest of which were not excavated. Feature 25 was full of ceramics, fauna, lithic materials, and burnt clay. Approximately 10cm below the floor surface of the feature we encountered large portions of three vessels, one large jar, and two thick walled cylinder or funnel vessels. Also recovered from this feature was a fire fractured drill, a piece of worked hematite, two fragments of ground sandstone, and one sandstone abrader with five narrow grooves. Two unfired balls of clay were also present in the fill. Overall, Feature 25 is similar in appearance to Moorehead Phase interior storage pits found in the

[1] Pauketat (2003) has developed an estimate of 10-12 years for the length of time structures stood prior to needing wall replacements or major repairs (based on known phase lengths and number of rebuilds at Cahokian sites). Drawing on this estimate, Feature 22 at Common Field may have been occupied for 30-36 years. See Chapter 9 (Section 9.1) for a synthesis of house occupation estimates, radiocarbon dates, and a proposed occupational chronology for Common Field.

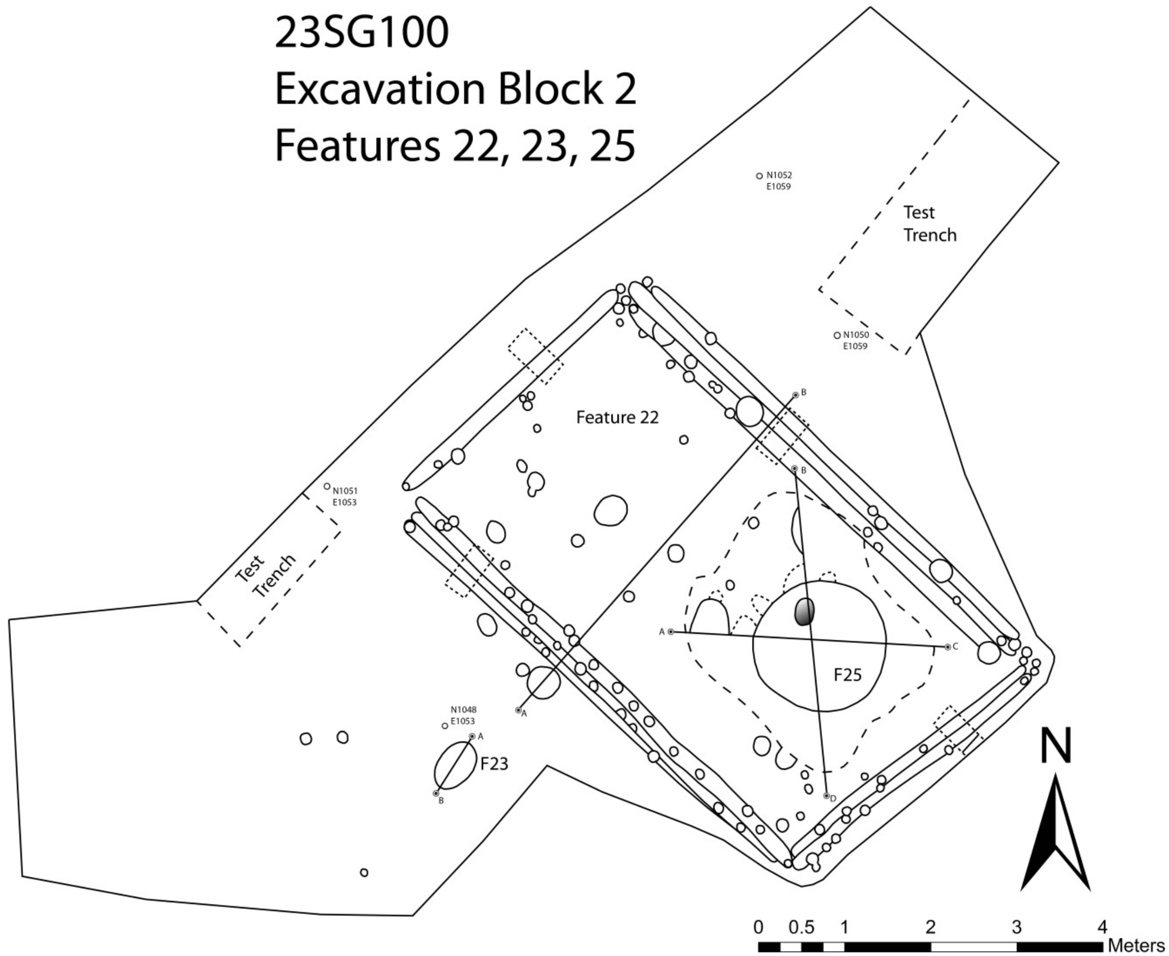

Figure 6.14. Plan map of features present in Excavation Block 2.

Table 6.7 Excavation Block 2										
Provenience	Ceramics	Fauna	Tools	Lithic Debitage	Sandstone	Limestone	Pebbles	Burnt Clay	Daub	Other
General Collection	28	17	2	26	5	2	0	0	4	
Feature 22	27	14	1	26	6	3	6	12	0	1 rhyolite frag
Feature 25	402	506	5	261	108	19	46	192	2	1 galena, 2 balls of unfired clay

American Bottom region (Mehrer 1995). Similar storage pits are present in Feature 1 (from 2010 unit excavations) and Feature 26 (see below).

6.3.2.3 Excavation Block 3 (Figure 6.15)

Excavation Block 3 was the location of one artifact rich, large (but shallow) pit and several smaller, sterile pits. Within EB3, Features 13 and 13b and Postmolds 1, 2, and 3 were completely excavated. Artifact totals are summarized in Table 6.8. Feature 13 is a large, shallow pit full of burned debris including ceramics, lithics, fauna, and burnt clay/daub. Many of the artifacts recovered were highly fragmentary. The high degree of fragmentation combined with the burning is indicative of materials that were swept or cleaned out of another context. One piece of ferromagnetic material was found in Feature 13. This material is likely either magnetite or pyrrhotite, both of which can be found in the Missouri Ozarks.

One piece of burnt nutshell (Sample 4, ISGS #A2382) from Zone A of Feature 13 was submitted for AMS radiocarbon dating (Table 6.5; Figure 6.16). The uncalibrated date range is 675 B.P. ± 15. The calibrated one-sigma range is A.D. 1282-1299/A.D. 1372-1378 and the two-sigma range is A.D. 1278-1305/A.D. 1365-1385.

Features 17 and 20 were initially thought to be small pits. Both features were bisected and it was determined that they were natural disturbances, not human-made features. Both 17 and 20 were defeatured.

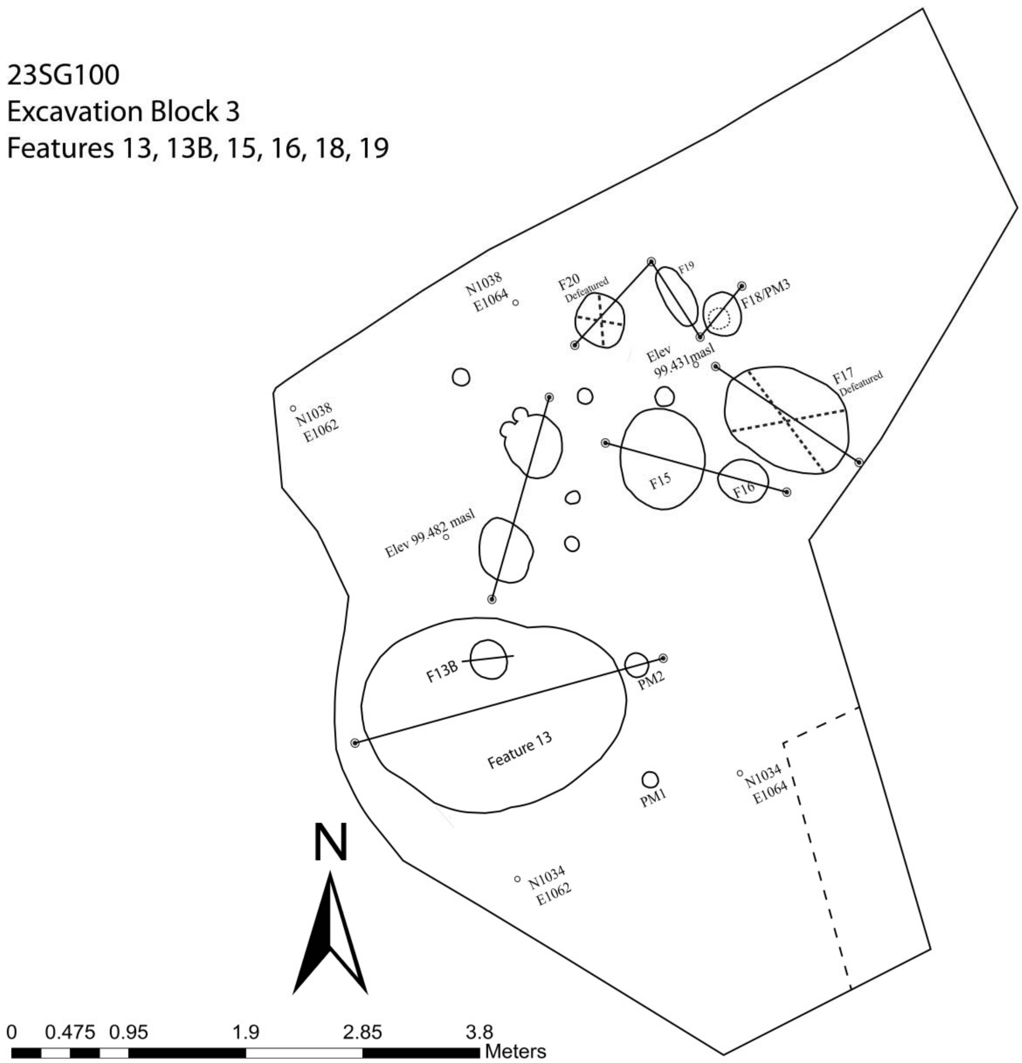

Figure 6.15. Plan map of features present in Excavation Block 3.

Table 6.8 Excavation Block 3										
Provenience	Ceramics	Fauna	Tools	Lithic Debitage	Sandstone	Limestone	Pebbles	Burnt Clay	Daub	Other
General Collection	17	27	4	45	10	0	1	1	0	
Feature 13	86	266	3	89	38	4	13	444	16	1 piece of iron ore, 1 piece of hematite
Feature 13b	1	0	0	0	0	1	0	4	0	
PM 1	0	1	0	0	0	0	0	1	0	

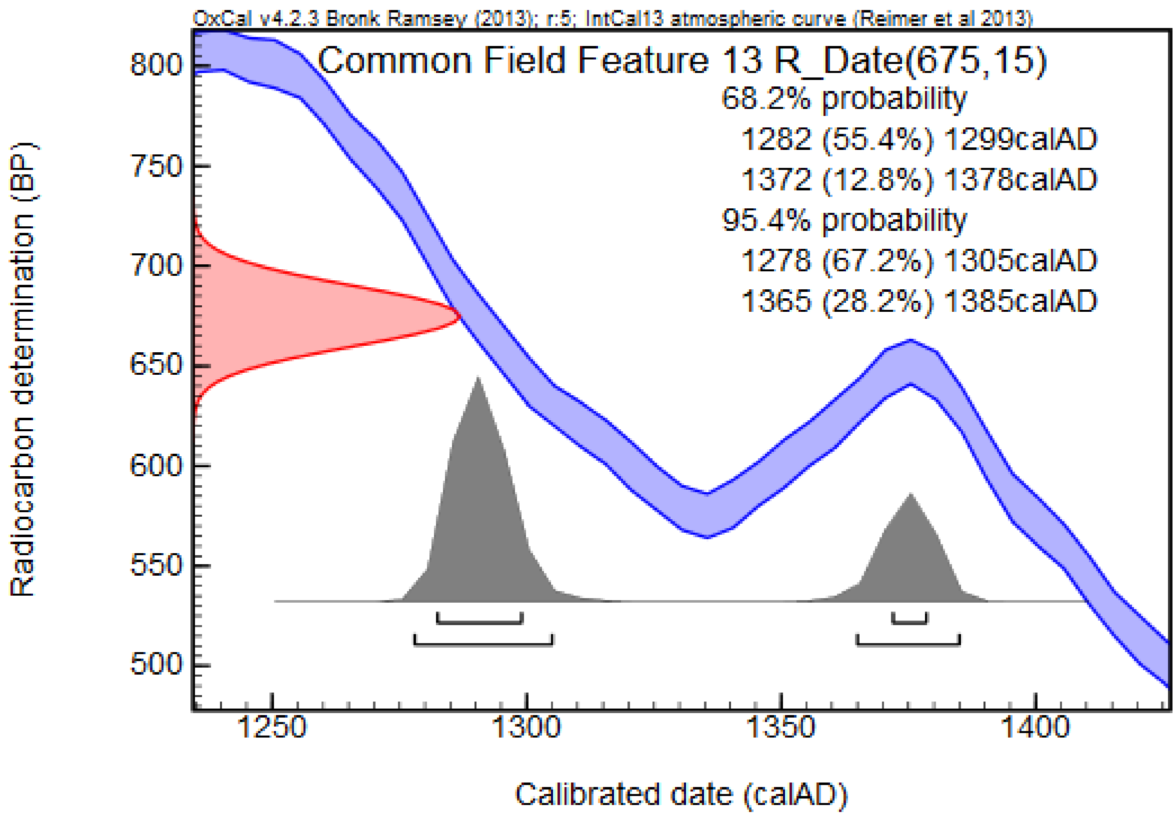

Figure 6.16. Calibration curve for Sample 4 (ISGS #A2382) from Feature 13.

6.3.2.4 Excavation Block 4 (Figure 6.17)

One complete structure (Feature 26) and one partial feature (possibly another structure) was encountered in Excavation Block 4. Only the southeast half of Feature 26 was excavated due to time constraints. All artifacts are summarized in Table 6.9.

Feature 26 is a small structure, much smaller than Features 11 and 22. The total floor area of Feature 26 was 15.44m^2 (4.54m by 3.4m), half the size of Feature 11 (Table 6.6). Despite its small size, Feature 26 had several interesting characteristics. Like Feature 22, there is a large

Table 6.9 Excavation Block 4

Provenience	Ceramics	Fauna	Tools	Lithic Debitage	Sandstone	Limestone	Pebbles	Burnt Clay	Daub	Other
General Collection	10	33	0	4	1	4	0	0	1	
Feature 26	89	157	0	68	23	18	3	44	3	3 pieces of quartz crystal, 1 piece of possible limonite

pit in the floor of the structure. In addition to the interior pit, there is also a wall trench screen near the middle of the structure, running north/south and paralleling the western wall of the structure. None of the excavated wall trenches were ever rebuilt. The floor of Feature 26 had large patches of oxidized soil, was covered with scattered flecks of charcoal, and had small flecks of hematite throughout. Several partially complete objects were recovered from the floor. Two halves of a box turtle shell was recovered from near the middle and from the southern end of the structure; it is not clear if they form a complete shell or if they are halves from two different turtle shells. One vessel missing its rim and base was found smashed on the floor as if it had dropped from a height, smashed, and the ends broke off and were deposited elsewhere. Finally, a large slab of limestone (with evidence of burning along the edges) was located atop the western wall trench. If the limestone slab was present at the same time as the wall trench, there would have likely been a gap in the wall, possibly a door.

The small size of the structure, the presence of the interior wall trench screen, and the hematite flecks on the floor, Feature 26 is considerably different from other structures excavated on site. Interior wall partitioning and hematite are both typically attributed to non-domestic activities, and the small size would indicate that few, if any, people actually lived in the structure. The presence of scattered charcoal (and a charred maize cob), the oxidized soil patches, and the smashed objects also point to the structure being burned.

One AMS radiocarbon date was run on charred maize kernels from the floor of the structure. Sample 3 (ISGS #A2381) has an uncalibrated age of 705 B.P. ± 20 (see Table 6.5; Figure 6.18). The one-sigma range is A.D. 1275-1290 and the two-sigma is A.D. 1265-1300/A.D. 1370-1380.

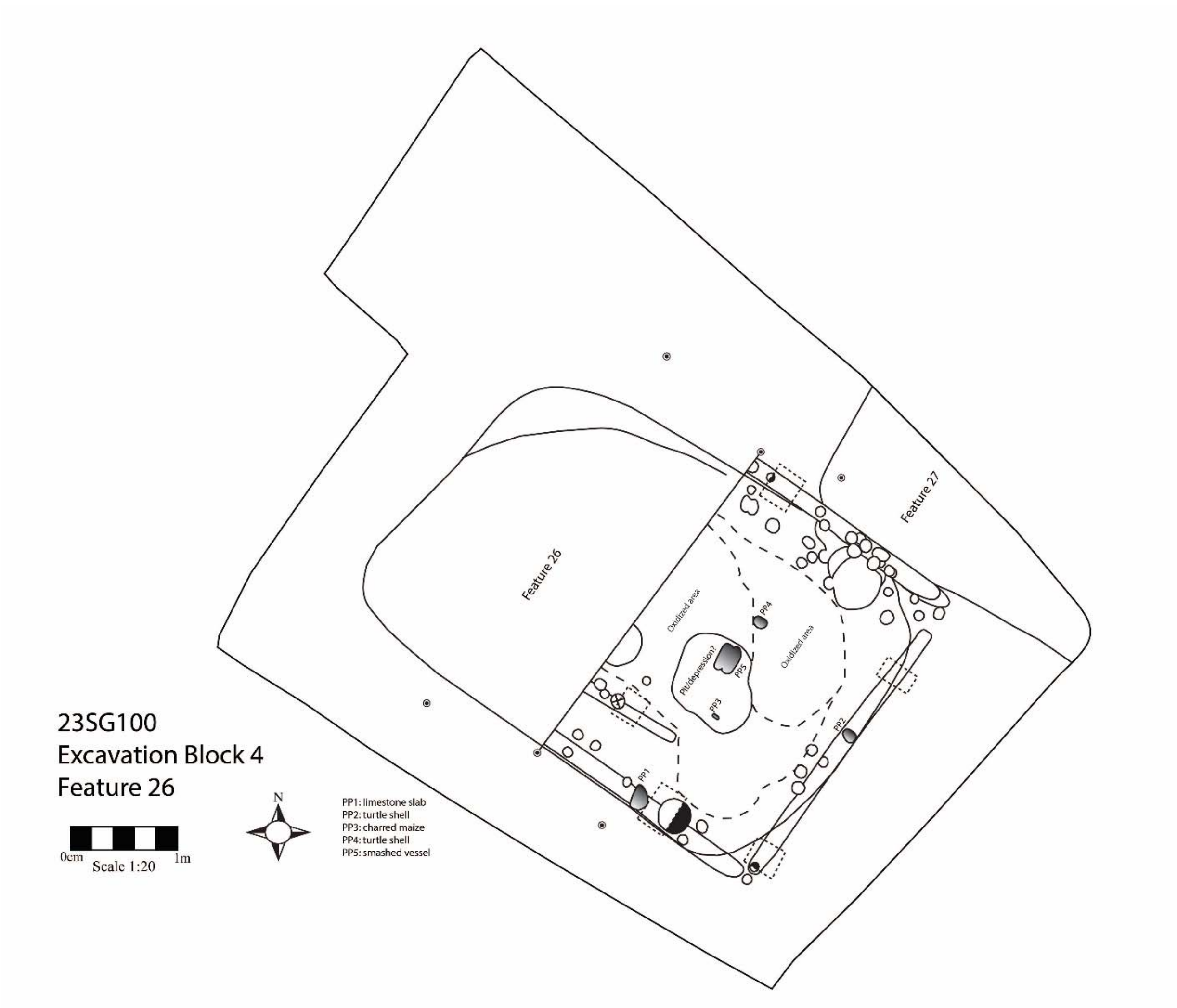

Figure 6.17. Plan map of features present in Excavation Block 4.

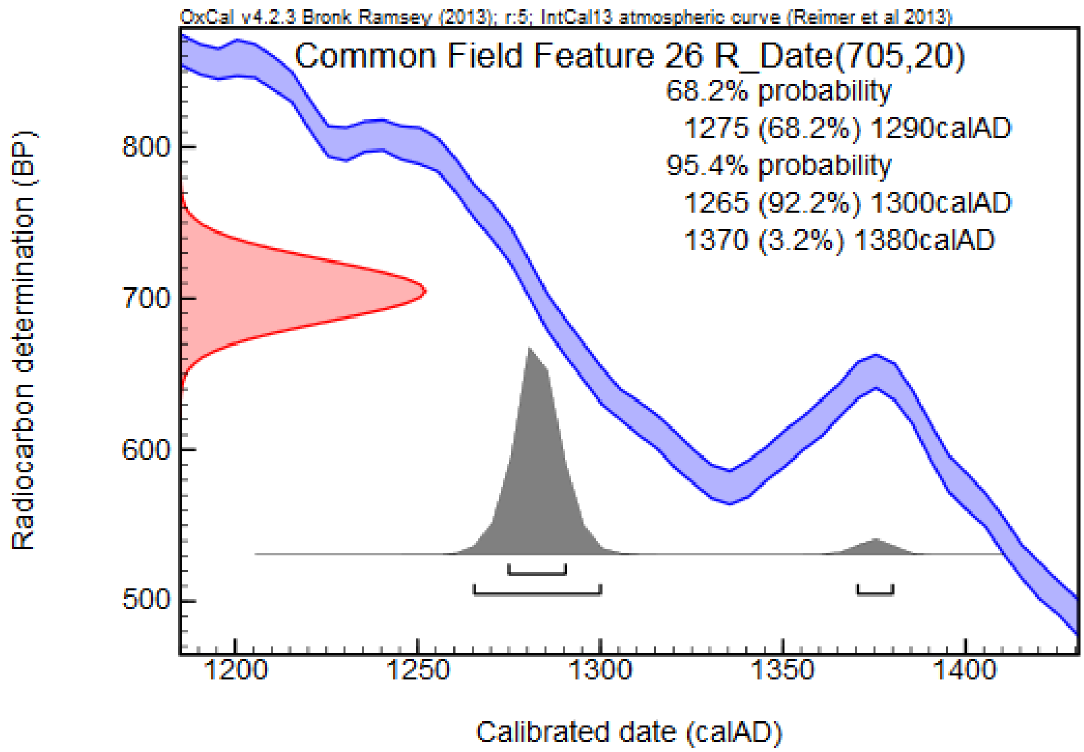

Figure 6.18. Calibration curve for Sample 3 (ISGS #A2381) from Feature 26.

6.4. Summary of Excavation Results and Conclusions

The most striking result of the research conducted at Common Field so far is that while magnetometry indicates that some features may still have intact basins or highly burnt walls, the features excavated so far show evidence of significant attrition due to plowing. These impacts are due in part to the 1979 flood that exposed features to plowing as well as the topographically higher location of my excavation blocks. This slightly higher elevation likely facilitated erosion following the 1979 flood. However, at the time of my excavations there was standing water in lower elevations due to seasonal flooding, making excavation in low lying areas impossible. Despite the impacts agriculture have had on subsurface features, some basin and feature fill has escaped destruction and magnetometry will be a powerful tool in the future for interpreting site organization and finding feature locations.

In addition to aiding in the placement of excavation blocks and finding subsurface features, magnetometry is already beginning to reveal information about site wide organization at Common Field. Weak magnetic readings along the western portion of the 2010 magnetometry survey suggest that there are few features in between Mound C and the inhabited north/south ridge. Magnetically quiet areas and portions of sites devoid of features are together indicative of an area left intentionally empty of domestic activities, a likely plaza. Continued magnetometry and targeted excavation will aid in determining if this is a plaza. If this magnetically quiet area is indeed a plaza, then there are both a south and east plaza. While many Mississippian villages have a single, central plaza with mounds arranged around the edges, Mississippian Cahokia Mounds has four plazas with the largest mound located in the center and additional mounds flanking the plazas. Common Field's overall organization more closely resembles American Bottom organization rather than site organization in the Lower Ohio River Valley or in the rest of the southeast.

Excavation led to the documentation of six structures, the palisade, multiple pits, and numerous architectural elements. Two structures (Features 1 and 8) were encountered during unit excavations in 2010 and their exact dimensions are unknown; the dimensions of Feature 10 from the 2011 excavations are also unknown. The other structures from Common Field range in size from 31.91m^2 to 15.44m^2. Features 11 and 22 appear to be the same approximate size as several unexcavated structures mapped by UMC (O'Brien et al. 1982:Figure 3).

Feature 11, located outside of the palisade, had very few artifacts present and wall trenches were never rebuilt. Fill in wall trenches, posts, and the small amount of basin was similar in color and texture to the surrounding subsoil. This evidence is indicative of abandonment and intentional infilling. Due to the close position of Feature 11 to the palisade (and its position outside of the defensive wall), it is probable that this feature was constructed shortly after the site was settled and intentionally abandoned around the same time the palisade was constructed.

In contrast to Feature 11, Features 10 and 22 both have walls that were rebuilt multiple times, highlighting the longevity of these houses. Neither structure was reoriented during a rebuilding episode, hinting that either space was at a premium or that the orientation of the structures was important. At least one wall in Feature 26 was also rebuilt once. In addition to its unusual size, Feature 26 is the only structure with internal partitions. Both Features 10 and 26 have patches of oxidized soil on the floor of the structure and artifactual evidence that they were burned. Human remains recovered from the floor of Feature 10 had no formal burial feature and were heavily damaged from carnivore gnawing, evidence that this person was killed in (or near) the structure and left exposed to carnivores around the same time the structure was burned. Feature 26 had artifacts (turtle shell and vessel) on the floor that looked like they had fallen from a height, hit the floor, and then scattered in multiple directions; the floor was also covered in flecks of charcoal and hematite.

Finally, the palisade was constructed by digging a deep trench, filling the base with a mixture of water worn pebbles, galena, and crushed limestone and sandstone after which large logs were placed upright in the trench; this would have required a substantial investment of labor and resources and was rebuilt twice. There is no evidence that the palisade was daubed. Large pieces of burned wood and the burned bases of at least one post were present in the palisade trench; several others appear in the magnetometry images.

6.4.1 Evidence of Warfare

Several lines of evidence from the field results point to a concern with violent attacks and a catastrophic event; this event was likely a surprise attack of Common Field by another community. First, there was a fortification wall that encircled the entirety of the village. While Feature 11 was initially located outside of this wall, it was later dismantled and filled in with sterile soils. Such a practice may have taken place in order to remove a potential fire hazard and hiding spot along the palisade. Additionally, few structures (via magnetometry) are visible outside of the palisade. Magnetometry and excavation results also demonstrate that the last construction of the palisade was burned.

Second, evidence from inside of features is indicative of a catastrophic event. The floors of Features 10 and 26 had large oxidized patches and flecks of charcoal scattered throughout. At other Mississippian Period sites in the Midwest, the burning of structures resulted in scattered debris of varying size (whole timbers to small charcoal flecks) and burned patterns on the floor (e.g Pauketat 2005:164). O'Brien et al. (1982) reported at least six structures with in situ burned posts at Common Field. If there had been intact burned timbers in any of the structures excavated in 2010-2012, they had been heavily impacted by agricultural plowing following the 1979 flooding and scouring event. Additional evidence of a catastrophic burning event include the USACE aerial photograph showing 300+ burned features, O'Brien's (1996) report of articulated human skeletons, and University of Missouri documentation of near complete ceramic vessels, charred maize, and large quantities of wall daub (Ferguson 1990; O'Brien et al 1982; Trader 1992).

Finally, the presence of human remains in unusual, non-burial contexts is evidence of unexpected, catastrophic death. The large number of articulated individuals noted by the University of Missouri on the surface of the site is striking in that formal burial features (especially stone box graves) were not present. The one human encountered in 2011 was also not in a formal burial and was recovered from a structure floor. As noted earlier, Mississippians in this region bury the deceased in below ground features (typically not in houses) or, during this temporal phase, in sandstone lined graves. The high degree of carnivore gnawing is also unusual and indicates that the body was left exposed. If this was simply a burial in a house interred when the site was occupied, it would mean that neighbors living near the burial would have been aware of carnivores (likely dogs) were disturbing a burial and let it continue. A more parsimonious explanation is that this individual died unexpectedly in a structure that burned (Feature 10 had burnt patches on the floor) in the conflagration, was left where he/she died, and was later disturbed by carnivores that were not scared away by other people because people no longer lived at Common Field. This kind of carnivore gnawing of human remains has also been documented at Norris Farms #36 (Milner et al. 1991) and Crow Creek (Willey and Emerson 1993); both of those sites suffered from violent attacks and in multiple instances, killed individuals were left exposed and disturbed by carnivores.

There is compelling evidence that Common Field was the site of a violent attack that ended in the burning of the village and the killing of multiple individuals who were left where their bodies fell. There is no evidence at this time that the site was ever revisited, that those individuals who were killed were buried, or that the site was ever reoccupied.

Chapter 7 – Results of Zooarchaeological Analyses

In this chapter, I present the results from the analysis of zooarchaeological remains from excavated contexts (2010-2012 excavations) at Common Field. Included in this discussion are possible taphonomic biases in the assemblage, site subsistence practices (measures of taxonomic richness, heterogeneity, and evenness), and an assessment of butchery and consumption practices by focusing on deer body part representation. Throughout the chapter these results will be compared to other Mississippian period sites, especially contemporaneous contexts in Cahokia (Tracts 15A and 15B, ICT-II, J. Ramey Mound, and Kunneman Mound), the American Bottom floodplain (Julien and Range), the uplands east of the American Bottom (Old Edwardsville Road site), Kincaid, and the Illinois River Valley (Morton and Norris Farms #36). The various contexts and sites discussed in the chapter are listed in Table 7.1 along with their respective NISPs and time period/phase designations. Faunal remains from the nearby Bauman site are not included in the quantitative comparisons because very few bones were recovered from the site. The sites that were included represent are range of archaeological phases and come from ritual, elite, and non-elite contexts (discussed throughout this chapter).

I have chosen to use a variety of methods to assess the taxonomic variability and butchery practices present in the faunal assemblage from excavations at Common Field; some of these methods are widely used by faunal analysts studying sites and regions contemporaneous with Common Field, others are not. My goal in utilizing a wide, diverse, and in some cases, non-traditional set of methods was to attempt to capture some of the regional variability and nuances present in faunal assemblages.

7.1 Zooarchaeological Analysis

Zooarchaeological materials from Common Field are derived from two primary sources: feature fill that has been screened through quarter-inch mesh and hand-picked materials from the surface collection and backdirt from machine excavation. As discussed in the Methods chapter (Chapter 6), the majority of the results discussed are presented in NISP (number of identified specimens, or bone count) due to small sample size and in order to facilitate comparisons across multiple assemblages. A total of 1510 NISP (1233.7g) were recovered.

Table 7.1 Sites Discussed in Text

Site	Total NISP	Phase
Common Field	1510	Moorehead
Cahokia 15B	11,759	Moorehead
Cahokia 15A	159	Stirling
J. Ramey Mound	286	Stirling
Kunneman Mound	101	Stirling
Cahokia ICT-II	348	Stirling
ICT-II	494	Moorehead
Julien	4006	Stirling
Julien	4879	Moorehead
Julien	15,633	Sand Prairie
Range	390	Stirling
Old Edwardsville	3282	Moorehead
Kincaid (1930-40s excavations)	1310	Middle/Late Kincaid
Kincaid (2006 excavation)	1024	Middle/Late Kincaid
Morton	1298	Oneota
Norris Farms #36 (Village)	188	Oneota
Norris Farms #36 (Cemetery)	727	Oneota

7.2 Taphonomic Biases

The bone fragments recovered from Common Field show very little evidence of weathering (Table 7.2). A total of three bone fragments clearly fall into Behrensmeyer's (1978) Weathering Stage 1 where the bone shows some signs of cracking, but are not flaking. At Stage

1, animal carcasses may have been exposed for up to three years, at least in Behrensmeyer's African samples. However, increased seasonal temperature and weather fluctuations (like those typically experienced throughout the year in Missouri) may actually mean that this period of exposure was shorter. Two of the weathered bones were recovered from Features 9 and 10 and likely represent bones left exposed during the occupation or abandonment of Common Field before they were buried through natural processes. The third bone was recovered during the surface collection, thus the weathering present may be more recent rather than evidence of past depositional practices. Other bones in the assemblage fragment easily, but these bones do not have clear evidence that the fragmentation was the result of weathering. Instead, high soil acidity likely plays some role in the preservation of bone. 21 bone fragments have evidence of root etching. Root etching can occur when bones are left exposed on the ground surface or when they are buried shallowly (Shipman 1981). Like the weathering, the presence of root etching indicates that at least some of the faunal remains from Common Field were left exposed for a short period of time before being buried by natural processes.

In addition to taphonomic modifications via natural sources, animals and humans have also had an impact on the preservation of the assemblage. 1.7% of the assemblage has evidence of carnivore and/or rodent gnawing. Carnivores, likely domesticated dogs in a habitation context, will chew the spongy cancellous bone from the epiphyses which can leave behind shafts with irregular, grooved edges or pit marks (Reitz and Wing 1999). The Common Field assemblage has both irregular grooves and pit marks. Rodent gnawing is characterized by parallel grooves, typically along bone edges. Unlike carnivores, which destroy epiphyses for food and nutrients, rodents tend to gnaw bone diaphyses in order to grind and sharpen their incisors. Both the natural and animal modifications present in the assemblage indicate that at least some of the faunal materials from Common Field were left exposed for a short period of time before deposition in their final archaeological context.

Table 7.2 Summary of Taphonomic Biases		
	NISP	% of Total NISP
Natural Modifications		
Weathering (Stage 1)	3	0.2
Root Etching	21	1.4
Total	24	1.6
Animal Modifications		
Carnivore Gnawing	17	1.1
Rodent Gnawing	9	0.6
Total	26	1.7
Human Modifications		
Cut Mark	2	0.1
Use Wear	4	0.3
Total	6	0.4
Degree of Burning		
Burnt	79	5.2
Carbonized	176	11.7
Calcined	201	13.3
Total	456	30.2

There is very little evidence for human modifications in the assemblage. Fine cut marks and evidence of use wear (polish and grinding) is present in 0.4% of the assemblage. Over 30% of the assemblage has evidence of burning. Burning can have multiple etiologies. Berres (2003) suggests that burning may reflect refuse disposal patterns (burning as disposal), burning of bone for fuel, cooking practices, accidental burning, or differential preservation in which burned bone preserved better than unburned. Several factors may be in play with regards to the burning in the Common Field assemblage. First, the analysis of food residues from ceramics in the American Bottom region indicate that ceramic vessels were not used to cook large mammal proteins and were instead used to cook maize and fish (Beehr and Ambrose 2007; Reber and Evershed 2004). Mammal proteins (especially deer) then were likely cooked over open fire which could result in burning exposed bone. Second, many of the burned materials from Feature 13 appear to have come from an intentional disposal context. 62.7% (173/267 NISP) of the bones from Feature 13 are burned to various degrees and are highly fragmentary. This, coupled with large amounts of burnt clay, considerable charcoal flecking, and ashy soils, indicates that these materials were transported from one location (a burned structure) and deposited into the Feature 13 pit. And third, Common Field was burned in a catastrophic event. In addition to houses burning, materials contained within would likely have evidence of burning. However, this is not always the case; House 1 at the Norris Farms #36 habitation area was burned but there is little burning in the faunal assemblage recovered from the floor of the structure (Styles 1990). Styles suggests that there are few burned floor materials because they were rapidly covered with debris from the building superstructure. At Common Field, many of the bone fragments with light burning appear as if burning or smoldering wood fragments landed on them, charring the bone with small patches or linear features. But like Styles notes at Norris Farms #36, the burned structures from Common Field do not have heavily burned bones associated with the structural burning events.

Other attritional factors may impact overall bone preservation and survivorship, but are difficult to assess based on surficial features. Quantitatively, assemblage attrition can be assessed by comparing the survivorship of skeletal elements against Lyman's (1984, 1994) bulk bone density values for deer. If there is a significant correlation between element abundance and bone density, then the assemblage is considered problematic from a preservation standpoint. MAUs were compared against Lyman's bulk density values (Figure 7.1). Spearman's *r* (following Jackson and Scott 2003) and Kendall's T_b (following Welch 1991) were used to assess the correlation between MAUs and bulk density.

The result of the Spearman's *r* (*r* = 0.182, two-tailed p= 0.297, df = 35) demonstrates that there is a positive correlation between MAUs and bone density, but the relationship between them is weak. Kendall's (T_b = 0.164, two-tailed p = 0.205) also demonstrates that there is a low correlation between density and abundance. In other words, while there may be some

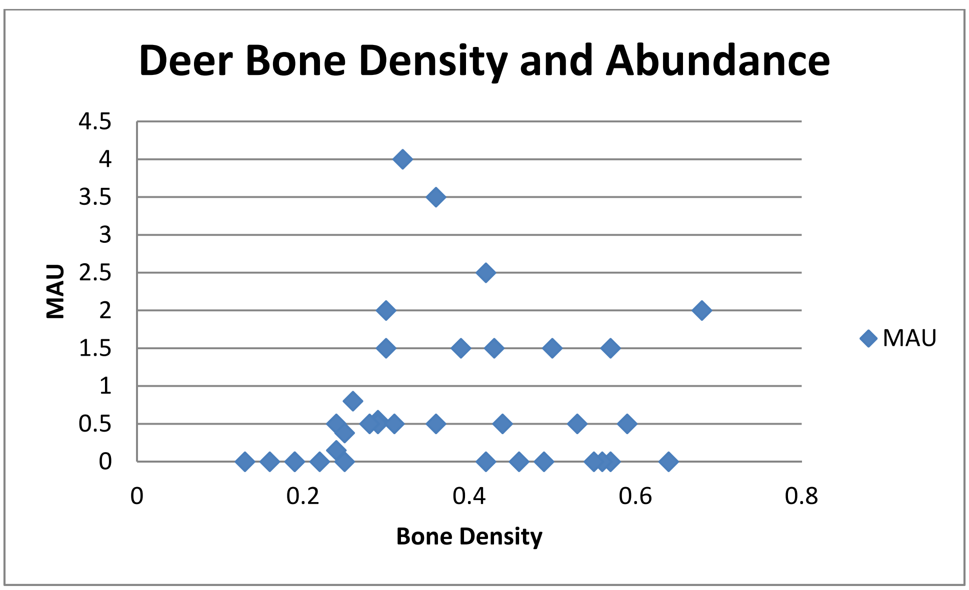

Figure 7.1. Scatterplot of deer bone density and skeletal element abundance (MAU).

density mediated attrition present in the assemblage (denser bones are preserving better than less dense bones), overall the correlation is weak and the assemblage is viable from a preservation standpoint.

7.3 Species Diversity and General Subsistence Practices

A total of 1510 NISP, weighing 1233.7g, were recovered over the course of 2010-2012. Mammals, birds, fish, reptiles, and molluscs are all present at the site; no amphibians, snakes, or anthropods have been identified (Table 7.3). The majority of the faunal materials were recovered from five features: Feature 9 (palisade), Feature 10 (wall-trench structure), Feature 13 (pit), Feature 25 (pit inside of a structure), and Feature 26 (small wall-trench structure). An additional 190 bone fragments were recovered during the excavation of several units during the 2010 season and units 2-6 were likely located within the footprint of another structure.

Of the mammalian species present, many are typically found in environmental contexts near borders between grasslands and lightly wooded areas. Deer, foxes, skunks, moles, and squirrels generally inhabit these areas; the same is true of turkeys (Schwartz and Schwartz 2001). Both elk and bald eagle can be found in hardwood forests and forest-edge regions. While it is difficult to know the exact environmental conditions of the Ste. Genevieve floodplain when Common Field was occupied, early Historic accounts describe much of the floodplain as covered in grassland with stands of trees located along streams (see Chapter 4). It seems unlikely that mammals in the floodplain alone could support the community at Common Field; instead, many of the deer and other food sources found at Common Field may have been hunted in the hilly, wooded bluffs to the west or across the river to the east and brought back to the site for consumption and other uses. There is an MNI of 14 deer present in the assemblage when subdivided by context (see Table 7.3). Because deer body parts may have been shared between features, when all contexts are pooled, there is an MNI of 4 based on proximal left radii.

All of the bird species (except the turkey) are migratory fowl that could have been recovered from nearby swampy sloughs and the Mississippi River. Of the four fish species identified, catfish, bowfin, and buffalo all tend to inhabit shallow waters near river edges, only bass frequent the deeper river channel.

The vast majority of the bone recovered was unidentifiable beyond the subphylum of Vertebrate, which includes mammals, birds, fish, reptiles and amphibians (Figure 7.2).

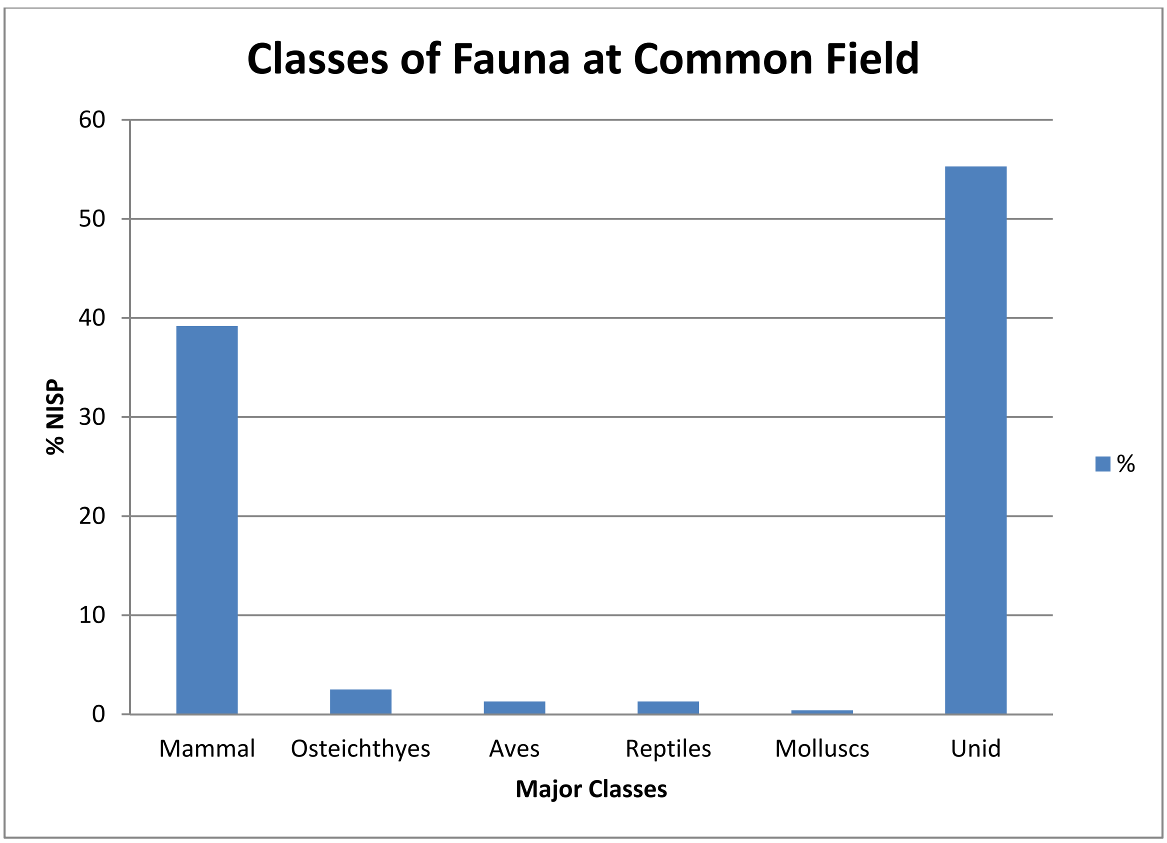

Figure 7.2. Major classes of fauna recovered from Common Field.

Table 7.3 Taxa Present At Common Field by NISP (MNI)

Taxon	Fea.1, 1b	Fea. 8	Fea.9	Fea.10	Fea.11	Fea.13, PM1	Fea.22	Fea.24	Fea.25	Fea.26	Surface	Units	Backdirt
Mammals													
Deer (*Odocoileus virginianus*)	1 (1)	1 (1)	12 (1)	9 (2)		9 (1)	1 (1)		27 (2)	12 (1)	2 (1)	5 (1)	7 (2)
Cf. Elk (*Cervus elaphus*)													1 (1)
Dog/Coyote (*Canis* sp.)				1 (1)					1 (1)			1 (1)	
Red Fox (*Vulpes vulpes*)										1 (1)			
Fox, indet. (*V. vulpes* or *Urocyon cinereoargenteus*)									1 (1)				
Beaver (*Castor canadensis*)									1 (1)				
Skunk (*Mephitis mephitis*)									1 (1)				
Cf. Fox Squirrel (*Sciurus niger*)			6 (1)										
Cf. Grey Squirrel (*Sciurus carolinensis*)			1 (1)										
Squirrels (*Sciurus* sp.)			5 (1)									1 (1)	
Ground squirrel (*Ictidomys tridecemlineatus*)			1 (1)										
Eastern Mole (*Scalopus aquaticus*)			1 (1)		1 (1)								
Deer Mouse (*Peromyscus maniculatus*)			1 (1)										
Large mammal	8		25	10	12	58	7		34	36	3	27	29
Medium mammal									2				
Small mammal						2							
Unid	3		28	119		1			35	27	3	11	1
Total NISP	12	1	80	139	13	70	8	0	102	76	8	45	38
Osteicthyes													
Bowfin (*Amia calva*)										1 (1)			
Catfish, indet. (*Ictalurus* sp.)			3 (1)			1 (1)							
Largemouth Bass (*Micropterus* sp.)			1 (1)										
Buffalo, indet. (*Ictiobus* sp.)						4 (1)							
Unid			10			15			3				
Total NISP	0	0	14	0	0	20	0	0	3	1	0	0	0
Aves													
Turkey (*Meleagris gallopavo*)			1 (1)			1 (1)							
Bald Eagle (*Haliaeetus leucocephalus*)									1 (1)				
Canada Goose (*Branta canadensis*)									2 (1)				
Mallard (*Anas platyrhynchos*)			1 (1)										
Lesser Scaup (*Aythya affinis*)			1 (1)										
Duck, indet. (Anatinae)			1 (1)										
Pied-Billed Grebe (*Podilymbus podiceps*)						1 (1)							
Unid.			5	1					1	1		2	
Total NISP	0	0	9	1	0	2	0	0	4	1	0	2	0
Reptilia													
Box Turtle (*Terrapene* sp.)			5 (1)						1 (1)	3 (1)			
Turtle, indet.			3 (1)	2 (1)					2 (1)	3 (1)			1 (1)
Total NISP	0	0	8	2	0	0	0	0	3	6	0	0	1
Unidentified Vertebrate	1	0	43	17	34	174	6	4	394	73	0	62	27
Mollusca													
Bivalve, indet (Pelecypoda)			4 (1)			1 (1)							
Total NISP	1	0	4	0	0	1	0	0	0	0	0	0	0
TOTAL NISP	14	1	158	159	47	267	14	4	506	157	8	109	66

Over 50% of the recovered bone fragments were unidentifiable, with mammals (39.2%) as the most abundant class. While accounting for a large proportion of the assemblage in terms of bone fragments, the unidentifiable remains are less than 10% (111.1g out of a total 1233.7g) of the assemblage by weight. When unidentifiable remains are removed (Figure 7.3), mammals dominate the assemblage (87.7%), with all other classes accounting for 13.3% NISP.

When the mammals are further broken (Figure 7.4) down by deer, large mammal, other mammals (foxes, squirrels, etc.), and unidentifiable mammals, once again (like the class distribution), unidentifiable remains (including unidentifiable large mammal) are the largest proportion of mammals. The large number of unidentifiable remain (both by class and within mammals) indicates that the Common Field assemblage is highly fragmentary. This large degree

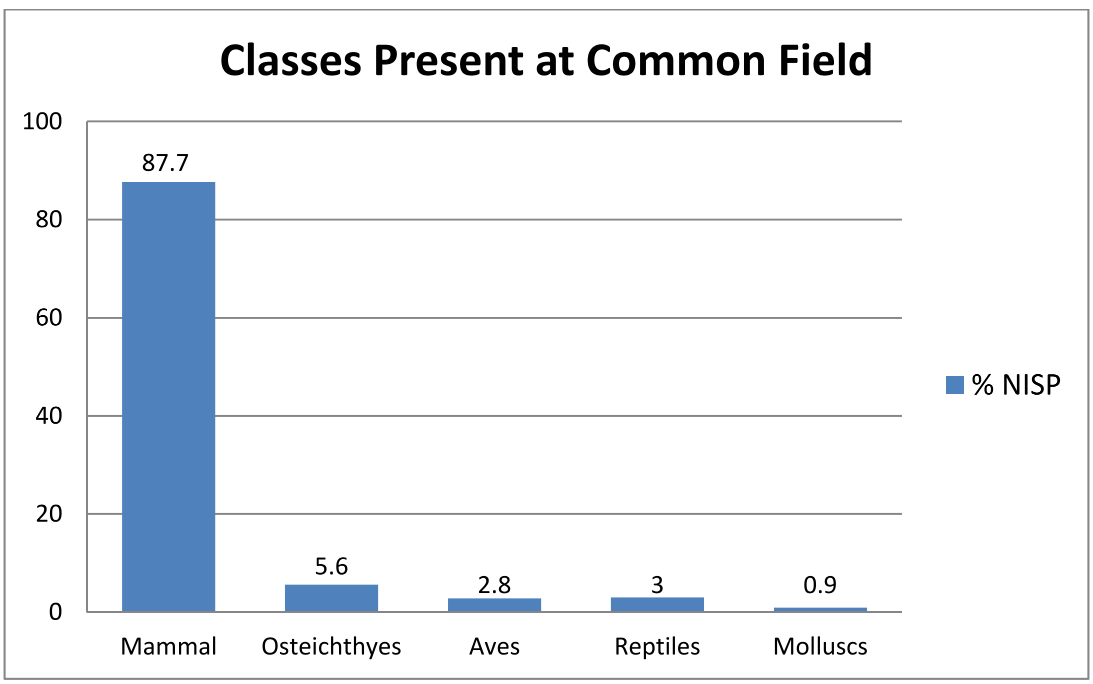

Figure 7.3. Major classes of fauna recovered from Common Field (by percent NISP), minus unidentifiable remains.

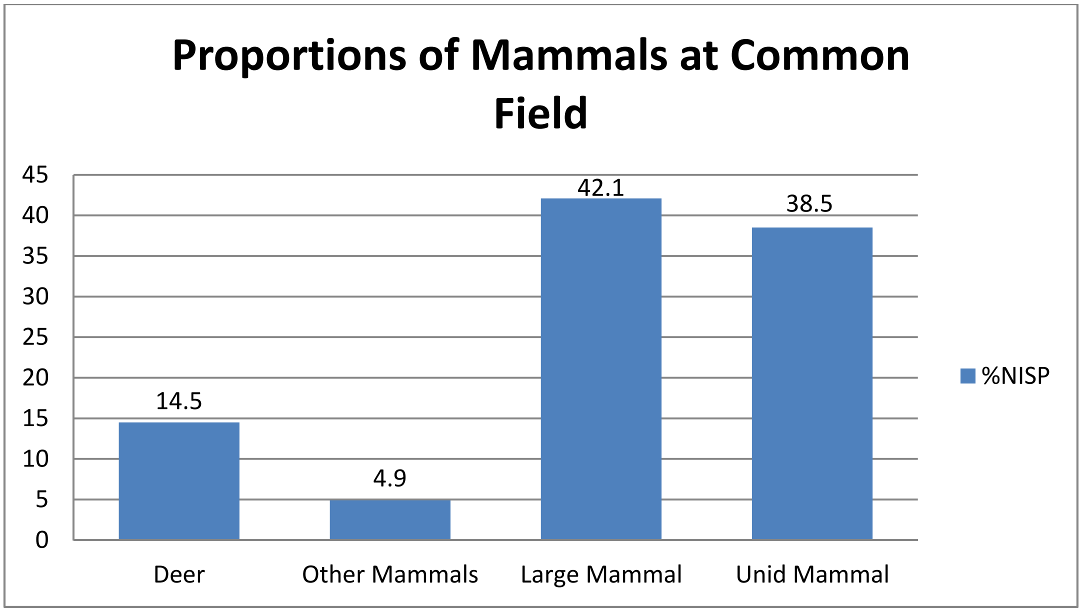

Figure 7.4. Major categories of mammals present at Common Field by percent NISP.

of fragmentation may be the result of post-depositional processes, but as indicated earlier, the relative proportion of identified deer body parts indicate that the assemblage is viable from a preservation standpoint. If post-depositional fragmentation was the primary cause of unidentifiable fragments, there should have been a stronger correlation between body parts and bone density (ie. less dense bones would be more poorly represented). Fragmentation in some cases can be the result of trampling. For example, Feature 13 has a large number of highly fragmented, unidentifiable bone fragments (174 NISP out of 267 total) as well as lots of burned bone (173 NISP). Feature 13 likely represents burned and trampled debris that was cleaned out of a structure.

High degrees of fragmentation in assemblages from other sites has been attributed to cooking practices (Scott 1982), extraction of marrow, and grease processing. In order to extract both marrow and grease, bones have to be pulverized and boiled (in the case of grease), resulting in highly fragmentary assemblages (Munro and Bar-Oz 2005). It is difficult to assess whether then degree of fragmentation and the proportion of unidentifiable remains is typical at contemporaneous sites or if it can be clearly attributed to either trampling or processing for marrow and grease extraction. For example, Tract 15B only has 3 unidentifiable vertebrate fragments out of a total 11,759 NISP (Kuehn 2013). Many of the samples from Cahokia and the American Bottom region were collected without standardized screening methods. In early and mid-twentieth century excavations throughout the Midwest, handpicked materials resulted in very few unidentifiable bone fragments (see Bozell 1993; Buchanan 2007; L. Kelly 1997; Kuehn 2013). Grading unidentifiable bone fragments by size class in the future may aid in differentiating between different kinds of taphonomic processes that lead to fragmentation.

In Figure 7.5, the materials from the Julien (all phases combined) and Old Edwardsville (unscreened and flotation samples combined) sites are compared to Common Field. Julien and Old Edwardsville are more similar to each other than they are to Common Field. Both Julien and Old Edwardsville are non-mound habitation sites, but they are located in different environmental contexts. Julien is located in the Mississippi River floodplain, and Old Edwardsville is located along the edge of the eastern Mississippi River bluffs. Despite these different locations, the inhabitants of both sites had access to diverse faunal resources from both floodplain and bluff contexts. Both sites had much higher percentages of fish remains that Common Field, despite Old Edwardsville being located some distance from the Mississippi

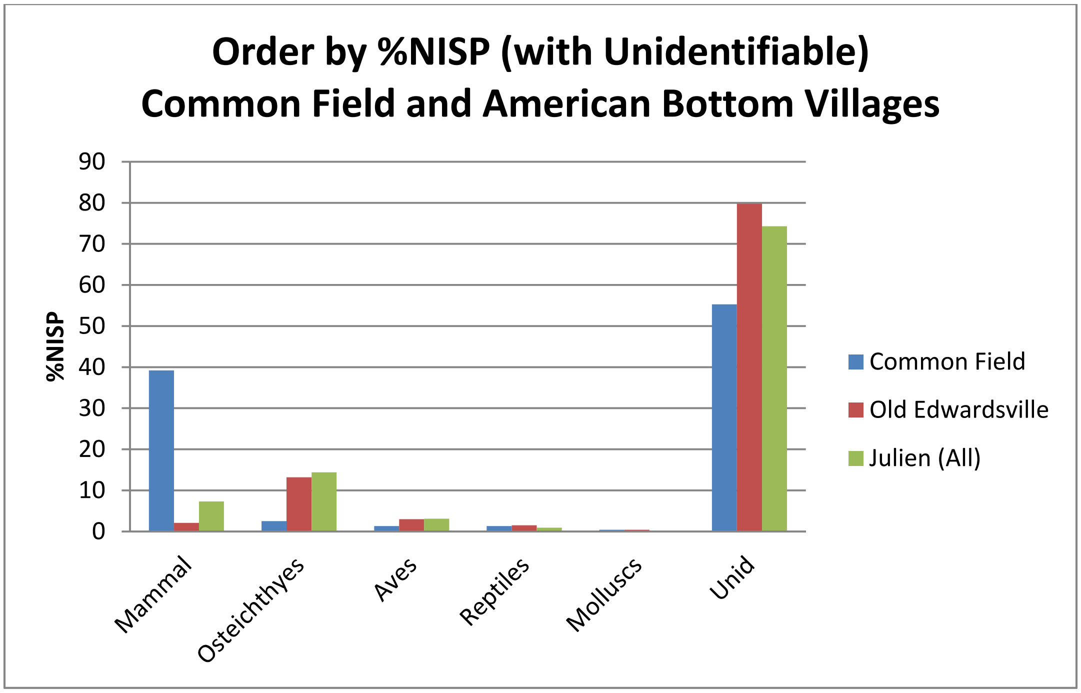

Figure 7.5. Major taxonomic classes present at Common Field, the Old Edwardsville site (Berres 2003), and Julien (Cross 1984).

River. Julien on the other hand is located near a meander scar lake and people living there would have had easy access to aquatic resources. When the Julien materials are separated by phase (Figure 7.6), Common Field is most similar to the Stirling Phase with regards to unidentifiable taxa, but the similarities end there since most frequent class is mammals at Common Field and fish at Julien. Once again, despite being located close to the Mississippi River, Common Field has considerably fewer fish remains than the Stirling Phase occupants of Julien. However, during the phases where Julien is inhabited at the same time as Common Field, there is much less fish exploitation than there had been during the Stirling Phase.

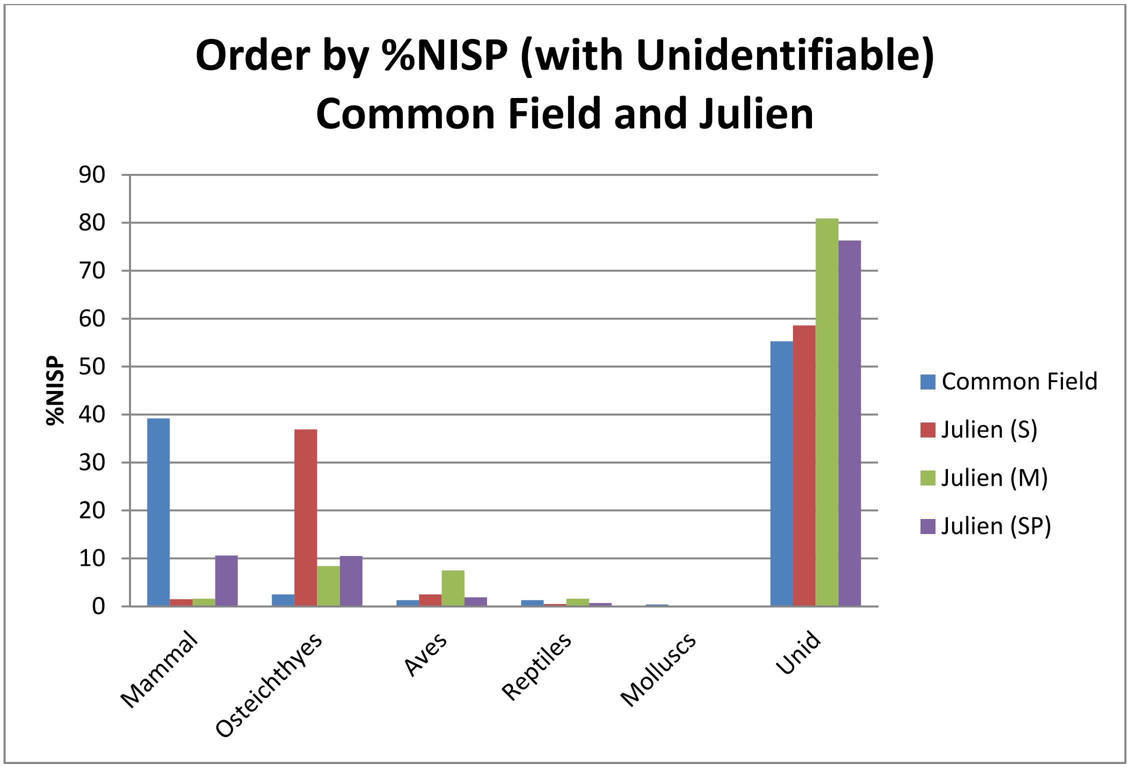

Figure 7.6. Taxonomic classes at Common Field compared with all phases at the Julien site (Cross 1984), including unidentifiable remains.

Unidentified remains were removed from site totals in order to compare the relative proportion of fauna by class. When compared to Stirling Phase (A.D. 1100-1200) American Bottom settlements, neighborhoods at Cahokia, and mound-related assemblages from Cahokia, Common Field most closely resembles the Cahokian assemblages, and not those from outlying settlements like Range or Julien. At Common Field and the Cahokian contexts, the largest contribution comes from mammalian remains. J. Ramey Mound, Tract 15A, and Kunneman Mound have higher proportion of bird remains than the other sites. The higher amount of birds may reflect resource exploitation from swamp, slough, and meander scar lake areas, either for consumption or for the use of bird feather and bones in other activities. The outlying sites have

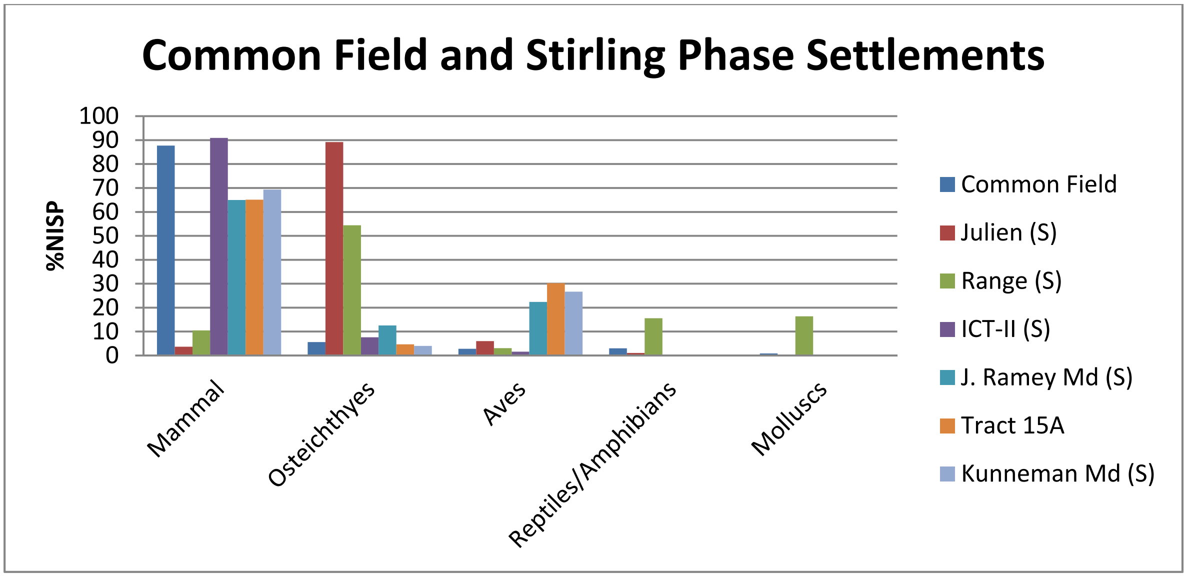

Figure 7.7. Relative proportion of fauna by class from Common Field, Julien (Cross 1984), Range (Kelly 2003), Tract 15A (Miracle 1998), ICT-II (L. Kelly 1997), J. Ramey Mound (L. Kelly 1997), and Kunneman Mound (L. Kelly 1997).

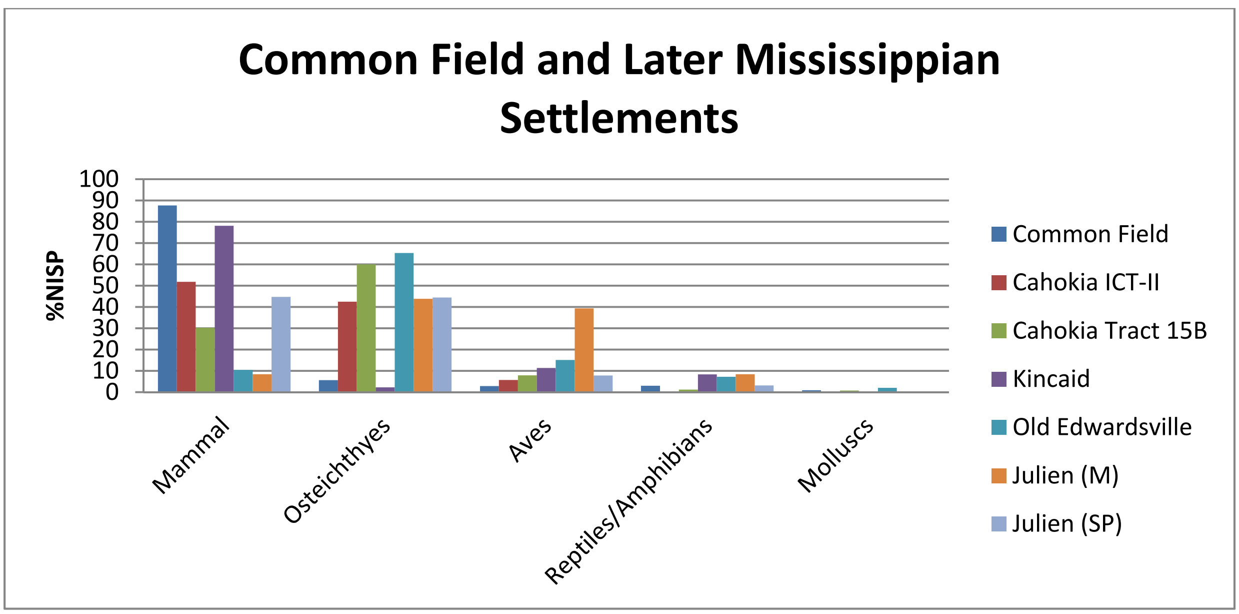

Figure 7.8. Relative proportion of fauna by class from Late Mississippian Common Field, ICT-II (Moorehead Phase; L. Kelly 1997), Cahokia Tact 15B (Kuehn 2013), Kincaid (Buchanan 2007; Buchanan and Gilmore, n.d.), Old Edwardsville (Berres 2003), and Julien (Moorehead and Sand Prairie Phase totals; Cross 1984).

much greater proportions of fish remains, indicating different dietary patterns between people living at mound centers and those living in smaller sites.

When Common Field is compared to contemporaneous (roughly A.D. 1200-1350) assemblages (Figure 7.8), it is most similar to the faunal assemblage from Kincaid Mounds. This similarity is surprising. While many of the American Bottom assemblages are unscreened, they are supplemented with water screened samples and provide evidence of small taxa that may have been missed during hand picking. The materials from Kincaid come from both unscreened (excavations in the 1930-40s) and screened (2006 excavation) contexts. Because a large amount came from unscreened samples from the University of Chicago and WPA excavations, it is not unusual that Kincaid has small proportions of fish, bird, and amphibian remains. What is surprising is that the 100% screened sample from Common Field is so similar to the mostly handpicked Kincaid sample. All of the American Bottom sites have much higher proportions of fish remains and fewer mammal remains. It is difficult to argue what the significance of this pattern may be when the significance lies in the absence of evidence (ie. fish remains). Fish butchery and use practices may account for the lack of some remains (Hoffman et al. 2000; Van Neer and Pieters 1997; Zohar et al. 2001). Van Neer and Pieters (1997) found primarily fish tail, head, and gill elements, which they suggested was evidence of processing remains. Hoffman et al. (2000) also suggest that head elements would be most frequent at processing/disposal sites and portions associated with fillets (pelvic and pectoral girdles) would be more prevalent at habitation sites. The Common Field assemblage contains elements from the head/gill area (NISP = 6), from the postcranial region (NISP = 17, primarily vertebrae), and several unidentifiable fragments (NISP = 12). The difference in cranial/postcranial elements may indicate some degree of butchery, but the sample is so small it is difficult to determine. Another butchery possibility is that fish were processed to such a degree (off site) that very few bones even made it back to habitation areas. This is virtually impossible to determine without locating a butchery site or without having a larger sample size. If this were possible to determine, it would constitute a series of food related practices not documented anywhere else in the pre-Columbian Midwest.

In Figure 7.9, Common Field is compared to the Oneota settlements at the Morton and Norris Farms #36 villages and the Norris Farms #36 cemetery, all of which are located in the

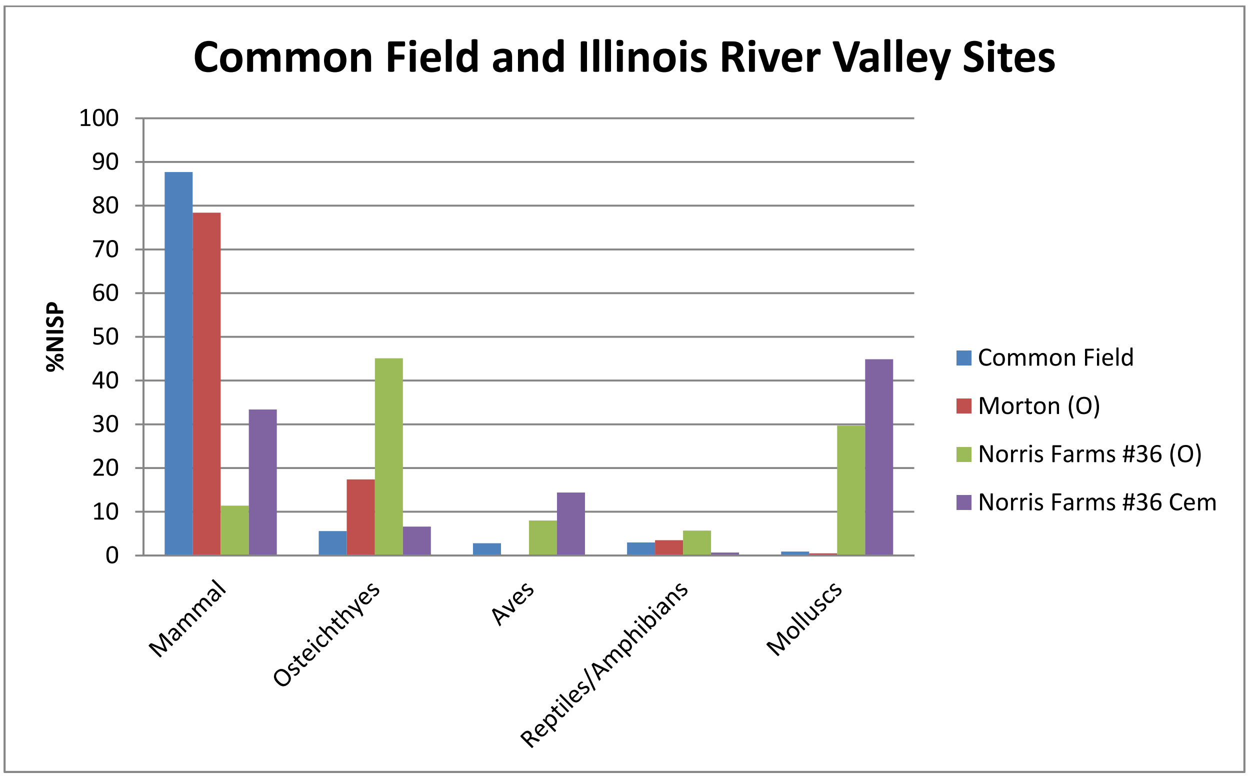

Figure 7.9. Relative proportion of fauna by class from Common Field and the Morton Village (Oneota Phase; Styles and King 1990a), Norris Farms #36 village (Oneota Phase; Styles and King 1990b), and the Oneota Norris Farms #36 Cemetery (Styles and King 1990b).

Illinois River Valley. Common Field is most similar to the assemblage recovered from Morton, while both of the Norris Farms #36 assemblages are considerably different. It should also be noted, that like Common Field, a large proportion of the Morton mammal remains (84.8%) are unidentifiable. Styles and King (1990:57a) indicate that the assemblage from Morton was highly fragmented and weathered, thus leading to such a high proportion of unidentifiable mammal remains. The Common Field assemblage is also highly fragmented, but there is little evidence for weathering, thus suggesting that the fragmentation has a different etiology.

7.3.1 Heterogeneity and Evenness

Using the Shannon Index to measure assemblage heterogeneity provides two benefits not present in simple comparisons of taxa present; first, it takes into account assemblage size and the proportion of taxa within the assemblage; second, this quantification of taxonomic proportions facilitates more rigorous comparisons between assemblages. Indices were calculated by genus[8]. Indices were calculated for the following sites: Common Field (Table 7.4), Moorehead Phase Cahokia ICT-II (L. Kelly 1997) (Table 7.5), Cahokia Tract 15A (Miracle 1998) (Table 7.6), Cahokia Tract 15B (Kuehn 2013) (Table 7.7), Kincaid (Buchanan 2007; Buchanan and Gilmore, n.d.) (Table 7.8), Old Edwardsville Road site (Berres 2003) (Table 7.9), Moorehead Phase Julien (Cross 1984) (Table 7.10), and Sand Prairie Phase Julien (7.11). The result from this analysis (as well as the result of the measure of evenness) is summarized in Table 7.12. In contrast to heterogeneity, the measure of evenness (which is derived from the Shannon index)

[8] Note that in some cases, family was used instead of genus. For some families, such as ducks, differentiating between various genera may be impossible. If a taxonomic family was identified, but no genera within that family, the family was used in calculating the Shannon-Weiner Index under the assumption that at least one genus was present. If however, both a family and a genus within the family were identified during analysis (and reported in publications) then only the identified genus was included in the calculation, not the specimens identified to family.

Table 7.4. Common Field Heterogeity

Genus	NISP	Proportion (*P*)	ln *P*	*P*(ln*P*)
Odocoileus	86	0.5972	-0.5156	-0.3079
Cervus	1	0.0069	-4.9762	-0.0343
Canis	3	0.0208	-3.8728	-0.0806
Vulpes	2	0.0139	-4.2759	-0.0594
Castor	1	0.0069	-4.9762	-0.0343
Mephitis	1	0.0069	-4.9762	-0.0343
Ictidomys	1	0.0069	-4.9762	-0.0343
Sciurus	13	0.0903	-2.4046	-0.2171
Scalopus	2	0.0139	-4.2759	-0.0594
Peromyscus	1	0.0069	-4.9762	-0.0343
Branta	2	0.0139	-4.2759	-0.0594
Meleagris	2	0.0139	-4.2759	-0.0594
Haliaeetus	1	0.0069	-4.9762	-0.0343
Podilymbus	1	0.0069	-4.9762	-0.0343
Anas	1	0.0069	-4.9762	-0.0343
Aythya	1	0.0069	-4.9762	-0.0343
Micropterus	1	0.0069	-4.9762	-0.0343
Ictalurus	4	0.0278	-3.5827	-0.0996
Amia	1	0.0069	-4.9762	-0.0343
Ictiobus	4	0.0278	-3.5827	-0.0996
Terrepene	9	0.0625	-2.7726	-0.1733
Pelecypoda	6	0.0412	-3.1893	-0.1314
Totals	144			1.7244

Table 7.5. Cahokia ICT-II Heterogeneity

Genus	NISP	Proportion (*P*)	ln *P*	*P*(ln*P*)
Odocoileus	250	0.5092	-0.6749	-0.3437
Procyon	1	0.002	-6.2146	-0.0124
Thomomys	4	0.0081	-4.8159	-0.039
Cygnus	4	0.0081	-4.8159	-0.039
Chen	1	0.002	-6.2146	-0.0124
Anas	10	0.0204	-3.8922	-0.0794
Meleagris	11	0.0224	-3.7132	-0.0832
Colinus	1	0.002	-6.2146	-0.0124
Amia	3	0.0061	-5.0995	-0.0311
Lepisosteus	1	0.002	-6.2146	-0.0124
Esox	1	0.002	-6.2146	-0.0124
Ameiurus	126	0.2566	-1.3602	-0.349
Siluriformes	66	0.1344	-2.0069	-0.2697
Catostomidae	5	0.0102	-4.5854	-0.0468
Apoldinotus	2	0.0041	-5.4968	-0.0225
Centrarchidae	5	0.0102	-4.5854	-0.0468
Totals	491			1.4122

Table 7.6. Cahokia Tract 15A Heterogeneity				
Genus	NISP	Proportion	ln P	P(lnP)
Odocoileus	42	0.4468	-0.8056	-0.36
Canis	2	0.0426	-3.1559	-0.1344
Ictiobus	1	0.0106	-4.5469	-0.0482
Ictalurus	1	0.0106	-4.5469	-0.0482
Anas	35	0.3723	-0.9881	-0.3679
Aythya	3	0.0319	-3.4451	-0.1099
Cygnus	6	0.0638	-2.752	-0.1756
Meleagris	3	0.0319	-3.4451	-0.1099
Charadrius	1	0.0106	-4.5469	-0.0482
Totals	94			1.4023

Table 7.7. Cahokia Tract 15B Heterogeneity				
Genus	NISP	Proportion	log P	P(log P)
Odocoileus	699	0.3019	-1.1977	-0.3616
Cervus	2	0.0009	-7.0131	-0.0063
Castor	6	0.0026	-5.9522	-0.0155
Ondatra	9	0.0039	-5.5468	-0.0216
Canis	19	0.0082	-4.8036	-0.0394
Scurius	63	0.0272	-3.6045	-0.098
Geomys	2	0.0009	-7.0131	-0.0063
Peromyscus	3	0.0013	-6.6454	-0.0086
Oryzomys	110	0.0475	-3.047	-0.1447
Procyon	2	0.0009	-7.0131	-0.0063
Lontra	1	0.0004	-7.824	-0.0031
Sylvilagus	2	0.0009	-7.0131	-0.0063
Scalopus	5	0.0022	-6.1193	-0.0135
Podilymbus	1	0.0004	-7.824	-0.0031
Phalacrocorax	55	0.0238	-3.7381	-0.089
Cygnus	32	0.0138	-4.2831	-0.0591
Branta	33	0.0143	-4.2475	-0.0607
Chen	73	0.0315	-3.4578	-0.1089
Anas	47	0.0203	-3.8971	-0.0791
Aix	9	0.0039	-5.5468	-0.0216
Aythya	28	0.0121	-4.4145	-0.0534
Bucephala	4	0.0017	-6.3771	-0.0108
Mergus	5	0.0022	-6.1193	-0.0135
Oxyura	10	0.0043	-5.4491	-0.0234
Haliaeetus	2	0.0009	-7.0131	-0.0063
Meleagris	14	0.006	-5.116	-0.0307
Accipitridae	1	0.0004	-7.824	-0.0031
Colinus	1	0.0004	-7.824	-0.0031
Tympanuchus	1	0.0004	-7.824	-0.0031
Grus	7	0.003	-5.8091	-0.0174
Porzana	41	0.0177	-4.0342	-0.0714
Fulica	18	0.0078	-4.8536	-0.0379
Tringa	3	0.0013	-6.6454	-0.0086
Chelydra	6	0.0026	-5.9522	-0.0155
Sternotherus	1	0.0004	-7.824	-0.0031
Terrapene	68	0.0294	-3.5268	-0.1037
Rana	36	0.0156	-4.1605	-0.0649
Acipenser	7	0.003	-5.8091	-0.0174
Lepisosteus	55	0.0238	-3.738	-0.089
Amia	94	0.0406	-3.204	-0.1301
Esox	2	0.0009	-7.0131	-0.0063
Ictiobus	98	0.0423	-3.163	-0.1338
Moxostoma	1	0.0004	-7.824	-0.0031
Catostomidae	180	0.0778	-2.5536	-0.1987
Ictalurus	23	0.0099	-4.6152	-0.0457
Ameiurus	321	0.1387	-1.9754	-0.274
Micropterus	13	0.0056	-5.185	-0.029
Lepomis	13	0.0056	-5.185	-0.029
Pomoxis	6	0.0026	-5.9522	-0.0155
Aplodinotus	28	0.0121	-4.4145	-0.0534
Buscyon	35	0.0151	-4.1931	-0.0633
Strombus	1	0.0004	-7.824	-0.0031
Anculosa	1	0.0004	-7.824	-0.0031
Campeloma	2	0.0009	-7.0131	-0.0063
Amblema	3	0.0013	-6.6454	-0.0086
Actinonaias	1	0.0004	-7.824	-0.0031
Pyganodon	2	0.0009	-7.0131	-0.0063
Elliptio	4	0.0017	-6.3771	-0.0108
Lampsilis	1	0.0004	-7.824	-0.0031
Megalonaias	1	0.0004	-7.824	-0.0031
Pleuroblema	1	0.0004	-7.824	-0.0031
Quadrula	3	0.0013	-6.6454	-0.0086
Totals	2315			2.7701

Table 7.8. Kincaid Heterogeneity				
Genus	NISP	Proportion	log P	P(log P)
Ursus	1	0.0009	-7.0131	-0.0063
Odocoileus	797	0.7072	-0.3464	-0.245
Puma	1	0.0009	-7.0131	-0.0063
Lynx	2	0.0018	-6.32	-0.0114
Canis	17	0.0151	-4.1931	-0.0633
Castor	7	0.0062	-5.0832	-0.0315
Procyon	13	0.0115	-4.4654	-0.0514
Didelphis	2	0.0018	-6.32	-0.0114
Sylvilagus	3	0.0027	-5.9145	-0.016
Sciurus	53	0.047	-3.058	-0.1437
Meleagris	77	0.0683	-2.6838	-0.1833
Branta	13	0.0115	-4.4654	-0.0514
Bonasa	1	0.0009	-7.0131	-0.0063
Colinus	12	0.0106	-4.5469	-0.0482
Ectopistes	1	0.0009	-7.0131	-0.0063
Cygnus	1	0.0009	-7.0131	-0.0063
Anatidae	6	0.0053	-5.24	-0.0278
Aplodinotus	8	0.0071	-4.9477	-0.0351
Terrapene	97	0.0861	-2.4522	-0.2111
Trionyx	1	0.0009	-7.0131	-0.0063
Pseudemys	1	0.0009	-7.0131	-0.0063
Trachemys	2	0.0018	-6.32	-0.0114
Chelydra	7	0.0062	-5.0832	-0.0315
Sternoratus	1	0.0009	-7.0131	-0.0063
Amia	1	0.0009	-7.0131	-0.0063
Micropterus	2	0.0018	-6.32	-0.0114
Totals	1127			1.2416

Table 7.9. Old Edwardsville Heterogeneity				
Genus	NISP	Proportion	ln P	P(lnP)
Odocoileus	9	0.1071	-2.234	-0.239
Ondatra	2	0.0238	-3.7381	-0.089
Peromyscus	6	0.0714	-2.6395	-0.1885
Geomys	15	0.1786	-1.7226	-0.3077
Anas	3	0.0357	-3.3326	-0.119
Fulica	1	0.0119	-4.4312	-0.0527
Ictalurus	29	0.3452	-1.0636	-0.3672
Micropterus	1	0.0119	-4.4312	-0.0527
Aplodinotus	1	0.0119	-4.4312	-0.0527
Terrepene	1	0.0119	-4.4312	-0.0527
Serpentes	3	0.0357	-3.3326	-0.119
Gastropoda	11	0.131	-2.0326	-0.2663
Pelecypoda	2	0.0238	-3.7381	-0.089
Totals	84			1.9955

Table 7.10. Julien (Moorehead) Heterogeneity				
NTAXA	NISP	Proportion	ln P	P(lnP)
Odocoileus	2	0.0163	-4.1166	-0.0671
Sciurus	1	0.0081	-4.8159	-0.039
Anas	21	0.1707	-1.7678	-0.3018
Anserinae	4	0.0325	-3.4265	-0.1114
Colinus	1	0.0081	-4.8159	-0.039
Gruidae	1	0.0081	-4.8159	-0.039
Amia	49	0.3984	-0.9203	-0.3667
Lepisosteus	3	0.0244	-3.7132	-0.0906
Esox	1	0.0081	-4.8159	-0.039
Ictalurus	16	0.1301	-2.0395	-0.2653
Catostomidae	1	0.0081	-4.8159	-0.039
Micropterus	2	0.0163	-4.1166	-0.0671
Lepomis	2	0.0163	-4.1166	-0.0671
Aplodinotus	2	0.0163	-4.1166	-0.0671
Chelydra	17	0.1382	-1.9791	-0.2735
Totals	123			1.8727

Table 7.11. Julien (Sand Prairie) Heterogeneity				
NTAXA	NISP	Proportion	ln P	P(lnP)
Odocoileus	46	0.0729	-2.6187	-0.1909
Canis	4	0.0063	-5.0672	-0.0319
Procyon	1	0.0016	-6.4378	-0.0103
Ondatra	126	0.1997	-1.6109	-0.3217
Tamias	1	0.0016	-6.4378	-0.0103
Oryzomys	4	0.0063	-5.0672	-0.0319
Geomys	3	0.0048	-5.3391	-0.0256
Anas	13	0.0206	-3.8825	-0.08
Aix	2	0.0032	-5.7446	-0.0184
Aythya	1	0.0016	-6.4378	-0.0103
Colymbidae	1	0.0016	-6.4378	-0.0103
Gruidae	18	0.0285	-3.5579	-0.1014
Cygnus	1	0.0016	-6.4378	-0.0103
Amia	317	0.5024	-0.6884	-0.3458
Lepisosteus	19	0.0301	-3.5032	-0.1054
Esox	3	0.0048	-5.3391	-0.0256
Ictiobus	10	0.0158	-4.1477	-0.0655
Ictalurus	54	0.0856	-2.4581	-0.2104
Pylodictis	1	0.0016	-6.4378	-0.0103
Lepomis	3	0.0048	-5.3391	-0.0256
Aplodinotus	1	0.0016	-6.4378	-0.0103
Chelydra	2	0.0032	-5.7446	-0.0184
Totals	631			1.6706

Table 7.12. Summary of Heterogeneity and Evenness				
	NISP	No. Genera	Heterogeneity	Evenness
Common Field	144	22	1.7244	0.5579
Cahokia ICT-II	491	16	1.4122	0.5093
Cahokia Tract 15B	2315	62	2.7701	0.6712
Cahokia Tract 15A	94	9	1.4023	0.6382
Kincaid	1127	27	1.2416	0.3767
Old Edwardsville	84	13	1.9955	0.778
Julien(M)	123	15	1.8727	0.6915
Julien(SP)	631	23	1.6706	0.5328

assesses how individuals are distributed across taxa (Lyman 2008; Magurran 1988). Evenness will vary between the values of 0 and 1, with 1 indicating that all taxa are equally abundant.

The most heterogeneous assemblage (based on the number of genera present) is from Cahokia's Tract 15B, which is unsurprising given its very large sample size and its likely role as a ritual/crafting area where many different taxa may have been used in ceremonies (Pauketat 2013). The high evenness score also shows that the identified specimens are evenly distributed across genera. The least heterogeneous and least even assemblage is from Kincaid; this lack of diversity is strongly influenced by excavation and collection methods used in the past (Buchanan 2007; Buchanan and Gilmore, n.d.). The Common Field score for heterogeneity falls in the middle of all of the sites calculated, scoring higher than Kincaid, ICT-II, Tract 15A, and Sand Prairie Phase Julien. Despite having a smaller proportion of fish remains than ICT-II and Sand Prairie Julien, and fewer genera than Sand Prairie Julien, Common Field has a more heterogeneous assemblage. Much like the measure for heterogeneity, Common Field also falls in the middle of the evenness scores, scoring higher than Kincaid, ICT-II, and Sand Prairie Julien. While Common Field is more heterogeneous than Tract 15A, it is less evenly distributed. In sum, Common Field is moderately heterogeneous, but not as evenly distributed across genera as other sites.

7.3.2 Measures of Similarity and Difference

Measures of similarity and difference can provide an assessment of how alike site assemblages are by comparing the total number of genera present at sites and the genera they share in common (Lyman 2008). In Table 7.13, Common Field is compared to several of the other sites discussed in this text. The genera used in these comparisons were derived from Tables 7.4-7.11. It is important to note, that neither the Jaccard nor the Sorenson indexes, which are both qualitative, account for the abundance of taxa in the assemblages; they only measure the degree to which assemblages are similar based on overlapping genera. Instead, the Sorenson quantitative index is used to take abundance variations into account.

Table7.13 Indices of Similarity

	Jaccard Index	Sorenson Index	Sorenson Quantitative
Common Field and 15A	29.17	45.16	0.42
Common Field and Tract 15B	27.27	42.86	0.11
Common Field and ICT-II(M)	11.76	21.05	0.28
Common Field and Kincaid	22.5	36.76	0.19
Common Field and Old Edwardsville	25	40	0.17
Common Field and Julien (M)	19.35	32.43	0.07
Common Field and Julien (SP)	18.42	31.11	0.15

Values for Jaccard and Sorenson can range between 0-100, with 0 indicating no similarity of genera, and 100 indicating that the assemblages are identical with regards to genera present. Based on the number of genera present at Common Field and other sites, Common Field shares the greatest similarity with Tracts 15A and 15B at Cahokia. The least similar assemblage comes from Cahokia's ICT-II. What all of these indices show is that despite being from similar environmental contexts, there is considerable diversity in terms of the genera being exploited and utilized. In other words, people living at these sites are making different choices about the kinds of fauna they were choosing to consume and use for other purposes. If choices were driven exclusively by people taking advantage of all taxa present in a particular environment or by people making choices aimed exclusively at maximizing food returns, the similarity indices would be closer to 100.

Sorenson's quantitative index accounts for variability in taxonomic abundances using the formula $2_{cN}/AN+BN$, where *AN* is the summed taxa from assemblage A, *BN* is the summed fauna from assemblage C, and *cN* is the sum of the lesser of the abundances of taxa shared between the assemblages (Lyman 2008; Magurran 1988). When this equation is applied to the same site comparisons as the qualitative assessment, Common Field again shares the greatest similarity with Cahokia's Tract 15A. In contrast to the qualitative indices, Sorenson's quantitative index shows that there is considerably less similarity between Common Field and Tract 15B. This difference has a lot to do with sample sizes and relative abundances of taxa. While Common Field and Tract 15B may have 18 overlapping genera, the abundances of those genera when compared to the overall sample size from both assemblages is small, resulting in the Sorenson quantitative score being much lower than the two qualitative indices.

7.4 Deer Body Part Representation

7.4.1 Deer Food Utility Indices

Following Kelly (1997), deer remains from Common Field were separated into high, medium, and low utility elements (by %NISP) and compared to the proportion of those same elements in a standard deer skeleton (Figure 7.10); teeth, antlers, and tools were removed from the Common Field totals. The low proportion of low utility elements at Common Field is indicative of the removal of lower limb and skull elements at another location. The majority of fragments are from medium utility elements, especially forelimbs.

Figure 7.11 compares food utility indices for Common Field, Stirling Phase assemblages from Cahokia's ICT-II and Tract 15A (L. Kelly 1997), Moorehead Phase deposits at Cahokia's ICT-II (L. Kelly 1997) and Tract 15B (Kuehn 2013), residential and plaza deposits from Kincaid (Buchanan 2007)[9], and a deer. Moorehead and Middle/Late Kincaid assemblages have higher

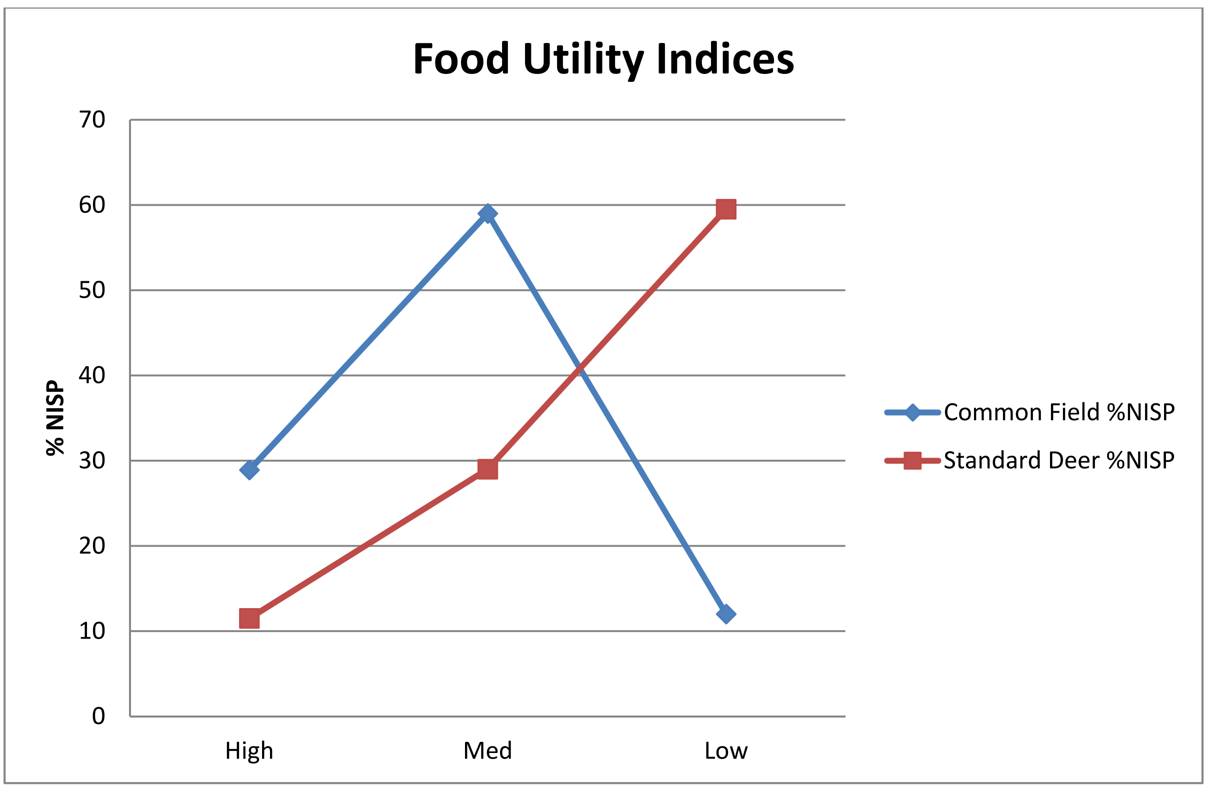

Figure 7.10. Relative proportion of food utility indices of deer remains from Common Field and a standard deer.

[9] The Kincaid totals presented in this chapter are modified from those published in Buchanan 2007. They have been modified to remove tool and tooth fragments.

proportions of low utility elements than earlier Stirling Phase assemblages from Cahokia. While the increase is slight in most cases (excepting Moorehead Phase ICT-II), this may signal a decrease in the rate of lower limb processing and an increase in lower limb utilization. Common Field has a higher proportion than the other Moorehead assemblages, again with the exception of ICT-II which Kelly (1997) suggests is a non-elite occupation and may have had higher proportions of low utility elements because the medium and high elements were being transported elsewhere. Overall, Common Field, Moorehead Phase, and Kincaid deposits have high proportions of medium utility elements, followed by high utility elements, and small proportions of low utility elements. Kelly (1997) has suggested for Cahokia that the increase in

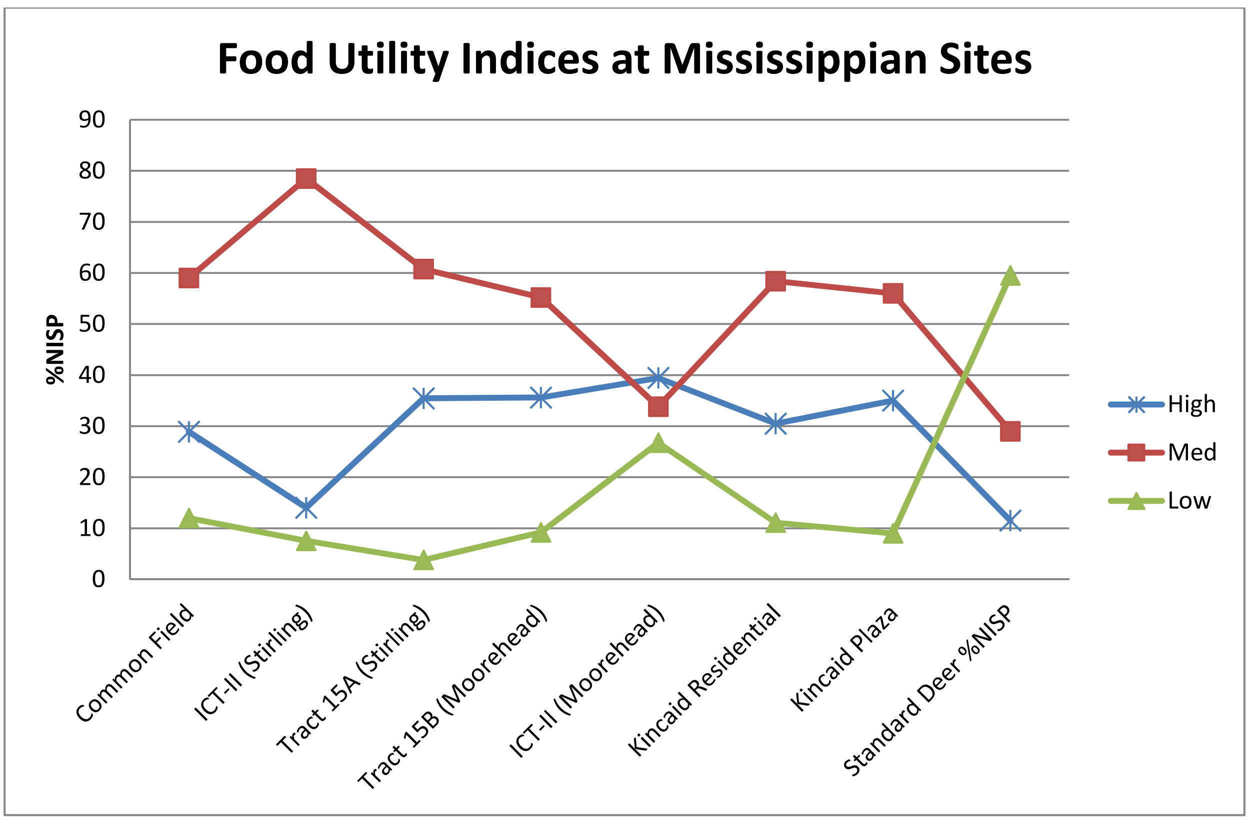

Figure 7.11. Relative proportion of high, medium, and low utility elements at Common Field, ICT-II (L. Kelly1997), Tract 15A (L. Kelly 1997), Tract 15B (Kuehn 2013), Kincaid (Buchanan 2007), and a deer (from L. Kelly 1997:Table 4.5).

low utility elements from the Stirling to Moorehead Phases may have been indicative of change sociopolitical relationships in the American Bottom region as Cahokian neighborhoods were no longer being provisioned with medium utility elements. Such a provisioning scenario may not make as much sense at Common Field where there is not a known hinterland population that would have been provisioning the mound center prior to palisade construction. Rather, the slightly higher proportion of low utility elements combined with the somewhat lower amounts of medium and high utility elements is suggestive of some body part butchery (since the amount of low utility elements in no way approaches that of a complete deer), but increased utilization of low food utility body parts in addition to high meat and marrow bearing elements.

7.4.2 Deer Anatomical Units

As discussed in Chapter 5, quantifying deer anatomical units is not as frequently used in the Midwest as it is in parts of the southeastern US. In contrast to food utility indices (which focus on the food potential of deer body parts), deer anatomical units (Scott 1982) allow for an exploration of butchery practices as certain body parts may have been left behind in the field, or others removed and transported elsewhere. Further, Scott (1982) suggests that anatomical units best replicate the way in which a deer carcass was likely broken down. Despite this difference between anatomical units and food utility units, there is some overlap in the analytical categories as hindlimbs are generally high utility (with the exception of the pelvis which is considered medium utility), forelimbs and the axial skeleton are medium utility, and the skull and lower limbs are low utility.

The analysis of deer anatomical units at Common Field closely mirrors the results from the food utility indices. The majority of the deer remains are comprised of fore (medium utility),

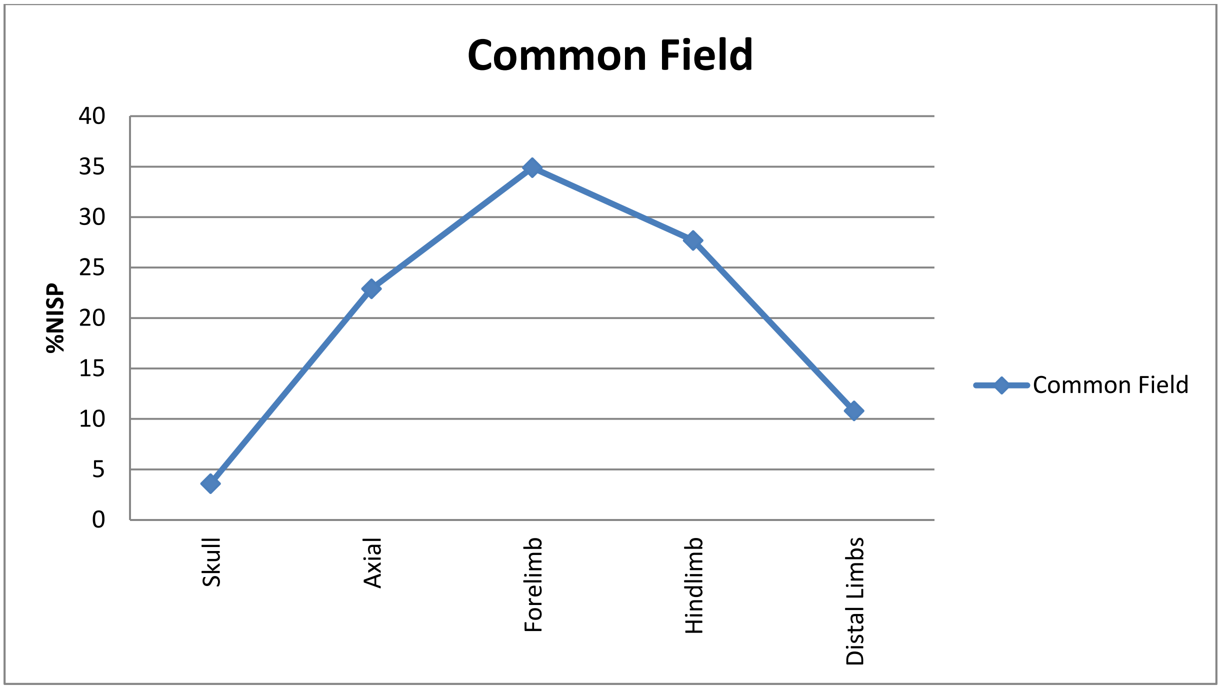

Figure 7.12. Proportional representation of deer anatomical units from Common Field.

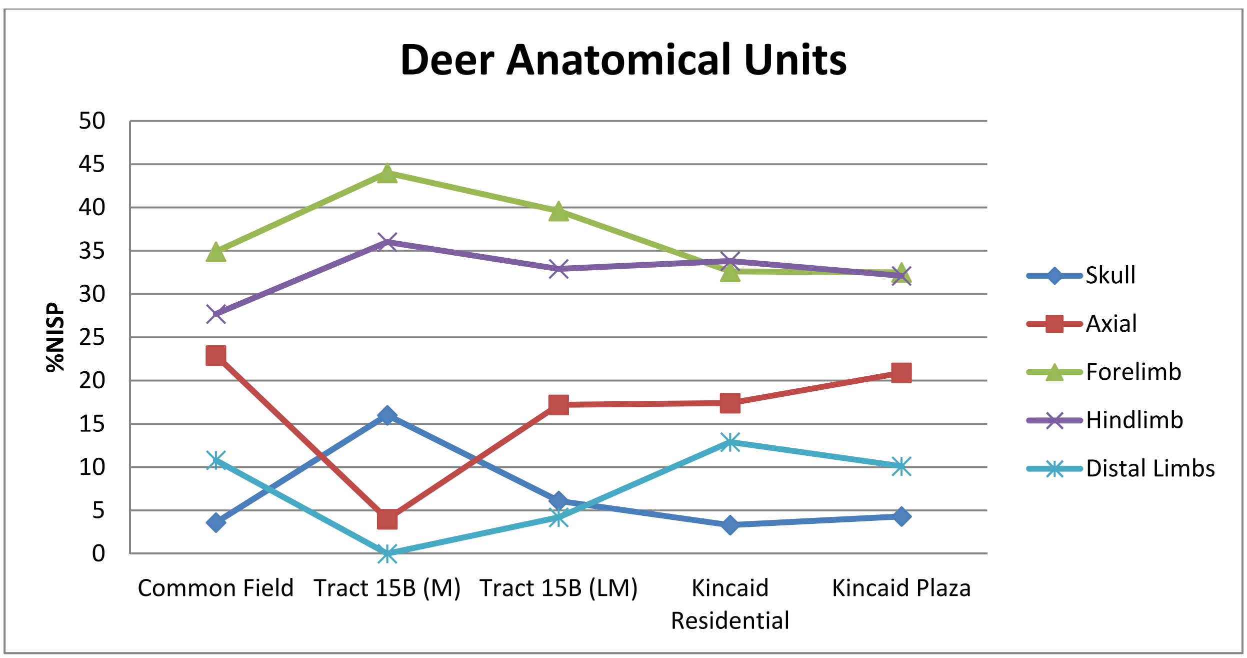

Figure 7.13. Proportional representation of deer anatomical units from Common Field, Tract 15B (Moorehead and Late Mississippian; Kuehn 2013) and Kincaid (Buchanan 2007)[10]

[10] The Kincaid totals presented in this chapter are modified from those published in Buchanan 2007. They have been modified to remove tool and tooth fragments.

hindlimb (high utility), and axial (medium utility) elements, with much smaller proportions of skull and lower limb (low utility) elements. When compared to contemporaneous assemblages from Cahokia's Tract 15B and Kincaid also have high proportions of fore and hindlimbs. The Moorehead Phase assemblage from 15B is the most different from the other sites, but this difference may be due to small sample size or to field butchery practices that resulted in fewer cranial and lower limb elements being brought back to the site. In all cases, the poor representation of lower limbs and cranial elements is highly suggestive of field butchery practices in which those portions of the skeleton are removed prior to the carcass being brought back to the site. What is not captured in the anatomical unit analysis is the fact that only one pelvis fragment (1.2% total NISP) was recovered from Common Field; at Tract15B, pelvis is 1.8% (12/669 NISP) of the Late Mississippian Tract 15B assemblage and 2.5% (7/277 NISP) of the Kincaid plaza assemblage. In contrast, pelvis is 8.7% (29/334 NISP) of Kincaid's residential assemblage. It is possible that in addition to field processing the skull and lowerlimbs, some Mississippian peoples during this time also removed the pelvis in the field. Most of the pelvis is low density bone, thus attrition may play a role in the lack of pelvis fragments, although the acetabular portion has a similar bone density to the distal femur and the proximal humerus (for example).

7.5 Summary

The results from the analysis of faunal remains from Common Field and their comparison to earlier and contemporaneous sites in the Midwest reveal a couple of patterns. First, in some ways, the Common Field assemblage is very similar to others. Deer butchery practices (food utility indices and anatomical units) at Common Field are comparable to those at Cahokia's Tract 15B and Kincaid Mounds. There is an emphasis on medium utility parts as well as fore and hindlimbs and axial skeletal elements. Low utility elements, skulls and lower limbs, are present in very low percentages and likely reflect offsite field dressing or butchery practices that moved those elements to other portions of the sites. Additionally, the pelvis may also have been discarded or utilized elsewhere on site.

Second, the high degree of unidentifiable remains from Common Field is unusual. Other sites with screened or flotation samples also have a high number of unidentifiable remains, whereas some of the American Bottom and Kincaid assemblages that were collected without the benefit of standardized screening have very few unidentifiable remains. A high degree of bone fragmentation can lead to unidentifiable remains. With the lack of weathering and the low correlation between bone density and survivorship at Common Field, bone fragmentation may be the result of non-natural taphonomic biases, ie. human-mediated fragmentation. Frequently, high degrees of bone fragmentation have been attributed to crushing of long bone shafts for marrow and the crushing and boiling of cancellous bone for grease. It is possible that the people of Common Field were likely processing large mammals for resources other than meat and hides. However, future research needs to explore whether or not trampling is another factor that led to the high degree of fragmentation.

Third, of the taxa present at Common Field, very few are from fish. This is highly unusual considering Common Field's location within the floodplain of the Mississippi River. Low proportions of fish remains are more common in Stirling Phase assemblages from the American Bottom than Moorehead Phase components that were contemporaneous with Common Field. High percentages of fish remains in Moorehead Phase deposits have been argued as evidence for overexploitation of woodland habitats (leading to fewer woodland fauna) and increased exploitation of remnant channel scar lakes near habitation areas. This explanation however does not necessarily help to understand why the Common Field site, situated approximately a mile away from the Mississippi River, does not have higher percentages of riverine resources or taxa that may have been found in nearby swampy areas.

And fourth, when the diversity of taxa from Common Field is compared to other sites, Common Field is more heterogeneous than Cahokia's ICT-II and Tract 15A, Kincaid, and the Sand Prairie Phase component at Julien; it is less heterogeneous than Tract 15B, the Old Edwardsville Site, and the Moorehead Phase component at Julien. The Common Field assemblage is also somewhat evenly distributed across genera although less so than many of the sites discussed. With regards to taxonomic similarity indices based on identifiable genera, Common Field is most similar to Cahokia's Tract 15A.

Chapter 8 – Ceramic Analysis Results

An analysis of ceramic materials from the 1980 UMC surface collection and the 2010-2012 excavations was undertaken in order to explore the diversity of techniques and practices utilized by the inhabitants of the Common Field site[11]. The results of those analyses are presented in this chapter. My initial goal was to compare intrasite, household[12] variability in ceramic practices as well as document and interpret any changes in practices that may have changed over time. However, as discussed in Chapter 6, most of the domestic features from Common Field have been severely impacted by the 1979/1980 flood and subsequent plowing. As a result, there were few stratified deposits present so feature assemblages were pooled for analysis. Additionally, radiocarbon dates (Chapter 6, Table 6.5) and the presence of temporally diagnostic ceramics (discussed below) all point to a relatively short occupational history at Common Field, compounding the difficulty in determining whether or not practices changed through time[13]. In order to partially address the lack of time depth, the result of ceramic analyses at Common Field were compared to chronologically earlier and contemporaneous sites in the Midwest.

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[11] Materials from University of Missouri research will be noted as "UMC," materials from my own excavations will be "IU," and combined data will simply be labeled as coming from Common Field. However, many of the UMC materials were missing catalog numbers and provenience information; those sherds were labeled as "IU-#" and the sherds from my excavations have catalog numbers that reference their context (e.g. a rim from Feature 13 will be F13-#).

[12] Household in this instance refers to a physical structure (ie. a house), not the social/economic unit

[13] While there are multiple structure wall rebuilds at Common Field, the deposits present within basins and on house floors will necessarily date to the final use occupation of the structure (unless the footprint of the house was shifted or reoriented, leaving some areas from early use undisturbed). Deposits in Mississippian domestic house basins do not typically represent the accumulation of materials from repeated reuse of the structures; rather basin fills and deposits are the accumulation of materials that were deposited (through both natural and cultural transformation processes) after structures were abandoned. An example of an exception to this pattern can be seen at the Pfeffer site, where two temples were dismantled, filled in, and then later partially re-excavated and used again (Pauketat 2013:173-180).

In Chapter 2 I argued that people living in warscapes would experience tensions between learned ceramic practices (embodied knowledge, techniques shared among communities of practice) and the changing realities of the world they lived in. I hypothesized that these tensions could have been materialized in a number of different ways and at a number of different scales. In this chapter, I present the results of my analysis of body and rim sherds recovered from Common Field. The analyses include those aimed at practices that provide clues about macro- or regional scale changes in practices (vessel morphology, iconography) and micro or intra-site scale interactions and practices (types of vessels used, vessel construction techniques). The results of my analyses will be compared to ceramic analyses from the Common Field region (Bauman site, Saline Locality), American Bottom sites (Cahokia ICT-II, Tract 15 A, Tract 15B, East Palisade, Edwards' Mound, East St. Louis, Julien, Lawrence Primas), Lower Ohio River valley sites (Kincaid, Angel), a Missouri River valley site (Dampier), and a southeast Missouri site (South Cape) when applicable.

8.1 Assemblage Summary

A total of 2355 (21947.7g) ceramic objects were recovered from the UMC surface collection and 2010-2012 Indiana University excavations. These materials are summarized in Table 8.1 and do not include daub and burnt clay (those are noted in Table 6.1). The total number of ceramics present in the UMC collection that I reanalyzed deviates drastically from the total number of sherds presented in Ferguson's (1990) thesis. She notes (1990:63) that 14104 pottery sherds were collected from the surface of Common Field, 6814 of which formed the basis for her analysis. As noted in Chapter 4 (section 4.2.1), Ferguson mentioned that the facility where sherds were kept experienced a flood and some materials were never recovered;

it is unclear if that is what happened to the majority of the sherds or if they have been placed elsewhere. Regardless, less than 5% (600/14104) of the sherds reported for Common Field were transferred to IU for my reanalysis.

Over 80% of the body sherds recovered from the UMC and IU projects are shell-tempered (N = 1707), with grog (N = 111) and shell-grog (N = 256) combinations accounting for less than 10% each (Figure 8.1)[14]. The large proportion of shell-tempered sherds is unsurprising

Table 8.1 Ceramic Artifacts Summary

	UMC		All IU		Surface/Backdirt/ General Collection		Units/Fea.1/ Fea.3	
	N	Wt. (g)	N	Wt. (g)	N	Wt. (g)	N	Wt. (g)
Rim Sherds	183	7402.3	92	2095.7	30	463.6	21	133.7
Body Sherds	414	5766.9	1656	6314.1	310	1038	451	1000.6
Pottery Discs, Handles, etc.	3	284.2	7	84.5	4	39.2	0	0
Total	600	13453.4	1755	8494.3	344	1540.8	472	1134.3

Table 8.1 Ceramic Artifacts Summary (cont.)

	Fea.9		Fea. 10		Fea. 11		Fea. 13/13b	
	N	Wt. (g)	N	Wt. (g)	N	Wt. (g)	N	Wt. (g)
Rim Sherds	5	109.4	6	18.9	1	20.9	5	80.6
Body Sherds	90	283.5	180	547.8	49	177.5	80	277.8
Pottery Discs, Handles, etc.	0	0	0	0	0	0	2	42.3
Total	95	392.9	186	566.7	50	198.4	87	400.7

Table 8.1 Ceramic Artifacts Summary (cont.)

	Fea. 22		Fea. 24		Fea. 25		Fea. 26	
	N	Wt. (g)	N	Wt. (g)	N	Wt. (g)	N	Wt. (g)
Rim Sherds	2	11.2	0	0	18	1108.2	4	149.2
Body Sherds	27	107.4	1	2.4	383	1226.2	85	1652.9
Pottery Discs, Handles, etc.	0	0	0	0	1	3	0	0
Total	29	118.6	1	2.4	402	2337.4	89	1802.1

[14] Vessel appendages (feet, handles) and non-vessel ceramic objects are included in these totals.

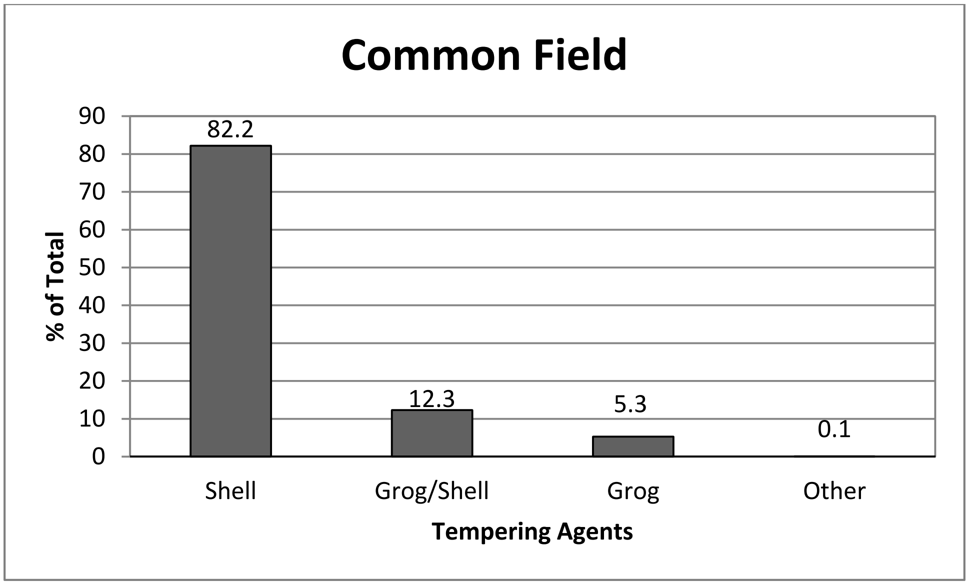


Figure 8.1. Tempering agents in body sherds.

given that the dominant tempering agent associated with Mississippian Period ceramic practices in the Midwest is burnt, crushed mussel shell (Phillips et al. 1951). However, acidic soils can leach exposed shell causing sherds to become friable. Many of the sherds recovered from excavation crumbled after exposure. Other tempers include limestone and mixtures of grog-limestone and shell-grog-limestone. These other tempers account for less that 0.1% (N = 3) of all Common Field body sherds.

The majority of body sherds (N = 1747) from Common Field have plain or eroded surfaces (Figure 8.2). This large proportion is common in Mississippian assemblages because many of the decorative additions to vessels are made on rims near vessel orifices. When vessels fragment, the decorated rims are identifiable as rims from a particular kind of vessels whereas the majority of the undecorated body and base fragments are unidentifiable. Plain/eroded sherds are followed by slipped (N = 188), cordmarked/fabric impressed (N= 67), slipped and

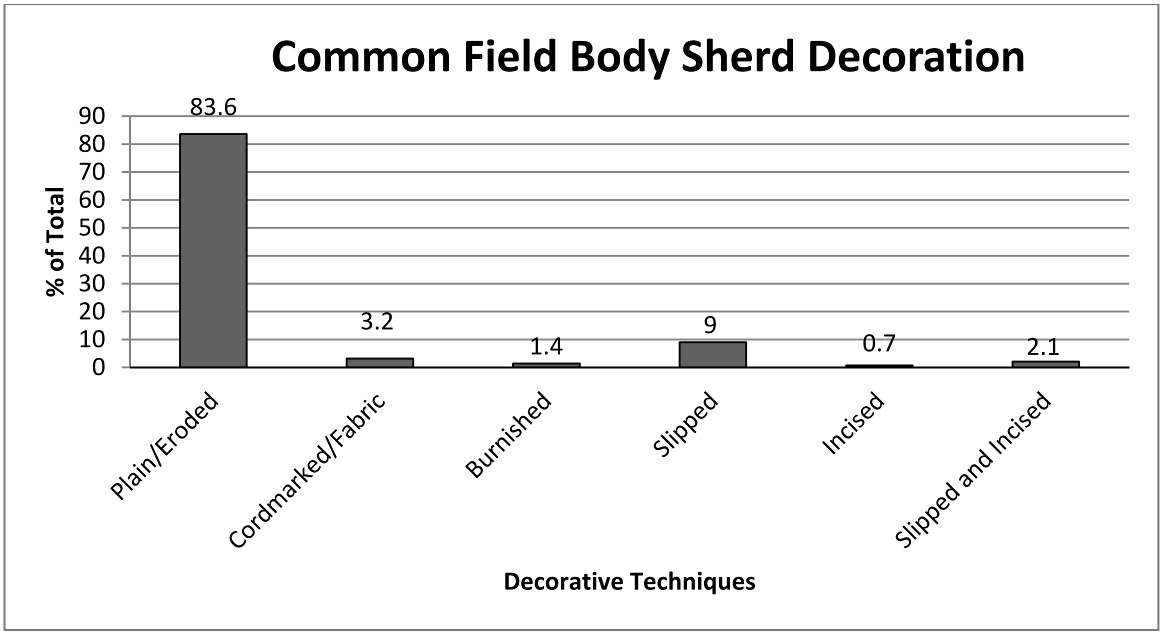


Figure 8.2. Decorative techniques present on body sherds.

incised (N = 43), burnished (N = 30), and incised decorative techniques (N = 13)[15]. Three different slip color categories were used: black/brown, red, and white (Figure 8.3). Black/brown slip (N = 167) was the most common used followed by red (N = 47) and white (N = 4). Black/brown slip was likely made from a mixture of clay and charcoal, red slip from hematite rich clay (Holley 1989:12-13), and white may have been made from galena/clay mixture.

Three incised sherds deserve mention (Figure 8.4a); all three are incised with the ladder motif typically seen on Ramey incised jars and beakers. Two of the sherds are from unknown vessel forms and one is slipped red and the other black. The third sherd appears to come from the shoulder of a plate; this may be a unique example pairing the ladder motif on a plate (see also section 8.3.1).

[15] The total number of decorated sherds differs from the total number of body sherds in Table 8.1 because some sherds had decorations applied to both the interior and exterior surfaces, thus counting twice in the Figure 8.2 totals and in the text.

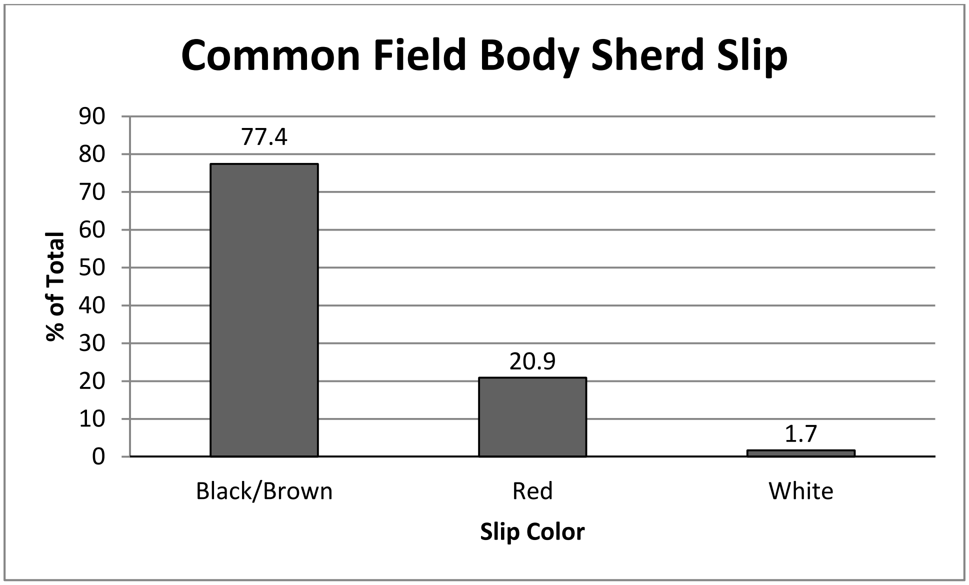


Figure 8.3. Proportion of slips used on body sherds.

8.2 Vessel Appendages and Ceramic Objects

Several unattached vessels appendages were recovered from Common Field. Attachments are divided into closed (attached to the vessel at two points) and open (attached at one point) categories (following Hilgeman 2000). All handles from Common Field are loop-style, not strap. Loop handles are round in cross-section. Jar handles appear to be primarily appliqued (welded to the vessel body with additional clay) rather than riveted (inserted into a hole in the vessel wall) (Figure 8.4b). Two jar rims missing their handles do not show any evidence of a hole and insertion construction technique. Several jar rims with handles still attached extend above the horizon of the rim and thus, could not have been riveted into the rim (Figure 8.4c). There are also examples of riders or adornos attached to both the handle and rim. There are two exceptions to trend of appliqueing rims. First, a jar handle with three associated body sherds; this handle clearly had a tab that was inserted into the body sherds (which refit to make a hole). Second, one shell-tempered vessel from the UMC surface collection had a grog-tempered handle. In total, six isolated handles appear to have come from jars, while 10 jar rims have handles still attached, and two rims have evidence that there were once handles attached. While all of the handles are loop-style, four handles are also grooved; three have the groove present on the superior/exterior portion of the handle creating small nodes and the fourth has the groove running down the entire length of the handle. Based on width, these grooves could have been made by impressing a stick, dowel, or fingertip into the handle.

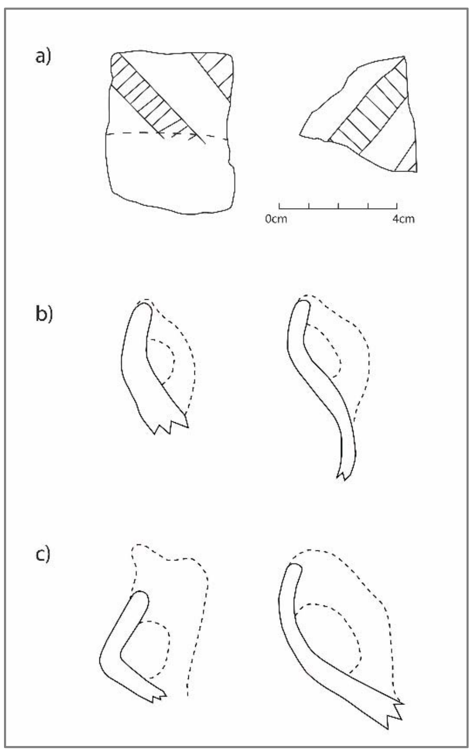


Figure 8.4. a) two decorated sherds with the ladder motif (IU-145, IU-146; b) examples of appliqued handles (IU-95, IU-97); c) example of handles that extend above the rim (IU-100, IU-104).

Open attachments take the form of lugs, beaker handles, lid handles, and vessel feet. Lugs are present on four jars, two bowls, one beaker, one seed jar, and two vessels that were not identifiable to shape. All of the lugs are rounded and most appear to be extruded from the vessel rim, not appliqued. However, one jar lug was appliqued; the marks from smoothing over the added clay are visible on the exterior surface of the lug and the vessel. Another lug is positioned part of way down the rim/body of a seed jar rather than protruding from the rim. There is also one possible effigy rim attachment in the UMC collection that looks like the tail of a duck/bird effigy bowl.

Six isolated beaker handles and one broken handle still attached to the vessel body are present. Beaker handles appear to have been riveted to vessel bodies. Several handles have beveled tabs at one end that are smaller than the rest of the handle. Additionally, one beaker rim has a clear hole in the vessel wall where one would expect a handle to be located. One handle is slipped black, one is brown slipped and burnished, and another is burnished. Beakers from the American Bottom are often slipped and incised. None of the beaker fragments have any incised lines. However, a personal collection from the site had several sherds from a red slipped beaker with an incised cross-in-circle and ladder motif (cf. Pauketat 1998:Figure 7.38).

Eight ceramic objects have been tentatively identified as vessel feet or lid handles. All of these grog or shell-grog appendages are approximately 3-4 cm long and 2-3cm thick. It is unclear if these appendages are handles for funnel lids or feet for another vessel type; both lids and footed vessels have been recovered at Common Field. In addition to these eight appendages, a stumpware foot was collected by UMC from the surface of the site. It is unclear what part of the site this piece of stumpware came from.

There are three pottery discs in the assemblage. All are tempered with shell and none have perforations. Two of the discs are undecorated. One disc is made from an incised plate and still retains the incised triangles similar to other incised plates. Discs with drilled holes or perforations are thought to be spindle whorls used in the production of thread (Alt 1999). Discs without holes may have been used as gaming pieces.

8.3 Vessels

Rims were divided into the following vessel categories: jars, plates, bowls, bottles/beakers, pans/platters, funnels/coarse ware, miniatures, other/indeterminate (Table 8.2). Each category will be discussed in detail below.

Table 8.2 Common Field Vessel Assemblage

	Shell-Tempered		Shell/Grog-Tempered		Grog-Tempered		Other/Indeterminate			
Vessel Tyle	N Rims	Wt. (g)	N Rims	Wt. (g)	N Rims	Wt. (g)	N Rims	Wt. (g)	Total N Rims	Total Wt. (g)
Bottle/beaker	7	216.1	0	0	2	92.8	0	0	9	308.9
Bowl	10	175.3	6	100.7	3	30	0	0	19	306
Plate	59	1988.2	26	870.1	4	196.3	0	0	89	3054.6
Jar	38	1282.7	4	182.2	1	16.7	1	38.1	44	1519.7
Funnel/Coarse	0	0	26	1962.5	15	1371.1	1	6.7	42	3340.3
Pan/Platter	6	506.5	0	0	0	0	0	0	6	506.5
Mini	8	79.6	1	1.1	0	0	0	0	9	80.7
Indet/Other	45	300.2	7	43.5	2	4.2	3	33.4	57	381.3
Total	173	4548.6	70	3160.1	27	1711.1	5	78.2	275	9498

The primary tempering agent used by Common Field potters was carbonized shell, followed by shell-grog and grog (Figure 8.5). Additional tempers included grit-grog, limestone, shell-limestone, grog-limestone, and an unidentifiable temper; each of these is represented by one rim sherd. Prior to the Mississippian settlement at Common Field, ceramics from Late Woodland deposits in the Saline Locality were tempered with grog and clay (Keslin 1964).

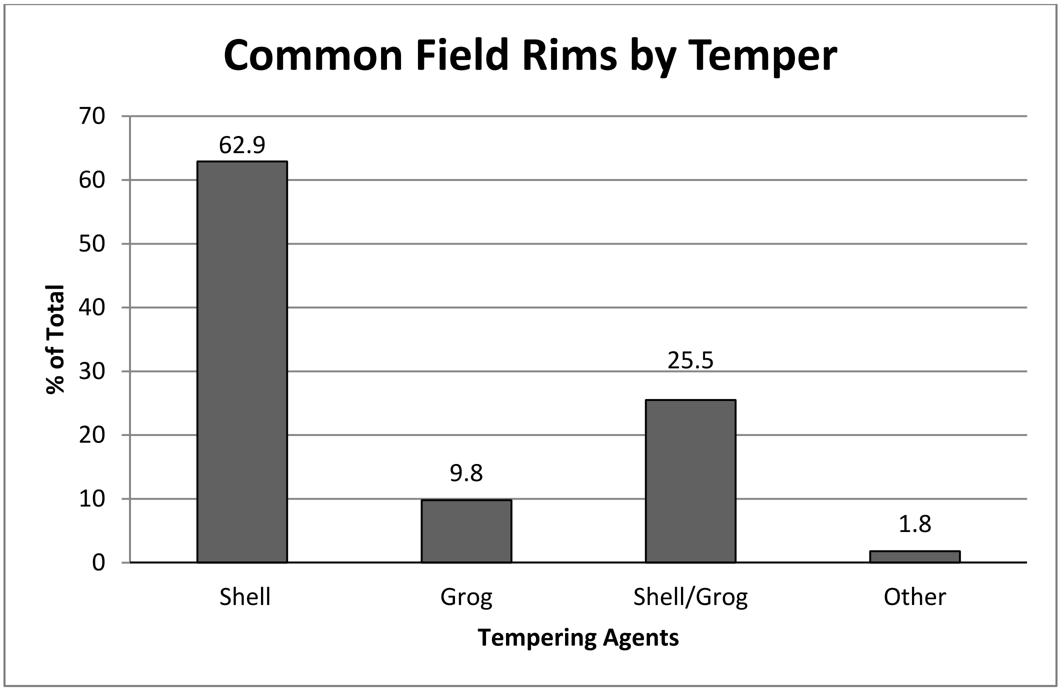


Figure 8.5. Proportion of different tempering agents used in the construction of Common Field vessels.

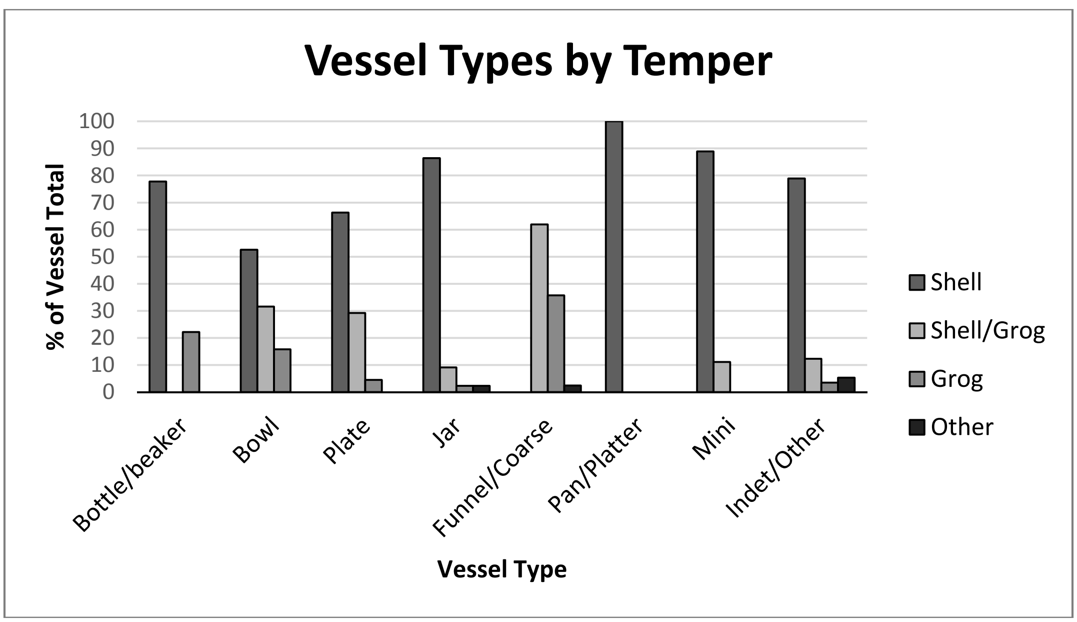


Figure 8.6. Vessels by temper type.

Ceramics from the Bauman site (Voigt 1981) are reported to have been shell-tempered; there is no mention of other tempering agents. Shell was the most common tempering agent for all vessel types except for funnels/coarse wares (Figure 8.6). Combinations of shell and grog are most common in bowls, plates, and funnels/coarse. The implications of these vessel and temper combinations are discussed in more detail below.

When compared to other Mississippian sites, Common Field has fewer rims tempered with shell and a greater proportion of shell-grog tempered vessels (Figure 8.7 and 8.8)[16]. The sites in Figure 8.7 represent a diversity of site types from ceremonial locations (Tract 15B), to elite domestic sites (Tract 15A, East St. Louis), to non-elite domestic sites (Old Edwardsville), to a possible market site (Dampier). The sites in Figure 8.8 also represent a number of different site types: ceremonial (Tract 15A and B, Mound 34, Edwards' Mound, East Palisade, Kincaid), elite domestic (Kincaid, ICT-II, East St. Louis), non-elite domestic (Kincaid, Julien, Lawrence Primas, South Cape). All of the sites in Figures 8.7 and 8.8 had close to 80% of their vessels tempered with shell, with the exception of the Lawrence Primas site. Common Field and Lawrence Primas are also the only two sites that have more than 20% of the rim sherds tempered with shell-grog. It is highly probable that there the presence of shell-grog is under identified at other sites. Several authors note the difficulty in differentiating shell-grog from shell-tempered pottery since shell-grog can consist of mixtures of shell and grog, grog made from crushed shell-tempered sherds, or a combination of the two mixtures (Milner 1984b:129;

[16] Many other sites in the Mississippi River valley have published ceramic analyses that could be included in this comparison. However, many of these analyses rely on the type variety system developed by Phillips, Ford, Griffin (1951; see also Phillips 1970). In these cases, I have to assume that rims categorized into certain types have the temper that was in the original definition and that the definition only included a single temper; several types defined in Phillips et al. have multiple tempers listed. Other site reports and publications do not provide totals for tempering agents because it is taken as a given that Mississippian pottery is predominantly shell-tempered.

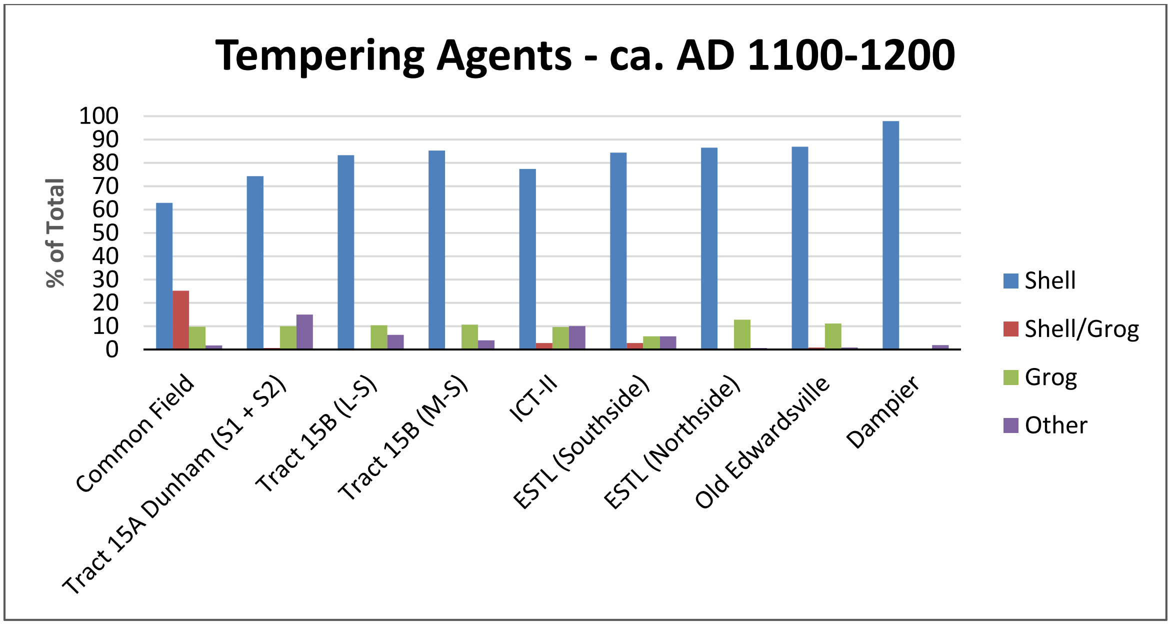


Figure 8.7. Proportion of tempering agents utilized at Tract 15A/Dunham Tract (Pauketat 1998), Tract 15B (Pauketat 2013b), ICT-II (Holley 1989), East St. Louis Mound site Southside (Pauketat 2005a), East St. Louis Mound site Northside (Fortier 2007), the Old Edwardsville Road site (Jackson and Millhouse 2003), and Dampier (Harl et al. 2011).

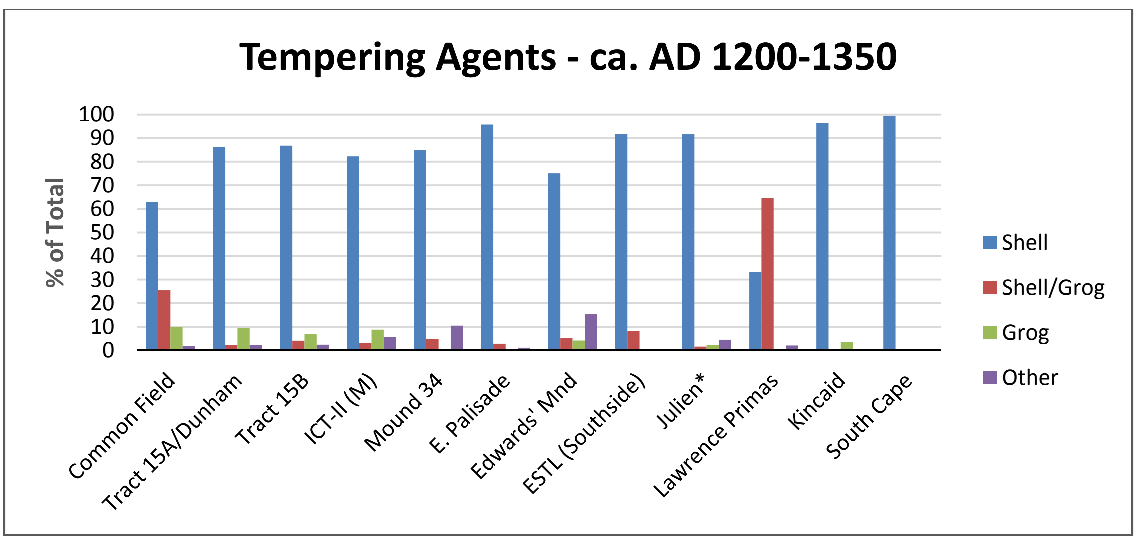


Figure 8.8. Proportion of tempering agents utilized at Cahokia's Tract 15A/Dunham Tract (Pauketat 1998), Tract 15B (Pauketat 2013b), ICT-II (Holley 1989), Mound 34, East Palisade, Edwards' Mound (Hamlin 2004), East St. Louis Mound site Southside (Pauketat 2005a), Julien (Milner 1984b*)[17], Lawrence Primas (Pauketat and Woods 1986), Kincaid (Brennan 2014), and the South Cape site (Stephens 2010).

[17] Milner (1984b) does not differentiate between shell and shell-grog for funnels and temper was not provided for indeterminate rims.

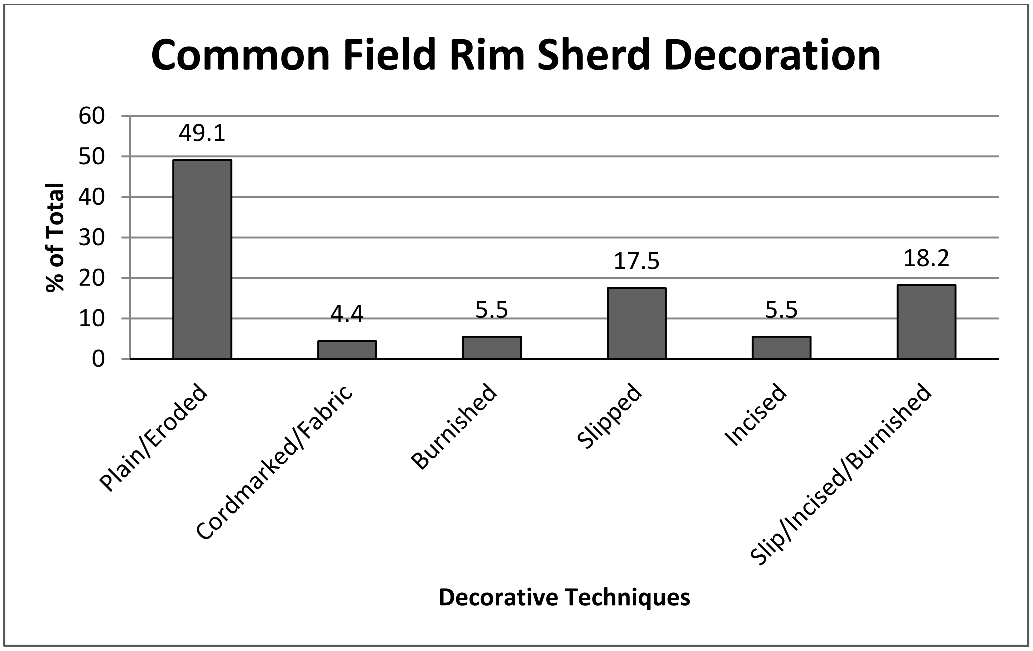


Figure 8.9. Decorative techniques present on rim sherds.

Pauketat 1998; see also Ahler et al. 1980). It is also possible that shell-grog was considered an incidental admixture and not included in final tabluations.

The majority of the rims from Common Field had some kind of surface modification or decoration on at least one of the sherd surfaces (Figure 8.9). Cordmarking and fabric impressions are sometimes left out of decorative analyses because it is thought that they may have technological functions (eg. O'Brien and Wood 1998:239). Large percentages of decorated vessels are not uncommon at American Bottom mound centers (eg. Holley 1989:204; Pauketat 1998: 207), but undecorated rims occur in much larger proportions at village sites like Julien (Milner 1984b). The mound centers of Kincaid and Angel both have less than 20% decorated vessels (Brennan 2014: Table 8.5; Kellar 1967; McGill 2013: 198-199). Of the cordmarked and fabric impressed rims, none were accompanied by slipping as is often the case with Cahokia

Cordmarked vessels (Griffin 1949:55-56; Vogel 1975:96) and pans (O'Brien 1972:53-54). At Cahokia's Tract 15A, 49% of rim sherds were slipped (Pauketat 1998:207), more than the 35.7% of rims at Common Field that are slipped or have combinations of slipping, burnishing, and incised. Three primary colors of slip were used: black/brown, red, and white (Figure 8.10). Holley (1989:204) noted that the application of dark slips was a practice started during the Stirling Phase and decreased at the end of the Moorehead Phase. The relative proportions of these slips used on rims parallels the percentages in body sherds (Figure 8.3). Decorative techniques and their use on different vessel types will be discussed in more detail in sections 8.3.1-8.3.7 below.

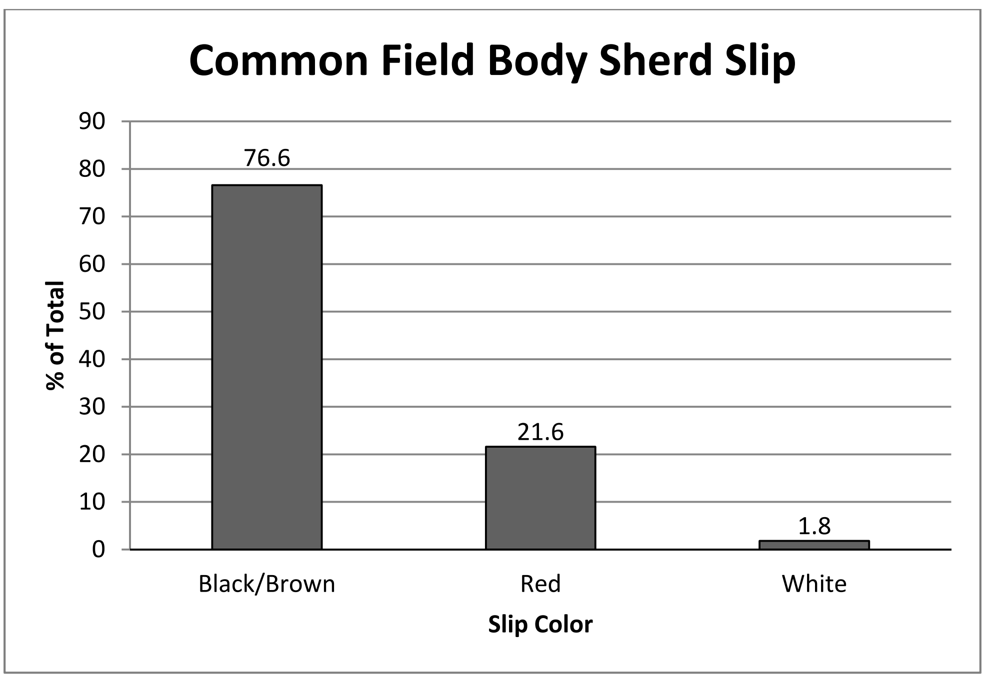


Figure 8.10. Proportions of slip colors used on Common Field rims.

At Common Field, the most common vessel form is the plate (Figure 8.11). These plates have wide-rims, a vessel morphological trend dated to the late Moorehead and Sand Prairie Phases in the American Bottom (A.D. 1250-1350). Plates, and other vessels with unrestricted orifices (bowls and beakers), are believed to have functioned as serving wares (e.g. Pauketat 1987). The second and third most frequent vessel forms are jars and funnels. Jars would have been used for storage and/or cooking. The function of funnels is less well-known. They are found in great frequency in regions associated with salt sources and processing. The small orifice on the base of the vessel may have been filled with limestone or other materials in order to remove salt from salty water (Holley 1989:16). In this analysis, funnel rims were combined with other coarsely made rims. These coarse wares are from funnels, funnel lids, and small bowls. Bowls, bottles, beakers, pans/platters, and miniature vessels each account for less than

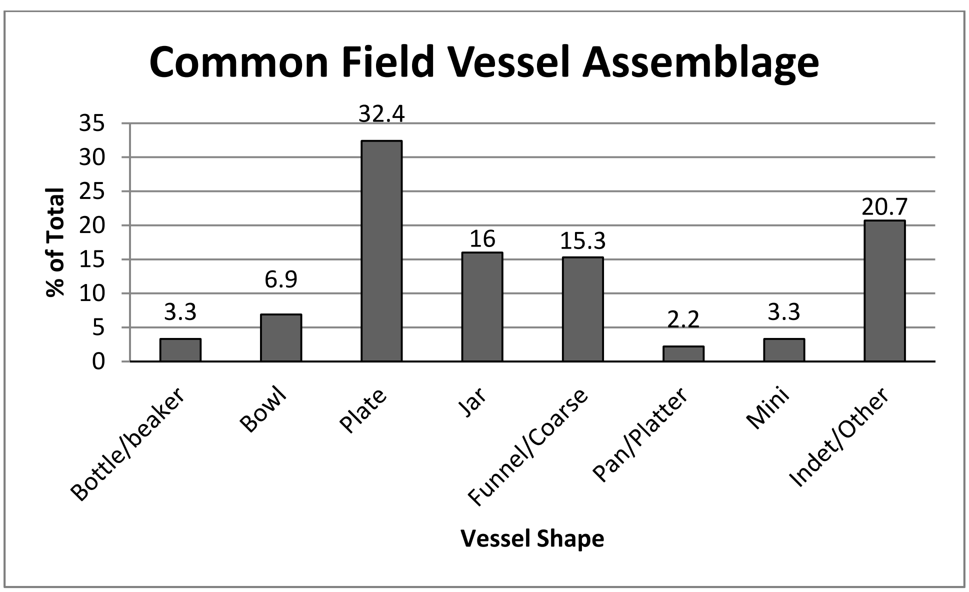
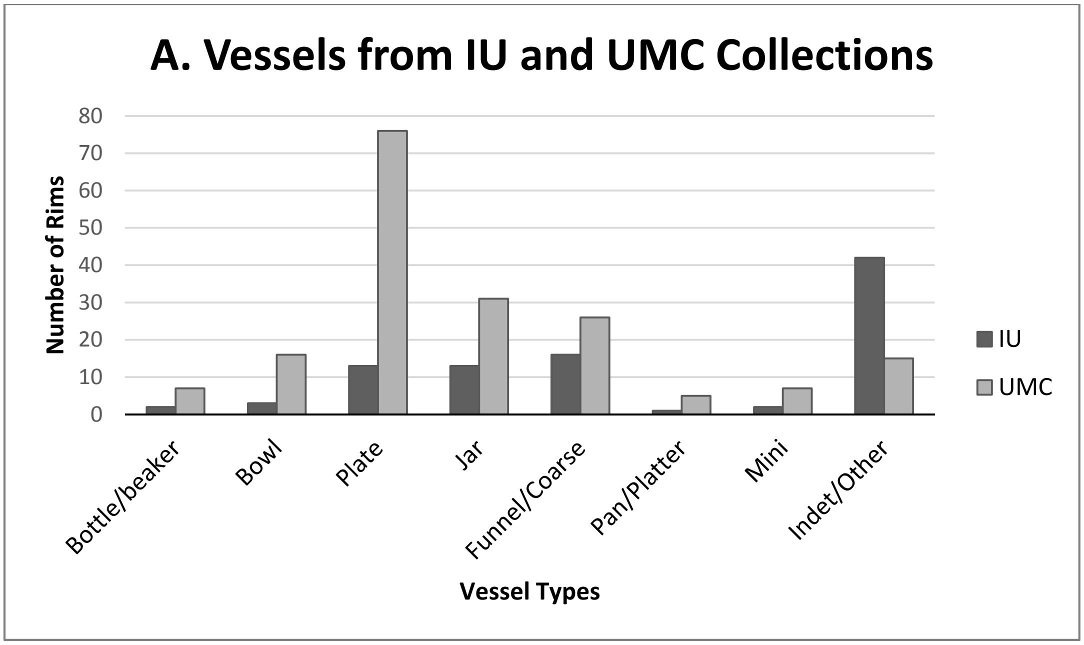


Figure 8.11. Proportion of different vessel types from Common Field

10% of the assemblage. Indeterminate/other vessels make up a large proportion of the assemblage and include rims too small to identify to specific vessel type. When the total assemblage is broken down by the two different project (IU and UMC) (Figure 8.12), there are two striking difference present in the kinds of vessels present. The first is that there is a much higher number of indeterminate vessels in the IU materials from excavated contexts. This large number of indeterminate rims reflects some of the impacts that plowing has had on the features at Common Field over time. The smaller sized rims from excavated contexts were much harder to narrow down to a single vessel type. Because of that, many were labeled as a combination vessel (ie. the rim came from a jar or plate, but I could not make a conclusive determination) or they were simply too small to orient and determine vessel shape.

The second major difference between the two collections is the number of plate rims. The UMC collection has considerably more plate rims that the IU collection. Some of this difference may again be attributed to taphonomic processes (plow impact over time). In many cases the UMC collection simply had larger vessel fragments because their surface collection took place soon after the flood exposed features and the plows had only impacted assemblages a few times. However, taphonomy might only account for part of this difference. The disparity may be more directly affected by sampling strategies regarding where the materials were collected. UMC did most of their surface collection north of the main mound group (see Figure 4.7), whereas my IU collection came from south of the mounds. The difference then may reflect different kinds of practices engaged in northern and southern parts of the site. This possibility will need to be tested in the future with an excavation sampling strategy that explores more parts of the site.



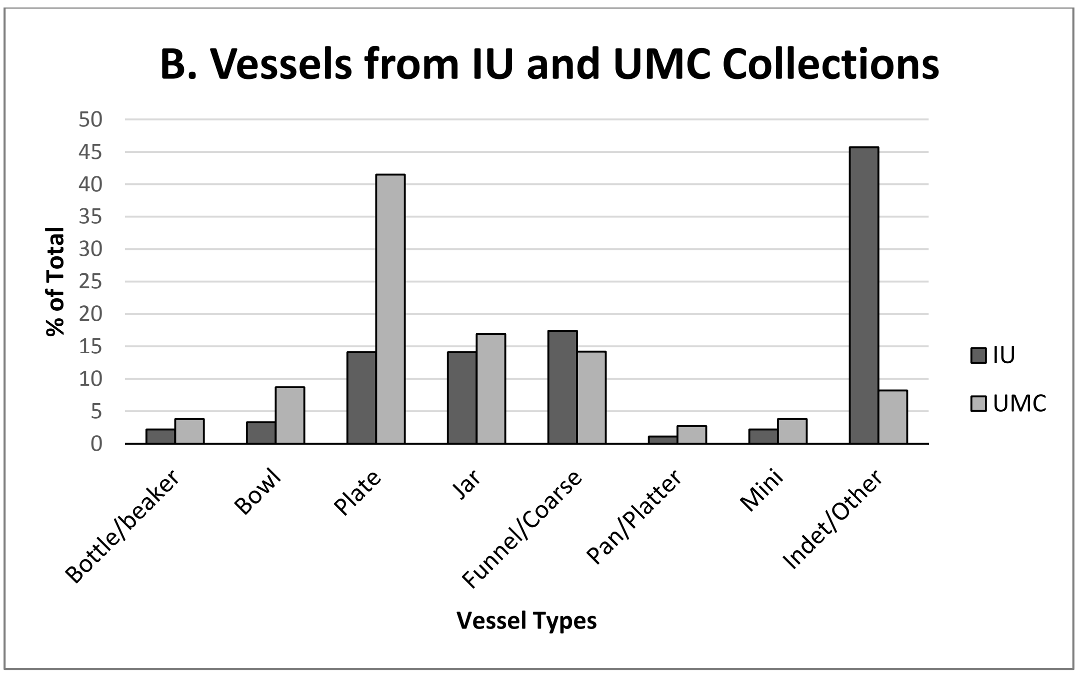


Figure 8.12. a) Vessels from Common Field present in the IU and UMC collections by raw number count; b) is the same vessels as a proportion of the total.

The distribution of vessels types at Common Field is very different than earlier assemblages in the American Bottom. In Figure 8.13, vessels from Common Field are compared to assemblages from Cahokia's Tract 15A/Dunham Tract (Stirling 1 and 2), Tract 15B (Lohmann/Stirling and Moorehead/Stirling assemblages), ICT-II (Stirling 1), East St. Louis Mound site (Southside and Northside), the Old Edwardsville Road site, and the Dampier site. In all of the American Bottom sites[18], jars are by far the most common vessel type in assemblages from the Stirling Phase/early Moorehead Phase, followed by bowls. Plates, the most frequent vessel

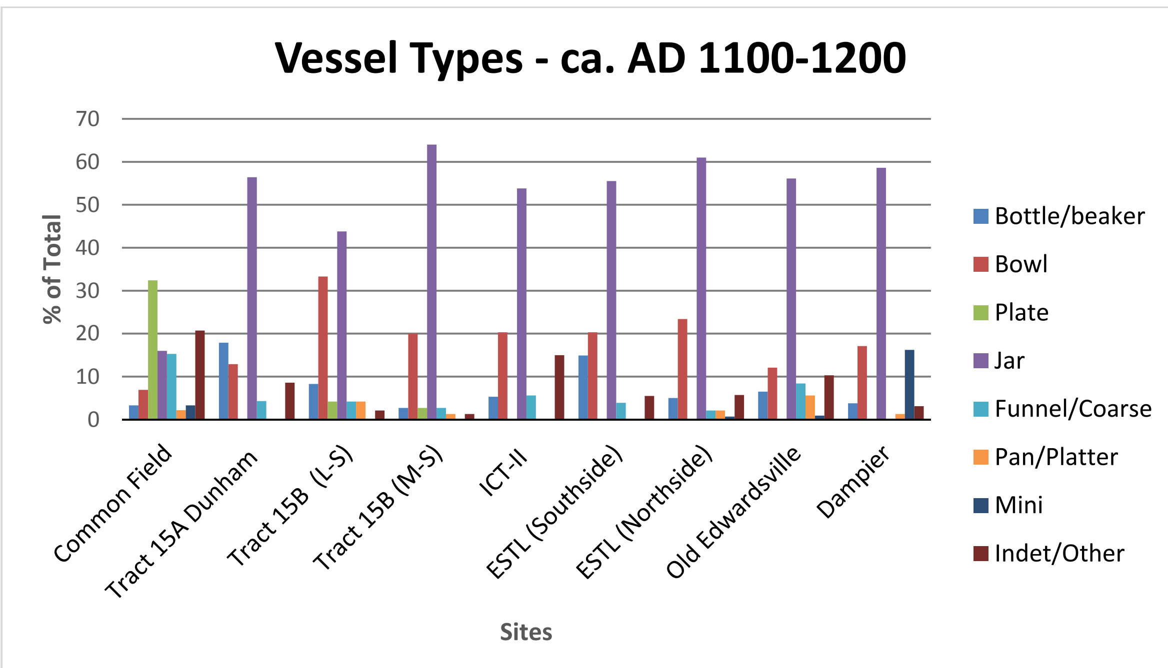


Figure 8.13. Proportion of vessels from Common Field, Tract 15A/Dunham Tract (Pauketat 1998), Tract 15B (Pauketat 2013b), ICT-II (Holley 1989), East St. Louis Mound site Southside (Pauketat 2005a), East St. Louis Mound site Northside (Fortier 2007), the Old Edwardsville Road site (Jackson and Millhouse 2003), and the Dampier site (Harl et al. 2011).

[18] Dampier is not located in the American Bottom. It is located along the Missouri River, near the town of Chesterfield, west of St. Louis. Artifacts and radiocarbon dates from the site demonstrate that it was contemporaneous with the Stirling Phase and was closely tied into the Cahokian world. As the authors of the site report note "it represents the first major Mississippian site excavated in east-central Missouri in modern times" (2011:1).

form at Common Field, are present in small numbers or not present at all in the other assemblages. Early plates have short rims and form a continuum (in terms of shape) with bowls, thus Common Field plates may be seen as somewhat analogous to bowls from earlier assemblages. However, even if Common Field plates were changed to bowls, jars are still woefully underrepresented at Common Field. This suggests that jars were needed less frequently for storage or cooking at Common Field.

When compared to contemporaneous assemblages (Figure 8.14), Common Field has half the amount of jars as any of the rest of the sites. Figure 8.14 has been split into two sections; Figure 8.14a displays assemblages from Cahokia and Figure 8.14b includes other sites from the American Bottom, Kincaid Mounds from the Lower Ohio River valley, and South Cape from southeast Missouri. Following the trend seen in Figure 8.8, jars and bowls tend to be the most frequent vessel forms at sites in the American Bottom and at Kincaid Mounds the most frequent are jars and pans. In contrast, the most frequent vessel form at Common Field is plates. Much like the assemblages from the Stirling Phase, it appears that people at Common Field were much more concerned with serving and displaying foods using plates rather than using jars for storage and cooking. The South Cape site also has a high proportion of serving wares, although like the other Mississippian sites, the primary vessel form is the jar.

Common Field also has considerably more funnels and coarse wares than any of the other assemblages. Both funnels and pans are associated with the processing of salt. Kincaid, located downriver from a natural salt source (the Great Salt Spring) on the Illinois Saline River, has a large number of pans and no funnels, although funnels have been reported in previous research (Cole et al. 1951). A few pans have been recovered from Common Field and many

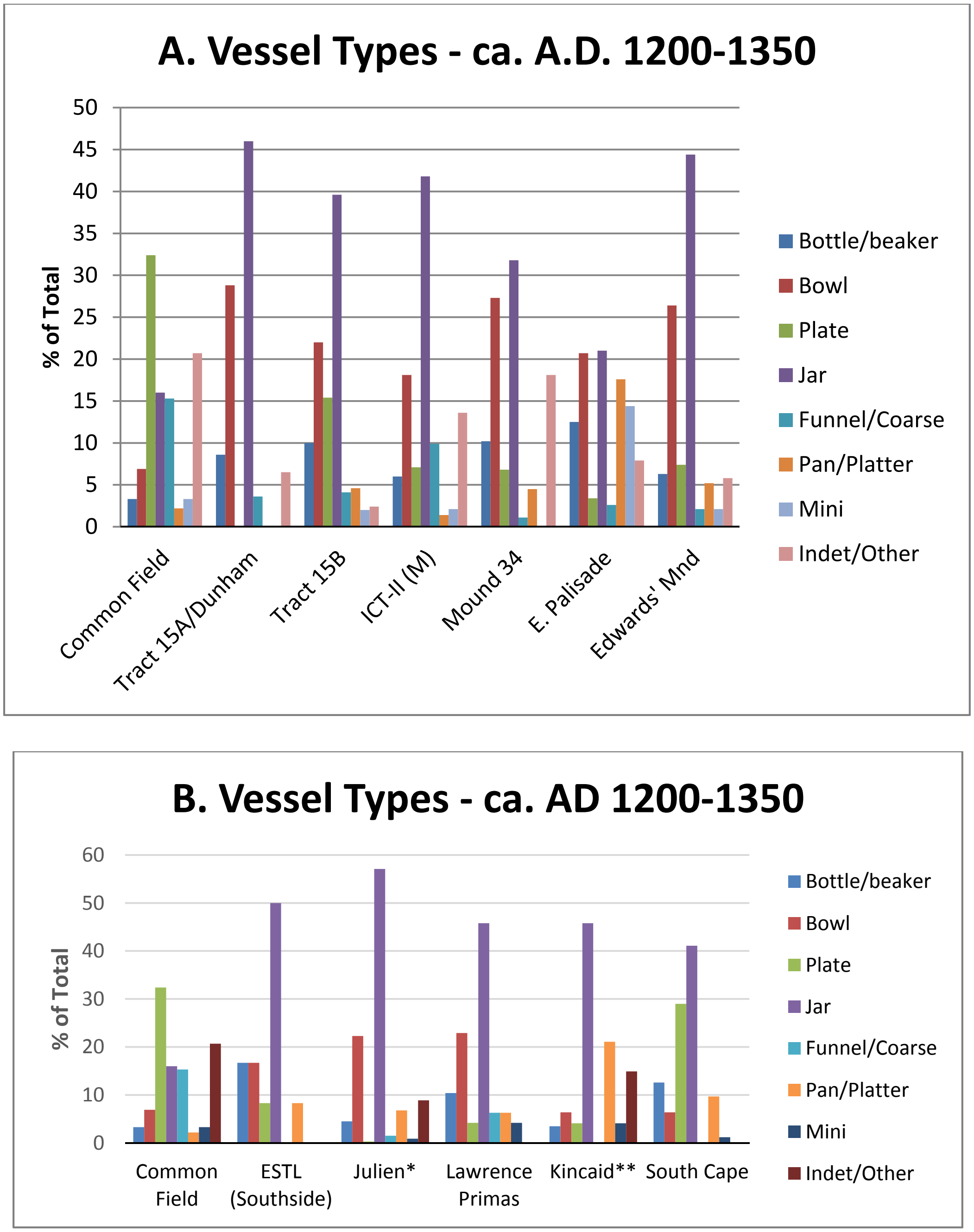


Figure 8.14. Proportion of vessels from Common Field and contemporaneous assemblages from Cahokia's Tract 15A/Dunham Tract (Pauketat 1998), Tract 15B (Pauketat 2013b), ICT-II (Holley 1989), Mound 34, East Palisade, Edwards' Mound (Hamlin 2004), East St. Louis Mound site Southside (Pauketat 2005a), Julien (Milner 1984b*)[19], Lawrence Primas (Pauketat and Woods 1986), Kincaid (Brennan 2014**)[20], and South Cape (Stephens 2011).

[19] Milner (1984b) combined bowls and pans in his analysis

[20] Brennan's (2014) analysis did not provide the totals for rims that were considered indeterminate or unidentifiable. The Indeterminate totals in this figure for Kincaid include Brennan's categories of Serving Wares and Effigy Vessels (which were not given a vessel shape in her analysis).

more reported from the Saline Locality (Keslin 1964). The different distributions of salt processing are suggestive of a division of labor related to salt processing or the use of different salt processing strategies and techniques. Evaporation of water from salt water in large pans may take place in one area and further refinement/filtering using funnels at another location.

8.3.1 Plates

Plates are thought to have been utilized as serving wares (e.g. Pauketat 1987) along with other vessels with unrestricted orifices (bowls and beakers); none of the plate rims has any sooting, further supporting the idea that they were used as serving vessels at Common Field. Several plate rims from 15B do have sooting and pot lidding on the exterior surfaces and one has carbonized residue on the interior, suggesting that plates at Common Field and Cahokia may have had slightly different use lives.

Early Moorehead plates have short rims and deep wells and overlapped in shape with bowls. Later Moorehead plates have long rims and shallower wells. All of the plates at Common Field are of the Late Moorehead variety. Plates are the most abundant vessel type at Common Field although plates are not typically the most abundant vessel type in Mississippian assemblages (see discussion and Figure 8.14 above).

The majority of Common Field plate rims are shell-tempered (Figure 8.15) and more than a quarter are tempered with shell-grog. No shell-grog was reported in plates in any of the other sites discussed in this analysis**.** Both the large percentage of plates and the presence of shell-grog tempering in plates are unusual for the region and period.

The average orifice diameter for plates is 31.7cm (Figure 8.16). At least six vessels have diameters larger than 40cm. At 15B (Pauketat 2013b:Figure 6.27) the most frequent plate size

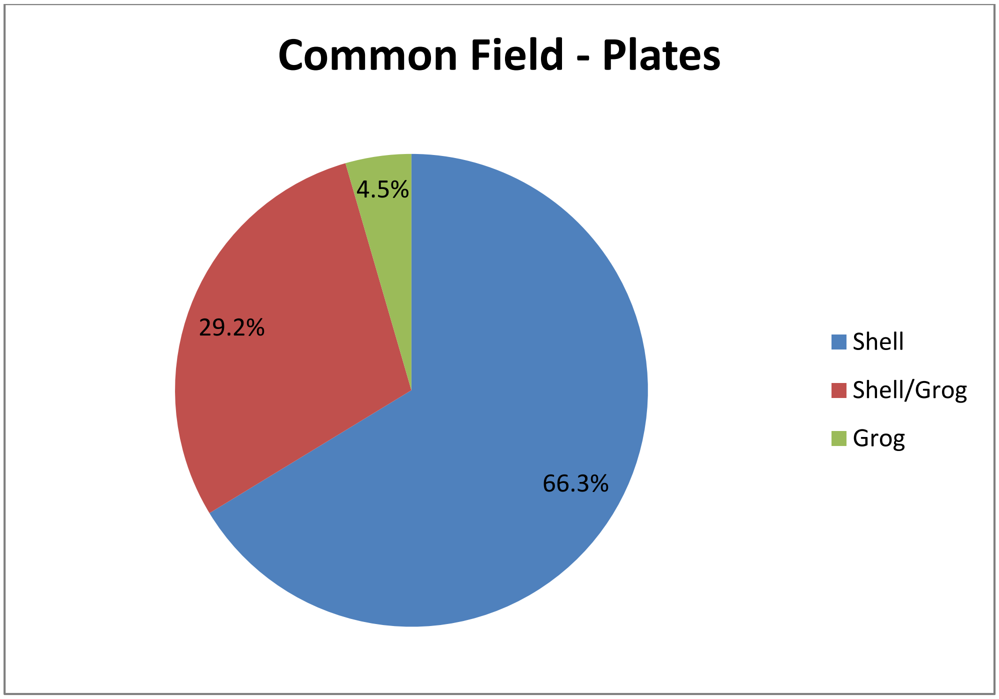


Figure 8.15. Tempers utilized in Common Field plates

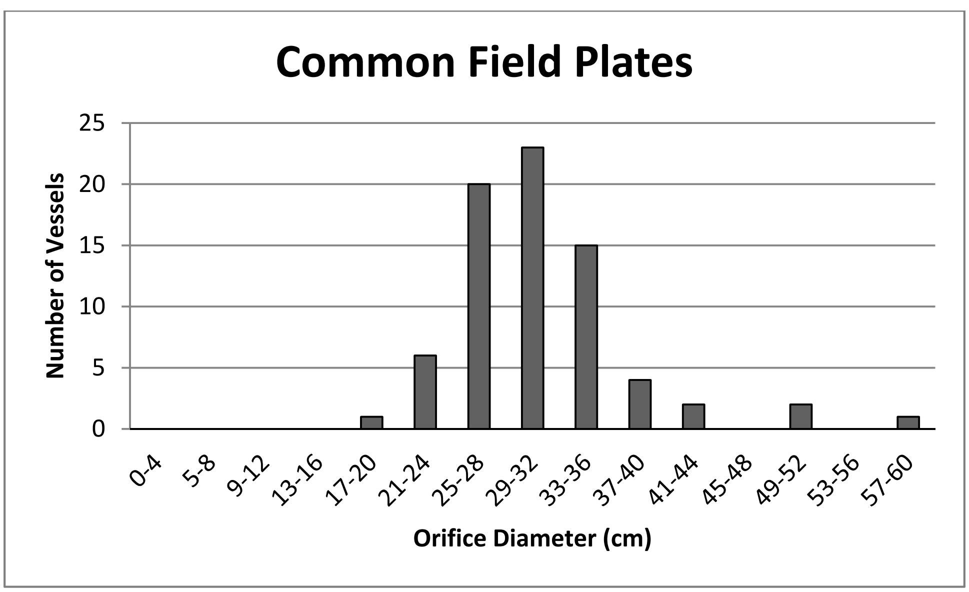


Figure 8.16. Common Field plate sizes.

was 25-28cm and the largest vessel was in the 49-52cm range. The majority of plate lip shapes are round (N = 55), followed by flat (N = 22), exterior beveled (N = 12), and interior beveled (N = 2) lips.

The considerable range in plate morphology, as seen in the vessel profiles illustrated in Figure 8.17, indicates the presence of potters who learned how to make vessels in numerous communities of practice rather than in one particular style. While exact construction methods can be difficult to discern, a few rim sherds provide clues about the construction of the entire vessel. Several sherds were broken at the rim/bowl interface right along a coil; these vessels were likely constructed as a single piece (ie. not composite vessels), made using a coiling technique, and then paddled into shape. Some of these vessels had a consistent thickness throughout; others had the bowl portion heavily scraped and thinned prior to paddling. Two plate fragments (IU-32 and 34-1) may have been composite vessels. In both of these examples, the temper orientation and paste composition differed between the rim and the bowl segments demonstrating that they were made at a different stage and with different materials before being combined. All of these examples, and the diversity of shapes in Figure 8.17, highlight that potters learned how to shape and make vessels in different learning communities and traditions.

Only 4 plate rims (out of 89) have no decoration on either the interior or exterior surfaces; 95.5% of Common Field plates have a decorative component. Of the vessels that were slipped, 41 had black slip, 4 brown, 4 red, 5 had a combination of slips, 1 had a white slip, and 2 sherds were decorated with Negative Painted motifs. 56 plate rims (62.9%) have incised decoration. Most of this incised decoration involves triangles and chevrons. In the American

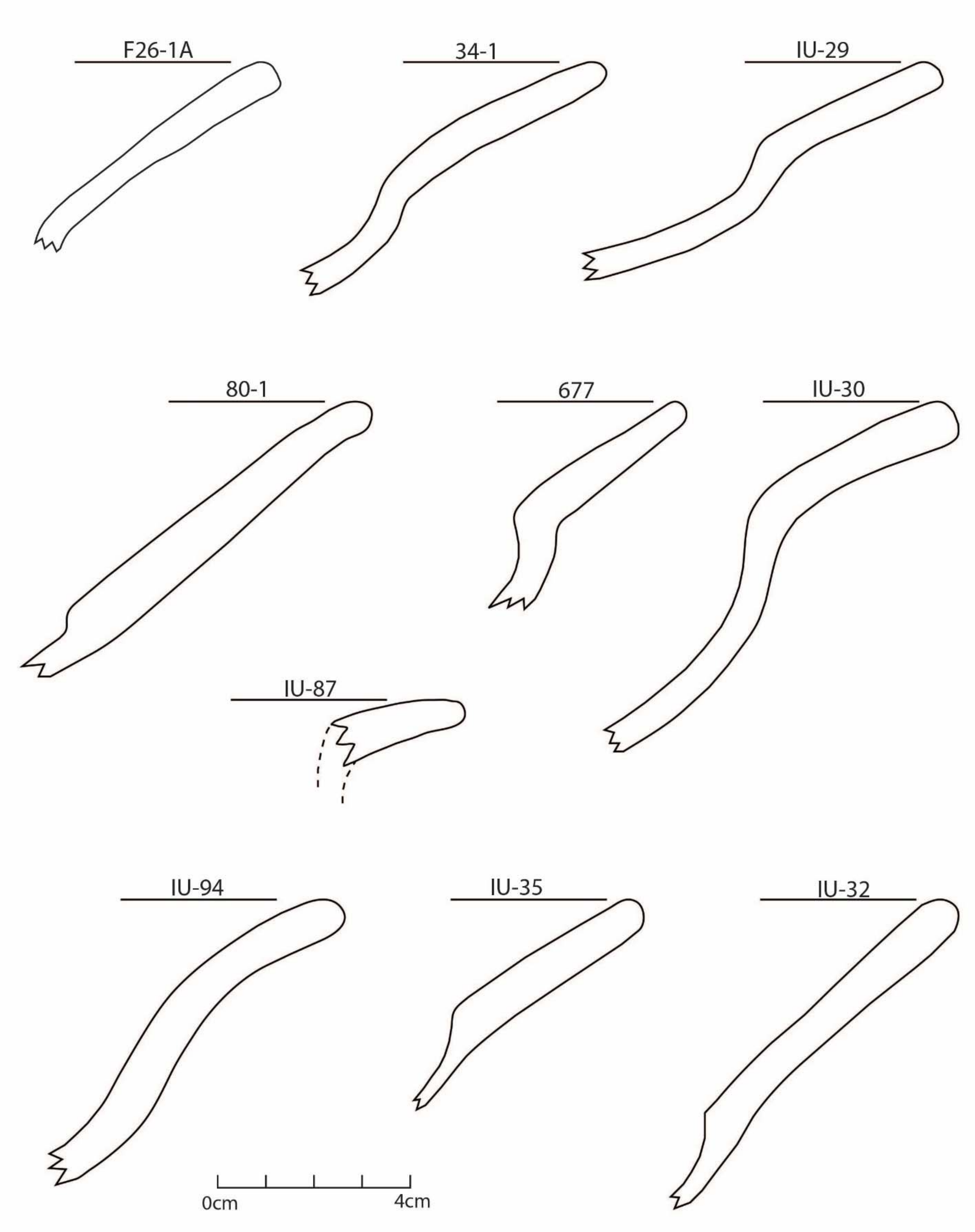


Figure 8.17. Plate profiles showing the diversity of vessel shapes.

Bottom region, incised plates are generally referred to as Wells Incised (with fine-lined and trailed variants) (Griffin 1949; Vogel 1975) and in the Ohio River valley they are referred to as O'Byam Incised (Hilgeman 2000; Williams 1954).

The Common Field incised plates contain considerable variability in motifs. I have divided the incised motifs from Common Field into four primary decorative categories (Figure 8.18). Category 1 is the most common plate decorative motif (n=24 rims); it consists of chevrons and line-filled triangles. Category 1 has been subdivided in to five subcategories. Category 1a (n = 13) consists of a single chevron field and line-filled triangles below and/or above the chevron field. The triangles in Category 1a are filled with lines that may be perpendicular, parallel, or diagonal to the plate well. Five body sherds may also fit into this category. Category 1b (n = 4) has chevrons that are somewhat curvilinear and have line-filled rounded triangles. Category 1c (n = 6) has nested chevrons[21] and line-filled triangles. Five body sherds appear to also be part of this category. Finally, Category 1d (n = 1) has a curvilinear chevron, line-filled rounded triangles above the chevron field, and a curvilinear ladder motif below the chevron. In addition to the one rim in Category 1d, one decorated body sherd from a plate appears to also fall into this category. Category 1e consists of simple, line-filled triangles. There is only one example of 1e.

Category 2 (n = 11) is decorated with line-filled triangles alternating directions (see Vogel 1975:Figure 65e and f). There are 11 rim sherds and one ceramic disc with this design. Category 3 consists of nested triangles and has been broken into two subcategories: 3a (n = 3) has triangles with their base oriented along the plate well and 3b (n = 2) has the triangle base

[21] Most vessels in Category 1c (n = 4) have two nested chevrons; two rims have at least four nested chevrons.

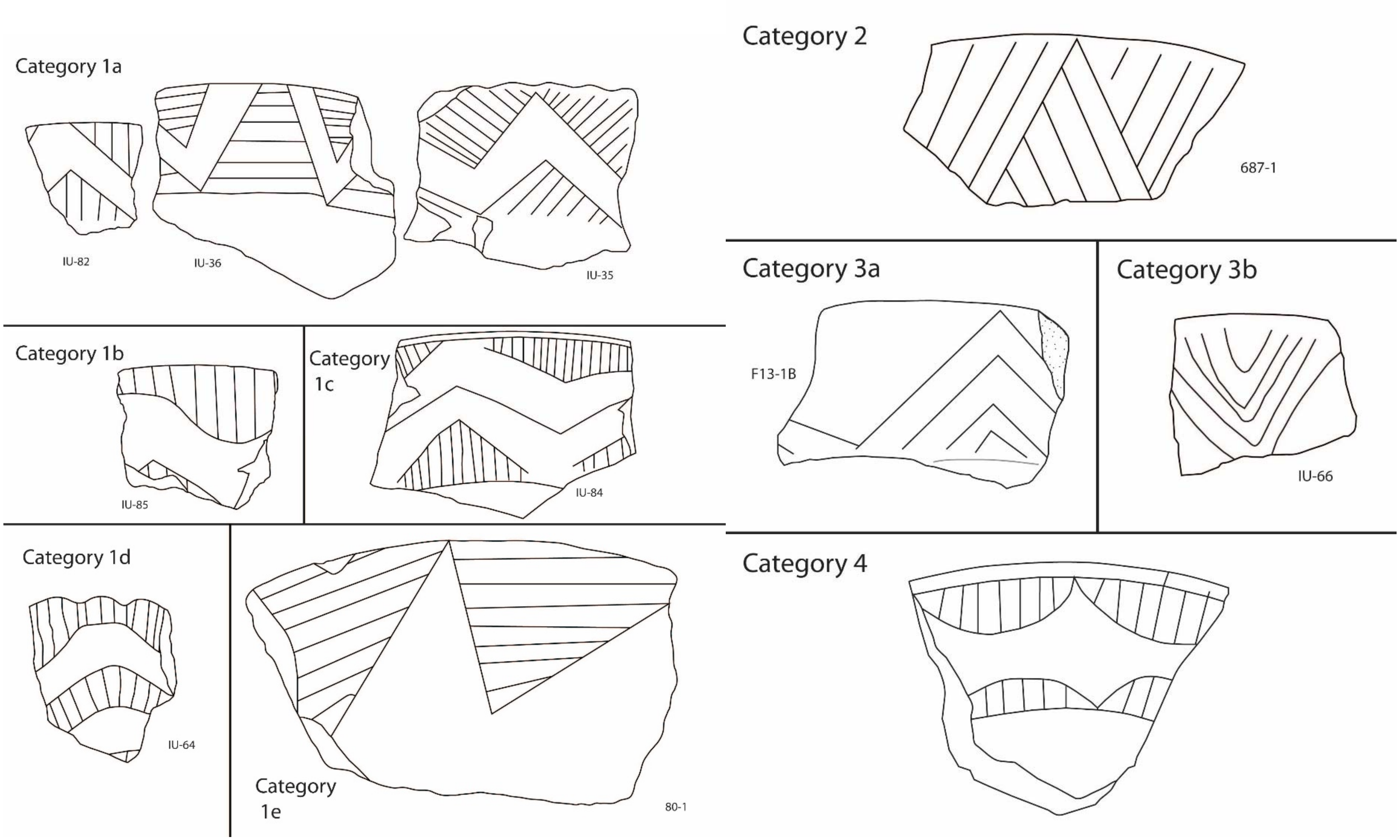


Figure 8.18. Plate decoration categories.

along the plate lip. One example of 3a has trailed lines rather than fine incision. A proposed Category 4 is based on a private collection from F. Terry Norris (this sherd has not been included in any other part of this analysis). Category 4 contains line-filled half circles positioned along the lip and shoulder of the plate rim.

8.3.2 Jars

Jars are typically the most abundant vessel type at pre-Columbian sites due to their dual usage as storage and cooking vessels. However, at Common Field they are the second most frequent vessel type, accounting for 16% of vessels (N = 44). As Pauketat (2013b:204-205) notes that a decrease in the number of jars present (compared to earlier phases) is also common at Tract 15B and Tract 15A/Dunham Tract (Pauketat 1998). With the exception of the Cahokia East Palisade, all other assemblages included in this analysis have at least twice the percentage of jars as Common Field.

Over 86% of the jar rim sherds were tempered with shell, followed by shell-grog (9.1%) (Figure 8.19). Jars have predominantly plain or eroded surfaces (N = 31, 70.5%); included in that category is one jar with a plain exterior and black slip on the interior surface. Six rims (13.6%) have cordmarked (or smoothed over cordmarked) exteriors and plain interiors. Of those cordmarked vessels where cordage twist could be determined, there was one s-twist and one z-twist. Five vessels (11.4%) are black/brown slipped on the exterior; of those, two are plain on the interior, two have black slip, and one is burnished and black slipped. No jars recovered from Common Field have incised or trailed lines although Ramey Incised jar fragments have been found at the Bauman site and Saline Locality.

Most of the jar lips were rounded (N = 35). Additional lip shapes include flat (N = 5), exterior bevel (N = 3), and extruded (N = 1). 10 vessels had loop handles attached to the rim, three had lugs, and two had small nodes attached to the loop handles near the rim. One jar rim was crenulated.

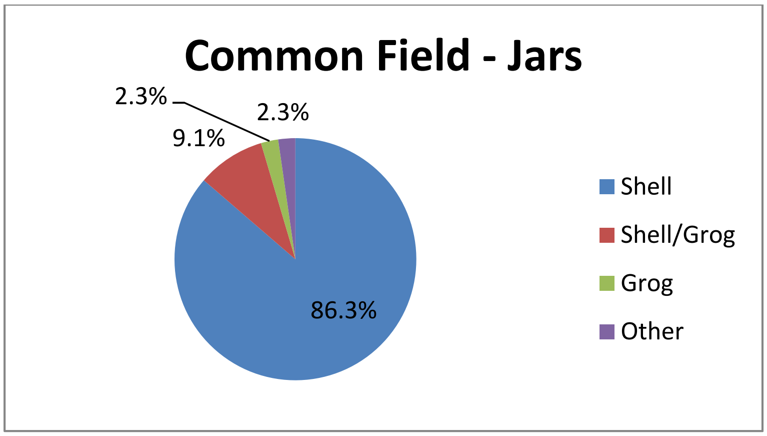


Figure 8.19. Tempers utilized in Common Field jars.

Lip protrusion (LP) indices average 0.34[22] (modified lip protrusion average is 0.29)[23]. Early Mississippian modified LPs at Cahokia's Tract 15B average 0.54 (Pauketat 2013b:199). During the Stirling Phase, jars from Cahokia's 15A LP averaged 0.65-0.55 (Pauketat 1998: Table 7.29, Table 7.36) and ICT-II averaged 0.54-0.48 (Holley 1989:100, 145), overlapping the modified LPs from 15B. During the Moorehead Phase, the LP for 15A is 0.47-0.37 (Pauketat 1998: Table 7.37, Table 7.43), ICT-II's average LP is 0.42 (Holley 1998:202), and 15B's modified LP average is 0.37 (Pauketat 2013b:208). The unmodified LP for Common Field is similar to the

[22] LPs and other quantitative measures for individual rims sherds are in Appendix B.
[23] Modified lip protrusion index involves excluding all LPs above 1.0. An index of 1.0 indicates that a vessel has a flat, unmodified lip (ie. length of lip is the same as wall thickness) (Pauketat 2013b:186). Indices less than 1.0 are indicative of increasingly modified and prominent lips; the smaller the LP indices, the more prominent the lip.

lower end of the LP range for 15A, but the modified Common Field jar LP is much lower than 15B's modified LP. Lower LPs are indicative of increasingly prominent lips and the lower LP at Common Field at first glance would suggest that jars there had longer rims than those recovered from Cahokian contexts. However, all of the Cahokian assemblages include Ramey Incised jars (with the exception of 15A's Moorehead 2 deposits) which tend to have higher LPs. In contrast, Cahokia Cordmarked vessels from the East Palisade assemblage had an average LP of 0.27 (Hamlin 2006:180)[24]. Lip shape (LS) ratio average for Common Field is 0.33, and like the LP average, this average is lower than the reported value for Stirling (0.76-0.73) and Moorehead Phase (0.55-0.49) jars from 15A. Again, the lower values at Common Field seem may be due to a lack of Ramey Incised jar rims.

Jar orifice diameter averages 22cm (Figure 8.20), identical to the 22cm average at 15B (Pauketat 2013b:205, 211). There are two size peaks at 17-20cm and 25-28cm. These two peaks fall under the primary jar orifice size peak at 15B. There are very few small or miniature jars in the Common Field assemblage. Common Field does not have very large jars like those present at 15B. Several of the structures at Common Field had interior storage pits. This switch to interior pits likely replaced the need to use large vessels for storage.

The jar profiles from Common Field demonstrate that the vessels came in several different shapes (Figure 8.21). Some of the rims have sharply outslanting and elongated rims; others have smoothly curved rims; and others have more vertically oriented rims. This diversity in terms of jar shape led Milner (1998:62) to suggest that Common Field jars were "unlike those

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[24] I selected the Cahokia Cordmarked values because that vessel type should already not include LP values greater than 1.0. However, Hamlin does not provide the LP values for individual rims, so the comparability between East Palisade average LP and Common Field average modified LP could not be verified.

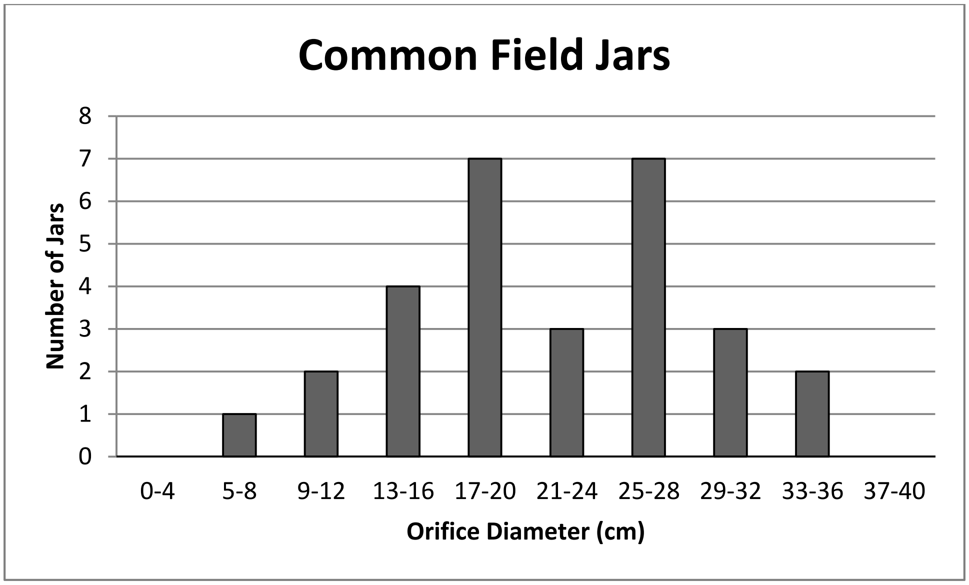

Figure 8.20. Common Field jar sizes.

found to the north" in the American Bottom and "more similar to vessels from the lowermost part of the valley." While the Common Field assemblage is missing the common Cahokia Cordmarked vessels, the overall diversity of jar rim shapes fits in well with the diversity of Moorehead and Sand Prairie Phase vessels from the Florence Street site (Emerson et al. 1983:Figure 81), ICT-II (Holley 1989:Figure 54), 15B (Pauketat 2013b: Appendix K) and other parts of the American Bottom (Bareis and Porter 1984:Figure 64). Part of Milner's observations about pottery from Common Field hinged on the site's location, geographically half way between the American Bottom and sites further south in the Mississippi River valley. However, recent work by Baltus (2014) at the Olin and Copper sites in the uplands around the American Bottom identified multiple instances in which ceramic practices reminiscent of the mid-south were in use at those sites. Northern Oneota and Oneota-like vessels have also been recovered from American Bottom sites (Bareis and Porter 1984). Rather than representing a transitional

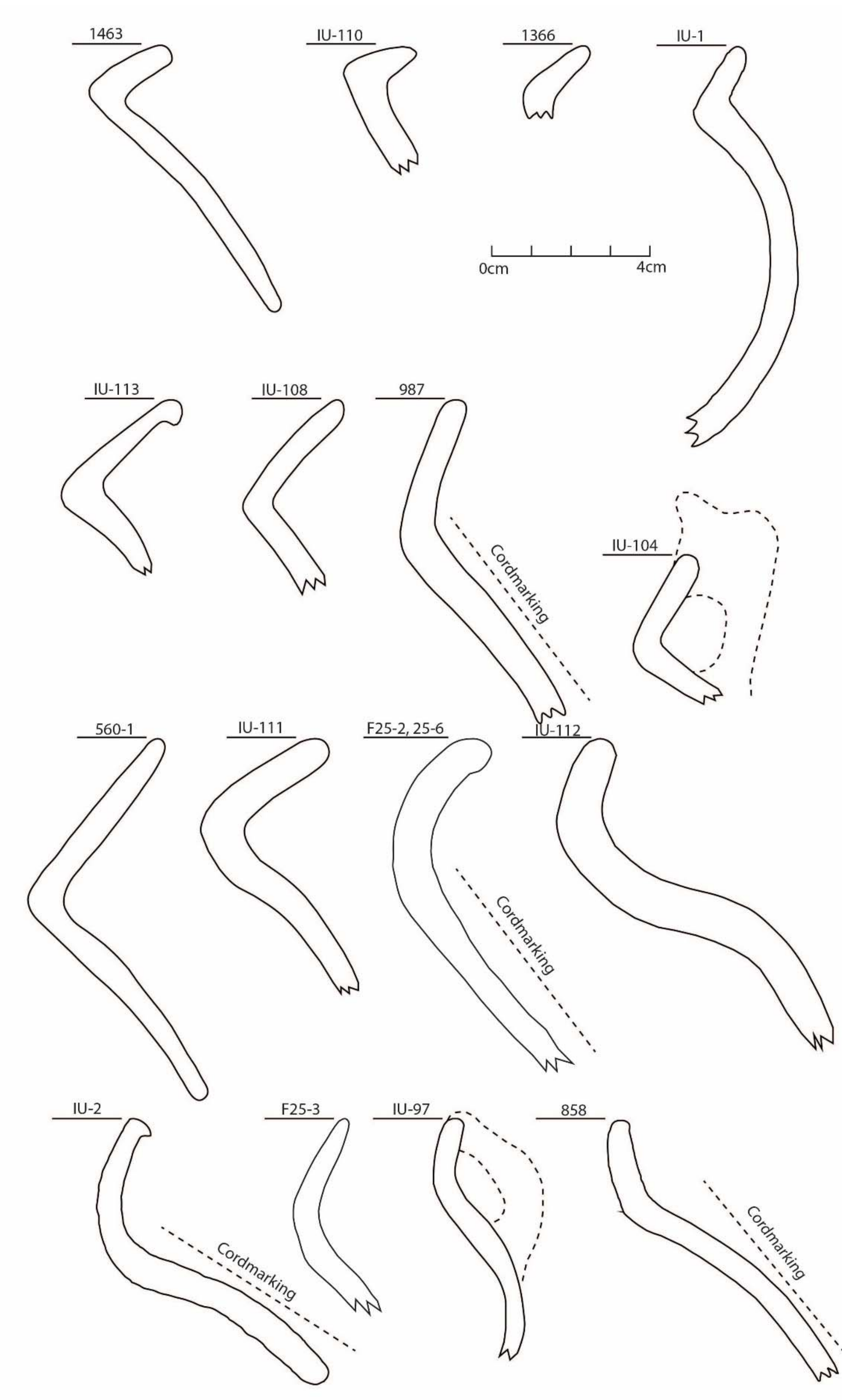

Figure 8.21. Jar profiles showing the diversity of vessel shapes.

ceramic tradition between north and south, Common Field appears to have the same kind of vessel morphological diversity seen within American Bottom and upland assemblages. Like plates, the diversity of morphological shapes at both Common Field and American Bottom sites is indicative of potters who learned how to craft their vessels within different communities of practice. In at least one case (rim 560-1), the vessel rim was added secondarily to the jar and extra clay was used to weld it on. In another example, the jar handle was tempered with grog while the rest of the vessel was shell. Both of these examples demonstrate that some potters constructed vessel bodies in separate steps rather than creating the entire vessel at one and then paddling the body to create consistent wall thickness.

8.3.3 Funnels/Coarse Wares

Funnels are thick walled vessels with a hollow base and tempered with grog or shell-grog. 42 rims have been identified as funnels or as coarse ware. These vessels proved some difficulty with regards to identifying rims to a specific vessel shape. Several vessel types at Common Field had thick walls and coarse temper. One large, nearly complete thick-walled cylinder was in the UMC collection. A similar vessel was recovered from the First Terrace of Monks Mound at Cahokia (Benchley 2003:Figure 5). Without the base present, this vessel would have been indistinguishable from hollow based funnels. The bases from funnels themselves have a rim-like appearance near the hollow base. Funnels also have lids that look like small, thick-walled bowls often with knob handles. Keslin (1964:Figure 27) identified several of these as miniature vessels at the Cole site. Some lids have one to two handles; others possible lids have three to four knobs. At least one vessel appears to be a shallow, coarsely tempered dish with four feet, making it difficult to neatly divide small, coarsely tempered rims into either a lid or footed bowl category. Because of these complications, unless I could positively identify a rim as belonging to a cylinder, rims were classified as a generic coarse ware.

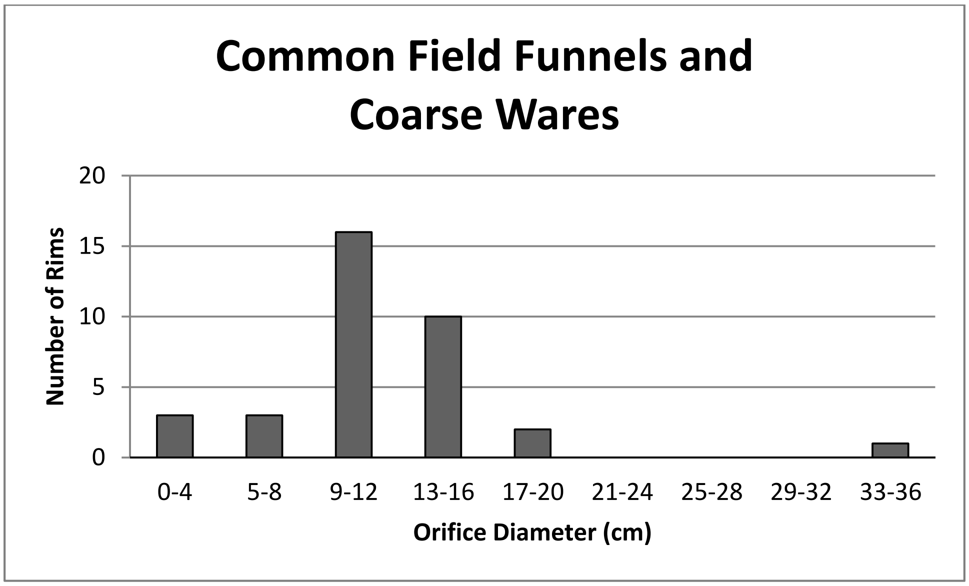

Figure 8.22. Diameters of funnels and coarse wares from Common Field.

Most of the rim diameters measure between 9 and 16cm (Figure 8.22). Those rims that fall below these diameters may actually be rims from funnel base orifices rather than the upper orifice. One diameter is an outlier at 33cm.

Benchley (2003) argues that funnels and earlier stumpware were both used to burn limestone and wood ash in order to produce lye for the nixtamalization of maize. The addition of lye to maize processing aids in the removal of tough outer kernel hulls, increases nutritional value, and can aid in preventing pellagra. Lye, also known as lime or quicklime, is highly caustic and has documented uses in Medieval European warfare (Sayers 2006). Benchley suggests that Mississippian coarse wares and pans could have been used in salt spring contexts for the production of alkalai salts that were used for processing maize. Very few of the funnels or coarse wares from Common Field have evidence of sooting or residues like that described by Benchley. However, the close proximity with the Saline Locality certainly lends credence to Benchley's proposition that these vessels were used in conjunction with lye and/or salt processing.

8.3.4 Pans/Platters

Six rims were identified as pan fragments. Those that were large enough to determine the vessel diameter exceeded 60cm. All of the pan rims were tempered with coarse shell and five of them had s-twisted fabric impressed exteriors. The negative impressions of the fabric indicate that all examples have plain twinning (e.g. Drooker 1992) although some of the impressions have closer weft groupings than others.

Because these kinds of vessels are found in large numbers near saline springs, they are typically referred to as "salt pans" (Keslin 1964:5). These large pans are thought to have been filled with saline water and placed over a fire in order to evaporate the water. The pans may have been made using pit-like molds (Bushnell 1907). Muller's (1984) excavations at the Great Salt Spring recovered large amounts of salt pans, leading him to identify the site as a specialized processing site. Despite there not being many salt pan fragments at Common Field, numerous rims were recovered from the Saline Locality (Bushnell 1914; Keslin 1964) and some of those rims were put to use in such a way as to indicate that salt production was not their sole purpose. Keslin (1964:34-36) reports that two cache pits lined with salt pan and mussel shells were found at the Kreilich site; the remainder of the pit was filled in with sterile soil indistinguishable from the subsoil.

8.3.5 Bowls, Bottles, Beakers

19 bowl rims were recovered. The majority of bowls were tempered with shell (N = 10), with smaller amounts of shell/grog (N = 6) and grog (N = 3) tempering. Most fall in the 9-12cm and 17-20cm orifice diameter range (Figure 8.23). Five of the 19 rims have plain interiors and exteriors and the remaining 14 rims were slipped, burnished, incised, and had a combination of decorative techniques used. One bowl rim recovered from the surface of the site is burnished and decorated with trailed lines. This decorative motif includes a trailed line that appears to encircle the vessel just under the lip with a circular/curvilinear motif under the line. Only one rim has evidence of sooting, indicating that these vessels were likely most frequently used for serving purposes rather than cooking.

Bottles are represented by eight rims, six of which are shell-tempered with the remaining two tempered with grog. Half of the vessels do not have any decoration and the

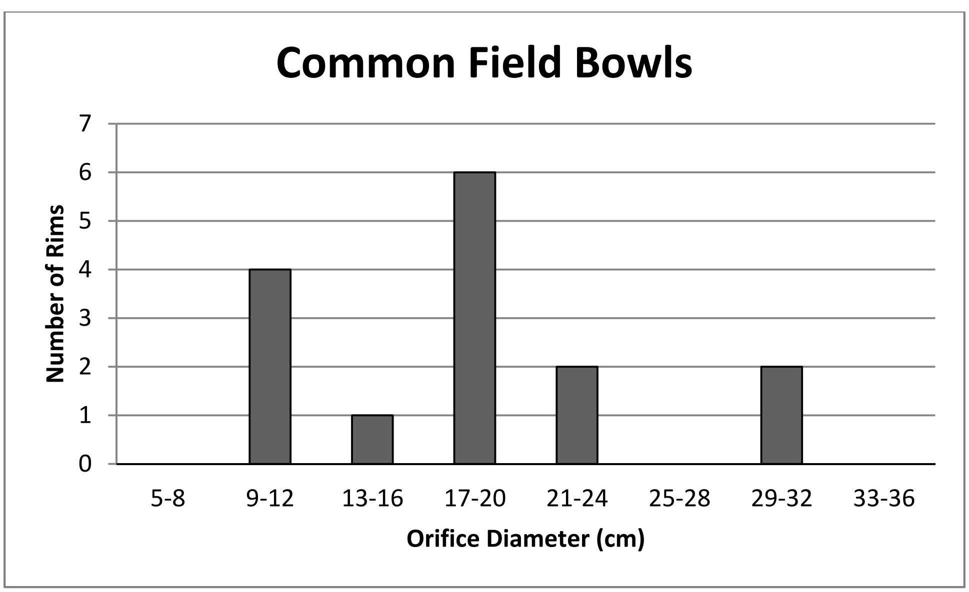

Figure 8.23. Orifice diameters of bowls from Common Field.

other half have red or black slip or burnished exteriors. Due to the restricted orifice of this vessel class, it is likely that they served as vessels for storing and pouring liquids.

Only one beaker rim was recovered from the UMC surface collection; none were present in my excavations. However, seven handles (discussed in Section 8.2) came from beakers. Additionally, several private collections from Common Field also have beaker rims and decorated body fragments present. Those fragments with decorations were also frequently red slipped and looked identical to Cahokia Red Engraved beakers (see for example Pauketat 2013b:Figure 6.45). Like bottles, beakers are thought to have stored liquids, a function that was recently confirmed through residue analyses (Crown et al. 2012; Washburn et al. 2014; cf. Miller 2013) (see Chapter 9 for further discussion).

8.3.6 Miniature Vessels

Very few miniature vessels were recovered (N = 9). Eight of the vessels were tempered with shell and one with shell-grog. Miniature bowls and jars are present in equal numbers (four each) and one miniature bottle rim was found in the palisade fill. The function of these diminutive vessels is not known, but due to their small size it has been suggested that they may have been children's toys and/or practice vessels for young potters, although Carey (2006) questions this association between small vessels and small people. Miniature vessels are often recovered in contexts that would suggest that they were intended as ritual or dedicatory offerings (e.g. Brennan 2014:171; Pauketat 2013:Table 6.10). At the Grossmann site, miniature vessels were recovered most frequently from special use structures or features with unusual deposits (Alt 2006a) further supporting the proposition that they likely had non-domestic uses.

8.3.7 Indeterminate/Others

Due to the small size of many rim sherds, 20.7% were classified as indeterminate or as a combination category. For example, long, relatively flat rims could have come from either a plate or a jar, but not from a bowl/bottle/beaker. When it was possible to narrow the vessel class down to two options (plate/jar, for example), this information was recorded and included in Appendix B. However, they were considered to be indeterminate for the purpose of analysis since a single vessel category could not be discerned. Most of the indeterminate/other rims were recovered during my excavations (42 from excavation versus 15 from UMC surface collection). Modern agricultural practices have no doubt had an impact on materials in deposits, causing them to fragment over time.

One rim falls into the category of “other;” the single seed jar fragment discussed in Section 8.2. One shell-grog seed jar rim with black slip was present in the UMC collection. Unlike typical jars, seed jars have restricted orifices rather than the open orifices. Vogel (1975:76-77) considered seed jars to be bowls and O’Brien (1972:56) classified them as neckless bottles/constricted bowls. Later, Holley (1989:16) referred to them as neckless jar that also overlapped morphologically with bowls. Seed jars are more common in earlier Mississippian phases, but still present in Moorehead Phase assemblages from Cahokia (Holley 1989).

8.4 Conclusions and Summary

The ceramic assemblage from Common Field is in some ways very similar to contemporaneous assemblages from the American Bottom (especially in terms of vessel shape and decoration), but also divergent with regards to assemblage composition and ceramic production processes. In contrast to most Mississippian sites (especially American Bottom sites), the people of Common Field constructed and used large numbers of plates decorated with incised triangles and line-filled fields; the trend elsewhere is high numbers of jars and low numbers of serving wares. Common Field vessels are also more likely to be tempered with combinations of shell and grog than other sites in the American Bottom and Lower Ohio River valley. The diversity of shapes within vessel categories is suggestive of people learning their craft in different communities of practice (see *chaînes opèratoires* in Chapter 9). These communities of practice may have long traditions, since in some cases similar vessel shapes, forms are present in American Bottom assemblages and those sites also display considerable intra-site variability.

Chapter 9 – Practices and Histories in a Mississippian Warscape

9.1. A Common Field Chronology

As discussed in Chapter 4, data regarding Mississippian site location and occupation along the Mississippi River south of the American Bottom and north of the Mississippi-Ohio confluence indicate that there were few sites occupied during Cahokia's Lohmann and Stirling Phases with the exception of sites along the Meramec River (Adams 1941, 1949) and the Saline Locality (Keslin 1964). With Cahokia's political ascendancy, many of the Late Woodland villages in this region were likely abandoned as people moved into the American Bottom region, although some larger villages like Herrell and Long have evidence of Stirling and Moorehead Phase occupations (Adams 1941, 1949). As people began to leave Cahokia and other mound centers in the American Bottom after A.D. 1150, a number of previously occupied Middle and Late Woodland sites along the Mississippi River were reoccupied or repurposed as mortuary sites.

Common Field is a relatively large Mississippian site (at least 17 hectares) and the central pyramidal platform mound may have been 30 feet tall. Population estimates can be difficult to derive without solid knowledge of structural density throughout the site. However, the 1980 aerial photograph allows some room for speculation. I counted at least 300 burned areas that could have been dwellings (admittedly, some may not have been). Pauketat and Lopinot (1997:116) estimate that approximately seven people could have occupied a Moorehead Phase structure at Cahokia. Using that number, there could have been more than 2000 people living at Common Field; a lower estimate of four people per structure would mean 1200 people at Common Field at the time of the conflagration. Even the lower estimate places

Common Field's population higher than totals estimated for Angel (Peterson 2011) and Kincaid Mounds (Brennan 2014). While Common Field is spatially much smaller than both of these sites, this preliminary estimate of population indicates that it was much more densely occupied.

Few artifacts indicate that Common Field was occupied prior to A.D. 1200. A stumpware foot and a seed jar rim collected by UMC are the only objects recovered that potentially pre-date the Moorehead Phase. Aside from those two objects, all of the diagnostic artifacts from the site date to the Moorehead (A.D. 1200-1300) and Sand Prairie (A.D. 1300-1350) Phases established for the American Bottom chronology (see Chapter 3). Radiocarbon dates from burned timbers recovered by UMC and dates from contexts excavated in this project confirm a post-A.D. 1200 occupation. At the 2-sigma range, my three AMS dates overlap ca. A.D. 1278-1283. One of the UMC dates also overlaps in this range and one does not. However, all of the dates together are evidence of a late A.D. 1200/early A.D. 1300 conflagration event.

Common Field does not appear to have been initially constructed with a palisade in mind. Feature 11, a wall-trench structure was located outside of the palisade wall. Having a wooden structure located so close to the fortification wall would have presented a fire hazard and could have been used as a hiding spot for enemies. Thus it is most likely that Feature 11 was built before the palisade, but torn down and infilled at or near the same time the palisade was constructed. Feature 22 (another wall-trench structure) and Feature 10 provide a means to estimate the length of time in which Common Field was occupied. Based on previous studies, Pauketat (1989, 2003) has estimated that houses were occupied for a maximum of 10-12 years. Two of the walls from Feature 22 and at least one wall from Feature 10 were rebuilt twice, providing a maximum estimate of 30-36 years for the occupation of those structures. This estimate combined with the radiocarbon dates puts the initial occupation of Common Field ca. A.D. 1250, right in the middle of the Moorehead Phase. There is no evidence that the site was reoccupied after the conflagration that destroyed the site.

9.2. Ceramic Practices

9.2.1. Common Field *Chaînes Opératoires*

The preceding sections provide some insights into some of the steps in *chaînes opératoires* enacted by potters at Common Field. Temper, decoration, vessel shape, attachments, etc. are all choices made by people in order to achieve a particular outcome, a particular vessel. But simply listing the materials and attributes of vessels is insufficient if the goal of elucidating possible *chaînes opératoires* is to attempt to understand the complex negotiations between people, materials, and experiences within particular social contexts (*sensu* Dobres 2000). Ceramic construction, like other crafts such as textile production (see for example Hendon 2006), is sometimes under-valued as a skill that involves knowledge, practice/training, and skill as are other technologies associated with household use and women (Bray 2007). The conception and creation of a ceramic vessel that withstands drying, firing, and use is not something that happens with zero experience or know-how.

The creation of a vessel begins with the need or desire to make one and an idea about what the finished product will look like. However, one can argue that the process actually begins much earlier than conception and creation. Potters' knowledge regarding how to make vessels, which kinds of materials work together, and which supplies are available for use are learned from earlier generations of potters who have taught their craft to others. Potters learn from those who came before and from others they come into contact with (who in turn have learned from other, earlier generations). Before a particular vessel is constructed, potters turn to the knowledge passed on from their teachers and from knowledge gleaned through their own encounters with the material world.

Ingold (1993) argues that actions, doings, and work unfold in taskscapes. He defines tasks as "any practical operation, carried out by a skilled agent, as a part of his or her normal business of life" (158); these tasks are part of social life and take place in relation to other tasks. Taken together these form taskscapes, historicized and temporalized landscapes in which tasks are enacted. Engaging in pottery production thus requires knowledge of the landscape (where things are) and the taskscape (when and what things are taking place) as well as becomes part of the taskscape itself.

Following the initial conception of the kind of vessel the potter wants to make, they need to collect the various supplies that go into vessel creation, especially clay, clay additives (temper), and pigments for decoration, and tools for shaping and decorating. It is unclear where Common Field potters acquired their clays. Subsoil clay recovered from excavation blocks contains sand content, something not seen macroscopically in Common Field pottery. Clay from below the living surface (sampled for a clay sourcing project initiated by Maura Hogan from Indiana University) had even higher sand content. It is possible that the clay was acquired from elsewhere within the palisade walls of Common Field, but as O'Brien et al. (1980) note, the site is situated atop a sand ridge adjacent to a remnant river channel. If the Mississippi River channel scar was present during the occupation of Common Field, it may have been the source of the clay; if not, other locations would have been mined for suitable clays. Timothy Pauketat (personal communication, 2014) has suggested that the clays used in most of the Common Field pottery has paste that is similar in appearance to clays from the uplands surrounding the American Bottom. If the clays used at Common Field did indeed come from the uplands to the east, then potters were traveling either to the bluffs or the bluff edges (where erosional soils could have been located) in order to procure clays for ceramic production. X-ray diffraction (XRD) was performed by Rebecca Barzilai (Barzilai et al. 2011) on a clay sample collected from Unit 1, a piece of wall daub, 1 piece of salt pan, and 2 sherds of plain shell-tempered pottery. All of the samples returned results that indicate that they are geochemically similar (Barzilai personal communication, 2015; Barzilai et al. 2011). This similarity may be due to the samples all coming from the same parent source or because much of the Mississippi River alluvial clays have a single compositional source (Steponaitis et al. 1996). The XRD results are further complicated because upland clays from near Common Field were not sampled. However, a clay sample from the Knoebel site (located in the uplands to the east of the American Bottom) was included in the analysis and was geochemically similar to the Common Field samples, although the Common Field samples had lower proportions of feldspar minerals.

Once clay was acquired, it would have been sorted to remove any stones or impurities that would lead to firing mishaps later on and crushed or ground in order to reduce particle size. Very few inclusions were noted during my analysis of Common Field ceramics with one exception; hematite. Hematite inclusions were present in 26 rims (9.5%). Hematite is not naturally occurring in the Ste. Genevieve floodplain. Hematite is visible in sherd breaks and on the surface of plain vessels. While finely crushed hematite was likely used in order to make slips for some vessels, the hematite inclusions discussed here refers to small spherules of hematite. There are three possible explanations for the presence of hematite in the paste: first, the vessels are imports from regions where hematite is naturally occurring; second, the clay used in these vessels was mined in another area in the proximity of Common Field where there is hematite naturally occurring; or third, hematite was intentionally added to the clay during processing prior to shaping and firing. There is not enough information at present to determine which explanation is most likely. However, it is likely that regardless of where the clay came from or whether or not the hematite was intentionally added, the inclusion of hematite into the clay results in a red speckled appearance to the vessels.

The primary tempering materials added to Common Field pots are shell and grog (see Section 9.3.3 below). Grog would have been the easiest temper to acquire. Broken vessels, daub, and other clay objects could have been recycled, crushed and added to fresh clay. Many of the grog-tempered rims from Common Field have grog that came from crushed shell-tempered sherds. Once some shell-tempered vessels outlived their initial use-life, they were repurposed as grog temper for a new vessel. Shell would have been acquired from the bottom of the Mississippi River or from lakes and sloughs. A large volume of shells would have been necessary in order to temper the vessels used at Common Field. There are not any sizeable lakes near the site and small oxbow lakes and sloughs would have been quickly depleted of mussel; this points to the Mississippi as the primary source for the majority of the shell used in vessels. Since water must be added to clay in order to make it malleable and plastic for mixing in temper and constructing the vessel, these riverine contexts would have been used for multiple purposes.

The Common Field vessels were made using two different techniques: coiling and slab construction. The coil construction method is the most common. Coil breaks are visible in some rims fragments. Several large, coarse wares were constructed out of large slabs of clay. The interiors of these vessels are still marked with finger prints and the grooves left by hands reaching in and pulling out excess clay. One partial vessel (missing both its rim and base) was recovered from the floor of Feature 26. Half of this slab-made vessel was tempered with shell-tempered grog and the other half was tempered with grog and shell. In order to repair a flaw in the vessel, an additional slab of shell-tempered clay was used to mend the exterior of the vessel.

The shaping of vessels would have been accomplished using hands, paddles and other tools. Some of the paddles were cordmarked, leaving behind a distinctive pattern and texture. Scrape marks are seen on the exterior and interior surfaces of some vessels, likely made during a process of thinning out walls, removing excess clay, and shaping the vessel. Individual coils are visible along the broken edges of some rim fragments and occasionally coiled vessels were not completely smoothed over, resulting in slightly undulating surfaces. Burnishing with pebbles or bone is another technique that was used to smooth vessel exteriors and gave the vessel a smooth, shiny surface. Decoration of vessels would have taken place at this stage and later during the drying process and would have required another set of tools including stone, bone, and wood etching implements and paints made from carbonized material (black) and hematite (red). Most incising was done after slips had been applied and dried. Incising would have also taken place after the clay had been allowed to dry until it was leather hard (Rice 2005:145-147). Many of the tools used in this stage of the construction process could have been tools initially made for other purposes (cutting meats, plants, etc.) that were refashioned for pottery use. In other case, pottery trowels for example, were made specifically for shaping clays. However, no pottery trowels have been found at Common Field.

The choices made regarding the shape of vessels can provide insight into the learned practices of potters as well as possible communities of ceramic practice at Common Field. Both plate (Figure 8.15) and jar (Figure 8.19) profiles show considerable diversity in terms of how vessels were shaped, resulting in their ultimate form. This high amount of diversity would imply that potters in the region learned and taught ceramic production in a relatively open rather than closed system (Wallaert-Pêtre 2001). If there had been greater uniformity in shape across Common Field and across the region, one could argue that there was a closed system with highly structured learning. However, an open learning system does not mean that there is no structure to how young potters are taught and learned. The many different ways of shaping vessels seen at Common Field and in the American Bottom were likely tied to how individual potters were taught how to form certain kinds of vessels. Some learned that the rims of plates were formed separately and the later added to the body; others learned that the plate is formed as a single piece; some learned that plates should have a sharp or distinct shoulder whereas others learned to make plates with smoothed, rolling shoulders. The same holds true for how people were taught to make jars: some with long outslanting rims, some with smoothed rim/body interfaces, some learned that handles should be riveted, some that handles are appliqued. It is difficult at this point in time to attempt to determine if these communities of practice were arranged spatially at Common Field (ie. a community of practice may also be a community of kin-related and/or spatially proximate groups of people). However, based on similarities with rim profiles from locations like the American Bottom and its uplands

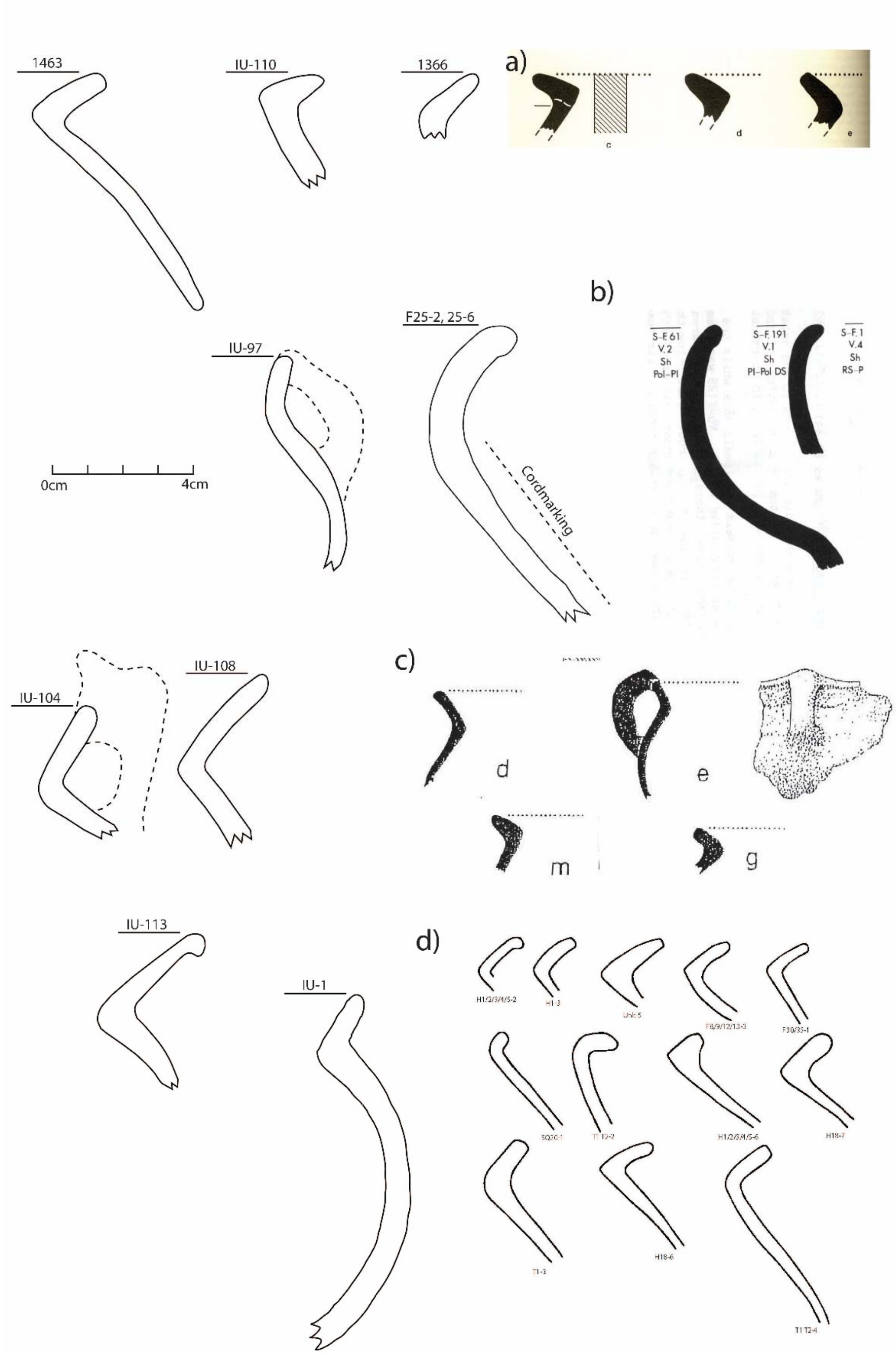

Figure 9.1. Jar rim profiles from Common Field (left) and American Bottom profiles examples illustrated in a) Bareis and Porter 1984 (Figure 64), b)Emerson et al. 1983 (Figure 81), Holley 1989 (Figure 54), and Pauketat 2013b (Appendix K).

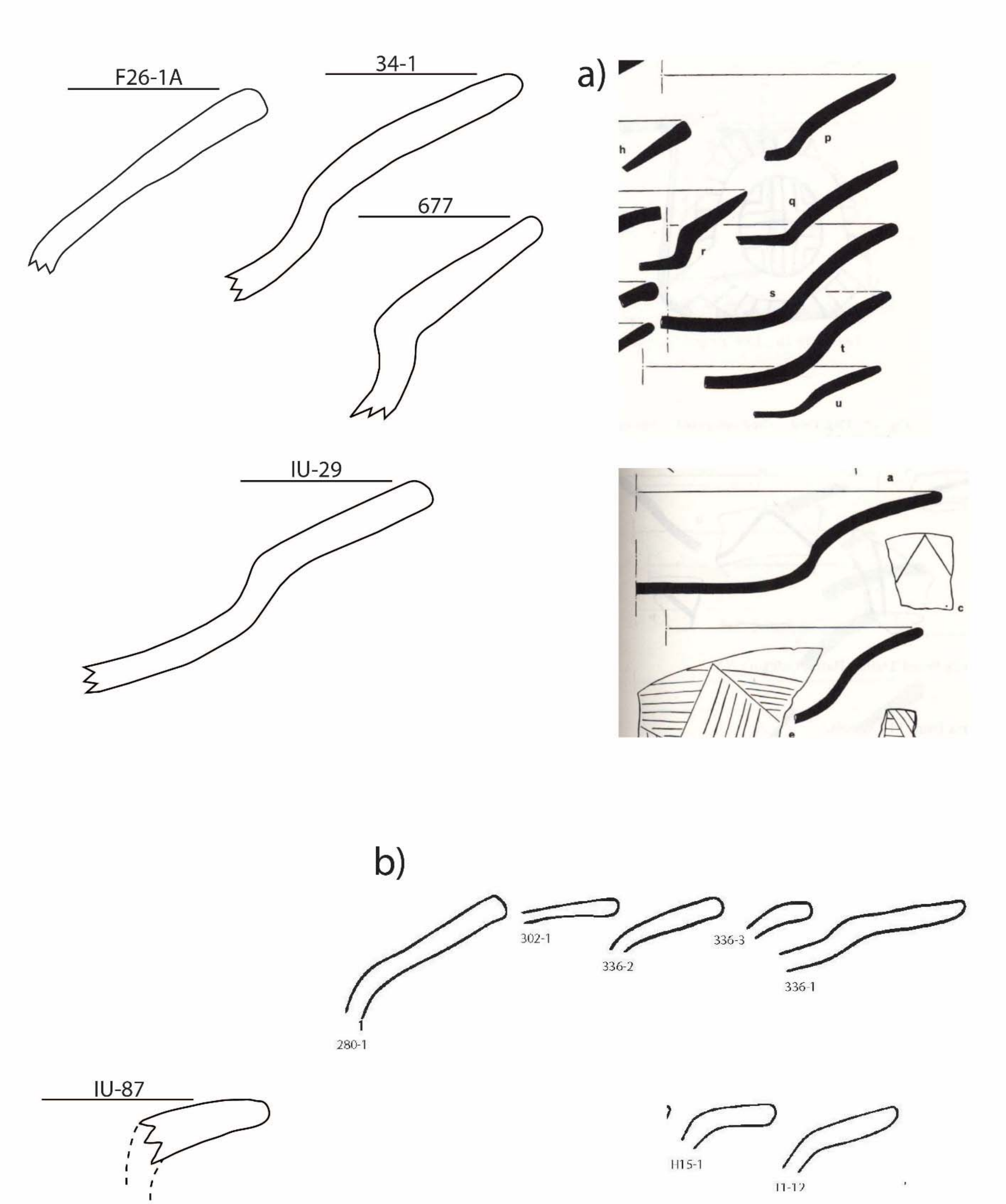

Figure 9.2. Plate profiles from Common Field (left) and American Bottom profiles examples illustrated in Vogel 1975 (Figures 65 and 67) and Pauketat 2013 (Appendix K).

(Baltus personal communication, 2014; Bareis and Porter 1984:Figure 64; Emerson et al. 1983:Figure 81; Holley 1989:Figure 54; Pauketat 2013b:Appendix K; Vogel 1975:Figures 59, 61, 65, 67), at least some of these communities of practice or traditions of learning were in existence prior to people moving to Common Field (Figure 9.1 and 9.2).

As Rice (2005:63) cautions, "drying is a dangerous step in the forming process, because stresses within the formed body can cause cracking and deformation." This is the stage of vessel construction where flaws and mistakes become most apparent. During this stage, water is evaporated from the clay, causing the vessel to shrink and cracks to appear if the vessel is dried too quickly. The drying stage would have required potters to closely monitor their formed vessels, determine when decorative slips and incisions were safe to add, and make sure that the clay did not dry too quickly. Common Field has the benefit of being located in a humid region that would have helped clays not to dry too quickly (as long as they were kept from the sun). Vessels that formed cracks might be repaired with additional clay or completely started over so as to avoid later issues with firing. There is little evidence that potters at Common Field had problems during the drying stage aside from the example discussed above with the clay slab mend.

The firing of vessels would have been another stage where the production process could go wrong. These potential errors in the firing process could have been detrimental to the vessels as well as the people who made them. Flaws in the clay fabric and tempers could result in portions of the vessel breaking off or, in worst case scenarios, exploding into pieces. Because of these dangers, it is unlikely that vessel firing took place inside of homes. This hypothesis is borne out by a relative lack of hearths (which could have doubled as cooking and ceramic firing facilities) inside of structures (this is also the case in the American Bottom). Instead, the firing of vessels would have taken place in an open area, some distance away from places where large groups of people would gather. Wind would be of concern to people firing their vessels since high winds could heat coals to levels that would cause clay to expand and explode. Many of the vessels from Common Field have clay matrix that is greyish and surfaces are dark, especially the interiors of plates, which were dark in color and then had a black slip applied. Black coloration occurs when carbon becomes deposited onto surfaces during firing (Rice 2005:345). In this case, the source of carbon was burning wood or other organics used to fuel the fire. In some cases, the firing is uneven and there is variability in the surface coloration. When pots are fired in a situation where potters cannot control all of the variables involved in firing, particularly the wind, different portions of the vessels can be exposed to different firing temperatures. Wind levels tend to be lowest during mid-summer (Windfinder 2014), a time when the climate is also at its most humid and then there is less chance of an out of control fire spreading. At this point in time, several factors regarding the firing processes at Common Field are unclear: first, where firing took place and second, if firing vessels was an activity for just a few potters, or if firing would have been a large-scale or community-wide event.

The final two stages of the ceramic *chaînes opératoires* are use and disposal. As discussed in Section 8.3, different vessel types are thought to have had specific purposes. Residue analyses of beakers from the American Bottom suggest that they were used for the serving and consumption of non-local beverages such as Black Drink and/or chocolate (Crown et al. 2012; Washburn et al. 2014); bottles, with their restricted orifices were likely also used for the serving and consumption of liquids; jars could have served many purposes from cooking, to serving, to storage; and plates, with their wide, decorated rims, open orifices, and large size would have been used for serving (see below for more discussion of plate use). The final disposition of all of the vessels from Common Field is difficult to discern since many were recovered from a surface collection. However, those that came from excavation contexts were primarily from the fill of domestic structures. Thus at this point, none of the vessel classes present at Common Field appear to have been afforded special burial or deposition and were likely disposed of in multiple contexts. Importantly, some number of vessels were given a secondary use life as they were crushed, mixed into clay, and built into new vessels.

9.2.2. Vessels

The Common Field ceramic assemblage is highly unusual in terms of vessel composition. As discussed in Chapter 8, Mississippian sites (both earlier and contemporaneous with Common Field) typically have jars as the most common vessel type. In contrast, the most common vessel type at Common Field is plates, particularly serving wares (plates) that are slipped or smudged black and decorated with incised lines. These decorated vessels, referred to as Wells Incised, and the presence of large numbers of serving wares deserve an extended discussion and interpretation. The Wells Incised type was defined by Griffin (1949) based on vessels found in the American Bottom region. His definition specifies that Wells Incised vessels are shell-tempered, have a smoothed or polished surface, with medium wide/deep or narrow lines in patterns of line-filled triangles, alternating line-filled and blank triangles, nested triangles, or groups of oblique lines. In the Ohio and Lower Mississippi River valleys, a similarly defined type (Williams 1954) is referred to as O’Byam Incised or O’Byam. A comparison of the descriptions of both types shows that there is little to recommend the differentiation into two types.

Prior to the early A.D. 1200s, Ramey Incised jars were highly charged vessels created in the American Bottom and distributed throughout the Midwestern and southeastern US (Emerson 1997a, 1997b, 1997c; Pauketat 2004; Pauketat and Emerson 1991). These vessels brought together symbolism, vessel form, and bodily movement to convey certain ideas about the cosmos (Figure 9.3). Ramey vessels are semi-globular with sharply inslanting shoulders and rolled rims. Incised and trailed designs (Figure 9.3a) are restricted to the broad shoulders of the vessels.

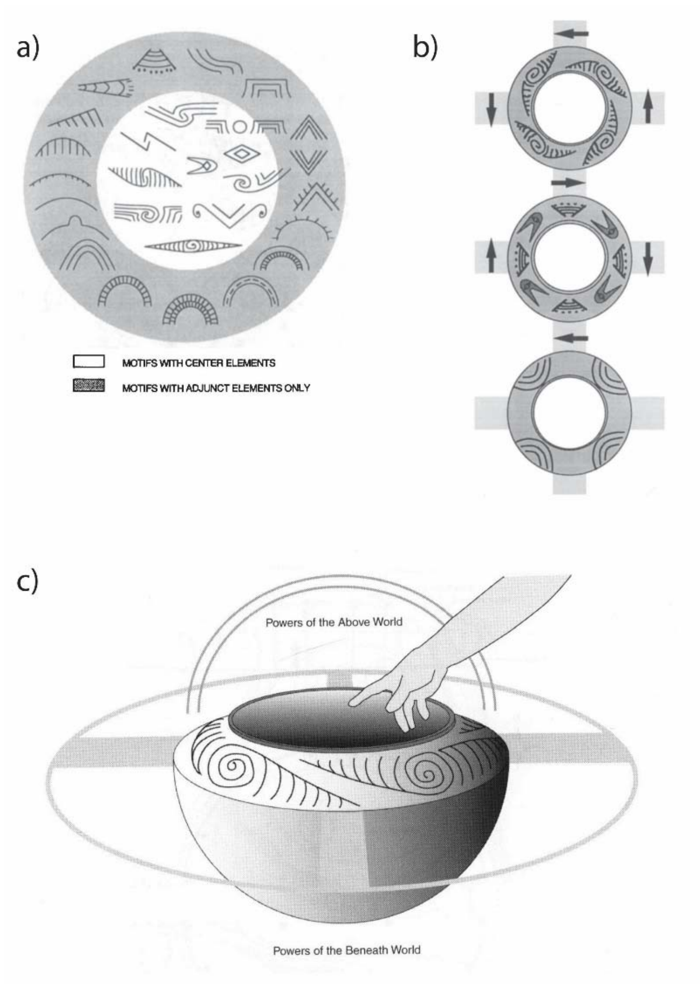

Figure 9.3. Ramey Incised symbolism; a) frequent Ramey motifs (Pauketat and Emerson 1991:Figure 4), b) Ramey quadripartite division (Pauketat and Emerson 1991:Figure 7), and c) reaching into a cosmic container (Pauketat 2013a:Figure 5.2).

Timothy Pauketat and Thomas Emerson (1991) have demonstrated that the designs on these vessels are arranged in a quadripartite division and frequently blend together Upper and Under World themes (Figure 9.3b). Further, the orifice of the vessel served as an axis mundi located in the center of the quadripartite division, connecting the physical and sensuous aspects of reaching into a vessel and tapping into the powers of the cosmos and the materials held within the pot (Figure9.3c). Based on the distribution of residues on the interior of vessels, Jessica Miller (2013) argues that Ramey vessels (and their undecorated counterparts, Powell Plain) were used for decocting liquids, possibly something similar to the Black Drink. Christina Friberg's (2014) analysis of Ramey motifs outside of the American Bottom has shown that Late Woodland motifs and design layouts are common in places like the Central Illinois River Valley, the Apple River valley, and Aztalan. Thus, Ramey made in the American Bottom may have reflected particular Cahokian narratives about the cosmos (and their attempts to spread that narrative), and other peoples living in hinterland regions integrated their own, localized interpretations into Ramey symbolism.

After early A.D. 1200, Ramey vessels were no longer produced in the American Bottom. Instead, long rimmed plates with incised decorations became much more common in the American Bottom, portions of the central Mississippi and Illinois River valleys. In the lower Ohio and Tennessee/Cumberland region, Negative Painted plates were present at Angel, Kincaid, and other Mississippian sites.

The Wells Incised decorative type is described as a sunburst motif. Kelly (1984:10, cited in Hilgeman 2000) has suggested that when a Wells Incised plate "is viewed as a whole, the various elements combine to represent the rays of the sun." Emerson (1997c:227) goes further and says that Wells plates contain “unambiguous sun symbols” and their use represents a major shift in Cahokia symbolic referents from the earlier symbolism present on Ramey Incised

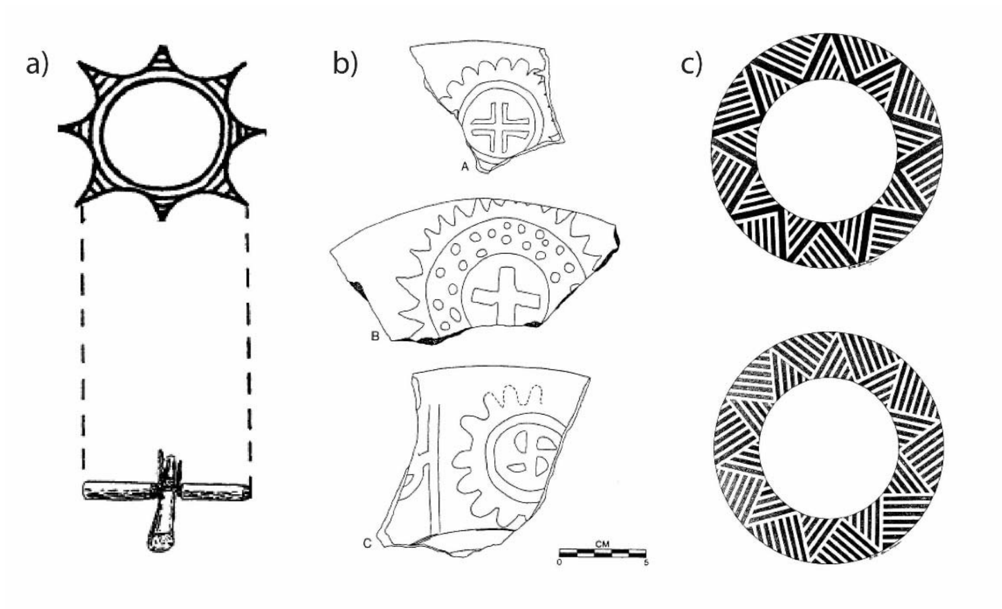

Figure 9.4. Mississippian cross-in-circle motifs in the context of a) fires (Lankford 2007) and b), c) Negative Painted pottery (Hilgeman 1999:Figures 7 and 10).

Figure 9.5. Wells Incised plate at the Cahokia Mounds Museum (photo by Michael Fuller, http://users.stlcc.edu/mfuller/cahokia.html).

vessels. With regards to Angel Negative Painted vessels, Hilgeman (2000) has argued that the combination of sun imagery and quadripartite division results in the production of the cross-in-circle motif, present throughout the Mississippian world (Figure 9.4). Drawing on southeastern ethnohistoric examples (particularly the Creek and Cherokee), she further connects this imagery to green corn and new fire ceremonies. This analogy has typically been extended to Wells Incised plates based on Kelly's suggestion that they represent sun symbols (see for example Figure 9.5).

However, the "sun rays" or nested, incised v-shaped designs are also present on Oneota vessels in the Upper Midwest where they are interpreted as avian symbols, specifically the broad tail and wing elements of raptors (Benn 1995) (see Figure 9.6b). Earlier vessels and rock art from the Upper Midwest depict human-avian hybrids, falcon dancers, or anthropomorphized raptors with triangular tail and wing fans that have radiating lines emerging from them. The diversity of incised plate motifs present at Common Field (see Figure 8.16) highlights some of the issues with assigning Wells Incised iconography exclusively to solar phenomena and green corn ceremonialism. First, if the well of the bowl is the body of the sun and the triangles the rays, why are the rays sometimes line-filled and other times not? Second, why are the line-filled "rays" sometimes in opposition to each other? Third, what should we make of the chevrons, curvilinear ladders, nested triangles, and line-filled half circles? While the interpretation of these vessels as sun circles is likely on one level correct (many clearly look sun-like or have obvious cross-in-circle designs), I would also like to propose that, Wells Incised plates reinterpret or reposition earlier Ramey Incised iconography (and its concomitant cosmic entanglements) through synecdoche alluding to hawks, falcons, and Thunderers, while excluding the Under World elements that were critical to the cosmic balance embodied in Ramey vessels.

The connections between birds of prey and Mississippian warrior and leadership status is well known (Emerson 1997c; Knight 1986; Strong 1989). Charles Cobb and Bretton Giles (2009) have argued that depictions of birdman warriors were intended to inculcate men towards particular warrior dispositions (although see Zejdlik et al. 2014 as to whether or not these depict persons who were male). Ethnohistoric accounts of war-related narratives and ceremonies provide additional evidence connecting warfare and birds. Francis LaFlesche's (1939) account of Osage War and Peace Ceremonies provides an evocative and relevant example, since many now believe that Deghian-Siouan speaking peoples of the Prairie-Plains are some of the descendants of Mississippians from the Middle Mississippi and Lower Ohio River valleys (Kelly and Brown 2012; Pauketat 2008). In one Osage narrative, the Sacred Leader, who has been chosen to lead a war party and has been fasting for seven days, is approached in the dark hours of the seventh morning by a hawk seeking protection from an owl (LaFlesche 1939:10-11). The hawk asks for protection because he is at a disadvantage at night and his strength is with the light of day. In return for the protection given by the Sacred Leader, the hawk gives him a wing feather as an item of remembrance, at which point the hawk flew into the air and attacked the owl, severing its head from its body. The hawk reminds the Sacred Leader to remember that event (through the feather he has received) when he attacks his foes. The Sacred Leader returns to his village, murmuring, "Thus the power of the day overcomes the night." In this narrative, the connections between hawks, feathers, day/sunlight, violent attacks, and warfare are explicit.

Pauketat and Emerson suggested that in-filled triangle, nested triangle, and half circle motifs on Ramey vessels were associated with the Upper World – in-filled triangles and nested triangles refer to feathers and ladders refer to sky-vaults. The association between birds, birdmen, and triangular motifs is made even more apparent when Oneota vessels from further north are taken into account (see above) (Figure 9.6); this is an argument Robert Hall (1991) made connecting Oneota vessels to Ramey Incised pots. In these vessels, bird men have outstretched wing and tail fans that depicted with line-filled and nested triangles. Thus, it is not a stretch to suggest that Wells Incised plates, which appear after the cessation of Ramey production, carried at least some of the same symbolic repertoire as Ramey. Pauketat (2013b: 229) even suggests that the incised decorations on plates was "decidedly Ramey-like in its execution." One plate rim from Cahokia's Tract 15B makes these connections even more

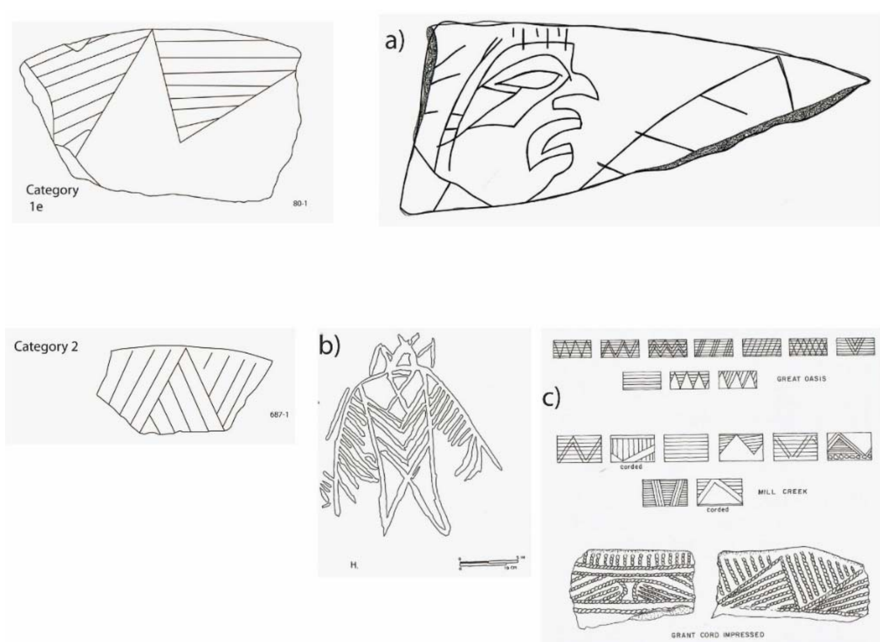

Figure 9.6. Examples of Common Field plate rim categories 1 and 2 (left) paired with birdman and avian imagery from Cahokia's Tract 15B (adapted from Pauketat 2013b:Figure 6.50) and the Upper Midwest (Benn 1995:Figure 17 and 13).

explicit, depicting a birdman, wing outstretched, in the shape of a triangle filled in with lines (Figure 9.6a).

Other elements on Wells Incised plates many similarly reference avian and Upper World beings and powers. The in-filled circles are reminiscent of the stylistic conventions used to depict wing feathers like those on the Wulfing A and Rogan 1 copper plates (Figure 9.7). Chevrons bear a resemblance to terraced cloud motifs and lightning bolts emanating from the

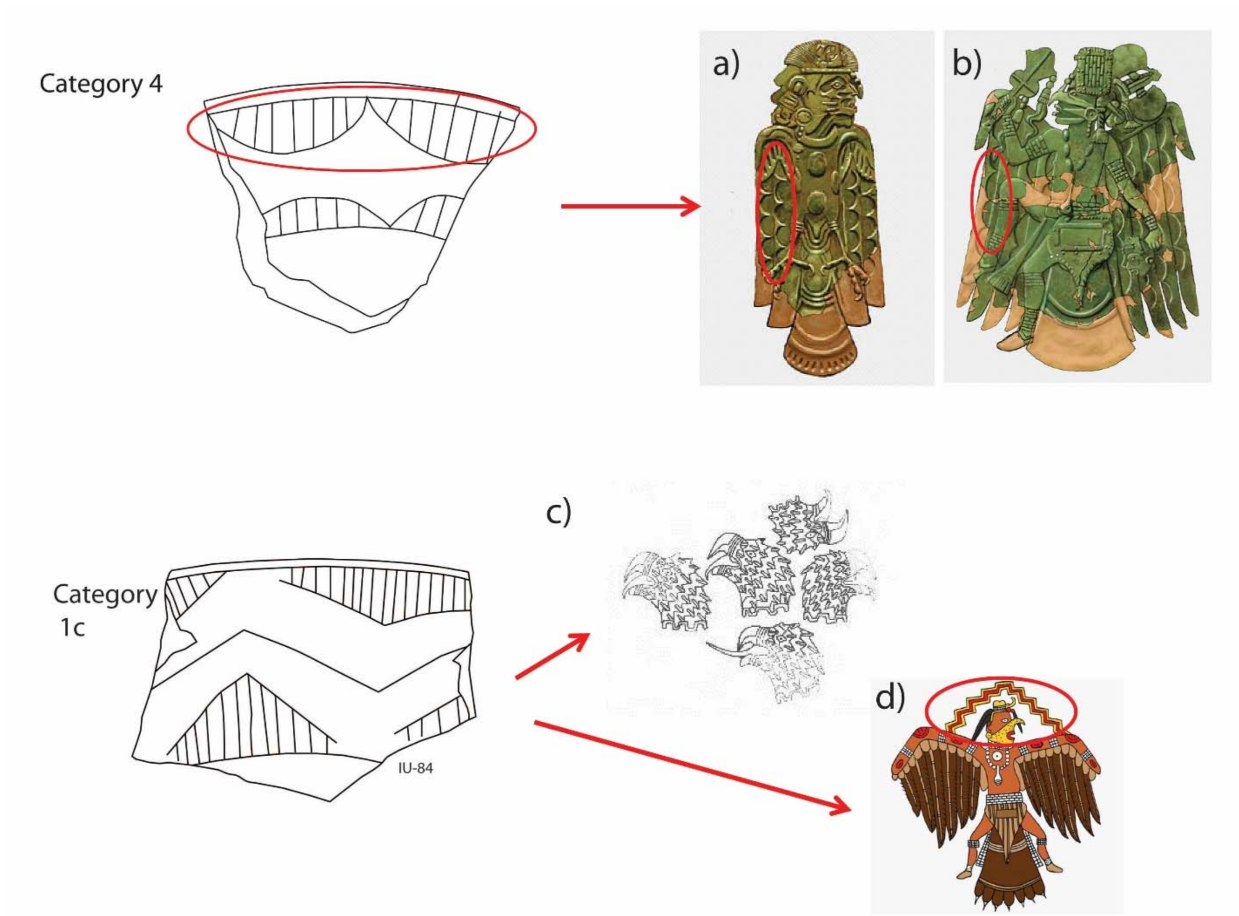

Figure 9.7. Examples of Common Field plate rim categories 1 and 4 (left) paired with birdman and avian imagery from a) the Wulfing plate A (http://en.wikipedia.org/wiki/Wulfing_cache), b) the Rogan plate 1 (http://en.wikipedia.org/wiki/Etowah_plates), c) decapitated eagle heads (Phillips and Brown 1978:Figure 191), and d) birdman from Spiro (illustration by Herb Roe, http://commons.wikimedia.org/wiki/File:Chromesun_mississippian_birdman.jpg).

mouths of Thunderers that inhabit the sky. The feathers of decapitated eagle heads depicted on a Spiro shell cup are similarly rendered with chevrons (Phillips and Brown 1978:Figure 191).

Wells Incised plates, while drawing on avian imagery present in the Ramey Incised repertoire, do not appear to carry the balance present in Ramey. The form of Wells plates does not allow for the physical, experiential aspects of Ramey; you cannot transcend the Upper World, through This World, and reach into the Under World with a Wells Incised plate. Also missing are the iconographic elements that reference the Under World; no spirals, volutes, or other Under World symbols. Instead the emphasis on Wells Incised plates is exclusively on the Upper World; wings, feathers, lightning, and ladders. The cosmological hierarchy embedded throughout Ramey is not present in Wells Incised plates.

These motifs must be reinterpreted within the changing social milieus in which they were produced, used, and disposed. Hawks, falcons, Thunderers and their close associations with war-like and violent actions make for potent symbols. With the regional spread in violence, the cosmological structure of the world may have no longer been in balance; the presence of the Upper World, with its war-like bird of prey inhabitants, would have been more visible and experienced by people throughout the region.

Serving vessels would have been an ideal medium for depicting the prominent role of the Upper World during this turbulent period. Large serving vessels would have been viewed and used to feed large numbers of people who were present at and participating in ceremonies. There is no evidence that Wells Incised plates (or Negative Painted plates) were ever placed over fires for cooking or decocting, but their open orifices make them ideal for serving. The association between war-related and Upper World imagery and the foods served within vessels may have imparted those foods with certain powers (*sensu* Fowler 2004; Joyce 2005; Weiner 1992), preparing people to go to war, to protect against attacks, or to solidify and/or create group communal identities in a rapidly changing social landscape (*sensu* Carsten 1995; Dye 2007; LaFlesche 1939; Weismantel 1995). LaFlesche's account of Osage war parties describe long ceremonies in which days of fasting by the war party was followed by feasts prepared by women and consumed prior to and after wars. Motifs depicted on ceramics were not just reflections of political, religious, or social ideologies; they were the materialization of complex relationships that were constantly changing and would have served as aids in the performance of narratives aimed at shaping or reinforcing those relationships. Brumfiel (1998, 2004) argues that in the Late Postclassic Basin of Mexico, the serving of foods and drinks from ceramic vessels with upper and below world iconography would have evoked themes of warfare (cosmic and in this world) and was aimed at particular audiences, namely the younger sons of noble families who might be conscripted into warrior classes. Similarly, Cobb and Giles (2009) interpret Mississippian shell gorgets as a medium of communication that served to inculcate certain populations into warrior dispositions. Thus, war-related iconography etched onto the rims of serving vessels could have had multiple functions and meanings at once; warfare, a world in chaos, use in war preparation ceremonies, use in post-war ceremonies, and use in warrior-making. The placement of that iconography on a highly visible media would have been used to reinforce certain narratives and relationships between people at Common Field, their relationships with people in other polities, and their place in an out of balance world.

Recent residue analyses of beakers from Cahokia have recovered evidence of the chemical theobromine, a chemical present in both *Ilex vomitoria* (Crown et al. 2013) and

Theobroma cacao (Washburn et al. 2014). Neither of these plant species are indigenous to the region (*I. vomitoria* is from the Gulf Coast and *T. cacao* is from Mesoamerica) and both are recorded in historic documents as playing an important role in rituals and ceremonies in the Southeast and Mesoamerica. Dye (2007:153-154) has argued that warfare rituals in the southeast were aimed at reducing anxiety, bolstering group solidarity, purifying warriors, and appealing to supernatural powers. One way to achieve both bodily and spiritual purity was through the consumption of emetics like the Black Drink, made from *I. vomitoria*. Like the feasting that was part of Osage war ceremonies, some southeastern Native American societies engaged in periods of fasting and feasting accompanied by rituals of purification, including the consumption of emetics. The presence of beakers, which have been documented elsewhere to have contained emetics, and the presence of large numbers of serving wares at Common Field is evocative of the same kinds of fasting, feasting, and purifying war ceremonies that were recorded historically throughout the Plains and Southeast[25]. Taken together, the presence of plates with war-related iconography and beakers with residues from emetics would point to ceremonies of war, although at this point in time it is not possible to say if they would have

[25] While I have drawn on Osage accounts of war and peace ceremonies to aid in interpreting some of the archaeological data from Common Field, it is also clear that much of the data from Common Field and other Midwestern Mississippian sites do not neatly 'fit' into the ethnohistoric accounts of any one historically known Native American society. At the time LaFlesche wrote his accounts of the Osage, they had been displaced far west of their ancestral homelands, their populations had been severely reduced, and their traditional religious and political practices were being attacked by the U.S. government (Bailey 1995). LaFlesche wrote some of the most detailed accounts of religious practices in existence; it is enticing to get caught in the particular details and their possible archaeological analogues. My use of the Osage accounts is not to suggest that their war and peace ceremonies were a hold out of pre-contact, Mississippian war ceremonies. Rather, the Osage, like many other indigenous societies of North America engaged in a number of common practices related to preparing for war: feasting, dancing, singing, spiritual visions, bundle ceremonies. Mississippian peoples of the Midwest and Southeast appear to have engaged in some similar general practices, but the particulars vary considerably across space and time. For example, Dye's (2007) interpretation that Moundville bottles were used in war purification ceremonies draws on Chickasaw and Natchez analogies; Hall's (1997) discussion on the antiquity of calumet and war ceremonialism primarily draws from Historic accounts of Algonquian speaking peoples.

been used in rituals relating to war preparation, returning from war, warrior initiation, or all three. Ethnohistoric records indicate that tribes throughout the Eastern Woodlands and the Great Plains participated in variations of one or more different kinds of war ceremonies that were highly spiritual and involved the consumption of food and drink.

9.2.3. Temper

The adoption of shell-tempering (Figure 9.8a) during the Mississippian Period is seen by some as a technological advancement (Dunnell 1978; Holley 1989; O'Brien and Wood 1998). The incorporation of carbonized shell into pottery clay allows for greater vessel strength and crack resistance, reduces clay stickiness, allows for the construction of thin-walled vessels (which facilitates heat transfer), and compound construction techniques. The beginning of the Mississippian Period witnessed the near complete adoption of shell tempering, which aided in the proliferation of vessels types, reduction in vessel wall thickness, and compound construction techniques (Holley 1989; Pauketat 1998). During the Cahokian climax (ca. A.D. 1100) some site ceramic assemblages were comprised of 100% shell temper.

Rather than seeing these changes as just a technological advancement, Pauketat (2001) suggests the incorporation of shell temper into ceramic technological practices at A.D. 1050 in the American Bottom should not (and cannot) be separated from the historical processes associated with the founding of Cahokia. Focusing only on the technological advanced aspects of ceramic production ignores the broader connections between technology, food, object use, discard, and their sociopolitical settings. For example, there is evidence from sites in the Cahokian uplands that the inclusion of shell temper did not improve clay chemically or mechanically (Alt 2001). Despite this, potters in the uplands still tempered the majority of their vessels with shell. Pauketat (2001) questions why upland potters would adopt shell tempering when it resulted in higher percentages of breaks, if not for historical processes related to the founding and settling of Cahokia?

During the Moorehead Phase, 150 years after the adoption of shell tempering, the use of shell temper still accounted for upwards of 80% of vessels recovered from most American

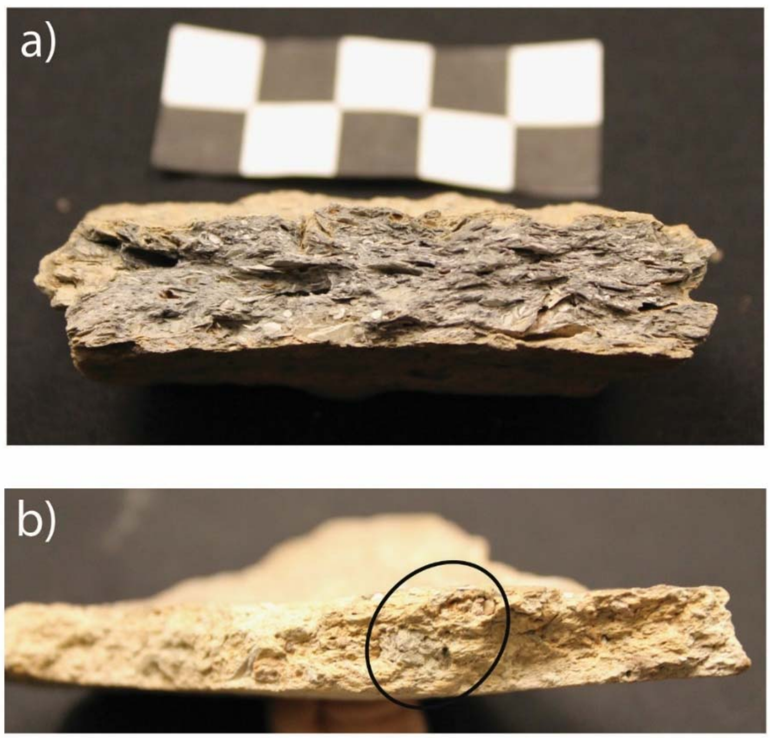

Figure 9.8. Sherd breaks from two Common Field vessels showing the presence of a) shell temper and b) shell/grog temper.

Bottom and Lower Ohio River Valley sites (Brennan 2013; Hamlin 2004; Holley 1989; Milner 1984b; Pauketat 1998, 2005a, 2013b; Pauketat and Woods 1986) (Figure 8.7)[26]. Many of the

[26] Many sites in the Lower Ohio and Lower Mississippi River Valleys rely on the type variety system for their ceramic analyses (e.g. Hilgeman 2000; Wesler 2001); others simply note that the majority of Mississippian sherds were shell-tempered (e.g. Kellar 1967;Cogswell and O'Brien 2002). The implicit assumption is that if a sherd was assigned to a Mississippian type, the temper is shell. However, as seen with sherds from Common Field that would fall under the Wells Incised type (which is defined as shell-tempered), many have mixed tempers. In other cases

archaeologists who conducted the ceramic analyses from these locations note that shell temper often has grog as an admixture. Shell-grog sherds (Figure 9.8b) can consist of mixtures of shell and grog, grog made from crushed shell sherds, or a mixture of the two combinations (shell mixed with shell-grog) making the identification and differentiation between tempers problematic[27]. Porter (1962, 1963a, 1963b, 1963c, 1964, 1964b) analyzed thin sections from a number of sherd types from sites in the American Bottom (Cahokia, Mitchell, Pulcher) and found that grog was visible microscopically but not macroscopically. He found sherds that had been identified as grit-tempered were actually tempered with grit-tempered grog; he also found examples of shell-tempered grog. In his analysis of the Julien Site pottery, Milner (1984b:129) noted the difficulties in macroscopically differentiating between shell temper and grog temper made from crushed shell-tempered pottery. This difficulty in differentiating shell-tempered sherds from shell-grog mixture sherds likely means that shell-grog sherds are underrepresented in the final analyses of these assemblages.

In the analysis of ceramics from the 1980 Common Field surface collection, Ferguson (1990) mentioned that sherds frequently had grog mixed into the temper. Ferguson placed the shell-grog tempered sherds in the Baytown Plain type and created the Common Field Plain type in order to account for plain, burnished sherds with grog or shell-grog temper. Combined, these mixed temper types account for less than 4 percent in her analysis of the Common Field

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(see below), sherds were placed in types from the Late Woodland Period when they almost certainly came from Mississippian contexts. During an informal survey of Negative Painted sherds from Angel Mounds housed at the Glenn A. Black Laboratory of Archaeology, I found multiple examples of sherds that were classified as shell-tempered but had shell-grog present. For these reasons, I have left analyses that do not explicitly address temper out of this analysis. However, planned future research (see Chapter 10) will reexamine some of these collections in order to assess the presence and frequency of mixed temper sherds.

[27] Also adding to the lack of clarity was the tendency to use the categories of clay temper and grog temper interchangeably.

assemblage. Problematically, Ferguson's strict adherence to the type variety system forced mixed tempered sherds into non-local, chronologically pre-Mississippian use periods (by several hundred years and several hundred miles in the case of Baytown pottery).

Overall, approximately 63% of the Common Field rim sherds are shell-tempered and over 25% contain mixtures of shell and grog (Figure 8.5). Without the benefit of microscopic analyses these totals are likely under representations as grog can be crushed so small that it is difficult to discern from the clay matrix. Some have suggested that mixed grog and shell was used largely for thick walled, expedient vessels related to salt processing (Ferguson 1990). This proposition has several problems. First, there is no explanation as to why shell-grog or grog-tempered pottery is better suited for salt processing. In fact, large pans used for salt processing are almost exclusively tempered with coarsely crushed shell. Secondly, as the ceramic totals from Cahokian sites show, shell-grog combinations do occur at sites where there are not natural salt sources. Salt springs are located along the Meramec River and the Saline Locality, not in the American Bottom. Finally, when broken down by vessel type, shell-grog sherds from non-salt related vessel types have been recovered from Common Field, including nearly 30% of recovered plate rims (Figure 8.6 and Table 8.2). In contrast, the Lawrence Primas site (which also had high percentages of shell-grog tempered sherds) had shell-grog mixtures in all vessel types except plates and bottles (Pauketat and Woods 1986).

Perspectives that emphasize the selection of particular technological traits as advantageous do little to help explain what appear to be technological maladaptations or regression to earlier practices. They also do not aid in understanding why people in some places (like Common Field and Lawrence Primas) engage in supposed maladaptations while others who live nearby (Cahokia, Julien, Kincaid, South Cape, Dampier) persist in using shell temper. The different choices made regarding the kinds of materials to add for temper reveals much about the learned practices and embodied knowledge of potters and their decisions in the pottery making processes. As discussed in Chapter 2 (Section 2.3.2.1), ethnoarchaeological studies of potters have shown that knowledge related to the processing and shaping of clays are often the most conservative to change. However, at Common Field, Mississippian potters who decades earlier would have tempered the vessels almost exclusively with shell changed their practices. The addition of shell into clay would have resulted in a tactile sensation different than the use of grog since shell-tempered clay is less sticky and stiffer (O'Brien and Wood 1998:250). Yet, rather than using simple fired clay or leftover daub from abandoned structures, Common Field potters chose shell, grog made from crushed shell-tempered pottery, and shell-tempered grog mixed with additional shell. Potters who were trained to shape clays tempered with carbonized shell, who were used to the feel of certain clays, and whose bodies were accustomed to working clays that were a particular stiffness, would have had to balance that technological knowledge against the availability of materials. For these reasons, I propose that potters made the decision to make accommodations based on the likelihood that travel to and work along the Mississippi River was a dangerous prospect due to the increase in violence and the frequency of riverine travel (e.g. war parties). Like the extreme lack of fish remains at Common Field (see below and Chapter 7), the reduction in the amount of shell and the use of recycled shell-tempered sherds points to a shift away from riverine resources. However, for Common Field potters, using shell-tempered grog or grog with small amounts of shells could have maintained the kinds of clay-feel that potters were used to without having to access the river as frequently.

This is the kind of hybridity (*sensu* Alt 2006a, 2006b, 2008, 2012; Bhabha 1994) referred to in Chapter 2. Hybrid not in the sense that these vessels are part shell-tempered pot and half grog-tempered pot, but hybridity in the sense that peoples' embodied sensibilities (their know-how to make ceramic vessels) were altered due to different circumstances and in the development of innovative ways of making ceramic vessels. The same could be said for the decorative motifs used on plates. Potters took what they knew (particular symbols and their associated meanings and powers) and innovated different ways of deploying those symbols on plates instead of jars (thus changing the hierarchy of meanings) and by emphasizing a palimpsest of Upper World and warfare related referents.

9.3. Foodways

The faunal evidence related to the procurement practices of people from Common Field confirms some of the interpretations of the ceramic materials. First, there was very little fish remains recovered from feature contexts. Like the switch away from exclusive shell temper, this lack of fish remains despite living in close proximity to the Mississippi River is suggestive of food practices that avoid riverine fauna (although fish processing cannot be ruled out at this point) due to the increase in violence in the region. This is particularly striking when compared to assemblages from earlier and contemporaneous sites in the American Bottom and the Illinois River Valley, most of which have considerably more fish than is present at Common Field. The one exception is the Kincaid assemblage which suffers from taphonomic biases. The Common Field assemblage is also fairly heterogenous and evenly distributed among species.

Second, the Common Field faunal assemblage hints at excursions and exploitations of hilly uplands and/or the Ozarks to the west. Like the hematite (and some lithic materials, see below) that was present in some of the clay fabric used to make vessels, several species present in the Common Field assemblage would have lived primarily in hardwood forest areas. While deer, foxes, squirrels and other mammals inhabit the interfaces between wooded and grasslands, elk and eagle are primarily forest dwellers.

Third, the proportions of deer elements in the assemblage are evidence that some butchery was taking place in the field, but not necessarily a complete breakdown of carcasses. Distal limb and cranial elements are poorly represented. Hind and fore limbs are the most frequent elements, followed by axial portions. Together, these present and absent anatomical units are indicative of carcasses that have heavy, low meat bearing elements removed in the field, with higher utility portions returned to the site. Field dressing of carcasses can significantly cut down the weight of the portion returned to the site for consumption and use. Rather than an entire deer weighing 150 pounds (or more), removal of less useful portions could result in a carcass that could be carried by a single individual.

As discussed in Chapter 2 (Section 2.3.1), Scott (2009) has discussed situations in which Karen villagers in Burma adopted subsistence practices that would facilitate escaping detection and fleeing if they were spotted. The faunal evidence from Common Field supports a similar kind of interpretation; hunting in areas where people conceivably would have been less of a target for war parties, raiders, or captive takers. Further, the deer butchery practices indicate that hunters could hunt on their own and still bring back a significant amount of meat, marrow, offal, and other useful deer related materials. Finally, the high degree of bone fragmentation at

Common Field has been noted in other regions and time periods as evidence of intensive processing of bone resources for the production of grease. The faunal practices at Common Field are highly suggestive of hunting and processing strategies that attempt to balance maximizing returns while at the same time minimizing danger to people as they moved about the landscape.

9.4. Living in a Warscape

As violence in the region intensified, the people at Common Field constructed a palisade around their community. Within the wall, people were afforded a certain amount of protection; outside, they could have been the victims of attack. Certain goods and resources would have become difficult to acquire and getting shell from the river would have been dangerous. Faunal remains recovered from feature contexts at Common Field are dominated by terrestrial mammals and very few aquatic resources are present. Both the reduction in shell use and the lack of aquatic faunal resources point to avoidance of riverine areas beyond the palisade walls. LeBlanc (2006) suggests that polities in the past established buffer zones around their primary resource extraction areas. These buffer zones would have constituted a kind of no man's land and would have aided in spotting armies or war parties as they advanced across the landscape. LeBlanc does not mention how river travel rather than overland travel would have factored into the ability of polities to spot approaching armies. Rivers could be a quick and relatively quiet means for both attack and escape. While the veracity of the massacre at Starved Rock is in contention (Walczynski 2007), historic accounts of the event had the Illinois besieged by the Ottawa and Potawatomi who had traveled down the Illinois River to Starved Rock; some of the Illinois warriors were thought to have escaped via the river down to St. Louis. There are reports in the de Soto chronicles that the entrada was repeatedly attacked by canoes full of Native American warriors as they traveled down the Mississippi River (Clayton et al. 1993). Many Mississippian sites are located in floodplain regions, not defensive bluff top positions, making them a somewhat easy target for attack via canoe traveling war parties.

Rivers may have also had additional dangerous connotations as these were places that underwater monsters (also referred to as underwater panthers, piasas, uktenas, or horned serpents) lived. Hudson (1976) suggests that the Cherokee uktena lived in deep pools and mountains along the peripheries of the Cherokee world. Near the confluences of the Illinois, Missouri, and Mississippi Rivers there used to be a painting of a piasa on the Mississippi River bluff near Alton, IL. The Alton piasa was reported by Marquette whose Illiniwek guides also feared another water-based spirit (a Manitou) south of Ste. Genevieve, Missouri (Thwaites 1900). Marquette was also warned by the Menominees that there were great monsters living in the Mississippi that would consume canoes (Hall 1997:5; Thwaites 1900)[28]. One such monster is depicted in Picture Cave in Missouri (Diaz-Granados and Duncan 2000).

Some of the fauna present at Common Field are evidence that at least some hunting and resource procurement took place in upland contexts. Considerable use of the uplands and an overall orientation away from riverine areas is further supported by the possible use of upland clays in ceramic production and the presence of several artifacts made from materials that can only be found in the Missouri Ozarks (hematite, galena, magnetite, and diabase). Diabase recovered from Common Field in the form of a finished celt (Figure 9.9) and pieces of celt-making debitage have 'snowflake' phenocrysts consistent with diabase that is unique to the

[28] Water monsters could also bring good to people. The Skidi Pawnee believed that the Hako ceremony (calumet) and the Medicine-Men's-Dance were revealed to them by a water monster (Dorsey 1904; Hall 1997:84).

Skrainka Formation near Fredricktown, Missouri in the Ozarks along the eastern margin of the St. Francois Mountains (Crow 2014; Kelly 2010; Keyes 1895; Koldehoff and Wilson 2010; Pauketat and Alt 2004). These all point to frequent incursions into the Ozarks (Buchanan, in press). In addition to its salt springs and proximity to a gateway to the below world (the Bushnell Ceremonial Cave), the River Aux Vases could have also served as a gateway into Ozarks, another region associated with blurred boundaries between this world and supernatural worlds. Kelly (2010) suggests that Cahokians could have used the Big River and portaged to the St. Francois River in order to access the Ozarks. Another route could have been the River Aux Vases, which splits into two creeks near Hawn State Park, the location of several intrusive basalt dikes. Common Field, just upstream from both the River Aux Vases and the Saline Creek Locality, was in the perfect position to control these gateways and their resources (both physical and supernatural). This position may have also made Common Field an attractive target and could be one of the reasons why it was ultimately attacked and destroyed.

Potters at Mississippian sites like Cahokia learned how to shape clays that incorporated burnt shell as the tempering agent. However, as violent encounters increased, palisades were constructed, and movements restricted, tempering practices reveal the tensions between learned actions (shaping clays with shell) and the changing realities of daily life. Potters accustomed to adding shell, accustomed to the particular feeling of working clays with shell-temper, accustomed to making particular kinds of vessels, were faced with new realities and attempted to find novel ways to construct their wares. Rather than replacing shell-temper with only grog (a readily available resource in the form of clay subsoil), potters at Common Field continued adding shell, shell and grog, and shell-grog combinations to their clays. Since people do not easily un-learn embodied knowledge, the use of shell-grog combinations allowed for the continued enactment of learned practices in changing sociopolitical climates.

Like the potters described in ethnoarchaeological studies (see Chapter 2), the embodied practices related to the preparation and shaping of clays at Common Field were conservative and difficult to change as people continued adding shell to clay, albeit in different form. The use embodied practices of clay preparation within a world in which the use of traditional supplies of

Figure 9.9. Broken celt from Common Field displaying two characteristics indicative of diabase resources from the St. Francois Mountains (specifically the Skrainka formation): iron staining (visible along broken margin of upper image) and phenocrysts (lower image).

of grog and shell, or grog made from shell-tempered pottery was a way to continue traditional, grog and shell, or grog made from shell-tempered pottery was a way to continue traditional, embodied practices of clay preparation within a world in which the use of traditional supplies may have come at the cost of human life. At Cahokia and nearby politically allied sites (possibly Julien), the shell totals remained high because Cahokia was the largest political center of its time and may have been engaging in, rather than the victim of, attacks. For each of the sites discussed, the choices to use certain kinds of materials for ceramic production are socially negotiated practices that cannot be divorced from broader historical processes.

The Common Field ceramic assemblage and its associated iconographic decorations support the idea that there was a significant reorientation during the Moorehead Phase with regards to the religious and political efficacy and potency of certain kinds of vessels. The cessation in the production and use of Ramey Incised pottery signaled “an unraveling of entanglements” (Baltus 2014:307) between vessels, their associated powers, and the groups of people who held them. The reorganization and reorientation of some of the Upper World motifs onto serving vessels highlight the unraveling of old entanglements and the formation of new connections. Serving vessels with decorative motifs referencing warfare, the foods served within them, and the attendant ceremonies would have reinforced connections between people already living at Common Field (or who knew each other before settling the town), served to forge new relationships, and/or aided in the creation of warrior sensibilities (cf. Brumfiel 1998, 2004). Further, as noted above, ceremonies and the serving of food were a vital part of the war and peace practices of Prairie-Plains people during the Historic Era. That such practices (as evidenced through the serving wares) would have also been part of pre-Columbian ceremonialism during a period of heightened conflict would not be unusual since the historical roots of those Prairie-Plains Native American groups may have been practiced or even originated at places like Common Field or the American Bottom.

It has been suggested that Cahokian beakers and the ceremonialism associated with the consumption of might have been part of a distinctive Cahokian ritual package that was distributed throughout the Midwest along with Ramey Incised vessels and flint clay figurines (Crown et al. 2013). However, like the replacement by and/or transformation of Ramey iconography and vessels into Wells Incised plates, the continued use of beakers (and the likely continued use of emetics) at the same time there was an increase in the use of serving wares is highly suggestive of a significant reorganization and reorientation of associations between beakers, the materials contained within, and the people that used them. Rather than continuing to be a hallmark of Cahokian Mississippian, beakers and their emetics may have been entangled with plates (and their war-related iconography) and their associated ceremonialism.

9.5. Death and Destruction in a Warscape

Common Field's palisade necessitated a considerable investment in terms of resources and man hours in order to protect the village's inhabitants from perceived outside forces. While it has been argued that Cahokia's palisade demarcated a sacred space, Common Field's palisade surrounds the entirety of the village. The initial construction of the palisade involved digging a deep trench and setting upright logs into the trench. Soil stains from several of these 20 cm diameter posts were visible beneath the base of the palisade trench, indicating that the first palisade construction was either allowed to rot in place, or only partially chopped down with the bases left to rot in situ.

During the second palisade construction, a prepared fill of mixed crushed limestone, sandstone, polished pebbles, and galena was used beneath the posts and was packed around the bases of the fortification posts. This mixture could been intended to mitigate palisade settling or leaning. However, the mixed fill was very soft and loose, a condition that would have exacerbated leaning and settling rather than preventing them. The sandstone and limestone was likely procured from the bluffs located half a kilometer west of Common Field. The polished pebbles came from an unknown source.

The pebble fill included highly polished, subangular local chert cobbles, quartz pebbles, and siltstone (Maura Hogan, personal communication 2012), all of which could have originated from exposed local bedrock. However, there were also polished fragments of rhyolite (some with hematite flecks), basalt, and granite, all of which come from non-local parent source materials in the Ozarks/St. Francois Mountains. The high polish, the subangularity of the stones, and the presence of non-local materials are characteristic of low velocity creek or stream bed fill with a source at a higher elevation (Richmond and Weide 1993), like the River Aux Vases and the Saline Creek. The Springfield and Salem Plateaus that make up the Ozark Uplift region and the St. Francois Mountains are comprised of igneous bedrock, bands of chert, multiple basalt dikes, and multiple hematite and galena sources (Ray 2007; Weller and St. Clair 1928).

Several pieces of galena were also incorporated into the prepared palisade fill. Galena can be found in four Missouri counties (Crawford, Washington, Iron, and Reynolds), all of which encircle the St. Francois Mountains and the eastern Ozarks. Archaeologists working in the American Bottom recognize galena as a prestige and sacred item that could have been ground into white pigment, turned into other objects (such as beads), or left in its unmodified state (Betzenhauser 2007; Emerson 1997a; Pauketat 2004). The St. Francois Mountains and the Ozarks constituted part of a sacred landscape (Butler 2011; Kelly and Brown 2012; Pauketat and

Alt 2004); caves, sinkholes, and other unusual natural features in the region were visited by Mississippians and earlier peoples (Diaz-Granados and Duncan 2000). Many of these caves are marked with cross-in-circle and avian motifs (including the Bushnell Ceremonial cave in the Saline Locality). Caves were transgressable places where the boundaries between This World, the World Above, and the World Below were fluid. Materials brought back from the Ozark/St. Francois Mountain region would have had their own associated essences and powers. As people from Common Field accessed the Ozarks (via the River Aux Vases) or the Saline Creek (for salt or to visit the cave), they could have also picked up polished pebbles to bring back to the village for incorporation into the palisade.

In his account of Osage war and peace ceremonies, LaFlesche (1939:228) indicated that the Osage preferred not to engage in offensive warfare for fear of reprisal. Instead, they would engage in defensive practices for long periods of time before considering going on the offensive since the only way to be successful was to completely destroy ones enemies (Bailey 1995). This preference for defensive war was not necessarily practiced by other tribes, but serves to remind that not all warfare had to be offensive and also serves to remind that there would have been rituals of protection for villages and the people living in them. While La Flesche does not provide details about the practices used in Osage defense, his descriptions of war ceremonies and preparations can provide clues about the nature of human and supernatural interactions during war times. Preparations for offensive war among the Osage included praying, crying, and singing to *wa-kon-da* for aid and success; certain materials and animals, themselves considered to be *wa-kan*, were assembled for marches, dances, prayer, guidance, and worship.

Ceremonies and religious practices surrounding warfare were not simply “beliefs,” as animate powers were accessed in order to inspire war parties, protect warriors, and animate war trophies and bundles (Cave 2006; La Flesche 1939; Pauketat 2013a; Zedeño 2008).Humans could access and tap into these powers in order to affect the outcomes of violent encounters and to quell restless or dissatisfied spirits. There is considerable evidence that Mississippian peoples invoked the powers of objects, materials, places, and supernatural beings for a number of religious reasons (Baltus and Baires 2012; Emerson 1997; Kelly and Brown 2012; Pauketat 2013a); they would have also done so in order to invoke supernatural powers for protective measures and for victory in battle.

The inclusion of power laden materials into the foundations of the palisade would have create a protected space that was experienced daily. These materials were intentionally removed from non-local places (the Ozarks/St. Francois Mountains and/or the River Aux Vases and the Saline Creek) and constructed into the physical protection of the village. Structured deposits of specially prepared alternating mantles of light and dark soils in mounds have similarly been argued as evidence for the gathering of dispersed agentic forces at Mississippian sites in the American Bottom and uplands (Pauketat 2008). The deposition of materials from the Ozarks and their association with the palisade at Common Field suggests a bundling (*sensu* Pauketat 2013a) or gathering of agentic powers (physical and spiritual) around the village for defensive purposes. The agency or power of some protected spaces may have been such that the only way to destroy it was through fire, like the possible ritual burning of the East St. Louis mound site (Pauketat et al. 2013; cf. Baltus and Baires 2012).

University of Missouri researchers concluded that human remains encountered on the surface of Common Field in 1980 were burials because they were still articulated (O’Brien et al. 1982; O’Brien 1996). Formal burials in the Saline Locality were all in graves lined with limestone slabs or large fragments of salt pan (Bushnell 1914; Keslin 1964). Stone box graves are typical of the Moorehead Phase in the American Bottom and are found throughout the Mississippi and Ohio River valleys (Brown 1981; Emerson and Hargrave 2000). However, the UMC account of human remains recovered from the Common Field surface survey made no mention of limestone slabs or other evidence of formal grave features (photographic slides from the 1980 project also do not show limestone or distinct burial features). One individual was recovered by UMC in the fill of a house basin, unaccompanied by funerary goods or stone slabs for a grave. The presence of this individual in basin fill (rather than a subfloor feature or a formal cemetery) indicates this person was not buried and was instead left in the abandoned structure. Articulated human remains, a lack of formal burial features, the presence of one individual in house basin fill from the 1980 project, and numerous burned structures are indicative of a catastrophic event that resulted in loss of life.

During the 2011 excavations, another individual was recovered from the floor of a structure. Portions of a left and right femur as well as a tibia, patella, radius, and multiple phalanges were encountered during the excavation of a house (Feature 10) located just inside the palisade wall; there was no burial feature inside of Feature 10 and burial inside of houses is not a common Mississippian practice in this region. The femora and tibia of this individual were heavily impacted by carnivore gnawing, evidence that they were left exposed and no one scared away the carnivores. The presence of the gnaw marks along major muscle attachment areas indicates that this person may have still been fleshed when the carnivores began. Patches of burned and oxidized soil were present on the floor of Feature 10, as well as postholes with evidence of burning, indicating that the individual was left in the structure at approximately the same time it was burned. Following the conflagration, the deceased individual was left in or near the structure, exposed, and was eventually destroyed by carnivores before natural processes filled in the remainder of the basin with soils.

Patterns of carnivore gnawing have also been recorded at the Norris Farms #36 cemetery (Milner 1999; Milner et al. 1991) and the Crow Creek massacre site (Willey and Emerson 1993; Zimmerman 1997; Zimmerman and Bradley 1993). Both Norris Farms #36 and Crow Creek were the sites of violent attacks. At Crow Creek, survivors of the attack returned to the village and buried the deceased, but not before the dead were set upon by carnivores. Victims of attacks at Norris Farms #36 were similarly mutilated, left exposed, and gnawed by carnivores prior to being buried by returning survivors.

The recovery of human remains in house basins rather than burial features, and the extreme carnivore gnawing on at least one individual point to a different scenario of violence than that seen at Norris Farms #36 and Crow Canyon. At Common Field, as the village was attacked and the town burned, some people were killed and left exposed; while they were exposed, carnivores consumed the deceased and chewed their bones. If survivors returned to Common Field in order to bury the dead, not all were found and afforded burial; survivors may not have returned to bury the dead like they did at Norris Farms #36 and Crow Creek.

9.6. Small practices, Big Histories

In Chapter 2 (Section 2.3.2.2), I proposed that living in a warscape would have an impact on peoples' daily lives and practices and I posed three questions to answer. In this section I will revisit those questions from the micro-scale to the macro-scale and tie together the practices of daily life to the big histories that shaped both the future and the historical remembrances of those people who came after the inhabitants of Common Field and the Mississippian Midwest.

At the micro-scale (Question 2), I asked about how violence would impact daily practices before and after the spread of regional violence and hypothesized that there would be tensions between peoples learned practices and changing socio-political contexts. Ceramic practices related to temper and shaping highlight some of these tensions. Vessel forms and methods used to make vessels demonstrate that people learned how to create ceramic vessels among different communities of practice, some of which appear to overlap (or derive from) communities of practice in the American Bottom. The practice of mixing tempers or crushing up shell-tempered sherds for use as grog temper is evidence that people had to modify how they learned to prepare clays by developing novel methods and resulting in hybrid practices. Faunal materials are also indicative of the impacts of regional threats of violence as hunting was reoriented in ways such that hunters could minimize danger (hunting solo and in wooded areas rather than out in the open) and maximize returns (field dressing and butchery of deer carcasses). Both the faunal assemblage and the ceramic temper highlight an overall shift away from sustained riverine exploitation. The Mississippi River would have been the quickest means for attacking parties to advance upon villages. People near the river fishing, collecting and processing shell, or hunting out in the open could have easily been caught by surprise and killed or taken captive. Minimizing the amount of time near the river way would have mitigated some potential for casualties.

Ceremonies using plates with newly reconfigured meanings may not have played a daily presence in peoples' lives, but the large proportions of those vessels in the overall assemblage demonstrate that they were not used infrequently. While the unrestricted orifices of the plates lend themselves to serving functions, Baltus (2014:314) suggests that the decorative elements would have been most readily visible to the direct user of the vessel. Ramey vessels would have positioned individual users in relation to the cosmos while others could still view the symbols (Pauketat and Emerson 1991) whereas Wells Incised plates were most visible to the immediate user, but could have had many users at once. Frequent ceremonies utilizing plates with Upper World, warfare related iconography would have changed how people at Common Field related to each other, to people in other villages, to the vessels, and to the cosmological ordering of the world inherent in the plates and their designs. The development of plates, new use of symbols, and new ceremonial orderings can be described as (or derived from) processes of hybridity (sensu Alt 2006a, 2006b, 2008, 2012a; Bhabha 1994) whereby interstitial spaces were opened and the emergent identities of people, objects, and places drew on the past, present, and future through the deployment of symbols with historical roots, the reorganization of relations, and the intended consequences of ceremonies aimed at affecting and effecting something.

Question 1 from Chapter 2 asked "What was the history of political fragmentation and resettlement in the Mississippi River Valley and how did relationships between people at Common Field and other nearby polities change over time?" As the *pax Cahokiana* ended, palisades were constructed across the Midwest, large numbers of people left major political centers, and the town of Common Field was likely established by immigrants from the American Bottom region. Once settled in the Ste. Genevieve floodplain they constructed a palisade, enclosing their earthen platform mounds and habitation area. Structures located outside of the palisade were dismantled and filled with soil. The people of Common Field, while they did not feel threatened at first did construct a palisade early in their settlement. Ceramic evidence suggests that many Common Field residents originated from the American Bottom but then left that region right around the time that regional tensions increased. The establishment of Common Field could have been a deliberate attempt to distance themselves from entrenched American Bottom politico-religious structures. However, despite leaving the American Bottom, the people of Common Field engaged in the production of transformed iconography on plates and their use in ceremonies. Common Fielders distanced themselves geographically from the American Bottom by connecting themselves and drawing on some of the same religious practices and repertoire.

The presence of several Negative Painted sherds from Southeast Missouri or the Lower Ohio River valley point to loose ties or interactions with those regions. Regional survey data at this time are incomplete, but published information on site locations and temporal affiliations (discussed in Chapter 3) indicate that there was (re)occupation of several sites along the Mississippi River valley during the Moorehead and Sand Prairie Phases; people moving into these places and vying for control and access to various resources undoubtedly also had an impact on regional sociopolitical relationships and tensions. The salt spring and Bushnell Ceremonial cave (with its associated fresh water spring) would have both been valuable resources for communities in the region.

The final question posed (Question 3) was "How were the practices and events that took place at Common Field shaping of the later sociopolitical regional history?" This question about macro-scale history is the most difficult and tenuous to answer since large-scale narratives often involve multiple lines of evidence and causalities. Having a grasp on the multiple scales at which violence was enacted and experienced can aid archaeologists (and historians and cultural anthropologists, etc.) in understanding and interpreting big histories. Big history can refer to an approach "that places human history within the context of cosmic history" (Spier 2010:1), connecting for example, human viewers who witnessed a very bright light in the sky ca. A.D. 1054 to the actual supernova (resulting in the formation of the Crab Nebula) that had occurred 6500 years earlier (Pauketat and Emerson 2008). Anthropological and archaeological approaches may take a similar tack or they can re-theorize scales of time, tacking back and forth between human lives and experiences and long-term histories (Robb and Pauketat 2013), not just between individual agency and social structures. Retheorizing warfare to warscapes and reorienting our focus away from elites/warriors and towards the everyday lives, practices, and experience of people within landscapes of violence can similarly allow archaeologists to tack between small and big histories. The practices and events that happened at Common Field would not have been the only factor playing into larger regional histories; however they certainly played an important role and had lasting impacts after the site was destroyed.

Despite the efforts of the people at Common Field to bundle physical and spiritual protections together around their town, the palisade was eventually burned and breached leading to the desecration of sacred spaces, the killing of numerous people, and the destruction of the village. The penetration and destruction (with fire) of the fortification constructed with protective powers would have been a signal to the people of Common Field that their attempts at supernatural and physical defense were perhaps unheard, disregarded, or denied. Just as some materials were brought together, woven, entangled, enmeshed, and bundled with each other, through these final events at Common Field they were pulled apart and unmade (cf. Baltus 2014, 2015).

Native American tribes' mourning ceremonies for deceased warriors or community members killed in attacks throughout the Eastern Woodlands and Plains often involved the bundling of souls into/with physical items prior to releasing their spirits to the next world (Hall 1997; La Flesche 1939). LaFlesche records that the Osage believe that the soul of someone killed in a violent event sleeps until someone is able to avenge their death and dispatch their soul and hunters would report hearing the voices of restless dead after visiting areas where violence had taken place. La Flesche (1939:87) also reports that the journey spirits make to the afterlife is lonely. Thus additional war parties were sometimes formed to kill enemies to accompany deceased friends to the spirit realm. In parts of the Eastern Woodlands, captives were frequently taken, tortured, and adopted to take the place of deceased individuals (DeBoer 2008; Hall 1997; Peregrine 2008).

People who were killed after the penetration of the palisade were left unburied, perhaps left unmourned. Survivors of the attack may have scattered to other villages where they could find safety; some were likely taken captive. The lack of burial treatment and exposure to carnivores indicates that the deceased were likely not properly mourned after their death. Like the restless victims heard by Osage hunters, the unmourned dead at Common Field would have had a lingering human presence, even as the survivors had left. The dead continued to animate the region after the living had fled.

The Vacant Quarter is one of the big historical outcomes of political reorientations, religious dis- and re-entanglements, and the violent conflicts that took place in the 13^{th} and 14^{th} centuries. While seemingly distanced from daily practices, the Vacant Quarter is none-the-less tied to the quotidian activities of people living in the Midwestern Mississippian warscape. The stresses of reconfiguring peoples' lives, the persistent dangers, and the threats to those ways of lives would have factored into the decisions to never return to certain places. The Vacant Quarter hypothesis has been around for more than 20 years, yet those who rely on purely environmental and climate-based explanations for understanding this abandonment have yet to be able to account for why some places were abandoned and why others were not.

Unlike the Southeast where ethnohistoric accounts and modern Native American groups can trace their histories to particular sites and regions, the Midwest (especially the Mississippi River Valley region) presents a much more complicated case. There is compelling evidence that some Siouan speaking peoples were the descendants of Cahokians and other middle Mississippi River Valley peoples and several groups have traditions that would have placed them in this region during the Mississippian Period (Hall 2004). Yet, none of these traditions mention a place like Cahokia or events like Mound 72 style mortuary ceremonialism or the burning of villages like Common Field. These particular histories appear to have been forgotten by descendant communities. In reference to Holocaust survivors, Forty (1999:6) suggests that many tried to intentionally forget the atrocities that were inflicted upon them. Whether warfare and its associated atrocities was the primary reason places like Cahokia and Common Field were wiped from the collective memories of Siouan speaking peoples is certainly up for debate, however it undoubtedly would have played a role in the decisions to leave some places in the middle Mississippi River Valley and to forget some histories.

To revisit the quote from Nordstrom (1997:125), “violence reverberates across personal and social landscapes in ways that move beyond the sheer physicality of harm.” People who lived in the Midwestern warscape intentionally distanced themselves from their lives and histories of catastrophic and contentious events that took place in the Mississippi and Ohio River Valleys. Despite this, the events that took place and the people that experienced them continued to have an effect on larger regional histories. Pauketat (2005:190-191) suggests that the movement of Mississippian peoples out of the valleys and onto the prairie-plains to the west had a snowball effect as new groups of people were put into contact and conflict, culminating with the massacre at Crow Creek.

The reverberations of violence would have spread laterally across the landscape as people and stories moved. The reverberations would have also continued to be tied to certain places and regions were violence was centered and experienced as it became associated with specific sites, peoples, events, and places on the landscape. Even after the middle Mississippi River Valley was abandoned by Mississippian peoples and later reoccupied by Algonquian speaking peoples, some areas were still recognized as being powerful and dangerous. As Pere Marquette and his Illiniwek guides traveled south of the American Bottom (but were still north of the Ohio), the guides became uneasy and warned about the presence of a Manitou, or evil spirit, that lived in the vicinity (Thwaites 1899). Maps of Upper Louisiana drawn by Jacques-Nicolas Belin in the 1740s and 1750s show that Kaskaskia Indians were living on the east side of the Mississippi River near Common Field; no villages are depicted within 100 miles west of the site (Ekberg 1996:87).

From the small-scale actions embodied in the practices of daily life to large-scale histories of change, life in the Mississippian Midwestern warscape impacted the people living at Common Field. Threats of violence and life within the walls of a palisade impacted their abilities to procure food, make pots, and necessitated the lining of the palisade with special deposits and the performance of ceremonies drawing on reconfigured symbols and human-material-supernatural associations. Violence impacted more than the lives of elites and warriors; violence was in the background of everybody's daily actions and experiences.

Chapter 10 – Conclusions and Future Directions

I began this research with a quote from Robben and Nordstrom (1995:3), a call for anthropologists to refocus their attentions on the lives of people who are impacted by violence and warfare rather than solely exploring political/economic/religious institutions that are often the source of violence. The daily lives and experiences of people living in warscapes are inseparable from and inextricably woven into those institutions that have been the focus of past research. Archaeologists have been quick to attribute warfare to social evolutionary and environmental causal factors, while downplaying the day-to-day actions of people living in warscapes. The end result of such research is a vision of the past in which warriors and elites have some agency, but the vast majority of people living in societies were agent-less background to the grand narratives of conquest, destruction, and the rise and fall of polities.

Ethnographic and ethnohistoric accounts of lives in warscapes demonstrate over and over that violence does have an effect on daily practices. Sometimes those effects are profound and life changing, resulting in death, destruction, and mass migration; sometimes those effects are less visible like having to change the kinds of foods you eat due to availability, cost of living increases, or rearranging daily schedules and travel routes in order to avoid certain places. Thus, rather than asking why violence happens, in this research project I asked how does violence impact people? The data from the Common Field site provide an ideal case for asking that question. I believe that the evidence summarized in the following paragraphs supports my contention that Common Field was burned in a violent attack, that violence had an impact on daily practices before the attack, and that Mississippian warfare in the Midwest had macro-scale, historical consequences.

Aerial photographs and the surface collection conducted by the University of Missouri-Columbia supplied evidence that Common Field met a disastrous end. Burned structures, deposits full of near complete domestic debris, and human remains in house fill (rather than burial features) are unambiguous evidence that Common Field was unexpectedly attacked. Since it is clear that there was violence at Common Field, it could provide testing ground for exploring how threats of violence prior to the burning would have impacted peoples' lives and experiences and would have had material consequences.

Violence has a deep history in the pre-Columbian Midwest. During the Mississippian Period, there may have been a *Pax Cahokiana* early on and violence in the American Bottom appears to have been part of large-scale religious ceremonies (Pauketat 2010). The tenor of violence changed at the end of the 12th century. The large conflagration at East St. Louis marks the beginning of a series of changes throughout the region including a new political-religious movement and material changes in ceramic practices and architecture (Baltus 2014). The conflagration and the political-religious movement also preceded the appearance of fortifications throughout the Midwest and increases in the number of burned villages and cemetery assemblages with evidence of interpersonal trauma (Milner 1999; Wilson 2012). Based on evidence from radiocarbon dates and the presence of diagnostic artifacts, Common Field was founded in the decades following the East St. Louis conflagration.

The timing of the founding of Common Field and ceramic evidence (Chapter 8) strongly indicate that the people living at Common Field originally came from the American Bottom at the time when large numbers of people were leaving that region. Ceramic vessel shaping and construction methods as well as decorative motifs present at Common Field are also present in assemblages from the American Bottom.

The everyday practices of people living at Common Field during this period of escalating violence were different than those practiced in the American Bottom at the same time and in the decades before. Ceramics from Common Field have hybrid tempering practices, some of which combined traditional shell-tempering with grog and some which used grog made from shell-tempered sherds. This change in ceramic clay preparation follows trends noted in ethnoarchaeological studies whereby potters are conservative in changing the kinds of practices related to the physical preparation and construction of vessels. The kinds of embodied knowledge (muscle memory) that comes along with learning how to mix clays and shape vessels are difficult to unlearn. The potters at Common Field would have been used to certain kinds of clay textures and malleability. When one of the materials (shell) necessary to achieve the correct clay texture and consistency became difficult to procure, potters found creative, novel ways in which to still incorporate shell into the clay fabric and thus, still achieve one of the necessary steps in their learned *chaîne opératoire*. This shift towards using shell and shell-grog as temper also points to a shift away from, or at least a reduction in, the use of riverine resources. Shell would have been readily available in the nearby Mississippi River, but Common Field potters used shell in much lower numbers than their contemporaries in the American Bottom and the Lower Ohio River Valley. The *chaîne opératoire* presented in Chapter 9 further confirms a shift away from the most locally available resources; clay used in the creation of vessels appears to have an upland origin and some clay has hematite (available in the Ozarks) added to the fabric.

The practices relating to faunal foodways at Common Field similarly echo practices of creativity and movement away from exploiting riverine contexts. Very little fish remains were recovered from feature contexts at the site despite good bone preservation. Other taxa indicate that hunting was done in wooded areas. Both the deer body parts present and the high degree of bone fragmentation demonstrate that hunters and food preparers at Common Field were extracting as much nutritional content as they could from animal resources.

The introduction of ceremonies using plates and reinterpreted Ramey-like iconography is evidence of larger, regional changes that were instigated during the Moorehead Phase. The large quantities of plates at Common Field highlight the importance of ceremony and the consumption of food or drink. As argued in Chapter 9, the changes in plate use/decoration and the incorporation of new tempering practices are evidence of processes of hybridity that were developed in historically and regionally unique ways at different sites in the Midwest. The inclusion of iconography related to Upper World warfare themes on plates used for serving food and drink aligned people with certain cosmological beings and powers.

The construction of the palisade also incorporated actions and materials aimed at providing protective powers. Despite the ceremonies and the palisade, Common Field was destroyed in a catastrophic event that left the village smoldering and people dead. The reverberations of these actions would have had far flung consequences that extended beyond this segment of the Mississippi River Valley. Survivors, captives, warriors, and the spirits of the dead had tales to tell. As violence continued to escalate in the region people and tales would have continued to spread and in some cases (like Crow Canyon), violence could have begat more violence. The culmination of the Midwestern war-scape was a Vacant Quarter and the systematic forgetting of the Mississippian Midwest by descendant communities.

Some archaeologists have argued that the past was relatively peaceful while others have argued that violence was an inherent part of human biology and/or political systems. Rather than asking 'why do humans fight and go to war?' which has been the underlying question guiding archaeological research, I instead asked how violence impacts peoples' lives and experiences and how those impacts play into larger regional histories and processes. The research detailed in this dissertation proposes a theoretical framework for how archaeologists might explore the intersections between daily life and warfare and provides multiple lines of evidence for these impacts in the daily lives of people living at the Mississippian Period Common Field site.

10.1 Broader Impacts and Future Research Directions

As of right now, there are few others in archaeology exploring the impacts of violence on daily practices (although see Wilson 2012); the theoretical framework laid out in my research is a starting point for other archaeologists to expand upon and test. However, until there are more studies done, it is difficult to know if the material expectations I laid out for my hypotheses in Chapter 2 (Section 2.3.2.2) will hold true in other places and time periods. Of immediate interest for my project is whether or not the material associations discussed in this research project hold true for different neighborhoods or precincts at Common Field or if segments of society were impacted by warfare and violence in disparate ways. Additional archaeological projects on violence and daily life will be able to determine if my expectations can be generalized to other contexts as well as the historically and culturally specific ways in which they are manifested materially. Each site, region, and time period will have different permutations on these expectations since people bring their own traditions, histories of practices, and sensibilities to the specific configurations of relations within warscapes. Of immediate interest is in the potential of my research to explore the presence and/or intensity of violence in areas where there is no overt evidence of warfare. There have been debates about the scale and intensity of warfare in the Mississippian world and even if palisade construction was actually a response to warfare since there is little evidence that sites like Kincaid, Angel, Southwind, or Powers Phase sites (southeast Missouri) were ever attacked (no catastrophic burning events, very little skeletal trauma). The implications (if not the exact expectations) laid out in Chapter 2 can be tested against and applied to other regions and time periods where the evidence for warfare is ambiguous.

A direct comparison with the Southwestern US following the fall of Chaco and the spread of warfare would be particularly interesting. The events in the Midwest and Southeast were roughly contemporaneous and were related to the fall of two large, political-religious centers. However, these regions have very different histories and histories of practices, thus the particularities of the impacts of violence on daily practices will likely vary and have different historical outcomes. Another fruitful line of comparison will be between the results of my research and the bodies of literature related to ‘disaster archaeology’ (e.g. Hollenback 2012) and culture contact studies (e.g. Mitchell 2011; Wagner 2010) that make explicit connections to daily practices.

While archaeologists know quite a lot about the settlement pattern histories in the American Bottom and the Lower Ohio, based on large-scale survey and excavation programs in the 1970s and 80s, much less is known about the history of site occupations in the stretch of the Mississippi River south of the American Bottom and north of the Ohio confluence. One way to remedy this gap in our knowledge is through the combining of Illinois and Missouri state site file GIS databases and the revisiting of extant museum collections for finer grained chronological modeling. Additionally, large-scale surveys in the Mississippi River Valley would aid in locating the presence of previously unrecorded sites and determine the current conditions of sites. Magnetometry would be critical in determining which sites were burned in the past, which were left untouched, and provide a view of overall site plans and organization without engaging in destructive excavation practices.

Several future projects can be done in order to further strengthen the implications of the ceramic research presented in this dissertation. First, Elizabeth Watts-Malouchos and I started a project to evaluate the utility of several non-destructive methods for doing detailed temper analysis rather than relying on costly and destructive thin-sectioning. If this project proves useful, the methods developed can be used to analyze ceramics from other sites that made by peoples living in warscapes. Second, building on my interpretations of Wells Incised iconography, a detailed comparison with Negative Painted pottery can aid in identifying site/regionally specific motifs versus those that are widely spread as well as explore issues of motif spacing, repetition, and whether or not these vessels employ quadripartite division. Third, since residues from Cahokian beakers containing Black Drink or chocolate (Crown et al. 2013; Washburn et al. 2014), similar absorbed residue analyses should be performed on additional vessels, especially the Wells Incised and Negative Painted plates, in order to determine what kinds of foods or liquids may have been served in them and what roles those consumables played in war ceremonies. Fourth, the sourcing of clay used in ceramic production and the sourcing other raw materials (like the hematite, galena, and palisade pebbles) with non-destructive mineralogical and elemental composition techniques like X-ray fluorescence and X-ray diffraction will allow us to better understand landscape utilization and the power of certain natural places.

Beyond the archaeological applications for this research there are broader anthropological implications. Some could argue that focusing on the topics of violence and warfare particularly within the context of the indigenous Americas has the potential to stereotype and dehumanize Native American societies and peoples as simultaneously violent and as dispensable victims, a kind of violence felt by descendant communities[29]. Cobb and Steadman (2012) addressed this ethical dilemma with regards to using of photographs of Native American skeletal elements in publications. The response to this dilemma should not be to avoid certain topics, but instead to interpret sensitive topics like violence and warfare within their cultural contexts and in a nuanced and sensitive manner (*sensu* Dye and Keel 2012). In avoiding topics, in avoiding exploring how multiple groups of humans across time and space lived, in avoiding understanding the many causes and consequences of, we may continue repeat the same historical mistakes over and over again. In avoiding researching topics like warfare, we make a similar essentializing mistake as those who would stereotype indigenous peoples by portraying them as extremely violent; we dehumanize people by not acknowledging

[29] This is not an ethical dilemma just for warfare-related topics. Beth Conklin explores the ethics of researching cannibalism in her book Consuming Grief (2001). Part of her approach to the dilemma of whether or not to study the topic of cannibalism can be summed in this sentence: "If we cannot believe Wari' when they say they used to eat human flesh, then we ought to dismiss everything else they have said about their lives before the contact" (15). She further contends that only through studying troublesome and taboo topics can we begin to undo certain cultural assumptions made about those topics. I agree with her.

even the bad parts of what is found in most human societies. Additionally, many Native American societies are proud of and celebrate their warrior traditions, including many Siouan, Muskogean, and Algonquian-speaking peoples who are among the descendants of Mississippians.

My hope is that this research will be of use for anthropologists who study modern war contexts. Warfare continues to be something that affects large numbers of people throughout the world. These wars and other forms of violence exist on differing scales of impact, harm, and have an effect on the daily practices of people around the world. Yet, many of the anthropologists working in warscapes have not paid considerable attention to the materiality of peoples' daily lives and actions in these situations. This oversight is understandable when peoples' very existences are under threat. However, as anthropologists continue to emphasize the connections between humans, objects, materials, and places, and explore the co-creation of people and things, attending to the use of materials and their affective qualities in warscapes will be of great importance. In this respect, archaeological research, with its access to diachronic datasets, has the potential to offer much to cultural anthropology with regards to understanding and interpreting the recursive relationships between warfare, peoples' daily actions and experiences, the material conditions of lives in warscapes, and larger histories of violence and peace.

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Appendix A – Fauna

List of Codes

Class

A – Aves
M – Mammalia
O – Osteichthyes
R – Reptilia
S – Mollusca
I – Indeterminate

Taxa

BEVR – Beaver (*Castor canadensis*)
CANI – Canids (Canidae family)
DEER – White-tailed deer (*Odocoileus virginianus*)
FOX – Foxes (*V. vulpes or U. cinereoargenteus*)
FOXR – Reed fox (*Vulpes vulpes*)
GSQL – Thirteen-lined ground squirrel (*Ictidomys tridecemlineatus*)
MODE – Deer mouse (*Peromyscus maniculatus*)
MOLE – Moles (Talpidae family)
SKUN – Striped skunk (*Mephitis mephitis*)
SQFO – Eastern fox squirrel (*Sciurus niger*)
SQGR – Eastern grey squirrel (*Sciurus carolinensis*)
SQRL – Squirrels (*Sciurus* spp.)

ANAT – Ducks (Anatidae family)
EAGL – Bald eagle (*Haliaeetus leucocephalus*)
GOOS – Canada goose (*Branta canadensis*)
MLRD – Mallard (*Anas platyrhynchos*)
PGRE – Pied-billed grebe (*Podilymbus podiceps*)
SCAUP – Lesser scaup (*Aythya affinis*)
TURK – Turkey (*Meleagris gallopavo*)

BOWF – Bowfin (*Amia calva*)
CFSH – Catfish (Ictaluridae family)
ICTI – Buffalo (*Ictiobus* spp.)
LBAS – Largemouth bass (*Micropterus salmoides*)

BOXT – Eastern box turtle (*Terrapene carolina*)

INDET - Indeterminate
VLMM – Very large mammal
LMAM – Large mammal
MMAM – Medium mammal
SMAM – Small mammal

Element

ANTL – Antler
ARTI – Articular
ASTR – Astragalus
BRAC – Branchiostengal ray
CA23 – 2^{nd} and 3^{rd} carpal
CARA – Carapace
CINT – Intermediate carpal
CLEI – Cleithrum
CORA – Coracoid
COST – Costals (pleurals)
FEMR - Femur
FURC – Furculum
HUMR - Humerus
LAMA – Lateral malleolus
LONG – Long bone fragment
METP - Metapodial
PATE – Patella
PELV – Pelvis
PERI – Peripherals
PHL3 – 3^{rd} phalanx
RADI – Radius
RIB – Rib
SCAP – Scapula
SHELL – Indeterminate shell fragment
SKUL – Skull
SPIN – Indeterminate spinous piece
STERN – Sternum
TART – Tarsometatarsus

TIBI - Tibia
TIBT – Tibiotarsus
TOTH - Tooth
ULNA - Ulna
VCAU – Caudal vertebra
VCER – Cervical vertebra
VERT - Vertebra
VLUM – Lumbar vertebra
VPH2 – 2nd vestigial phalanx
VSPN – Vertebral spine
VTHO – Thoracic vertebra

Portion

1/2C – Half complete
3/4C – Three quarters complete
ALL – All/complete
ARTI – Articular process
BODY – Body/centrum
CAEP – Caudal epiphysis
CAUP – Caudal articular process
CENT – Body/centrum
CFCT – Coracoid facet
COMP – All/complete
CRAP – Cranial articular process
CRWN – Tooth crown
DEND – Distal end
DEPH – Distal epiphysis
DSFT – Distal shaft
EPHI – Epiphysis
FRAG – Fragment
FRON – Frontal
GLEN – Glenoid cavity
GLNB – Glenoid cavity, neck, and body
ILIU – Ilium
ISCH – Ischium
MAXT – Maxilla with teeth
NEUR – Neural
PARI – Parietal
PEND – Proximal end
PEPH – Proximal epiphesis
PERI – Peripheral
PSFT – Proximal shaft
SHFT – Shaft
SPIN – Spinous process
TIP – Tip (antler)
TRAN – Transverse process
ZYGO - Zygomatic

Fragment

ALL – Complete
ANLA – Anterior/Lateral
ANTE – Anterior
LATE – Lateral
MEDI – Medial
POLA – Posterior/Lateral
POME – Posterior/Medial
POST – Posterior

Side

L – Left
R – Right
I – Indeterminate
A – Axial

Proximal and Distal Fusion

F – Fused
G – Fusing
U – Unfused
I – Indeterminate

Anatomical Unit

AXIAL - Axial
FORE – Fore limb
HIND – Hind limb
LLFT – Lower limb/feet
SKUL – Skull

Utility Indices

HIGH – High
MED – Medium
LOW – Low

Fragment Size

COMP – Complete
HALF – ½ complete
LQTR – Less than ¼ complete
TQTR – ¾ complete
QTR – ¼ complete

Break/Fracture

MOD – Modern break
SPIR – Spiral fracture
SPII – Irregular spiral
STEP – Step fracture
EROD - Eroded
SAW – Saw-toothed fracture

Degree of Burning

BRNT – Burnt (brown burn)
CARB – Carbonized (black burn)
CALC – Calcined (grey/white burn)

Animal Modification

CARN – Carnivore gnawing
RODN – Rodent gnawing

Human Modification

USE – Use wear
CUT – Cut mark

Natural Modification

ROOT – Root etching/damage
WEA1 – Weathering Stage 1

Count

Number of fragments

Weight

Weighed to the nearest tenth of a gram

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
F9-3	Fea 9	W1/4, ZA	A	MLRD	FURC	PSFT	ALL	R											1	0.1	
F9-3	Fea 9	W1/4, ZA	A	INDET	INDET														2	0.1	
UN1-2	Unit 1	Level 2, 10-15cmbs	A	INDET	LONG	SHFT												ROOT	1	1.0	
F25-12	Fea 25	S1/2, ZB	A	EAGL	ULNA	PEND	ALL	L											1	5.6	
F25-7	Fea 25	N1/2, ZA	A	GOOS	FURC	PSFT	ALL	R											1	0.4	
F9-5	Fea 9	W1/4, ZA	A	INDET	LONG	SHFT													1	0.7	
F9-2	Fea 9	W1/2, ZA	A	TURK	TIBT	DEND		I							CALC				1	0.4	
F25-7	Fea 25	N1/2, ZA	A	GOOS	SCAP	PEND	ALL	L											1	0.2	
F9-3	Fea 9	W1/4, ZA	A	INDET	LONG										BRNT				1	0.1	
F25-12	Fea 25	S1/2, ZB	A	INDET	LONG	SHFT													1	0.4	
F10-3	Fea 10	ZA	A	INDET	TART	SHFT		I											1	0.1	
F9-5	Fea 9	W1/4, ZA	A	SCAUP	STERN	CFCT		L											1	0.3	
F9-3	Fea 9	W1/4, ZA	A	ANAT	CORA	PEND													1	0.2	cf. Mallard
F13-2	Fea 13	S1/2, ZA	A	PGRE	CORA	PEND	ALL	R							BRNT				1	0.2	
F9-3	Fea 9	W1/4, ZA	A	INDET	RIB														1	0.1	
F13-2	Fea 13	S1/2, ZA	A	TURK	FEMR	PSFT	POLA	R							BRNT				1	0.1	
F26-4	Fea 26	ZA, S1/2	A	INDET	LONG	SHFT													1	0.1	
UN2-3	Unit 2	Interface 1, 17-23cmbs	A	INDET	LONG	SHFT													1	0.3	
UN3-6	Unit 3	Scraping above features	I	INDET	INDET														4	0.1	
EB3-2	EB3	Gen collection	I	INDET	INDET														15	0.9	
UN3-5	Unit 3	Clay level, 26-30cmbs	I	INDET	INDET														8	0.7	
UN3-2	Unit 3	Plow zone, 12-17cmbs	I	INDET	INDET														1	0.2	
UN3-1	Unit 3	Plow zone	I	INDET	INDET										CALC				3	0.8	
F25-1	Fea 25	NW1/4, ZA	I	INDET	INDET														8	0.8	
F11-5	Fea 11	E1/2, ZA, Burned	I	INDET	INDET														7	0.4	
UN2-6	Unit 2	Clay level	I	INDET	INDET										CALC				2	0.5	
UN2-6	Unit 2	Clay level	I	INDET	INDET														3	0.2	
F25-1	Fea 25	NW1/4, ZA	I	INDET	INDET										CARB				3	0.6	
F25-1	Fea 25	NW1/4, ZA	I	INDET	INDET										CALC				3	0.2	
UN2-3	Unit 2	Interface 1, 17-23cmbs	I	INDET	INDET										CARB				1	0.1	

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
UN2-3	Unit 2	Interface 1, 17-23cmbs	I	INDET	INDET										CALC				2	0.4	
F25-2	Fea 25	NW1/4, ZA	I	INDET	INDET										BRNT	USE			1	0.2	polished and ground to point
UN3-1	Unit 3	Plow zone	I	INDET	INDET														7	1.7	
F11-8	Fea 11	E1/2, Floor	I	INDET	LONG	SHFT													8	0.8	
F26-2	Fea 26	ZA, S1/2	I	INDET	INDET										CARB				4	0.6	likely from fire shattered bones
F26-2	Fea 26	ZA, S1/2	I	INDET	INDET										CALC				17	4.2	likely from fire shattered bones
EB1-1	EB1	Backdirt	I	INDET	LONG	SHFT													4	0.7	
EB1-1	EB1	Backdirt	I	INDET	INDET														7	2.4	
F22-7	Fea 22	SE1/2, ZA	I	INDET	INDET										CARB				1	0.2	
F22-7	Fea 22	SE1/2, ZA	I	INDET	INDET										CALC				3	0.3	
F26-4	Fea 26	ZA, S1/2	I	INDET	INDET										CARB				5	0.8	
F22-3	Fea 22	SE1/2, ZA	I	INDET	INDET														1	0.1	
F22-1	Fea 22	Machine scraped surface	I	INDET	INDET														1	0.1	
UN4-4	Unit 4	Scraping above features	I	INDET	LONG	SHFT									CALC				1	0.1	
F26-5	Fea 26	ZA, S1/2	I	INDET	INDET														1	0.1	
EB3-1	EB3	Gen collection	I	INDET	INDET														1	0.9	
F11-8	Fea 11	E1/2, Floor	I	INDET	LONG	SHFT									CARB				1	0.2	
F11-5	Fea 11	E1/2, ZA	I	INDET	INDET														8	0.4	
F11-5	Fea 11	E1/2, ZA	I	INDET	INDET										CARB				7	1.0	
F11-5	Fea 11	E1/2, ZA, Burned area	I	INDET	INDET										BRNT				3	0.1	
UN1-4	Unit 1	Level 3, 20-25cmbs	I	INDET	INDET										CARB				1	0.1	
F24-2	Fea 24	PM4, S1/2, ZA	I	INDET	INDET														4	0.3	
UN2-2	Unit 2	Plow zone	I	INDET	INDET										CALC				3	0.6	
UN4-2	Unit 4	Interface	I	INDET	INDET														2	0.1	
UN4-1	Unit 4	Plow zone	I	INDET	INDET										CALC				1	0.1	
F26-5	Fea 26	ZA, S1/2	I	INDET	INDET														2	0.1	
UN5-3	Unit 5	Clay level	I	INDET	INDET														1	0.1	

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
F13-5	Fea 13	N1/2, ZA	I	INDET	INDET										CARB				11	2.2	
F13-5	Fea 13	N1/2, ZA	I	INDET	INDET										BRNT				11	2.2	
F13-5	Fea 13	N1/2, ZA	I	INDET	INDET														12	0.7	
F13-2	Fea 13	S1/2, ZA	I	INDET	INDET										CALC				44	4.3	
F13-2	Fea 13	S1/2, ZA	I	INDET	INDET										CARB				7	0.7	
F13-2	Fea 13	S1/2, ZA	I	INDET	INDET										BRNT				6	1.1	
F13-2	Fea 13	S1/2, ZA	I	INDET	INDET														24	3.0	
F25-3	Fea 25	NE1/4, ZA	I	INDET	INDET														8	1.0	
F25-9	Fea 25	S1/2, ZA	I	INDET	INDET										CARB				9	1.6	
F13-8	Fea 13	N1/2, ZB	I	INDET	INDET										BRNT				4	1.3	
F25-9	Fea 25	S1/2, ZA	I	INDET	INDET										CALC				1	0.1	
UN3-4	Unit 3	Clay level 24-26cmbs	I	INDET	INDET										CALC				1	0.1	
F25-9	Fea 25	S1/2, ZA	I	INDET	INDET														32	3.0	
UN4-3	Unit 4	Clay level, 24-29cmbs	I	INDET	INDET														1	0.2	
F25-15	Fea 25	S1/2, ZC	I	INDET	INDET														18	1.9	
F25-12	Fea 25	S1/2, ZB	I	INDET	INDET														137	16.1	many likely from scap
F25-12	Fea 25	S1/2, ZB	I	INDET	INDET										CARB				8	1.6	
F25-12	Fea 25	S1/2, ZB	I	INDET	INDET										CALC				2	0.1	
F13-1	Fea 13	Machine scraped surface	I	INDET	INDET														22	1.9	
UN1-3	Unit 1	Level 3, 15-20cmbs	I	INDET	INDET										CALC				1	0.1	
UN2-1	Unit 2	Plow zone	I	INDET	INDET										CALC				2	0.3	
UN1-7	Unit 1	Level 5, 30-45cmbs	I	INDET	INDET										CARB				2	0.5	
UN1-7	Unit 1	Level 5, 30-45cmbs	I	INDET	INDET										CALC				2	0.7	
F25-2	Fea 25	NW1/4, ZA	I	INDET	INDET														9	1.6	
F25-2	Fea 25	NW1/4, ZA	I	INDET	INDET										CALC				1	0.1	
F26-2	Fea 26	ZA, S1/2	I	INDET	INDET														15	2.9	
UN1-4	Unit 1	Level 3, 20-25cmbs	I	INDET	INDET										CALC				1	0.1	
F26-4	Fea 26	ZA, S1/2	I	INDET	INDET														1	0.1	
F13-5	Fea 13	N1/2, ZA	I	INDET	INDET										CALC				22	2.3	

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
UN1-3	Unit 1	Level 3, 15-20cmbs	I	INDET	INDET														1	0.1	
F25-7	Fea 25	N1/2, ZA	I	INDET	INDET														148	23.0	
F25-4	Fea 25	NE1/4, ZA	I	INDET	INDET														1	0.2	
UN1-2	Unit 1	Level 2, 10-15cmbs	I	INDET	INDET										CALC				4	0.3	
UN1-2	Unit 1	Level 2, 10-15cmbs	I	INDET	INDET										BRNT				1	0.2	
UN1-2	Unit 1	Level 2, 10-15cmbs	I	INDET	INDET														4	0.6	
F25-7	Fea 25	N1/2, ZA	I	INDET	INDET										CARB				2	0.2	
F25-7	Fea 25	N1/2, ZA	I	INDET	INDET										CALC				3	0.4	
F13-8	Fea 13	N1/2, ZB	I	INDET	INDET										CALC				2	0.1	
UN2-2	Unit 2	Plow zone	I	INDET	INDET										CARB				1	1.3	
UN1-4	Unit 1	Level 3, 20-25cmbs	I	INDET	INDET										BRNT				1	0.1	
F9-8	Fea 9	W1/4, ZA	I	INDET	INDET														1	0.1	
F10-6	Fea 10	Floor	I	INDET	INDET														1	0.1	
F10-4	Fea 10	ZA	I	INDET	INDET										CARB				2	0.7	
F10-4	Fea 10	ZA	I	INDET	INDET										CALC				4	0.6	
F10-3	Fea 10	ZA	I	INDET	INDET												RODN		1	0.1	
F10-3	Fea 10	ZA	I	INDET	INDET														4	0.4	
F10-3	Fea 10	ZA	I	INDET	INDET										CALC				1	0.1	
F10-3	Fea 10	ZA	I	INDET	LONG										CARB				4	0.5	
F9-5	Fea 9	W1/4, ZA	I	INDET	INDET														1	0.1	
F1-2	Fea 1	W1/4, UN2,3, ZA	I	INDET	INDET										CALC				1	0.1	
F26-1	Fea 26	Machine scraped surface	I	INDET	INDET														25	3.2	
F26-4	Fea 26	ZA, S1/2	I	INDET	INDET										CALC				3	0.4	
F9-5	Fea 9	W1/4, ZA	I	INDET	INDET										CALC				2	0.2	
F13-2	Fea 13	S1/2, ZA	I	INDET	INDET										BRNT				2	0.3	
F13-2	Fea 13	S1/2, ZA	I	INDET	INDET										CARB				5	0.4	
F13-2	Fea 13	S1/2, ZA	I	INDET	INDET														2	0.1	
F9-3	Fea 9	W1/4, ZA	I	INDET	INDET														16	0.7	
F9-3	Fea 9	W1/4, ZA	I	INDET	INDET										CARB				3	0.4	
F9-3	Fea 9	W1/4, ZA	I	INDET	INDET										CALC				3	0.1	

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
F9-2	Fea 9	W1/2, ZA	I	INDET	INDET														14	1.2	
F9-2	Fea 9	W1/2, ZA	I	INDET	INDET														1	0.1	
F9-3	Fea 9	W1/4, ZA	I	INDET	INDET														1	0.5	have no idea what this is
F9-5	Fea 9	W1/4, ZA	I	INDET	INDET										BRNT				1	0.2	
F9-3	Fea 9	W1/4, ZA	M	LMAM	LONG														1	1.0	
F26-2	Fea 26	ZA, S1/2	M	LMAM	LONG	SHFT									CALC				6	3.7	likely from fire shattered bones
F26-2	Fea 26	ZA, S1/2	M	INDET	LONG	SHFT													2	0.8	
F26-2	Fea 26	ZA, S1/2	M	INDET	LONG	SHFT									CARB				5	2.0	likely from fire shattered bones
F25-7	Fea 25	N1/2, ZA	M	DEER	RADI	PEND	LATE	R	FORE	MED	LQTR	MOD	F				CARN		1	3.3	
F25-7	Fea 25	N1/2, ZA	M	DEER	VLUM	ALL	ALL	A	AXIAL	MED	COMP		F	F					1	14.4	
F9-3	Fea 9	W1/4, ZA	M	LMAM	LONG										CALC				1	0.3	
F25-7	Fea 25	N1/2, ZA	M	DEER	SCAP	GLNB	ALL	R	FORE	MED	TQTR	MOD					CARN		1	30.1	many of the indet frags likely came from this highly fragmented scapula
F25-7	Fea 25	N1/2, ZA	M	DEER	ULNA	PEND	ALL	R	FORE	MED	HALF	MOD	F						1	7.3	
F25-7	Fea 25	N1/2, ZA	M	DEER	TIBI	PSFT	ANTE	R	HIND	HIGH	LQTR	SPIR					RODN		1	5.7	
F25-7	Fea 25	N1/2, ZA	M	DEER	RADI	PEND	ALL	L	FORE	MED	QTR	SPIR	F						1	20.6	
F9-3	Fea 9	W1/4, ZA	M	LMAM	LONG										CARB				2	1.2	
F26-2	Fea 26	ZA, S1/2	M	INDET	INDET														2	1.4	
F9-3	Fea 9	W1/4, ZA	M	DEER	VLUM	CRAP	LATE		AXIAL	MED	LQTR	STEP			CARB				1	0.6	
F26-2	Fea 26	ZA, S1/2	M	DEER	RADI	PEND	ALL	L	FORE	MED	LQTR	SAW	F		CALC				1	6.3	in 3 pieces, fire shatter
F25-7	Fea 25	N1/2, ZA	M	DEER	SKUL	PARI		A	SKUL	LOW					CARB				1	4.9	
F9-3	Fea 9	W1/4, ZA	M	LMAM	LONG												RODN		1	1.6	
F9-3	Fea 9	W1/4, ZA	M	INDET	INDET										CARB				2	0.7	
F9-3	Fea 9	W1/4, ZA	M	DEER	RADI	SHFT	LATE	I	FORE	MED	LQTR	SPII							1	6.9	
F9-3	Fea 9	W1/4, ZA	M	DEER	RIB	PSFT	ALL	R	AXIAL	MED	HALF	SAW					CARN		1	6.9	few small dark patches, 1 carn tooth puncture
F25-7	Fea 25	N1/2, ZA	M	INDET	RIB	SHFT													1	1.2	
F25-7	Fea 25	N1/2, ZA	M	INDET	INDET														1	0.9	
F25-7	Fea 25	N1/2, ZA	M	MMAM	LONG	SHFT													1	0.4	
F9-3	Fea 9	W1/4, ZA	M	LMAM	RIB	SHFT				MED									7	2.2	
F9-3	Fea 9	W1/4, ZA	M	DEER	PHL3	COMP	ALL	I	LLFT	LOW									2	0.5	

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
F9-3	Fea 9	W1/4, ZA	M	DEER	PATE	COMP	ALL	I	HIND	HIGH	THQT						CARN		1	1.9	
F9-3	Fea 9	W1/4, ZA	M	DEER	VLUM	CAUP	POST		AXIAL	MED	QTR	SAW		U			CARN		1	3.8	
F25-7	Fea 25	N1/2, ZA	M	LMAM	LONG	SHFT									CARB				3	1.9	
F9-5	Fea 9	W1/4, ZA	M	INDET	INDET										CALC				2	0.3	
F26-2	Fea 26	ZA, S1/2	M	INDET	INDET										CALC				17	10.8	likely from fire shattered bones
F9-2	Fea 9	W1/2, ZA	M	INDET	LONG										CARB				7	0.9	
F9-2	Fea 9	W1/2, ZA	M	DEER	SCAP	GLNB	ALL	R	FORE	MED	QTR	SAW	F					ROOT	2	42.8	
F9-2	Fea 9	W1/2, ZA	M	DEER	SCAP	GLEN	ALL	L	FORE	MED	LQTR	EROD	I					WEA1	1	2.9	
F9-2	Fea 9	W1/2, ZA	M	DEER	TOTH	FRAG			SKUL	LOW					CARB				1	0.4	
F25-12	Fea 25	S1/2, ZB	M	LMAM	LONG	SHFT									CARB				2	1.0	
F25-12	Fea 25	S1/2, ZB	M	LMAM	LONG	SHFT													6	3.6	
F25-12	Fea 25	S1/2, ZB	M	DEER	TIBI	PSFT	LATE	L	HIND	HIGH	LQTR	SPIR							1	2.4	
F25-12	Fea 25	S1/2, ZB	M	DEER	SCAP	GLNB	ALL	L	FORE	MED	HALF	MOD							2	43.8	2 large scapulae (22.8g, 21.0g)
F9-2	Fea 9	W1/2, ZA	M	LMAM	LONG										CARB				6	4.8	
F25-12	Fea 25	S1/2, ZB	M	DEER	FEMR	PSFT	ANTE	L	HIND	HIGH	LQTR	SPIR							1	2.9	
F25-12	Fea 25	S1/2, ZB	M	DEER	TIBI	PSFT	ANLA	L	HIND	HIGH	LQTR	SPII							1	12.4	
F25-12	Fea 25	S1/2, ZB	M	DEER	TIBI	SHFT	POST	L	HIND	HIGH	QTR	SPIR						ROOT	1	18.9	
F9-2	Fea 9	W1/2, ZA	M	LMAM	INDET										CARB				2	1.1	
F25-12	Fea 25	S1/2, ZB	M	DEER	FEMR	SHFT	POLA	I	HIND	HIGH	LQTR	SPIR							1	1.6	
F26-2	Fea 26	ZA, S1/2	M	LMAM	LONG	SHFT									CARB				5	3.4	likely from fire shattered bones
F25-9	Fea 25	S1/2, ZA	M	DEER	TIBI	DEND	ALL	L	HIND	HIGH	LQTR			U					1	2.7	
F26-2	Fea 26	ZA, S1/2	M	DEER	RADI	DEND	ALL	L	FORE	MED	LQTR	SAW		F	CALC				1	5.2	fire shatter
F25-11	Fea 25	N1/2, ZA	M	INDET	INDET														1	0.8	
F25-9	Fea 25	S1/2, ZA	M	DEER	TIBI	PSFT	POLA	L	HIND	HIGH	LQTR	SPIR	U						1	11.5	possible refit with PEPH
F25-9	Fea 25	S1/2, ZA	M	DEER	TIBI	PEPH	ALL	L	HIND	HIGH	LQTR	SAW	U						1	7.3	possible refit with PSFT
F25-9	Fea 25	S1/2, ZA	M	DEER	HUMR	DSFT	LATE	R	FORE	MED	LQTR	SPIR					RODN		1	5.1	
F26-2	Fea 26	ZA, S1/2	M	LMAM	LONG	SHFT													4	4.1	
F9-2	Fea 9	W1/2, ZA	M	INDET	INDET														8	1.4	
F9-2	Fea 9	W1/2, ZA	M	INDET	INDET										CARB				2	0.4	
F25-9	Fea 25	S1/2, ZA	M	DEER	VLUM	1/2C		A	AXIAL	MED	HALF	SAW	I	I					1	4.8	
F25-9	Fea 25	S1/2, ZA	M	INDET	INDET														6	3.5	
F25-9	Fea 25	S1/2, ZA	M	INDET	LONG	SHFT									CARB				2	0.7	

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
F26-2	Fea 26	ZA, S1/2	M	LMAM	LONG	SHFT									BRNT				5	5.5	likely from fire shattered bones
F9-2	Fea 9	W1/2, ZA	M	INDET	LONG										CALC				4	0.5	
F25-7	Fea 25	N1/2, ZA	M	DEER	CA23	ALL	ALL	R	LLFT	LOW	COMP								1	3.2	
F25-9	Fea 25	S1/2, ZA	M	DEER	TOTH	CRWN		I	SKUL	LOW	LQTR								1	0.2	
EB2-1	EB2	midden/feat ure	M	LMAM	INDET	INDET													1	2.7	possible antler tine
F26-4	Fea 26	ZA, S1/2	M	LMAM	LONG	SHFT									CARB				1	0.7	
F26-4	Fea 26	ZA, S1/2	M	LMAM	LONG	SHFT									BRNT				3	2.4	
F10-3	Fea 10	ZA	M	DEER	ULNA	DEND	ALL	L	FORE	MED		SAW		I				ROOT	1	0.6	
F10-3	Fea 10	ZA	M	DEER	ASTR	COMP	ALL	R	LLFT	HIGH		SAW					CARN, RODN		1	7.8	
F10-3	Fea 10	ZA	M	DEER	VTHO	CAUP	POST	A	AXIAL	MED		SAW							1	0.7	
EB3-1	EB3	Gen collection	M	LMAM	LONG	SHFT									CALC				1	2.0	
F10-3	Fea 10	ZA	M	DEER	VTHO	TRAN	LATE	A	AXIAL	MED		SAW			CARB				1	0.7	rib facet
F26-2	Fea 26	ZA, S1/2	M	DEER	VLUM	CENT	ALL	A	AXIAL	MED	HALF	SAW	U	U	CARB				1	4.4	in 5 pieces, shattered by fire
EB3-1	EB3	Gen collection	M	LMAM	LONG	SHFT													7	10.1	
F26-2	Fea 26	ZA, S1/2	M	DEER	VTHO	SPIN	ALL	A	AXIAL	MED	LQTR	SAW							1	1.5	
EB3-1	EB3	Gen collection	M	DEER	RADI	DEND	ALL	R	FORE	MED	QTR	MOD					CARN		1	19.9	
EB3-1	EB3	Gen collection	M	VLMM	FEMR	DEPH	MEDI	L											1	18.1	cf. wapiti
F25-7	Fea 25	N1/2, ZA	M	LMAM	LONG	SHFT													16	23.0	
F10-4	Fea 10	ZA	M	DEER	TIBI	DEND	POME	R	HIND	HIGH		SAW		U					1	5.0	in 3 pieces, DEPH unfused but present
F25-1	Fea 25	NW1/4, ZA	M	DEER	HUMR	DEND	MEDI	L	FORE	MED	QTR	SPIR		F		CUT	CARN		1	27.6	
F10-4	Fea 10	ZA	M	INDET	INDET														70	17.5	many likely part of deer tibia
F26-4	Fea 26	ZA, S1/2	M	LMAM	LONG	SHFT									CALC				1	0.2	
F10-6	Fea 10	Floor, PP3	M	DEER	TIBI	DEND	ALL	R	HIND	HIGH		SAW		G					1	20.7	
F10-7	Fea 10	North wall, transition	M	INDET	INDET														7	0.8	
EB2-1	EB2	midden/feat ure	M	DEER	TIBI	SHFT	ALL	R	HIND	HIGH	QTR	SPIR							1	37.7	
F26-1	Fea 26	Machine scraped surface	M	DEER	TIBI	PSFT	POST	L	HIND	HIGH	QTR	SPIR						ROOT	1	24.1	

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
F26-1	Fea 26	Machine scraped surface	M	DEER	TIBI	PSFT	POLA	R	HIND	HIGH	QTR	SPIR					RODN		1	13.4	
F26-1	Fea 26	Machine scraped surface	M	FOXR	FEMR	DEND	ANTE	R						I					1	0.4	
F26-5	Fea 26	ZA, S1/2	M	INDET	INDET														1	0.4	
F26-5	Fea 26	ZA, S1/2	M	LMAM	LONG	SHFT									CARB				4	3.5	
F26-1	Fea 26	Machine scraped surface	M	LMAM	LONG	SHFT													2	2.3	
F26-5	Fea 26	ZA, S1/2	M	LMAM	LONG	SHFT									CALC				1	0.2	
F26-1	Fea 26	Machine scraped surface	M	LMAM	INDET	INDET													3	3.1	
F10-4	Fea 10	ZA	M	LMAM	LONG	SHFT													2	1.6	
F10-1	Fea 10	Plow zone	M	DEER	TIBI	PEND	ALL	R	HIND	HIGH	QTR	SAW	F				CARN	WEA1	1	37.9	
F9-8	Fea 9	W1/4, ZA	M	INDET	INDET														1	0.2	
F25-4	Fea 25	NE1/4, ZA	M	LMAM	LONG	SHFT									CARB				2	0.9	
F25-4	Fea 25	NE1/4, ZA	M	DEER	RADI	PEND	ALL	L	FORE	MED	QTR	SPIR	F						1	19.8	
F9-10	Fea 9	W1/4, ZA	M	INDET	RIB	SHFT	ALL										CARN		1	0.7	cf. DOG
F9-5	Fea 9	W1/4, ZA	M	LMAM	LONG	SHFT													2	10.5	
F9-5	Fea 9	W1/4, ZA	M	LMAM	LONG	SHFT									BRNT				2	1.2	
F9-5	Fea 9	W1/4, ZA	M	LMAM	LONG	SHFT									CALC				1	0.9	
F25-3	Fea 25	NE1/4, ZA	M	DEER	VLUM	CAUP	LATE	A	AXIAL	MED	LQTR	MOD							1	0.6	
F9-5	Fea 9	W1/4, ZA	M	INDET	INDET												CARN		1	1.1	
F26-2	Fea 26	ZA, S1/2	M	DEER	RADI	PSFT	POLA	L	FORE	MED	LQTR	SPIR						ROOT	2	11.4	
F26-4	Fea 26	ZA, S1/2	M	DEER	RIB	PSFT	ALL	R	AXIAL	MED	LQTR	SAW							1	2.5	
F26-2	Fea 26	ZA, S1/2	M	DEER	FEMR	DEND	ALL	R	HIND	HIGH	QTR	SPIR		I	CALC				1	18.5	in 8 pieces, shattered by fire
F26-4	Fea 26	ZA, S1/2	M	LMAM	LONG	SHFT											CARN	ROOT	1	2.9	
EB3-3	EB3	Backdirt	M	LMAM	LONG	SHFT													1	4.8	
F10-2	Fea 10	Plow zone	M	INDET	INDET														18	2.8	
F13-5	Fea 13	N1/2, ZA	M	DEER	VLUM	EPHI	ALL	A	AXIAL	MED	LQTR		U	U					2	1.2	unsure if cranial or caudal EPHI
F26-2	Fea 26	ZA, S1/2	M	DEER	TIBI	PEND	ALL	L	HIND	HIGH	QTR	SPII	F		CARB				1	30.4	in 6 pieces, shattered by fire
F10-3	Fea 10	ZA	M	INDET	INDET														21	3.7	
F10-3	Fea 10	ZA	M	LMAM	LONG	SHFT									CALC				2	0.7	
F10-3	Fea 10	ZA	M	LMAM	LONG	SHFT									CARB				4	2.9	
F25-2	Fea 25	NW1/4, ZA	M	INDET	RIB	SHFT	ALL												1	1.1	likely deer

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
F10-2	Fea 10	Plow zone	M	INDET	TOTH	CRWN													1	0.1	
F9-5	Fea 9	W1/4, ZA	M	DEER	ANTL	TIP	ALL		SKUL	LOW		SAW							1	2.9	
F25-2	Fea 25	NW1/4, ZA	M	DEER	VLUM	CRAP	LATE	A	AXIAL	MED	LQTR	SAW							1	1.3	
F10-2	Fea 10	Plow zone	M	DEER	ULNA	PEND	ANTE	R	FORE	MED	LQTR	MOD	I						1	3.5	in 5 pieces
F10-1	Fea 10	Plow zone	M	INDET	LONG	SHFT													2	5.0	
F10-1	Fea 10	Plow zone	M	CANI	PHL3	COMP	ALL	I			COMP		F						1	0.1	
F10-1	Fea 10	Plow zone	M	DEER	CINT			L	LLFT	LOW	HALF	SAW							1	1.7	
F26-2	Fea 26	ZA, S1/2	M	DEER	FEMR	PSFT	ANTE	I	HIND	HIGH	LQTR	SPIR			BRNT			ROOT	1	6.7	slight burning
F10-3	Fea 10	ZA	M	LMAM	LONG	SHFT													2	1.5	
G-2	Backdirt	Gen collection	M	INDET	LONG	SHFT													1	0.2	
SC-39	Surface	Grid K, Zone 1	M	DEER	HUMR	DEND	MEDI	R	FORE	MED	LQTR	MOD						ROOT	1	3.7	
F25-12	Fea 25	S1/2, ZB	M	INDET	INDET														18	8.9	many likely from scap
F1-3	Fea1b	ZA	M	INDET	INDET														1	0.1	
F13-5	Fea 13	N1/2, ZA	M	DEER	METP	SHFT	POST	I	LLFT	LOW	LQTR	STEP			BRNT				1	12.7	
F1-5	Fea 1	PM3, W1/2, ZA	M	LMAM	LONG	SHFT													1	3.8	fragmented
F1-1	Fea 1	Trench 1, ZA	M	DEER	RADI	DSFT	ANTE	R	FORE	MED	LQTR	SPIR							1	8.2	in many fragments
G-1	Backdirt	Gen collection	M	LMAM	LONG	SHFT													1	0.6	
UN2-6	Unit 2	Clay level	M	CANI	TOTH	COMP	ALL	R											1	1.1	cf. dog
G-2	Backdirt	Gen collection	M	DEER	RADI	DEND	LATE	R	FORE	MED				U				ROOT	1	5.5	
SC-15	Surface	Grid D, Zone 3	M	INDET	LONG										CARB				1	0.6	
SC-18	Surface	Grid E, Zone 2	M	LMAM	LONG	SHFT												ROOT	1	2.1	
SC-20	Surface	Grid E, Zone 4	M	INDET	INDET										CALC				1	0.1	
SC-29	Surface	Grid H, Zone 3	M	LMAM	LONG	SHFT									CALC				1	0.4	
F22-5	Fea 22	NW1/2, ZA	M	LMAM	LONG	SHFT									BRNT				1	0.3	
F1-6	Fea 1	PM3, E1/2, ZA	M	LMAM	LONG	SHFT													1	1.1	fragmented
EB2-4	EB2	Backdirt	M	DEER	SKUL	MAXT		R	SKUL	LOW	LQTR	SAW							1	5.8	
F22-6	Fea 22	NW1/2, Floor scrape, ZA	M	LMAM	LONG	SHFT									BRNT				2	0.4	
F22-7	Fea 22	SE1/2, ZA	M	LMAM	LONG	SHFT											RODN		1	4.2	

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
F22-7	Fea 22	SE1/2, ZA	M	LMAM	LONG	SHFT									CARB				1	0.7	
EB1-1	EB1	Backdirt	M	DEER	PELV	ISCH	ALL	L	PELV	MED	QTR						CARN	ROOT	1	7.9	
EB1-1	EB1	Backdirt	M	LMAM	LONG	SHFT												ROOT	3	8.4	
F1-2	Fea 1	W1/4, UN2,3, ZA	M	LMAM	LONG	SHFT						MOD							5	1.2	
EB2-2	EB2	Backdirt	M	LMAM	LONG	SHFT													2	2.0	
SC-54	Surface	Grid O, Zone 2	M	INDET	LONG														1	0.5	
EB2-4	EB2	Backdirt	M	DEER	ULNA	PEND	ALL	L	FORE	MED	QTR	SAW							1	3.5	
EB2-4	EB2	Backdirt	M	LMAM	RIB	SHFT													1	1.2	
EB2-4	EB2	Backdirt	M	LMAM	LONG	SHFT											CARN		1	3.8	
EB2-4	EB2	Backdirt	M	LMAM	LONG	SHFT											RODN		1	3.4	
EB2-4	EB2	Backdirt	M	LMAM	LONG	SHFT									BRNT				1	4.9	
EB2-4	EB2	Backdirt	M	LMAM	LONG	SHFT													7	5.4	
EB1-2	EB1	Backdirt	M	LMAM	LONG	SHFT									CALC				1	0.6	
F9-5	Fea 9	W1/4, ZA	M	SQRL	VERT	BODY	ALL	A											1	0.1	likely VCAU
SC-33	Surface	Grid 1, Zone 3	M	LMAM	LONG	SHFT												ROOT	1	1.0	
F11-5	Fea 11	E1/2, ZA	M	MOLE	HUMR	PEND	ALL	L					F		CARB				1	0.1	
F9-2	Fea 9	W1/2, ZA	M	GSQL	TOTH	CRWN	ALL	R											1	0.1	lower incisor, 13 line ground squirrel
F9-9	Fea 9	W1/4, wall cleaning	M	SQFO	PELV	ILIU	ALL	R											1	0.1	
F9-5	Fea 9	W1/4, ZA	M	SQGR	RADI	COMP	ALL	L							BRNT				1	0.3	in 2 pieces
F9-3	Fea 9	W1/4, ZA	M	SQRL	RIB	SHFT	ALL	R											2	0.1	
F9-5	Fea 9	W1/4, ZA	M	SQFO	RADI	DEND	ALL	R											1	0.2	
UN3-1	Unit 3	Plow zone	M	SQRL	TOTH	CRWN		I											1	0.1	incisor
F9-5	Fea 9	W1/4, ZA	M	SQFO	CALC	COMP	ALL	L											1	0.1	
F9-5	Fea 9	W1/4, ZA	M	MOLE	TIBI	SHFT	ALL	L							BRNT				1	0.1	
F9-5	Fea 9	W1/4, ZA	M	SQRL	TIBI	DEND	ALL	R						F	BRNT				1	0.1	
G-2	Backdirt	Backdirt	M	DEER	SKUL	ZYGO	LATE	R	SKUL	LOW									1	0.7	
F13-2	Fea 13	S1/2, ZA	M	SMAM	PELV	ILIU	ALL	R							CARB				1	0.2	size sim to squirrel, but not morphology
F13-5	Fea 13	N1/2, ZA	M	SMAM	LONG	SHFT		I							CARB				1	0.1	
F9-5	Fea 9	W1/4, ZA	M	SQFO	RADI	COMP	ALL	L							BRNT				1	0.4	in 2 pieces
F25-1	Fea 25	NW1/4, ZA	M	FOX	VCER	BODY	ALL	A					F	F					1	0.4	

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
SC-61	Surface	Grid Q, Zone 1	M	DEER	TIBI	PEND	ANLA	R	HIND	HIGH	LQTR	SAW	U					WEA1	1	3.6	
UN6-2	Unit 6	Interface, 17-24 cmbs	M	DEER	FEMR	PSFT	LATE	R	HIND	HIGH	LQTR	SPIR						ROOT	1	4.9	
UN6-3	Unit 6	Clay layer, 24-29cmbs	M	INDET	INDET														3	0.1	
UN6-4	Unit 6	Scraping above features	M	INDET	INDET														1	0.4	
F25-12	Fea 25	S1/2, ZB	M	BEVR	TOTH	COMP		R											1	0.8	
F9-3	Fea 9	W1/4, ZA	M	MODE	TOTH	CRWN	ALL	I											1	0.1	incisor
F25-1	Fea 25	NW1/4, ZA	M	SKUN	RADI	PEND	ALL	L					F						1	0.2	
F1-2	Fea 1	W1/4, UN2,3, ZA	M	LMAM	LONG	SHFT									CALC				1	0.2	
F25-7	Fea 25	N1/2, ZA	M	CANI	HUMR	DSFT	POST	R											1		cf. dog
F25-7	Fea 25	N1/2, ZA	M	DEER	RIB	ARTI	ALL	L	AXIAL	MED			F						1		
F25-7	Fea 25	N1/2, ZA	M	LMAM	SKUL	FRON	LATE	I			LQTR	SAW							1		
F9-3	Fea 9	W1/4, ZA	M	SQFO	ULNA	PEND	ALL	R					F						1	0.2	
F9-3	Fea 9	W1/4, ZA	M	SQFO	RADI	PEND	ALL	R					F						1	0.1	
F9-3	Fea 9	W1/4, ZA	M	SQRL	VLUM	BODY	ALL	I					U	U					1	0.1	
F25-12	Fea 25	S1/2, ZB	M	MMAM	VCAU	COMP		A					F	F	CARB				1	0.1	cf. BOBC
F13-5	Fea 13	N1/2, ZA	M	LMAM	LONG	SHFT									CALC				2	0.9	
UN1-2	Unit 1	Level 2, 10-15cmbs	M	LMAM	LONG	SHFT													3	2.4	
F13-2	Fea 13	S1/2, ZA	M	DEER	PHL3	ALL	ALL	I	LLFT	LOW	COMP				BRNT				1	2.2	
F13-2	Fea 13	S1/2, ZA	M	DEER	LAMA	ALL	ALL	R	LLFT	HIGH	COMP								1	1.0	
F1-4	Fea 1	E1/4	M	INDET	INDET														2	0.2	
F13-2	Fea 13	S1/2, ZA	M	LMAM	LONG	SHFT									CARB				8	5.5	
F13-2	Fea 13	S1/2, ZA	M	LMAM	RIB	SHFT													4	4.5	
F13-5	Fea 13	N1/2, ZA	M	DEER	RADI	SHFT	ALL	L	FORE	MED	LQTR	SPIR							1	9.3	
F13-1	Fea 13	Machine scraped surface	M	INDET	INDET														1	0.3	
F13-5	Fea 13	N1/2, ZA	M	LMAM	LONG	SHFT									CARB				2	0.7	
F13-5	Fea 13	N1/2, ZA	M	LMAM	LONG	SHFT									BRNT				3	1.6	
F13-5	Fea 13	N1/2, ZA	M	LMAM	LONG	SHFT													4	3.9	
F13-8	Fea 13	N1/2, ZB	M	LMAM	LONG	SHFT									CARB				4	4.1	

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
EB3-3	EB3, PM1	SW1/2, ZA	M	DEER	SCAP	GLNB	ALL	L	FORE	MED	HALF	MOD				CUT	CARN		1	22.1	heavy carnivore gnawing, cut mark may be dog scour marks
UN1-1	Unit 1	Level 1, 0-10cmbs	M	LMAM	LONG	SHFT												ROOT	1	4.7	
F22-5	Fea 22	NW1/2, ZA	M	LMAM	LONG	SHFT													1	0.3	
UN3-4	Unit 3	Clay level, 24-26cmbs	M	LMAM	LONG	SHFT									CALC				1	0.5	
F25-15	Fea 25	S1/2, ZC	M	DEER	HUMR	PEND	ALL	R	FORE	MED	QTR	SPIR	F				CARN		1	30.1	
F25-15	Fea 25	S1/2, ZC	M	LMAM	LONG	SHFT									CARB				3	1.0	
F25-15	Fea 25	S1/2, ZC	M	LMAM	LONG	SHFT									CALC				1	0.9	
F25-15	Fea 25	S1/2, ZC	M	INDET	INDET														5	1.4	
F20-1	Fea 20	N1/2, ZA	M	LMAM	LONG	SHFT										USE	RODN		1	2.9	switch to backdirt - F20 defeatured
F13-2	Fea 13	S1/2, ZA	M	LMAM	RIB	SHFT									BRNT				7	2.5	
UN4-3	Unit 4	Clay level, 24-29cmbs	M	DEER	VLUM	CAEP		A	AXIAL	MED	LQTR	SAW		U					1	1.1	
F13-2	Fea 13	S1/2, ZA	M	LMAM	LONG	SHFT													12	9.5	
UN3-4	Unit 3	Clay level 24-26cmbs	M	LMAM	LONG	SHFT													1	0.4	
UN5-3	Unit 5	Clay level	M	LMAM	LONG	SHFT									CARB				1	1.0	
F13-1	Fea 13	Machine scraped surface	M	DEER	FEMR	PEND	ANTE	L	HIND	HIGH	LQTR	MOD	U						1	3.0	
F13-1	Fea 13	Machine scraped surface	M	DEER	RIB	PSFT	ALL	L	AXIAL	MED	QTR	SAW			CARB				1	1.5	
F13-1	Fea 13	Machine scraped surface	M	LMAM	LONG	SHFT									CALC				1	0.6	
F13-1	Fea 13	Machine scraped surface	M	LMAM	LONG	SHFT													2	1.0	
UN4-3	Unit 4	Clay level, 24-29cmbs	M	LMAM	LONG	SHFT													1	0.7	
F11-4	Fea 11	E1/2, ZA	M	LMAM	LONG	SHFT									CARB				2	0.7	
UN2-6	Unit 2	Clay level	M	LMAM	LONG	SHFT													1	1.0	
UN2-6	Unit 2	Clay level	M	LMAM	LONG	SHFT									CARB				1	0.4	
UN2-6	Unit 2	Clay level	M	LMAM	LONG	SHFT									CALC				2	0.7	

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
UN3-1	Unit 3	Plow zone	M	LMAM	LONG	SHFT													2	1.0	
UN3-2	Unit 3	Plow zone, 12-17cmbs	M	LMAM	LONG	SHFT												ROOT	1	1.8	
UN3-5	Unit 3	Clay level, 26-30cmbs	M	DEER	RADI	PEND	ANTE	L	FORE	MED	LQTR	SAW	F						1	0.8	
UN4-1	Unit 4	Plow zone	M	INDET	INDET														1	1.4	
UN4-1	Unit 4	Plow zone	M	LMAM	LONG	SHFT									CALC				1	0.4	
UN2-3	Unit 2	Interface 1, 17-23cmbs	M	LMAM	LONG	SHFT									CARB				1	0.5	
F8-1	Fea 8	Wall trench, ZA	M	DEER	RIB	ARTI	ALL	R	AXIAL	MED	HALF	MOD	I						1	6.8	in many fragments
F11-5	Fea 11	E1/2, ZA	M	LMAM	LONG	SHFT									CARB				1	0.2	
F11-5	Fea 11	E1/2, ZA, Burned area	M	LMAM	LONG	SHFT									BRNT				3	1.5	
UN1-2	Unit 1	Level 2, 10-15cmbs	M	INDET	INDET										CALC				1	0.3	either TIBI DEND, RADI PEND, or LAMA
F11-11	Fea 11	Machine scraped surface	M	LMAM	LONG	SHFT													4	3.1	
F13-2	Fea 13	S1/2, ZA	M	LMAM	LONG	SHFT									CALC				9	7.1	
F11-11	Fea 11	Machine scraped surface	M	LMAM	INDET														1	2.1	cf. RADI
F11-17	Fea 11	W1/2, ZA	M	LMAM	LONG	SHFT									BRNT				1	0.4	
F22-3	Fea 22	SE1/2, ZA	M	DEER	VPH2	COMP	ALL	I	LLFT	LOW	COMP				BRNT				1	0.5	
F22-3	Fea 22	SE1/2, ZA	M	LMAM	LONG	SHFT									CARB				1	0.4	
UN4-2	Unit 4	Interface	M	LMAM	LONG	SHFT									CALC				1	0.3	
UN1-7	Unit 1	Level 5, 30-45cmbs	M	INDET	INDET														3	0.9	
UN2-2	Unit 2	Plow zone	M	DEER	VERT	BODY		A	AXIAL	MED	LQTR	SAW							1	0.8	
UN1-7	Unit 1	Level 5, 30-45cmbs	M	LMAM	LONG	SHFT									CARB				1	0.9	
UN1-4	Unit 1	Level 3, 20-25cmbs	M	LMAM	LONG	SHFT									CALC				2	0.6	
UN1-7	Unit 1	Level 5, 30-45cmbs	M	DEER	HUMR	DEND	ALL	L	FORE	MED	QTR	SPIR		F					1	19.0	
UN1-6	Unit 1	Level 4, 25-30cmbs	M	LMAM	LONG	SHFT									BRNT				1	0.5	
UN1-3	Unit 1	Level 3, 15-20cmbs	M	INDET	LONG	SHFT										USE			2	0.6	2 polished bone frags

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
UN1-3	Unit 1	Level 3, 15-20cmbs	M	LMAM	LONG	SHFT													2	0.4	
UN1-4	Unit 1	Level 3, 20-25cmbs	M	LMAM	LONG	SHFT									BRNT				2	1.1	
UN1-3	Unit 1	Level 3, 15-20cmbs	M	LMAM	LONG	SHFT									CALC				1	0.2	
F13-2	Fea 13	S1/2, ZA	O	FISH	RIB										CARB				1	0.1	
F13B-1	Fea 13	S1/2, ZA	O	FISH	INDET										CARB				1	0.1	
F13-2	Fea 13	S1/2, ZA	O	FISH	RIB														3	0.3	
F13-2	Fea 13	S1/2, ZA	O	FISH	RIB										BRNT				5	0.8	
F13-2	Fea 13	S1/2, ZA	O	CFSH	VSPN			A							CARB				1	0.1	
F13-2	Fea 13	S1/2, ZA	O	FISH	SPIN										BRNT				1	0.1	
F13-5	Fea 13	N1/2, ZA	O	ICTI	BRAC	ARTI									CARB				2	0.2	
F13-5	Fea 13	N1/2, ZA	O	FISH	INDET										CARB				3	0.2	
F25-15	Fea 25	S1/2, ZC	O	INDET	SPIN														1	0.1	
F25-12	Fea 25	S1/2, ZB	O	INDET	VERT	BODY													1	0.3	in 3 pieces; large fish
F25-12	Fea 25	S1/2, ZB	O	INDET	BRAC	SHFT									CARB				1	0.1	
F9-2	Fea 9	W1/2, ZA	O	CFSH	SPIN														1	0.1	
F9-5	Fea 9	W1/4, ZA	O	FISH	SPIN														1	0.1	
F9-5	Fea 9	W1/4, ZA	O	CFSH	VERT	BODY													1	0.3	
F9-3	Fea 9	W1/4, ZA	O	FISH	BRAC														1	0.1	
F13-5	Fea 13	N1/2, ZA	O	ICTI	BRAC	SHFT													1	0.1	in 2 pieces
F9-2	Fea 9	W1/2, ZA	O	FISH	INDET														7	0.2	
F9-2	Fea 9	W1/2, ZA	O	FISH	INDET										CARB				1	0.1	
F9-2	Fea 9	W1/2, ZA	O	LBAS	ARTI			L											1	0.9	
F9-2	Fea 9	W1/2, ZA	O	CFSH	VERT	3/4C													1	0.9	precaudal vert
F13-2	Fea 13	S1/2, ZA	O	FISH	VERT	BODY		A							CARB				1	0.1	
F26-2	Fea 26	ZA, S1/2	O	BOWF	VERT	COMP													1	0.1	
F13-1	Fea 13	Machine scraped surface	O	ICTI	CLEI			R							CARB				1	1.1	cf. Bigmouth Buffalo
F26-2	Fea 26	ZA, S1/2	R	TURT	COST														3	0.6	cf. BOXT
F9-3	Fea 9	W1/4, ZA	R	TURT	CARA	COST													2	0.8	
F9-3	Fea 9	W1/4, ZA	R	BOXT	CARA	COST													1	0.7	
F9-3	Fea 9	W1/4, ZA	R	BOXT	CARA	PERI													2	0.5	

Bag No	Fea	Provenience	Class	Taxa	Element	Portion	Aspect	Side	Anat	Util	Frag sz	Break	PF	DF	Burn	Hmod	Amod	NMod	Cnt	Wt	Notes
F9-3	Fea 9	W1/4, ZA	R	BOXT	HUMR	SHFT													1	0.1	
F9-1	Fea 9	Machine scraped surface	R	BOXT	SHELL														1	2.9	
F10-3	Fea 10	ZA	R	TURT	CARA														2	0.6	
F26-2	Fea 26	ZA, S1/2, PP4	R	BOXT	CARA	1/2C													1	9.0	in many frags, approximately half shell, may refit with PP2
F26-2	Fea 26	ZA, S1/2, PP2	R	BOXT	CARA	1/2C									BRNT				1	5.9	in many frags, approximatly half shell
EB1-1	EB1	Backdirt	R	TURT	CARA														1	0.5	
F25-12	Fea 25	S1/2, ZB	R	BOXT	CARA	PERI													1	0.2	
F25-12	Fea 25	S1/2, ZB	R	TURT	CARA	NEUR													1	0.1	
F25-12	Fea 25	S1/2, ZB	R	TURT	CARA	COST													1	0.6	
F9-5	Fea 9	W1/4, ZA	R	TURT	CARA														1	0.1	
F26-4	Fea 26	ZA, S1/2	R	BOXT	PERI	COMP													1	0.3	
F9-5	Fea 9	W1/4, ZA	S	INDET															2	0.1	
F1-2	Fea 1	W1/4, UN 2, 3, ZA	S	INDET															1	0.1	
F9-3	Fea 9	W1/4, ZA	S	INDET															1	1.0	many fragments
F9-2	Fea 9	W1/2, ZA	S	INDET															1	5.8	
F13-8	Fea 13	N1/2, ZB	S	INDET															1	3.3	dirt adhering

Appendix B – Ceramic Tables

List of Codes

Temper

SHELL – shell temper
FSHEL – fine shell
CSHEL – coarse shell
GGSH – grog and shell
FGSH – fine grog and shell
FSHG – fine grog made from shell sherds
SHGG – grog made from shell sherds
LSGG – limestone and grog temper
SHLS – shell and limestone
SHLG – shell, limestone, grog
RESD – residual sherds (no temper or count recorded)
LIME – limestone temper
GTGG – grit and grog

Surface

PLAIN – plain/no dec
INCIS – incised
BKSLP – black slipped
BRSLP – brown slipped
DKSLP – dark (unsure if black or brown) slipped
RSLIP – red slipped
BKRSP – black and red slipping
SLINC – slipped and incised
BURN – burnished
BNINC – burnished and incised
BNSLP – burnished and slipped
BSINC – burnished, slipped, incised
EROD – eroded
WSLP – white slipped
GSLIP – grey slipped
CORD – cordmarked
SMCD – smoothed over cordmarked
FABR – fabric impressed
SMDG – smudged
SMBN – smudged and burnished
SBINC – smudged, burnished, and incised
NEGP – negative painted

Vessel type

PAN – pan (salt pan)
FNNL – funnel
THCK – coarse ware (thick, often grog temp vessel)
JAR – jar
MJAR – miniature jar
MBOT – miniature bottle
JPLAT – jar/plate (not enough rim to determine)
PLATE – plate
BOWL – bowl
MBOWL – miniature bowl
BLPLT – bowl/plate
INDET – indeterminate
BOTL – bottle
SJAR – seed jar

Lip form

ROUND – rounded
FLAT – flat
INBEV – beveled on the interior
EXBEV – exterior bevel
EXTRD – extruded

Lip Modification

FIMP – finger impressions
STICK – stick impressions
CREN - crenulated

Lip attachment

LUG – lug
LGHD – lug/handle combination
LHAND – loop handle
SHAND – strap handle
BLHND – bifurcated loop handle
IHAND – indeterminate handle
TAB – small nodes or tabs

Use wear

SALT – salt residue
SCRAPE – scrape marks
RPGT – red pigment
SOOT – sooting
BRNT – burning
RESD - residue

SHERDS

Common Field 2010 - 2012 - sherds								
Bag No	Fea	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
F3-1	3	Trench, ZA	SHELL	EROD	EROD	1	0.9	
F17-1	17	E1/2, ZA	SHELL	PLAIN	PLAIN	3	6.0	
F24-1	24	PM2, N1/2, ZA	SHELL	PLAIN	PLAIN	1	2.4	
F22-1	22	Machine scraped surface	SHELL	PLAIN	PLAIN	3	5.4	
F22-1	22	Machine scraped surface	FSHEL	BRSLP	WSLIP	1	11.8	bowl/bean pot?
F22-1	22	Machine scraped surface	GGSH	PLAIN	PLAIN	1	39.2	funnel?
F22-2	22	East wall trench	SHELL	PLAIN	PLAIN	1	20.7	hematite inclusions
F22-3	22	SE1/2, ZA	SHELL	PLAIN	PLAIN	5	3.9	
F22-3	22	SE1/2, ZA	SHELL	CORD	PLAIN	1	0.8	
F22-5	22	NW1/2, ZA	SHELL	PLAIN	PLAIN	1	1.9	
F22-5	22	NW1/2, ZA	GGSH	PLAIN	PLAIN	1	1.4	
F22-5	22	NW1/2, ZA	GROG	PLAIN	PLAIN	2	8.2	
F22-6	22	NW1,2m Floor scrape, ZA	SHELL	PLAIN	PLAIN	5	2.5	
F22-7	22	SE1/2, ZA	SHELL	BKSLP	PLAIN	1	3.2	
F22-7	22	SE1/2, ZA	SHELL	PLAIN	PLAIN	3	6.5	
F22-7	22	SE1/2, ZA	GROG	PLAIN	PLAIN	1	1.5	
F22-7	22	SE1/2, ZA	SHELL	BKSLP	EROD	1	0.4	
F13-1	13	Machine scraped surface	SHELL	PLAIN	PLAIN	1	0.6	
F13-1	13	Machine scraped surface	GGSH	BKSLP	BKSLP	1	4.2	
F13-1	13	Machine scraped surface	GGSH	EROD	EROD	1	1.7	
F13-2	13	S1/2, ZA	FSHEL	BKSLP	BKSLP	1	7.0	
F13-2	13	S1/2, ZA	GGSH	BKSLP	BKSLP	1	0.5	
F13-2	13	S1/2, ZA	SHELL	PLAIN	PLAIN	29	63.2	
F13-2	13	S1/2, ZA	GGSH	PLAIN	PLAIN	5	5.4	
F13-2	13	S1/2, ZA	GROG	PLAIN	PLAIN	3	3.5	
F13-2	13	S1/2, ZA	RESD				0.7	
F13-2	13	S1/2, ZA	SHELL	CORD	PLAIN	7	111.5	likely all from same vessel, all s-twist
F13-5	13	N1/2, ZA	GGSH	PLAIN	PLAIN	8	28.8	7 pieces likely from same vessel
F13-5	13	N1/2, ZA	SHGG	PLAIN	PLAIN	6	21.5	likely same vessel
F13-5	13	N1/2, ZA	SHELL	CORD	PLAIN	3	5.3	crossmend with F13-2?
F13-5	13	N1/2, ZA	SHELL	PLAIN	PLAIN	1	0.6	
F13-5	13	N1/2, ZA	SHELL	EROD	EROD	3	0.5	
F13-8	13	N1/2, ZB	LSGG	PLAIN	PLAIN	1	9.4	
F13-8	13	N1/2, ZB	SHELL	PLAIN	PLAIN	2	3.5	
F13-8	13	N1/2, ZB	GGSH	PLAIN	PLAIN	2	4.4	
F13-8	13	N1/2, ZB	GGSH	EROD	EROD	1	0.2	
F13-8	13	N1/2, ZB	GROG	EROD	EROD	3	1.4	
F13B-2	13B	N1/2,ZA	GGSH	FABR	PLAIN	1	3.9	plain twined, s-twist
F11-1	11	W1/2, ZA	SHELL	PLAIN	PLAIN	1	0.5	
F11-1	11	W1/2, ZA	SHELL	EROD	EROD	1	0.2	
F11-2	11	W1/2, ZA	SHELL	EROD	EROD	1	0.2	
F11-2	11	W1/2, ZA	GROG	PLAIN	PLAIN	1	3.2	
F11-4	11	E1/2, ZA	SHELL	BURN	BURN	2	10.3	

Bag No	Fea	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
F11-4	11	E1/2, ZA	SHELL	EROD	EROD	2	1.5	1 sherd burnt
F11-5	11	E1/2, ZA, burned area	SHELL	PLAIN	PLAIN	10	17.6	more pieces may refit, possible disc but too fragmentary
F11-5	11	E1/2, ZA	SHELL	PLAIN	PLAIN	1	3.5	
F11-5	11	E1/2, ZA	SHELL	SMCD	PLAIN	1	43.9	
F11-7	11	E1/2, floor	SHELL	EROD	EROD	1	1.3	
F11-8	11	E1/2, floor	SHELL	PLAIN	PLAIN	7	12.5	
F11-8	11	E1/2, floor	SHELL	EROD	EROD	4	0.9	
F11-11	11	machine scraped surface	FGSH	BURN	PLAIN	1	26.5	plate bowl?
F11-11	11	machine scraped surface	SHELL	PLAIN	PLAIN	9	19.9	more pieces may refit, possible disc but too fragmentary
F11-11	11	machine scraped surface	SHELL	EROD	EROD	1	0.8	
F11-16	11	PM15, E1/2, ZA	SHELL	PLAIN	PLAIN	1	4.5	
F11-16	11	PM15, E1/2, ZA	SHGG	EROD	EROD	1	1.2	
F11-19	11	PM18, W1/2, ZA	SHELL	PLAIN	PLAIN	1	6.2	
F11-20	11	Slot trench 2	SHELL	PLAIN	PLAIN	2	15.8	1 low fired sherd
F11-20	11	Slot trench 2	FSHG	BKSLP	BKSLP	1	7.0	
F10-1	10	Plow zone	CSHEL	PLAIN	PLAIN	2	124.2	pan frags
F10-1	10	Plow zone	SHELL	PLAIN	PLAIN	4	18.4	possible disc frag?
F10-1	10	Plow zone	GGSH	EROD	EROD	1	2.2	
F10-2	10	Transition	SHELL	PLAIN	PLAIN	9	25.7	
F10-2	10	Transition	GROG	PLAIN	PLAIN	1	3.5	
F10-2	10	Transition	SHELL	EROD	EROD	1	1.5	
F10-2	10	Transition	GGSH	PLAIN	PLAIN	7	14.0	
F10-3	10	ZA	SHELL	PLAIN	PLAIN	27	146.2	2 shoulder with sooting
F10-3	10	ZA	SHELL	EROD	EROD	33	12.9	
F10-3	10	ZA	SHELL	BKSLP	PLAIN	2	15.0	
F10-3	10	ZA	SHELL	BKSLP	BKSLP	2	2.4	
F10-3	10	ZA	SHELL	BRSLP	PLAIN	1	2.3	
F10-3	10	ZA	GGSH	BURN	BKSLP	1	1.0	
F10-3	10	ZA	GROG	SMCD	PLAIN	1	6.7	
F10-3	10	ZA	SHELL	CORD	PLAIN	1	3.6	z-twist
F10-3	10	ZA	GGSH	RDSLP	BKSLP	1	3.1	
F10-3	10	ZA	GGSH	PLAIN	PLAIN	3	4.3	
F10-3	10	ZA	GGSH	EROD	EROD	11	6.0	
F10-4	10	ZA	SHELL	PLAIN	PLAIN	20	55.5	
F10-4	10	ZA	SHELL	PLAIN	BRSLP	4	4.7	
F10-4	10	ZA	SHELL	EROD	EROD	15	6.9	
F10-4	10	ZA	GGSH	PLAIN	BKSLP	3	3.0	
F10-4	10	ZA	SHGG	EROD	EROD	1	3.7	
F10-4	10	ZA	GROG	EROD	EROD	1	1.2	
F10-4	10	ZA	GGSH	EROD	EROD	3	2.2	
F10-6	10	ZA	SHELL	PLAIN	PLAIN	8	17.5	
F10-6	10	ZA	FSHEL	BKSLP	PLAIN	1	0.3	
F10-6	10	ZA	SHELL	CORD	PLAIN	1	0.6	s-twist

Bag No	Fea	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
F10-6	10	ZA	GROG	EROD	EROD	1	1.1	
F10-6	10	ZA	GGSH	EROD	EROD	1	1.9	
F10-2	10	ZA	SHELL	BKSLP	BKSLP	1	1.8	
F10-2	10	ZA	SHGG	EROD	EROD	1	1.0	take photo!
F10-2	10	ZA	SHELL	PLAIN	PLAIN	3	2.4	
F10-2	10	ZA	SHELL	EROD	EROD	2	0.4	
F10-2	10	ZA	SHELL	BRSLP	PLAIN	1	1.6	
F10-2	10	ZA	SHELL	BKSLP	PLAIN	1	1.8	
F10-7	10	North wall, ZA	SHELL	PLAIN	PLAIN	1	19.6	ceramic 2
F10-7	10	North wall, transition	SHELL	PLAIN	PLAIN	1	8.5	ceramic 1
F10-8	10	PM4	SHELL	PLAIN	PLAIN	1	5.4	
F10-9	10	PM7	GGSH	BRSLP	BRSLP	1	13.7	
F1-1	1	Trench, ZA	SHELL	BKSLP	PLAIN	1	4.7	
F1-1	1	Trench, ZA	SHELL	EROD	EROD	3	1.5	
F1-2	1	W1/4, UN2,3, ZA	SHELL	PLAIN	PLAIN	8	9.2	
F1-2	1	W1/4, UN2,3, ZA	SHELL	EROD	EROD	2	0.3	
F1-2	1	W1/4, UN2,3, ZA	SHELL	BRSLP	PLAIN	1	1.7	
F1-2	1	W1/4, UN2,3, ZA	SHGG	BRSLP	BRSLP	1	4.5	in 5 pieces
F1-2	1	W1/4, UN2,3, ZA	SHGG	EROD	EROD	1	1.8	take photo
F1-3	1b	ZA	SHELL	EROD	EROD	1	0.2	
F1-3	1b	ZA	SHELL	PLAIN	PLAIN	1	66.3	salt pan sherd destroyed for XRD
F1-5	1	PM3, W1/2, ZA	GGSH	PLAIN	PLAIN	1	3.2	
F9-2	9	W1/2, ZA	SHELL	PLAIN	PLAIN	20	43.1	
F9-2	9	W1/2, ZA	SHELL	EROD	EROD	6	1.6	
F9-2	9	W1/2, ZA	RESD				0.8	
F9-2	9	W1/2, ZA	GROG	SMCD	WSLIP	1	6.2	
F9-2	9	W1/2, ZA	SHELL	BRSLP	PLAIN	1	1.9	
F9-2	9	W1/2, ZA	GGSH	BKSLP	BRSLP	1	4.7	
F9-2	9	W1/2, ZA	SHELL	CORD	PLAIN	2	1.7	s-twist
F9-2	9	W1/2, ZA	GROG	PLAIN	PLAIN	2	2.5	
F9-2	9	W1/2, ZA	SHGG	PLAIN	PLAIN	1	2.4	
F9-2	9	W1/2, ZA	SHGG	EROD	EROD	1	4.0	
F9-3	9	W1/4, ZA	RESD				0.5	
F9-3	9	W1/4, ZA	SHELL	EROD	EROD	8	3.3	
F9-3	9	W1/4, ZA	CSHEL	PLAIN	PLAIN	1	11.8	
F9-3	9	W1/4, ZA	SHELL	PLAIN	PLAIN	13	67.5	
F9-3	9	W1/4, ZA	SHELL	CORD	RSLIP	1	2.2	s-twist
F9-3	9	W1/4, ZA	SHGG	PLAIN	PLAIN	1	38.1	photo!!
F9-3	9	W1/4, ZA	SHGG	EROD	EROD	2	1.1	photo!
F9-3	9	W1/4, ZA	GGSH	BURN	PLAIN	1	3.1	
F9-3	9	W1/4, ZA	GGSH	EROD	EROD	7	7.0	
F9-5	9	W1/4, ZA	SHELL	PLAIN	PLAIN	11	44.9	
F9-5	9	W1/4, ZA	SHELL	EROD	EROD	6	2.4	
F9-5	9	W1/4, ZA	SHELL	BKSLP	BURN	1	2.3	
F9-5	9	W1/4, ZA	GGSH	PLAIN	PLAIN	1	28.2	

Bag No	Fea	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
F9-8	9	W1/4, ZA	SHELL	PLAIN	PLAIN	1	0.2	
F9-10	9	W1/4, ZA	GGSH	EROD	EROD	1	2.0	
UN1-1	UN1	Unit 1, Level 1, 0-10cmbs	SHELL	PLAIN	PLAIN	4	7.4	
UN1-1	UN1	Unit 1, Level 1, 0-10	SHELL	CORD	PLAIN	1	2.6	cannot determine twist
UN1-2	UN1	Unit 1, Level 2, 10-15	SHELL	PLAIN	PLAIN	13	15.9	
UN1-2	UN1	Unit 1, Level 2, 10-15	SHELL	EROD	EROD	18	7.1	
UN1-2	UN1	Unit 1, Level 2, 10-15	SHELL	RSLIP	PLAIN	2	1.2	
UN1-2	UN1	Unit 1, Level 2, 10-15	GGSH	PLAIN	PLAIN	3	2.5	
UN1-2	UN1	Unit 1, Level2, 10-15	GROG	PLAIN	PLAIN	1	0.7	
UN1-3	UN1	Unit 1. Level 3, 15-20	SHELL	PLAIN	PLAIN	13	10.7	
UN1-3	UN1	Unit 1, Level 3, 15-20	SHELL	EROD	EROD	17	8.7	
UN1-3	UN1	Unit 1, Level 3, 15-20	SHELL	CORD	PLAIN	3	2.6	1 s-twist, 2 undetermined
UN1-3	UN1	Unit 1, Level 3, 15-20	GGSH	PLAIN	PLAIN	3	1.8	
UN1-3	UN1	Unit 1, Level 3, 15-20	GROG	BKSLP	PLAIN	1	0.3	
UN1-4	UN1	Unit 1, Level 3, 20-25	SHELL	PLAIN	PLAIN	17	22.4	
UN1-4	UN1	Unit 1, Level 3, 20-25	SHELL	EROD	EROD	13	10.4	
UN1-4	UN1	Unit 1, Level 3, 20-25	SHELL	BRSLP	PLAIN	1	1.7	
UN1-4	UN1	Unit 1, Level 3, 20-25	SHELL	BKSLP	BKSLP	1	1.3	
UN1-6	UN1	Unit 1, Level 4, 25-30	GGSH	BURN	BURN	1	47.1	plate base?
UN1-7	UN1	Unit 1, Level 5, 30-40	SHELL	PLAIN	PLAIN	6	24.8	
UN1-8	UN1	Unit 1, Level 6, 45-50	SHELL	PLAIN	PLAIN	1	6.6	in ~15 pieces
UN2-1	UN2	Plow zone	SHELL	PLAIN	PLAIN	15	28.0	
UN2-1	UN2	Plow zone	SHELL	BRSLP	PLAIN	1	0.9	
UN2-1	UN2	Plow zone	SHELL	RSLIP	RSLIP	1	0.4	
UN2-1	UN2	Plow zone	SHELL	CORD	PLAIN	1	1.5	s-twist
UN2-1	UN2	Plow zone	GGSH	PLAIN	PLAIN	3	11.9	
UN2-1	UN2	Plow zone	GGSH	EROD	EROD	2	1.8	
UN2-2	UN2	Plow zone	SHELL	PLAIN	PLAIN	12	19.5	
UN2-2	UN2	Plow zone	SHELL	RSLIP	PLAIN	1	1.5	
UN2-2	UN2	Plow zone	SHELL	BURN	PLAIN	1	2.0	
UN2-2	UN2	Plow zone	SHELL	BKSLP	PLAIN	1	1.8	
UN2-2	UN2	Plow zone	GGSH	PLAIN	PLAIN	4	15.0	
UN2-2	UN2	Plow zone	GGSH	BKSLP	PLAIN	1	1.5	
UN2-2	UN2	Plow zone	GROG	BRSLP	PLAIN	1	2.9	
UN2-3	UN2	Interface 1	SHELL	PLAIN	PLAIN	13	18.7	
UN2-3	UN2	Interface 1	SHELL	BKSLP	PLAIN	1	2.6	
UN2-3	UN2	Interface 1	GGSH	RSLIP	RSLIP	1	2.4	
UN2-3	UN2	Interface 1	GROG	BURN	PLAIN	1	9.2	base
UN2-4	UN2	Interface 1	SHELL	PLAIN	PLAIN	1	1.8	
UN2-4	UN2	Interface 1	GGSH	RSLIP	PLAIN	1	4.7	
UN2-5	UN2	Clay Level, 25-27 cmbs	SHELL	PLAIN	PLAIN	2	5.6	
UN2-6	UN2	Clay level	SHELL	PLAIN	PLAIN	11	31.1	
UN2-6	UN2	Clay level	SHELL	BRSLP	EROD	1	0.3	
UN2-6	UN2	Clay level	SHGG	PLAIN	PLAIN	2	53.8	1 in 3 pieces
UN2-6	UN2	Clay level	GROG	EROD	EROD	4	4.7	

Bag No	Fea	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
UN2-7	UN2	Scraping above features	SHELL	PLAIN	PLAIN	1	1.1	
UN2-7	UN2	Scraping above features	SHELL	FABR	PLAIN	1	1.1	warp and weft s-twist, 10 imp/2cm
UN2-7	UN2	Scraping above features	GROG	EROD	EROD	1	14.7	in 3 pieces
UN2-7	UN2	Scraping above features	SHGG	EROD	EROD	1	3.4	
UN3-1	UN3	Plow zone	SHELL	PLAIN	PLAIN	14	28.6	
UN3-1	UN3	Plow zone	SHELL	EROD	EROD	3	1.5	
UN3-1	UN3	Plow zone	SHELL	BKSLP	BKSLP	1	2.8	
UN3-1	UN3	Plow zone	SHELL	BRSLP	PLAIN	1	5.1	
UN3-1	UN3	Plow zone	SHELL	CORD	RSLIP	1	1.4	s-twist
UN3-1	UN3	Plow zone	SHELL	CORD	PLAIN	1	1.0	s-twist
UN3-1	UN3	Plow zone	GGSH	PLAIN	PLAIN	4	4.0	
UN3-1	UN3	Plow zone	GGSH	BKSLP	BKSLP	2	8.2	
UN3-1	UN3	Plow zone	GROG	PLAIN	PLAIN	1	3.3	
UN3-2	UN3	Plow zone	SHELL	PLAIN	PLAIN	1	4.0	
UN3-3	UN3	Interface 1	SHELL	RSLIP	BKSLP	1	0.5	
UN3-3	UN3	Interface 1	SHELL	BKSLP	PLAIN	1	0.6	
UN3-3	UN3	Interface 1	SHELL	PLAIN	PLAIN	11	16.7	
UN3-3	UN3	Interface 1	GGSH	EROD	EROD	1	3.7	
UN3-3	UN3	Interface 1	GROG	PLAIN	PLAIN	2	4.0	
UN3-4	UN3	Clay Level	SHELL	PLAIN	PLAIN	10	16.6	
UN3-4	UN3	Clay Level	SHELL	EROD	EROD	5	0.9	
UN3-4	UN3	Clay Level	SHELL	BKSLP	PLAIN	5	3.4	
UN3-4	UN3	Clay Level	SHELL	FABR	PLAIN	1	3.7	s-twist, 9 warp/2cm
UN3-4	UN3	Clay Level	GGSH	RSLIP	PLAIN	1	4.9	finely crushed
UN3-5	UN3	Clay Level, 26-30cmbs	SHELL	PLAIN	PLAIN	25	99.3	likely from a few vessels; 2 sherds removed for XRD (1 plain shell 9.8g, 1 plain shell 7.3)
UN3-5	UN3	Clay Level, 26-30cmbs	SHELL	EROD	EROD	7	3.6	
UN3-5	UN3	Clay Level, 26-30cmbs	RESD				0.6	
UN3-5	UN3	Clay Level, 26-30cmbs	SHELL	BURN	PLAIN	1	1.4	
UN3-5	UN3	Clay Level, 26-30cmbs	GROG	EROD	EROD	1	1.8	
UN3-6	UN3	Scraping above features	SHELL	PLAIN	PLAIN	3	3.4	
UN3-6	UN3	Scraping above features	SHELL	EROD	EROD	2	1.5	
G-1	Backdirt	General Collection	SHELL	PLAIN	PLAIN	2	9.9	
G-1	Backdirt	General Collection	SHGG	PLAIN	PLAIN	1	11.7	
G-2	Backdirt	General Collection	SHELL	PLAIN	PLAIN	5	23.9	
G-2	Backdirt	General Collection	GGSH	PLAIN	PLAIN	1	15.9	
G-2	Backdirt	General Collection	GROG	PLAIN	PLAIN	2	7.1	
G-2	Backdirt	General Collection	SHELL	FABR	PLAIN	1	3.8	s-twist, 8 warp/2cm
G-3	Backdirt	General Collection	SHELL	PLAIN	PLAIN	7	27.3	
G-3	Backdirt	General Collection	FGSH	PLAIN	PLAIN	1	5.2	
G-3	Backdirt	General Collection	SHELL	RSLIP	RSLIP	1	1.1	
G-3	Backdirt	General Collection	SHELL	BRSLP	PLAIN	1	4.5	
G-3	Backdirt	General Collection	SHELL	PLAIN	BURN	1	1.6	
G-4	Backdirt	General Collection	SHELL	RSLIP	PLAIN	1	0.7	

Bag No	Fea	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
G-4	Backdirt	General Collection	SHELL	PLAIN	PLAIN	7	2.7	
EB2-1	EB2	Midden/Feature	SHELL	PLAIN	PLAIN	1	11.0	
EB2-2	EB2	Backdirt	SHELL	PLAIN	PLAIN	1	1.0	
EB2-4	EB2	Backdirt	SHELL	PLAIN	PLAIN	14	55.9	
EB2-4	EB2	Backdirt	SHELL	CORD	PLAIN	1	10.6	z-twist
EB2-4	EB2	Backdirt	GGSH	PLAIN	PLAIN	1	12.2	
EB2-4	EB2	Backdirt	SHELL	BURN	PLAIN	1	19.5	
EB2-4	EB2	Backdirt	SHELL	BURN	BURN	1	0.7	
EB2-4	EB2	Backdirt	SHELL	PLAIN	RSLIP	1	2.8	
EB2-4	EB2	Backdirt	SHELL	PLAIN	BKSLP	1	1.1	
EB1-1	EB1	Backdirt	SHELL	PLAIN	PLAIN	6	23.5	
EB1-1	EB1	Backdirt	SHELL	RSLIP	RSLIP	1	8.9	
EB1-1	EB1	Backdirt	GGSH	PLAIN	PLAIN	1	3.4	
EB1-1	EB1	Backdirt	GROG	EROR	EROD	1	2.0	
EB1-3	EB1	Backdirt	SHELL	PLAIN	PLAIN	7	21.2	
EB1-3	EB1	Backdirt	CSHEL	PLAIN	PLAIN	1	21.1	white residue
EB1-3	EB1	Backdirt	GROG	EROD	EROD	1	1.4	
UN5-1	UN5	Plow zone	SHELL	EROD	EROD	1	0.6	
UN5-2	UN5	Interface	SHELL	PLAIN	PLAIN	6	11.7	
UN5-2	UN5	Interface	GGSH	WSLP	EROD	1	2.4	
UN5-3	UN5	Clay level	SHELL	PLAIN	PLAIN	6	7.1	
UN5-3	UN5	Clay level	GGSH	RSLIP	PLAIN	1	4.4	
UN5-4	UN5	Scraping above features	SHELL	PLAIN	PLAIN	1	4.1	
EB3-1	EB3	General collection	SHELL	PLAIN	PLAIN	2	42.9	1sherd with frequent hematite inclusions
EB3-1	EB3	General collection	GGSH	PLAIN	PLAIN	3	54.2	
EB3-3	EB3	Backdirt	SHELL	PLAIN	PLAIN	2	2.6	
EB3-3	EB3	Backdirt	SHELL	BKSLP	BKSLP	2	3.4	
EB3-3	EB3	Backdirt	GGSH	PLAIN	PLAIN	4	16.1	
F25-1	25	NW1/4, ZA	SHELL	RSLIP	PLAIN	1	0.9	
F25-1	25	NW1/4, ZA	SHELL	PLAIN	PLAIN	20	31.2	
F25-1	25	NW1/4, ZA	SHELL	EROD	EROD	13	5.8	
F25-1	25	NW1/4, ZA	GROG	EROD	EROD	2	2.0	
F25-1	25	NW1/4, ZA	GGSH	PLAIN	PLAIN	2	87.8	1 frag in 3 pieces (refit), 1 frag in many pieces
F25-2	25	NW1/4, ZA	SHELL	PLAIN	PLAIN	22	37.4	
F25-2	25	NW1/4, ZA	SHELL	BRSLP	PLAIN	1	6.8	
F25-2	25	NW1/4, ZA	SHELL	EROD	EROD	6	3.6	
F25-2	25	NW1/4, ZA	GROG	PLAIN	PLAIN	3	12.7	
F25-2	25	NW1/4, ZA	SHGG	PLAIN	PLAIN	1	16.9	also has shell
F25-2	25	NW1/4, ZA	GROG	EROD	EROD	4	2.8	
F25-3	25	NE1/4, ZA	SHELL	PLAIN	PLAIN	6	109.1	
F25-3	25	NE1/4, ZA	SHELL	CORD	PLAIN	1	3.9	indet. Twist
F25-3	25	NE1/4, ZA	SHELL	EROD	EROD	14	8.3	
F25-3	25	NE1/4, ZA	SHELL	BKSLP	EROD	1	0.5	

Bag No	Fea	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
F25-3	25	NE1/4, ZA	GGSH	EROD	EROD	5	2.1	
F25-4	25	NE1/4, ZA	GGSH	BKSLP	PLAIN	1	14.9	includes refit from F25-3, brush marks higly visible
F25-4	25	NE1/4, ZA	SHELL	PLAIN	PLAIN	5	13.1	
F25-4	25	NE1/4, ZA	SHELL	SMCD	PLAIN	2	8.8	
F25-4	25	NE1/4, ZA	SHELL	EROD	EROD	8	2.1	
F25-4	25	NE1/4, ZA	GGSH	EROD	EROD	3	2.2	
F25-6	25	NE1/4, ZA	SHELL	PLAIN	PLAIN	11	52.3	
F25-6	25	NE1/4, ZA	SHELL	EROD	EROD	3	0.8	
F25-7	25	N1/2, ZA	GGSH	PLAIN	PLAIN	5	61.0	
F25-7	25	N1/2, ZA	SHGG	PLAIN	PLAIN	1	27.1	
F25-7	25	N1/2, ZA	GROG	EROD	EROD	4	1.6	
F25-7	25	N1/2, ZA	GGSH	BKSLP	PLAIN	2	5.8	Llikely refit with f25-4
F25-7	25	N1/2, ZA	SHELL	BKSLP	PLAIN	6	13.5	
F25-7	25	N1/2, ZA	SHELL	RSLIP	PLAIN	1	1.4	
F25-7	25	N1/2, ZA	SHELL	CORD	PLAIN	1	0.8	indet. Twist
F25-7	25	N1/2, ZA	SHELL	BRSLP	PLAIN	2	4.3	
F25-7	25	N1/2, ZA	SHELL	PLAIN	PLAIN	38	141.5	
F25-7	25	N1/2, ZA	SHELL	EROD	EROD	24	9.0	
F25-9	25	S1/2, ZA	SHELL	BKSLP	BKSLP	1	3.2	
F25-9	25	S1/2, ZA	SHELL	BKSLP	EROD	5	0.8	
F25-9	25	S1/2, ZA	SHELL	BRSLP	EROD	1	0.6	in 2 pieces
F25-9	25	S1/2, ZA	SHELL	BKSLP	PLAIN	1	3.8	
F25-9	25	S1/2, ZA	SHELL	PLAIN	PLAIN	10	102.7	red pigment on large vessel base sherd
F25-9	25	S1/2, ZA	SHELL	EROD	EROD	15	4.8	
F25-9	25	S1/2, ZA	GGSH	PLAIN	PLAIN	1	0.7	
F25-9	25	S1/2, ZA	GROG	EROD	EROD	7	4.2	
F25-11	25	Profile wall, ZB	SHELL	PLAIN	PLAIN	1	5.2	pottery 1
F25-11	25	Profile wall, ZB	GGSH	PLAIN	PLAIN	1	109.9	pottery 2
F25-15	25	S1/2, ZC	SHELL	PLAIN	PLAIN	8	16.0	
F25-15	25	S1/2, ZC	SHELL	CORD	PLAIN	1	1.2	indet. Twist
F25-25	25	S1/2, ZC	SHELL	EROD	EROD	7	2.0	
F25-12	25	S1/2, ZB	SHELL	PLAIN	PLAIN	73	220.3	
F25-12	25	S1/2, ZB	SHELL	EROD	EROD	13	6.2	
F25-12	25	S1/2, ZB	GGSH	BRSLP	BURN	1	2.0	
F25-12	25	S1/2, ZB	SHELL	BRSLP	PLAIN	3	14.3	from same vessel?
F25-12	25	S1/2, ZB	SHELL	BKSLP	PLAIN	2	18.5	from same vessel?
F25-12	25	S1/2, ZB	GGSH	EROD	EROD	11	10.7	2 possibly from neg. painted plate in 25-3
F25-12	25	S1/2, ZB	GGSH	PLAIN	PLAIN	1	1.3	very finely crushed
UN4-1	UN4	Plow zone	SHELL	PLAIN	PLAIN	4	7.1	
UN4-1	UN4	Plow zone	SHELL	CORD	PLAIN	1	1.4	s-twist
UN4-1	UN4	Plow zone	SHELL	EROD	EROD	5	3.1	
UN4-1	UN4	Plow zone	GROG	PLAIN	PLAIN	2	4.9	

Bag No	Fea	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
UN4-2	UN4	Interface	SHELL	PLAIN	PLAIN	13	20.4	
UN4-2	UN4	Interface	SHELL	BKSLP	PLAIN	2	7.9	
UN4-2	UN4	Interface	GGSH	EROD	EROD	2	2.8	
UN4-3	UN4	Clay level, 24-29cmbs	SHELL	PLAIN	PLAIN	15	31.1	
UN4-3	UN4	Clay level, 24-29cmbs	SHELL	BKSLP	BKSLP	1	1.4	
UN4-3	UN4	Clay level, 24-29cmbs	SHELL	BURN	BURN	2	3.8	
UN4-3	UN4	Clay level, 24-29cmbs	GGSH	PLAIN	PLAIN	3	7.8	
UN4-3	UN4	Clay level, 24-29cmbs	SHELL	EROD	EROD	3	4.3	
UN4-4	UN4	Scraping above features	SHELL	PLAIN	PLAIN	2	1.6	
UN4-4	UN4	Scraping above feature	GGSH	PLAIN	PLAIN	1	2.2	
UN4-4	UN4	Scraping above feature	GGSH	EROD	EROD	1	3.1	
UN6-1	UN6	PZ, 0-17cmbs	SHELL	PLAIN	PLAIN	12	38.4	
UN6-2	UN6	Interface, 17-24cmbs	SHELL	PLAIN	PLAIN	12	16.4	
UN6-2	UN6	Interface, 17-24cmbs	SHELL	BURN	PLAIN	1	1.2	
UN6-3	UN6	Clay layer, 24-29cmbs	SHELL	PLAIN	PLAIN	7	30.8	
UN6-3	UN6	Clay layer, 24-29cmbs	SHELL	BRSLP	PLAIN	1	6.0	
UN6-3	UN6	Clay layer, 24-29cmbs	GGSH	PLAIN	PLAIN	1	6.8	
UN6-3	UN6	Clay layer, 24-29cmbs	SHELL	BKSLP	PLAIN	1	1.1	
UN6-3	UN6	Clay layer, 24-29cmbs	SHELL	EROD	EROD	1	0.5	
UN6-4	UN6	Scraping above feature	SHELL	PLAIN	PLAIN	5	13.5	
UN6-4	UN6	Scraping above feature	SHELL	RSLIP	PLAIN	1	0.4	
UN6-4	UN6	Scraping above feature	GGSH	BKSLP	PLAIN	1	2.1	
F26-1	26	Machine scraped surface	SHELL	PLAIN	PLAIN	6	81.5	
F26-1	26	Maching scraped surface	SHGG	PLAIN	PLAIN	1	51.9	
F26-1	26	Machine scraped surface	GGSH	EROD	EROD	1	2.1	
F26-2	26	S1/2, ZA	SHELL	PLAIN	PLAIN	26	71.4	
F26-2	26	S1/2, ZA	SHELL	CORD	PLAIN	2	5.0	1 s-twist, 1 z-twist
F26-2	26	S1/2, ZA	SHELL	EROD	EROD	13	5.3	
F26-2	26	S1/2, ZA	GROG	PLAIN	PLAIN	1	2.0	
F26-2	26	S1/2, ZA	GGSH	PLAIN	PLAIN	4	90.7	
F26-2	26	S1/2, ZA	SHGG	PLAIN	PLAIN	3	44.3	
F26-2	26	S1/2, ZA	GGSH	EROD	EROD	9	21.3	
F26-4	26	S1/2, ZA	SHELL	PLAIN	PLAIN	9	47.8	
F26-4	26	S1/2, ZA	SHELL	CORD	PLAIN	1	11.2	
F26-4	26	S1/2, ZA	SHGG	PLAIN	PLAIN	2	37.1	
F26-4	26	S1/2, ZA	GROG	EROD	EROD	1	0.9	
F26-5	26	S1/2, floor	SHELL	PLAIN	PLAIN	1	0.4	
F26-5	26	S1/2, floor	SHELL	EROD	EROD	3	0.3	
F26-5	26	S1/2, floor	SHGG	EROD	EROD	1	1.0	
F26-5	26	S1/2, FLOOR	SHGG	PLAIN	PLAIN	1	1178.7	PP5, near complete vessel, possible residue, shgg and ggsh, applied shell temp surface on part of exterior, slab construction
F13-1	13	Machine scraped surface	GGSH	PLAIN	PLAIN	1	31.3	vessel foot and body
F13-5	13	N1/2, ZA	SHELL	INCIS	PLAIN	1	11	pottery disc, recycled plate rim

Bag No	Fea	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
F25-9	25	S1/2, ZA	SHELL	INCIS	PLAIN	1	5.8	likely from a plate
F25-12	25	S1/2, ZA	SHELL	PLAIN	PLAIN	1	3	pottery disc
UN6-3	UN6	Clay layer, 24-29cmbs	GGSH	INCIS	PLAIN	1	1.6	plate
G-2	Gen	Backdirt	SHELL	PLAIN	PLAIN	1	1.4	pottery disc
EB3-3	EB3	Backdirt	GGSH	BRSLP	PLAIN	1	8.6	loop handle, some eroded brown slip
G-3	Gen	Backdirt	SHELL	SLINC	BKSLP	1	4.9	
G-3	Gen	Backdirt	SHELL	INCIS	PLAIN	1	2.6	trailed
SC-68	Grid R	Zone 4, surface	SHELL	PLAIN	PLAIN	4	11.4	
SC-29	Grid H	Zone 3, surface	SHELL	PLAIN	PLAIN	1	5.2	
SC-32	Grid I	Zone 3, surface	SHELL	PLAIN	PLAIN	1	0.7	
SC-19	Grid E	Zone 3, surface	SHELL	PLAIN	PLAIN	1	2.0	
SC-19	Grid E	Zone 3, surface	GGSH	BKSLP	BKSLP	1	1.5	
SC-17	Grid E	Zone 1, surface	SHELL	PLAIN	PLAIN	8	30.3	
SC-17	Grid E	Zone 1, surface	SHELL	BRSLP	PLAIN	1	7.9	
SC-37	Grid J	Zone 3, surface	SHELL	PLAIN	PLAIN	6	9.1	
SC-67	Grid R	Zone 3, surface	SHELL	PLAIN	PLAIN	2	16.7	
SC-67	Grid R	Zone 3, surface	SHELL	RSLIP	RSLIP	1	0.8	
SC-63	Grid Q	Zone 3, surface	SHELL	PLAIN	PLAIN	6	9.9	
SC-63	Grid Q	Zone 3, surface	SHELL	BRSLP	BRSLP	1	1.9	
SC-45	Grid L	Zone 3, surface	SHELL	PLAIN	PLAIN	5	9.8	
SC-45	Grid L	Zone 3, surface	SHELL	RSLIP	PLAIN	1	1.6	
SC-60	Grid P	Zone 4, surface	SHELL	PLAIN	PLAIN	3	3.1	
SC-53	Grid O	Zone 1, surface	SHELL	PLAIN	PLAIN	3	3.7	
SC-56	Grid O	Zone 4, surface	SHELL	PLAIN	PLAIN	8	12.3	
SC-56	Grid O	Zone 4, surface	SHELL	BURN	BURN	1	1.9	
SC-66	Grid R	Zone 2, surface	SHELL	PLAIN	PLAIN	2	1.6	
SC-44	Grid L	Zone 2, surface	SHELL	PLAIN	PLAIN	1	1.7	
SC-44	Grid L	Zone 2, surface	SHELL	BRSLP	PLAIN	1	2.1	
SC-55	Grid O	Zone 3, surface	SHELL	BKSLP	BKSLP	1	1.2	
SC-61	Grid Q	Zone 1, surface	SHELL	PLAIN	PLAIN	8	9.6	
SC-61	Grid Q	Zone 1, surface	SHELL	EROD	EROD	2	1.1	
SC-61	Grid Q	Zone 1, surface	SHELL	CORD	PLAIN	1	2.4	
SC-59	Grid P	Zone 3, surface	SHELL	PLAIN	PLAIN	5	7.0	
SC-59	Grid P	Zone 3, surface	GROG	PLAIN	PLAIN	1	4.0	
SC-62	Grid Q	Zone 2, surface	SHELL	PLAIN	PLAIN	1	0.7	
SC-62	Grid Q	Zone 2, surface	GGSH	PLAIN	PLAIN	1	10.4	
SC-58	Grid P	Zone 2, surface	SHELL	PLAIN	PLAIN	5	5.3	
SC-58	Grid P	Zone 2, surface	SHELL	BRSLP	BRSLP	1	0.6	hematite inclusions
SC-31	Grid I	Zone 1, surface	SHELL	BKSLP	EROD	1	0.7	
SC-46	Grid L	Zone 4, surface	GROG	PLAIN	PLAIN	1	16.8	vessel foot
SC-46	Grid L	Zone 4, surface	SHELL	PLAIN	PLAIN	3	6.1	
SC-46	Grid L	Zone 4, surface	SHELL	CORD	PLAIN	1	1.3	z-twist
SC-46	Grid L	Zone 4, surface	GGSH	RSLIP	PLAIN	1	2.6	
SC-39	Grid K	Zone 1, surface	SHELL	PLAIN	PLAIN	4	5.6	

Bag No	Fea	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
SC-41	Grid K	Zone 3, surface	SHELL	PLAIN	PLAIN	2	6.1	
SC-41	Grid K	Zone 3, surface	SHELL	EROD	EROD	1	4.8	
SC-41	Grid K	Zone 3, surface	SHELL	BURN	PLAIN	1	4.3	
SC-41	Grid K	Zone 3, surface	GROG	PLAIN	PLAIN	3	6.2	
SC-41	Grid K	Zone 3, surface	GGSH	RSLIP	RSLIP	1	10.2	
SC-36	Grid J	Zone 2, surface	SHELL	PLAIN	PLAIN	2	4.5	
SC-36	Grid J	Zone 2, surface	SHELL	RSLIP	RSLIP	1	1.4	
SC-52	Grid N	Zone 4, surface	SHELL	PLAIN	PLAIN	3	3.6	
SC-52	Grid N	Zone 4, surface	SHELL	EROD	EROD	2	1.1	
SC-38	Grid J	Zone 4, surface	SHELL	PLAIN	PLAIN	4	7.3	
SC-38	Grid J	Zone 4, surface	SHELL	PLAIN	PLAIN	1	12.4	vessel foot
SC-38	Grid J	Zone 4, surface	SHELL	BRSLP	PLAIN	1	5.6	
SC-38	Grid J	Zone 4, surface	SHELL	BRSLP	BRSLP	1	2.2	
SC-24	Grid F	Zone 4, surface	SHELL	PLAIN	PLAIN	1	4.1	
SC-64	Grid Q	Zone 4, surface	SHELL	PLAIN	PLAIN	7	68.2	
SC-33	Grid I	Zone 3, surface	SHELL	PLAIN	PLAIN	6	12.7	
SC-33	Grid I	Zone 3, surface	SHELL	CORD	PLAIN	1	3.8	
SC-42	Grid K	Zone 4, surface	SHELL	PLAIN	PLAIN	5	6.9	
SC-42	Grid K	Zone 4, surface	SHELL	BKSLP	PLAIN	1	7.1	
SC-42	Grid K	Zone 4, surface	SHELL	BKSLP	RSLIP	1	1.1	
SC-27	Grid G	Zone 4, surface	SHELL	PLAIN	PLAIN	1	8.3	
SC-40	Grid K	Zone 2, surface	SHELL	PLAIN	PLAIN	8	18.1	
SC-40	Grid K	Zone 2, surface	SHELL	SMCD	PLAIN	1	4.0	
SC-40	Grid K	Zone 2, surface	SHELL	BKSLP	BKSLP	1	2.4	
SC-65	Grid R	Zone 1, surface	SHELL	PLAIN	PLAIN	5	6.3	
SC-65	Grid R	Zone 1, surface	SHGG	PLAIN	EROD	1	8.1	
SC-34	Grid I	Zone 4, surface	SHELL	PLAIN	PLAIN	2	4.7	1 with brush marks
SC-57	Grid P	Zone 1, surface	SHELL	PLAIN	PLAIN	4	5.8	
SC-57	Grid P	Zone 1, surface	SHELL	EROD	EROD	3	1.3	
SC-57	Grid P	Zone 1, surface	GGSH	PLAIN	PLAIN	1	5.6	
SC-43	Grid L	Zone 1, surface	SHELL	PLAIN	PLAIN	4	12.3	
SC-43	Grid L	Zone 1, surface	SHELL	FABR	PLAIN	1	13.5	
SC-43	Grid L	Zone 1, surface	SHLG	WSLP	PLAIN	1	3.5	
UN6-2	UN6	Interface (17-24 cmbs)	GROG	RSLIP	RSLIP	2	8.1	likely refit
SC-14	Grid D	Zone 2, surface	SHELL	EROD	EROD	2	1.2	
SC-14	Grid D	Zone 2, surface	SHELL	PLAIN	PLAIN	1	1.0	
SC-14	Grid D	Zone 2, surface	GGSH	PLAIN	PLAIN	2	3.5	
SC-20	Grid E	Zone 4, surface	GGSH	PLAIN	PLAIN	2	4.3	
SC-20	Grid E	Zone 4, surface	SHELL	PLAIN	PLAIN	1	0.9	
SC-28	Grid H	Zone 2, surface	GGSH	EROD	EROD	1	0.8	
SC-22	Grid F	Zone 2, surface	GGSH	PLAIN	PLAIN	4	10.5	
SC-22	Grid F	Zone 2, surface	SHELL	PLAIN	PLAIN	1	0.9	
SC-22	Grid F	Zone 2, surface	SHELL	EROD	EROD	1	1.6	
SC-15	Grid D	Zone 3, surface	GROG	PLAIN	EROD	1	3.1	
SC-15	Grid D	Zone 3, surface	SHELL	PLAIN	PLAIN	8	51.2	

Bag No	Fea	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
SC-35	Grid J	Zone 1, surface	SHELL	PLAIN	PLAIN	4	3.9	
SC-35	Grid J	Zone 1, surface	SHELL	EROD	EROD	2	2.1	
SC-23	Grid F	Zone 3, surface	SHELL	PLAIN	PLAIN	4	10.8	
SC-23	Grid F	Zone 3, surface	SHELL	BRSLP	BRSLP	1	0.9	
SC-12	Grid C	Zone 4, surface	GROG	PLAIN	EROD	1	2.6	
SC-6	Grid B	Zone 2, surface	GGSH	PLAIN	EROD	1	2.8	
SC-21	Grid F	Zone 1, surface	SHELL	BKSLP	BKSLP	1	2.4	
SC-21	Grid F	Zone 1, surface	SHELL	PLAIN	PLAIN	1	7.6	
SC-18	Grid E	Zone 2, surface	SHGG	PLAIN	PLAIN	1	12.4	
SC-18	Grid E	Zone 2, surface	SHELL	PLAIN	PLAIN	5	15.0	
SC-16	Grid D	Zone 4, surface	SHELL	PLAIN	PLAIN	3	5.0	
SC-10	Grid C	Zone 2, surface	SHELL	PLAIN	PLAIN	1	0.8	
SC-7	Grid B	Zone 3, surface	GGSH	PLAIN	EROD	1	1.1	
SC-11	Grid C	Zone 3, surface	SHELL	PLAIN	PLAIN	2	3.3	
SC-11	Grid C	Zone 3, surface	GROG	PLAIN	PLAIN	1	1.0	

Common Field 1980 - sherds

Cat No	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
967	B6-34-83	SHELL	PLAIN	PLAIN	8	51.5	
967	B6-34-83	SHELL	BURN	PLAIN	1	16.1	
	Western most mound	SHELL	RSLIP	PLAIN	1	5.0	
	Western most mound	SHELL	BKSLP	PLAIN	5	16.3	
	Western most mound	SHELL	PLAIN	PLAIN	14	96.9	
	Western most mound	SHELL	FABR	PLAIN	2	23.7	
	Western most mound	GROG	CORD	PLAIN	1	15.9	
	Md NoE	SHELL	RSLIP	PLAIN	1	17.3	
	Md NoE	SHELL	PLAIN	PLAIN	9	48.3	
931	B6-34-77	SHELL	PLAIN	PLAIN	22	399.4	Very thick slab of shell temp ceramic
931	B6-34-77	SHELL	BKSLP	PLAIN	1	14.7	
960	B6-44-81	SHELL	RSLIP	PLAIN	1	105.8	possible interior red slip
960	B6-44-81	SHELL	PLAIN	PLAIN	11	42.5	
960	B6-44-81	SHELL	CORD	PLAIN	2	2.4	
943	B6-34-79	SHELL	PLAIN	PLAIN	8	68.3	
943	B6-34-79	SHELL	BRSLP	PLAIN	1	1.0	
943	B6-34-79	GROG	PLAIN	PLAIN	1	6.7	
940	B6-28-79	SHELL	PLAIN	PLAIN	9	55.2	
	NE Mound	SHELL	RSLIP	PLAIN	3	7.7	
	NE Mound	SHELL	BKSLP	PLAIN	1	5.3	
	NE Mound	SHELL	PLAIN	PLAIN	7	55.0	
	NE Mound	SHELL	FABR	PLAIN	1	19.9	
	NE Mound	GGSH	PLAIN	PLAIN	1	7.6	
	Surface, NE of Big Mound	SHELL	BKSLP	PLAIN	1	3.5	
	Surface, NE of Big Mound	SHELL	PLAIN	PLAIN	6	31.7	
	Surface, NE of Big Mound	GROG	PLAIN	PLAIN	1	6.6	
	Surface, NE of Big Mound	GROG	CORD	PLAIN	6	36.0	

Cat No	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
942	B6-34-77	SHELL	PLAIN	PLAIN	5	45.4	
963	B6-26-83	SHELL	BKSLP	PLAIN	1	13.6	
963	B6-26-83	SHELL	PLAIN	PLAIN	2	31.4	
937	B6-46-77	SHELL	BKSLP	PLAIN	2	9.1	
937	B6-46-77	SHELL	PLAIN	PLAIN	16	59.7	
966	B6-32-83	SHELL	RSLIP	PLAIN	1	1.9	
966	B6-32-83	SHELL	BKSLP	PLAIN	1	20.3	exterior sooting
966	B6-32-83	SHELL	PLAIN	PLAIN	5	19.9	
966	B6-32-83	SHELL	BURN	BURN	1	5.8	
935	B6-42-77	SHELL	BKSLP	PLAIN	1	13.2	
935	B6-42-77	SHELL	PLAIN	PLAIN	14	75.6	
966	B6-32-83	GGSH	BURN	PLAIN	1	4.3	
980	B6-48-79	SHELL	PLAIN	PLAIN	1	1.9	
929	B6-30-77	LIME	BKSLP	PLAIN	1	1.4	
989	B6-30-87	SHELL	PLAIN	PLAIN	1	0.4	
947	B6-42-79	SHELL	PLAIN	PLAIN	1	1.1	
185	B1/3-54-78	SHELL	PLAIN	PLAIN	2	3.2	
112	B1/3-66-66	GROG	PLAIN	PLAIN	1	0.8	
205	B1/3-68-80	SHELL	PLAIN	PLAIN	2	0.5	
1362	B4-52-68	SHELL	PLAIN	PLAIN	3	0.3	
83	B5-86-34	SHELL	PLAIN	PLAIN	1	2.6	
83	B5-64-58	GROG	BKSLP	PLAIN	1	12.2	
570	B5-78-20	SHELL	PLAIN	PLAIN	7	1.6	
658	B5-84-20	SHELL	PLAIN	PLAIN	1	0.3	
609	B5-88-24	SHELL	PLAIN	PLAIN	1	1.6	
609	B5-88-24	GROG	PLAIN	PLAIN	1	0.5	
626	B5-88-26	SHELL	PLAIN	PLAIN	2	0.5	
1385	B9-60-58	SHELL	RSLIP	PLAIN	1	2.1	
1396	B9-58-62	GROG	PLAIN	PLAIN	1	3.4	
72-241		SHELL	PLAIN	PLAIN	4	8.8	
199	B1-56-80	SHELL	RSLIP	PLAIN	1	5.8	
199	B1-56-80	SHELL	PLAIN	PLAIN	8	39.0	
199	B1-56-80	SHELL	CORD	PLAIN	1	2.5	
199	B1-56-80	GROG	PLAIN	PLAIN	1	1.0	
72-242		SHELL	RSLIP	PLAIN	2	13.4	
72-242		SHELL	BKSLP	PLAIN	3	16.2	
72-242		SHELL	PLAIN	PLAIN	47	275.5	
72-242		SHELL	CORD	PLAIN	1	2.4	
72-242		SHELL	FABR	PLAIN	1	12.8	
72-242		SHELL	BKINC	PLAIN	3	13.9	
72-242		GROG	BKSLP	PLAIN	1	4.4	
72-242		GROG	PLAIN	PLAIN	5	25.7	
620	B5-76-26	SHELL	PLAIN	PLAIN	1	7.8	
59d		SHELL	RSLP	PLAIN	8	200.3	
59d		SHELL	BKSLP	PLAIN	11	240.0	

Cat No	Provenience	Temper	Surface 1	Surface 2	Count	Weight	Notes
59d		SHELL	PLAIN	PLAIN	14	336.6	
59d		SHELL	CORD	PLAIN	1	27.9	
59d		SHELL	FABR	PLAIN	2	34.6	
59d		SHELL	BKINC	PLAIN	10	198.1	
59d		SHELL	BURN	PLAIN	1	36.1	
59d		SHELL	BNINC	PLAIN	2	38.4	
59d		SHELL	INCIS	PLAIN	1	6.9	
59d		GROG	RSLIP	PLAIN	1	14.1	
59d		GROG	PLAIN	PLAIN	9	885.2	
59d		GGSH	PLAIN	PLAIN	6	191.4	
59d		GGSH	BKSLP	PLAIN	3	63.8	
59d		GGSH	BNINC	PLAIN	1	15.5	
59d		GGSH	BKINC	PLAIN	12	238.9	
59d		GROG	BURN	PLAIN	1	12.0	
59d		GGSH	PLAIN	PLAIN	1	48.2	vessel foot
59d		GROG	PLAIN	PLAIN	1	87.9	footed vessel, in 5 pieces
59d		GROG	SMCD	SMCD	1	139	
59d		GROG	SMCD	SMCD	1	148.1	stumpware foot
59d		GROG	INCIS	PLAIN	1	14.5	plate
59d		GROG	PLAIN	PLAIN	1	16.7	beaker handle - finger impressions
59d		GROG	BURN	BURN	1	28.3	beaker handle
59d		GROG	BKSLP	BKSLP	1	4.5	beaker handle
59d		GROG	PLAIN	PLAIN	5	148.6	vessel feet/handles
59d		GGSH	PLAIN	PLAIN	1	17.5	beaker handle
59d		GGSH	PLAIN	PLAIN	3	44.1	jar handles
59d		GGSH	INCIS	PLAIN	1	22.4	plate
59d		GGSH	RINC	RSLIP	1	10.9	red slipped
59d		GGSH	BKINC	PLAIN	1	36.9	plate
59d		GGSH	BKINC	PLAIN	3	79.3	plates
59d		GGSH	BNINC	PLAIN	2	17.7	plates
59d		GGSH	BNSLP	BNSLP	1	38.2	beaker handle
59d		GGSH	BURN	BURN	2	23.6	rim attachments
59d		SHELL	BNINC	PLAIN	2	46.3	plates
59d		SHELL	INCIS	PLAIN	1	27.5	plate
59d		SHELL	BKINC	PLAIN	4	88.6	plates
59d		SHELL	PLAIN	PLAIN	2	55.9	beaker handles
59d		SHELL	PLAIN	PLAIN	1	19.2	handle - in 4 pieces
59d		SHELL	FABR	PLAIN	2	34.3	pan frags
59d		SHELL	BKSINC	BKSLP	1	21	plate - slip repair discoloration
59d		SHELL	RSINC	PLAIN	1	6.7	beaker body?
59d		SHELL	BRSINC	PLAIN	3	56.3	plate/beaker frags
59d		SHELL	INCIS	PLAIN	3	20.8	plates - 1 trailed

PLATES

Common Field 2010 - 2012 - plates																				
Bag No	Fea	Provenience	Vessel Type	Temper	Orifice Diam	% of Orifice	Rim Angle	Lip Length	Lip Thickness	Thickness Base Lip	Shoulder Angle	Lip Form	Ext Dec	Ext Slip	Int Dec	Int Slip	Use Wear	No Sherds	Weight	Notes
F9-3	9	W1/4, ZA	PLATE	SHELL	60	<5	45	4.9	1.3	1.1		EXBEV	PLAIN		SLINC	BRSLP		1	94.7	brown slip brushed on
F11-11	11	Machine scraped surface	PLATE	GGSH	32	6	40	3.6	.6			ROUND	BURN		BURN		BRNT	1	20.9	
F13-1	13	Machine scraped surface	PLATE	SHELL	37	5	26	4.0	1.0			ROUND	SLINC	BKSLP	SLIP	BKSLP		1	38.9	hematite inclusions
F22-1	22	Machine scraped surface	PLATE	GGSH	INDET	INDET			.7			ROUND	PLAIN		SLIP	RSLIP		1	4.2	may refit with rim from F25
F26-1	26	Machine scraped surface	PLATE	SHELL	33	5	38	5.9	.7	.6		FLAT	SLIP	BKSLP	SLIP	BKSLP		1	23.6	
F25-3, F25-7	25	NE 1/4 ZA, N1/2 ZA	PLATE	GGSH	34	10	40		.8			EXBEV	SLIP	RSLIP	SLIP	NEG		1	68.1	(in21 pieces) hematite inclusions. Triangular design, but difficult to
UN3-4	UN3	Clay level	PLATE	SHELL	36	10	28	4	1	.9	45	ROUND	SLIP	BKSLP	SLINC	BKSLP		1	55.4	same vessel, but don't refit - 1 large piece of
UN3-4	UN3	Clay level	PLATE	SHELL	INDET	INDET	20		.8			ROUND	SLIP	BKSLP	SLIP	BKSLP		1	14.9	in 3 pieces
EB1-1	EB1	Backdirt	PLATE	GGSH	30	<5	38	5.5	.9			ROUND	PLAIN		PLAIN			1	42.1	hematite inclusions
EB1-1	EB1	Backdirt	PLATE	SHELL	INDET	INDET			.9			EXBEV	BURN		BURN			1	7.8	too small for
EB1-2	EB1	Backdirt	PLATE	SHELL	INDET	INDET	42		.8			ROUND	BNSLP	BKSLP	SLIP	BRSLP		1	19.1	in 2 pieces
EB2-4	EB2	Backdirt	PLATE	SHELL	34	8	32	4.9	.7	.5		FLAT	SLIP	BKSLP	SLIP	BKSLP		1	43.8	hematite inclusions
G-2	Gen	Backdirt	PLATE	SHELL	INDET	INDET	40	5.3	.7			ROUND	SLINC	BKSLP	SLIP	BKSLP		1	19	hematite inclusions, most of rim missing

Common Field 1980 - Plates

Bag No	Provenience	Vessel Type	Temper	Orifice Diam	% of Orifice	Rim Angle	Lip Length	Lip Thickness	Thickness base of lip	Shoulder Angle	Lip Form	Lip Mod	Ext Dec	Ext Slip	Int Dec	Int Slip	Use Wear	No Sherds	Weight	Notes
IU-63	59d	PLATE	SHELL	30	>5	34		.7			ROUND		PLAIN		SLINC	BKSLP		1	25.9	
IU-77	59d	PLATE	SHGG	24	5	37		.8			FLAT		SLIP	BKSLP	SLINC	BKSLP		1	12.7	eroded, redish-pink on lip and extending to interior
IU-76	59d	PLATE	SHELL	24-28	<5	37		.8			FLAT		PLAIN		SLINC	BRSLP		1	15.3	
IU-75	59d	PLATE	SHELL	28	<5	34	4.8	.7			FLAT		SLIP	BKSLP	SLINC	BKLSP		1	27	very thick black slip, deepily incised
IU-74	59d	PLATE	SHELL	26	10	38		.7			EXBEV		PLAIN		SLINC	BKSLP		1	29.4	
IU-73	59d	PLATE	SHELL	30	5	22	4	.5	.8	32	ROUND		PLAIN		INCIS			1	38.2	some inclusions in the paste, lightly
IU-72	59d	PLATE	SHELL	32	7	33		.6			ROUND		PLAIN		INCIS			1	34.3	in 2 pieces
IU-78	59d	PLATE	SHELL	28	<5	35		.8			ROUND	FIMP	PLAIN		SLINC	BKSLP		1	19.2	redish-pink coloring on lip and possibly
IU-64	59d	PLATE	SHGG	24	6	35		.8			ROUND	FIMP	PLAIN		INCIS			1	28.7	
IU-82	59d	PLATE	SHGG	30	5	40	3.5	.8		47	EXBEV		SLIP	BKSLP	SLINC	BKSLP		1	15.2	
IU-70	59d	PLATE	SHELL	INDET	<5	42		.7			FLAT		PLAIN		SLINC	BRSLP		1	15.4	
IU-69	59d	PLATE	SHGG	36	6	23		.6			ROUND		SLIP	BKSLP	SLINC	BKSLP		1	16.2	
IU-68	59d	PLATE	SHGG	32	5	30		.8			EXBEV		PLAIN		INCIS			1	22.4	
IU-67	59d	PLATE	SHELL	32	5	40		.7			ROUND		PLAIN		INCIS			1	24.7	
IU-66	59d	PLATE	SHGG	26	5	20		.6			ROUND		PLAIN		SLINC	BKSLP		1	13.9	hematite inclusions
IU-65	59d	PLATE	SHGG	32	<5	32		.5			ROUND		PLAIN		INCIS			1	11.6	
IU-71	59d	PLATE	SHELL	28	5	31		.6			ROUND		SLIP	BKSLP	INCIS			1	12.4	may have been black slipped on int
IU-28	Slashed out of	PLATE	GGSH	36	7		5.2	.8			ROUND		SLIP	RSLIP	NEGP	RSLIP		1	49.2	
IU-93	59d	PLATE	SHGG	28	7	34	4.3	.8	1	46	ROUND		PLAIN		SLIP	BKRSP		1	72.3	vessel originally red slipped then painted over with black
IU-92	59d	PLATE	SHELL	40	7	26		.7 - .5			ROUND		SLIP	BKSLP	SLIP	BKSLP		1	32.8	in 2 pieces
IU-91	59d	PLATE	SHGG	INDET	<5	30		.7			INBEV		PLAIN		SLIP	BKSLP		1	9.7	
IU-90	59d	PLATE	GGSH	24	7	25		.8			EXBEV		PLAIN		SLIP	RSLIP		1	16	triangle dec
IU-89	59d	PLATE	SHGG	34	8	26		1 - 1.2			ROUND		PLAIN		SLIP	WSLP		1	40.1	
IU-88	59d	PLATE	SHELL	INDET	<5			.7 - .8			ROUND		PLAIN		PLAIN			1	20	shoulder break is due to coil
IU-86	59d	PLATE	SHELL	32	6	25	4.6	.7		40	FLAT		PLAIN		INCIS			1	34.1	low fired, very yellowish clay
IU-80	59d	PLATE	SHGG	32	10			.8			ROUND		SLIP	BKSLP	SLINC	RDSLP	BRNT	1	45.7	
IU-84	59d	PLATE	SHELL	44	6	35	5.3	1		25	ROUND		SLIP	BKSLP	SLINC	BKSLP		1	79.2	
IU-79	59d	PLATE	SHELL	32	5	27		.7			ROUND	FIMP	PLAIN		INCIS			1	27.8	
26-1	B1-74-	PLATE	SHGG	24	<5	40		.5			ROUND		SLIP	BKSLP	SLINC	BKSLP		1	9.1	
96-1	B1-58-	PLATE	SHELL	32	5	37	5.1	.7		42	ROUND		SLIP	BKSLP	SLINC	BKSLP		1	21.1	very finely crushed shell
80-1	B1-52-	PLATE	GROG	30	15	35	7	.8 - .11	.6	46	ROUND		PLAIN		INCIS			1	138.7	some oxidation on ext, in 3 pieces
677	B5-88-	PLATE	SHELL	30	5	32	4.1	.5	.7	62	FLAT		SLIP	BKSLP	SLIP	BKSLP		1	27.2	small hematite inclusions
IU-60	59d	PLATE	SHELL	32	5	50		.8			EXBEV		PLAIN		PLAIN			1	15.5	ext spalled
IU-81	59d	PLATE	SHELL	26	5	28	6.9	.9			EXBEV		SLIP	BKSLP	SLINC	BKSLP		1	27.2	in 2 pieces
IU-94	59d	PLATE	SHELL	INDET	INDET	35	4.0	0.8	0.8		ROUND		SMDG		PLAIN			1		
IU-85	59d	PLATE	SHGG	30	6	27		.8			EXBEV		BURN		BNINC			1	30.5	
IU-34	59d	PLATE	SHGG	INDET	<5	20	5.1	.8	.7	25	ROUND		PLAIN		SLINC	RSLIP		1	31.9	

Bag No	Provenience	Vessel Type	Temper	Orifice Diam	% of Orifice	Rim Angle	Lip Length	Lip Thickness	Thickness base of lip	Shoulder Angle	Lip Form	Lip Mod	Ext Dec	Ext Slip	Int Dec	Int Slip	Use Wear	No Sherds	Weight	Notes
IU-62	59d	PLATE	SHELL	28	10	32		.7			ROUND		PLAIN		INCIS		BRNT	1	39.3	spalling on exterior
IU-38	59d	PLATE	SHELL	INDET	<5	32		.6			ROUND		SLIP	BKSLP	SLINC	BRSLP		1	20.6	
34-1	B1-64-54	PLATE	SHELL	38	6	25	5.1	.5	.6	45	ROUND		BURN		SLIP	BKSLP		1	65	hematite inclusions, 2-part construction?
570-1	B5-78-	PLATE	SHGG	INDET	<5	25		.7	.5		FLAT		PLAIN		PLAIN			1	14.4	
78-1	B1-74-	PLATE	SHELL	26	6	44		.7			INBEV		BURN		BURN			1	25.7	
849-1	B5-66-	PLATE	SHELL	INDET	<5			.6			FLAT		SLIP	BKSLP	BURN			1	10.4	
IU-37	59d	PLATE	SHELL	34	15	32	4.2	1	.7	20	ROUND		PLAIN		SLIP	BKSLP		1	192.2	in 3 pieces
IU-40	59d	PLATE	SHELL	32	6	50		.7			FLAT		PLAIN		EROD			1	28.4	interior has spalled off, possibly had been black slipped (some slip present
IU-35	59d	PLATE	SHELL	36	7	32	4.4	.8	.4	52	ROUND		PLAIN		SLINC	BKSLP		1	47.3	very eroded
IU-41	59d	PLATE	SHELL	30	5	53		.8			FLAT		SLIP	BKSLP	SLIP	BKSLP		1	15.9	slipping eroded from rim and part of
IU-33	59d	PLATE	GROG	28	<5	24	4.5	.8	1	25	ROUND		SLIP	BKSLP	SLINC	BKSLP		1	30	in 2 pieces
IU-32	59d	PLATE	SHELL	44	6	40	6.8	.9	.5	50	ROUND		SMBN		SBINC			1	74.3	bowl portion not smudged or
IU-31	59d	PLATE	SHELL	26	8	34	4.3	.6	.5	30	ROUND		PLAIN		SLIP	BKSLP		1	50.2	
IU-30	59d	PLATE	SHGG	36	10	35	4.4	1	.6	55	FLAT		PLAIN		SLIP	BKSLP		1	172.4	in 2 pieces
IU-29	59d	PLATE	SHELL	36	8	25	4.1	.7	.6	45	FLAT		BURN		BURN			1	74.3	in 3 pieces
937	B6-46-	PLATE	SHELL	26	5	30	4.3	1	1		ROUND		PLAIN		SLIP	RSLIP		1	35.6	
1394-	B9-54-	PLATE	SHELL	30	7	38	4.1	.5	.7		ROUND		BNSLP	RSLIP	BSINC	BRSLP		1	31.2	trailed
687-1	B5-76-	PLATE	SHELL	26	7	35		.5			ROUND		BNSLP	BKSLP	BSINC	BKSLP		1	11.1	
IU-36	59d	PLATE	SHELL	INDET	<5	22	4.1	.8	.6	48	ROUND		PLAIN		INCIS			1	55.1	
IU-50	59d	PLATE	SHGG	26	<5	30		.6			EXBEV		SLIP	BKSLP	SLINC	BKSLP		1	13.4	
IU-59	59d	PLATE	SHGG	36	6	35		.6			ROUND		PLAIN		BNINC	RSLIP		1	42.1	
IU-58	59d	PLATE	SHELL	30	6	32		.8			FLAT	STICK	SLIP	BKSLP	SLINC	BKSLP		1	37.4	
IU-57	59d	PLATE	SHELL	28	<5	28	4.5	.5	.5	42	ROUND		BURN		SLINC	BRSLP		1	13.6	brown slip is eroded
IU-56	59d	PLATE	SHELL	28	5	42		.6			ROUND		SLIP	BKSLP	SLINC	BKSLP		1	12.8	
IU-55	59d	PLATE	SHELL	36	6	21		.9			FLAT		BURN		BNINC			1	22.9	
IU-54	59d	PLATE	SHELL	28	8	32		.8			ROUND	STICK	PLAIN		BNINC			1	30.0	black oxidation on int
IU-53	59d	PLATE	GROG	INDET	<5	30		.6			ROUND		PLAIN		SLINC	BKSLP		1	18.6	very thick slip
IU-39	59d	PLATE	SHELL	20	10	43		.7			ROUND	FIMP	PLAIN		SLINC	BKSLP		1	25	
IU-51	59d	PLATE	GROG	26	<5	40		.6			ROUND		PLAIN		INCIS			1	9	pinkish-orange slip
IU-61	59d	PLATE	SHELL	32	5	40		.7			ROUND		PLAIN		INCIS			1	14.3	
IU-49	59d	PLATE	SHELL	26	6	34		.8			ROUND		PLAIN		SLINC	BKSLP		1	17.3	
IU-48	59d	PLATE	SHELL	38	5	38		.9			ROUND		SLIP	BKSLP	SLINC	BKSLP		1	26	highly eroded int
IU-47	59d	PLATE	SHELL	36	<5	38		.6			ROUND		BURN		BNINC			1	12.3	
IU-46	59d	PLATE	SHELL	24	5	33		.8			ROUND		PLAIN		INCIS			1	31.7	coil breaks smoothed over but still
IU-45	59d	PLATE	SHGG	34	8	35		.9			FLAT		BURN		SLINC	BKSLP		1	43.9	
IU-44	59d	PLATE	SHELL	32	5	30	4.1	.7	1	65	EXBEV		SLIP	BKSLP	SLINC	BKSLP		1	28.1	
IU-43	59d	PLATE	SHELL	50	<5	40	5.2	1	.8	33	FLAT		SMDG		SMDG			1	55.1	may be same vessel as IU-42
IU-42	59d	PLATE	SHELL	50	<5	45	5.2	.9	.9		FLAT		SMDG		SMDG			1	41.2	may be same vessel as IU-43
IU-52	59d	PLATE	SHGG	26	5	27		.9			FLAT		SLIP	BKSLP	SLINC	RSLIP		1	23.4	

JARS

Common Field 2010-2012 - jars

Bag No	Fea	Provenience	Vessel Type	Temper	Orifice Diam	% of Orifice	Lip Bevel	Lip Length	Lip Thickness	Thickness Base Lip	Body Thickness	LP	LS	Rim Curv	Lip Form	Lip Mod	Lip Attachment	Ext Dec	Ext Slip	Ext CM Orientation	Ext CM twist	Ext Cord Width	Ext Interspace Width	Ext No twists/ 2cm	Int Dec	Use Wear	No Sherds	Weight	Notes
F25-2, F25-6	25	NW1/4 ZA, N1/2 ZA	JAR	SHELL	28	35	50	3.6	.9	1.1	.6	0.3	0.25		ROUND			CORD		90-100	S	0.3	<0.1	6	PLAIN	SOOT	1	281	in 3 pieces, cordmarking not even or complete coverage - probably from a small cord wrapped paddle.
F25-3	25	NE1/4, ZA	JAR	SHELL	20	15	60	2.8	.5	.6	.6	0.2	0.18		ROUND			BURN							PLAIN	SOOT	1	45.9	in 3 pieces
F25-12	25	S1/2, ZB	JAR	SHELL	INDET	INDET	57	1.6	.5	.7		0.4	0.31		EXBEV			PLAIN							PLAIN		1	2.4	fired in a reduced oxygen environment
UN2-1	UN2	plow zone	JAR	SHELL	INDET	INDET			.6						ROUND			PLAIN							PLAIN		1	1.5	too small for orientation
UN3-5	UN3		JAR	SHELL	14	10	80	1.8	.7	.7	.6	0.4	0.39		ROUND			PLAIN							PLAIN	RESD	1	16.6	residue? On interior
UN4-3	UN4	Clay level, 24-29cmbs	JAR	SHELL	INDET	INDET	38		.7						EXBEV			PLAIN							PLAIN		1	2.1	
EB1-1	EB1	Backdirt	JAR	SHELL	18	9	65		.7						ROUND			PLAIN							PLAIN		1	13	
EB2-1	EB2	Midden/feature	JAR	SHELL	12	5	65	2.8	.5	.6		0.2	0.18	0.06	ROUND			PLAIN							PLAIN		1	51.9	mostly shoulder present, very little rim, but was able to approximate the diameter
EB2-4	EB2	Backdirt	JAR	SHELL	18	10	68	2.7	.7				0.26		ROUND			PLAIN							PLAIN		1	10.1	lip folded over slightly along ext surface
EB2-4	EB2	Backdirt	JAR	SHELL	16	10	68	2	.4	.5		0.3	0.2		ROUND	NODE	LHAND	PLAIN							PLAIN		1	14.8	
EB2-4	EB2	Backdirt	JAR	GGSH	32	7	70	3.1	.5	.6		0.2	0.16		ROUND	NODE	LHAND	PLAIN							PLAIN	SOOT	1	43.1	loop handle, orientation difficult due to node above
EB3-1	EB3	Gen collection	JAR	SHELL	INDET	INDET		1	1	.8		0.8	1		ROUND			PLAIN							PLAIN	SOOT	1	40.2	coil break, cannot do proper orientation due to break and node, soot ext
SC-43	Surface	Grid L, Zone 1	JAR	SHELL	INDET	INDET	45		.7						EXBEV			SLIP	BRSLP						PLAIN		1	4.8	hematite inclusions

Common Field 1980 - Jars

Bag No	Provenience	Vessel Type	Temper	Orifice Diam	% of Orifice	Rim Angle	Lip Bevel	Lip Length	Lip Thickness	Thickness base of lip	LP	LS	Rim Curv	Lip Form	Lip Mod	Lip Attachment	Ext Dec	Ext Slip	Ext CM Orientation	Ext CM twist	Ext Cord Width	Ext Interspace Width	Ext No twists/2 cm	Int Dec	Int Slip	Use Wear	No Sherds	Weight	Notes
IU-97	59d	JAR	SHELL	INDET	INDET		78	1.7	.6	.6	0.35	0.35	.135	ROUND		LHAND	PLAIN							PLAIN			1	56.9	handle width 1.8, thickness 1.1
IU-95	59d	JAR	SHELL	INDET	INDET		76	2.5	.8	1	0.4	0.32		ROUND		LHAND	PLAIN							PLAIN			1	30.7	loop handle mostly broken off
120-1	B1-56-68	JAR	GROG	22	7			2.9	.8	1	0.34	0.28		ROUND			PLAIN							SLIP	BKSLP		1	16.7	hard to tell if lip mod is original due to excessive toothbrush
1463	grab sample	JAR	SHLS	30	10		30	2.3	.8	.5	0.22	0.35		ROUND			SLIP	BKSLP						SLIP	BKSLP		1	38.1	
560-1	B5-82-18	JAR	SHGG	30	12		50	5.4	.7	.6	0.11	0.13		ROUND			SLIP	BKSLP						BNSLP	BKSLP		1	60.6	lip was added later
IU-113	59d	JAR	SHELL	INDET	INDET									ROUND			PLAIN							PLAIN			1		
IU-112	59d	JAR	SHELL	INDET	INDET									ROUND			PLAIN							PLAIN			1		orangey paste
IU-111	59d	JAR	SHELL	INDET	INDET									ROUND			PLAIN							PLAIN			1		
IU-107	59d	JAR	SHELL	20	12		70	2	.6	.6	0.3	0.3		ROUND		BLHND	PLAIN							PLAIN			1	39.4	handle is GROG
IU-106	59d	JAR	SHELL	26	6		73	3.8	.7	.9	0.24	0.18		FLAT			SMCD		90					PLAIN			1	26.6	
IU-105	59d	JAR	SHELL	INDET	INDET		77	2.2	.5	.7	0.32	0.23		FLAT		BLHND	PLAIN							PLAIN		SOOT	1	32.4	
IU-104	59d	JAR	SHELL	16	10		60	3	.7	.7	0.23	0.23		ROUND		LHAND	PLAIN							PLAIN			1	40.2	possible rider attached to handle
IU-103	59d	JAR	SHELL	INDET	INDET		64	2.6	.6	.4	0.15	0.23		ROUND		LHAND	PLAIN							PLAIN			1	21.7	
IU-102	59d	JAR	SHELL	INDET	INDET		27	2	.5	.6	0.3	0.25		FLAT		LUG	PLAIN							PLAIN			1	32.1	
IU-101	59d	JAR	SHELL	26	5		75	2.8	.6	.7	0.25	0.21		ROUND			PLAIN							PLAIN		SOOT	1	49.9	
IU-100	59d	JAR	SHELL	22	8		80	2.6	.6	.7	0.27	0.23		ROUND		LHAND	PLAIN							PLAIN			1	32.9	
IU-99	59d	JAR	SHELL	26	6			1.9	.4	.4	0.21	0.21		ROUND		LHAND	PLAIN							PLAIN		SOOT	1	22.3	
IU-98	59d	JAR	SHELL	22	10		60	2.3	.7	.8	0.35	0.3		ROUND			SLIP	BKSLP						SLIP	BKSLP		1	98	black slipping on lip and 2cm of interior surface
199	B1-56-80	JAR	SHELL	INDET	INDET	70		.4	.7	.6	1.5	1.75		ROUND			PLAIN							PLAIN			1	3.8	inslanted rim - slightly rolled slip
858	B5-64-64	JAR	SHGG	18	5	75		2.4	.5	.7	0.29	0.21		ROUND			CORD		90	Z	.1	.2	11	PLAIN		BRNT	1	42.1	
879	B5-58-72	JAR	SHELL	20	8		50		.6					FLAT	CREN		PLAIN							PLAIN		SOOT	1	7.9	
940	B6-28-79	JAR	SHELL	26	6	60		.6	.7	.6	1	1.17		ROUND		LUG	SLIP	BKSLP						PLAIN		SOOT	1	18.4	
940	B6-28-79	JAR	SHELL	28	6			2.2	.7	.6	0.27	0.32		ROUND			PLAIN							PLAIN			1	14.6	may be a short carafe neck bottle
987	B6-26-87	JAR	SHELL	36	6		68	4.2	.7	1.1	0.26	0.17		ROUND			SMCD		90	INDET	.2	INDET	INDET	PLAIN			1	87.8	cordmarking at shoulder and
IU-1	59d	JAR	SHELL	12	35	60		2.2	.6	.8	0.36	0.27		ROUND			PLAIN							PLAIN		BRNT	1	135.2	in 7 pieces
IU-2	59d	JAR	SHELL	INDET	INDET		60	2.4	0.7	0.6	0.25	0.29		EXTRD			CORD							PLAIN			1		
IU-4	59d	JAR	SHELL	36	8		64		.8					ROUND		LUG	PLAIN							PLAIN			1	36.9	
IU-110	59d	JAR	SHELL	INDET	INDET									FLAT			PLAIN							PLAIN			1		
1366	B4-64-68	JAR	SHELL	26	5		37	2.2	.6	.7	0.32	0.27		ROUND			PLAIN							PLAIN			1	7.5	
614	B5-64-26	JAR	SHELL	INDET	<5		48	1.9	.5	.5	0.26	0.26		ROUND			BURN							BURN			1	3.2	
IU-108	59d	JAR	SHGG	INDET	INDET		49	3.7	.5	.7	0.19	0.14		ROUND			SMCD							PLAIN			1	36.4	
IU-96	59d	SJAR	SHGG	20	6		65		0.5					ROUND		LUG	SLIP	BKSLP						SLIP	BKSLP		1	29.3	lug was pre-formed and pre-slipped before being added to

BOTTLES, BEAKERS, BOWLS

Common Field 2010-2012 - bottles, beakers, bowls

Bag No	Fea	Provenience	Vessel Type	Temper	Orifice Diam	% of Orifice	Rim Angle	Lip Length	Lip Thickness	Thickness Base Lip	Body Thickness	Shoulder Angle	Lip Form	Ext Dec	Ext Slip	Int Dec	Int Slip	No Sherds	Weight	Notes
SC-19	Surface	Grid E, Zone 3	BOTL	GROG	10	7	90		.4	.7			ROUND	PLAIN		PLAIN		1	3.5	hematite inclusions, coils visible, small carafe neck
F25-6	25	N1/2, ZA	BOTL	SHELL	9	50	97	5.9	.6	.6	.8		ROUND	SLIP	BKSLP	PLAIN		1	95.8	interior scrape marks
SC-69	Surface	N4204905.797 E762567.180	BOWL	SHELL	22	5	87		.6				FLAT	BNINC		BURN		1	5.4	hematite inclusions - Caddoan?
UN2-6	UN2	Clay level	BOWL	GGSH	32	5	27	1.6	.5	.6	.5	36	EXBEV	PLAIN		PLAIN		1	7.3	hematite flecks
F13-8	13	N1/2, ZB	BOWL	SHELL	INDET	INDET	90		.5				FLAT	SLIP	BKSLP	SLIP	BKSLP	1	3.6	

Common Field 1980 - Beakers, Bottles, Bowls

Bag No	Provenience	Vessel Type	Temper	Orifice Diam	% of Orifice	Rim Angle	Lip Bevel	Lip Length	Lip Thickness	Thickness base of lip	Lip Form	Lip Mod	Lip Attachment	Ext Dec	Ext Slip	Ext CM Orientation	Ext CM twist	Ext Cord Width	Ext Interspace Width	Int Dec	Int Slip	Use Wear	No Sherds	Weight	Notes
IU-126	59d	BEAKR	SHELL	14	13				.4	.7	FLAT		LUG	BURN						BURN			1	19	handle missing
IU-127	59d	BOTL	SHELL	14	15				.5		FLAT			PLAIN						PLAIN			1	20.5	broken handle/tab
IU-128	59d	BOTL	SHELL	14	15				.8		FLAT			PLAIN						PLAIN			1	30.2	slip, ext has vert oriented smoothing marks
IU-129	59d	BOTL	SHELL	7					.7		EXBEV			SLIP	BKSLP					SLIP	BKSLP		1	12.9	
IU-130	59d	BOTL	SHELL	10	15				.5		INBEV			BURN						PLAIN			1	14.9	
IU-131	59d	BOTL	SHELL	22	8		84	3.2	.7	.6	ROUND			SLIP	RSLIP					PLAIN			1	22.8	
IU-132	59d	BOTL	GROG	8	50				.7 - .9		FLAT			PLAIN						PLAIN			1	89.3	interior burning near shoulder, in 4 pieces
IU-23	59d	BOWL	SHGG	20	5		66		.7		FLAT		LGHD	PLAIN						PLAIN			1	18.5	
IU-144	59d	BOWL	SHELL	20	>5	80			.6	.6	ROUND			PLAIN						PLAIN			1	6.6	hematite inclusions
IU-143	59d	BOWL	SHELL	INDET	INDET	60			.6	.6	ROUND			BURN						BURN			1	49.6	rider
IU-141	59d	BOWL	SHELL	20	8						FLAT			PLAIN						PLAIN		SCRAPE	1	30.8	
120-2	B1-56-68	BOWL	SHGG	16	10	24		1.8	.6	.6	ROUND			PLAIN						PLAIN			1	18.2	hematite inclusions, very eroded interior
198-1	B3-54-80	BOWL	SHELL	12	6	72			.4	.4	ROUND			SLIP	GSLIP					SLIP	GSLIP		1	8.1	hematite inclusions
877-1	B5-60-70	BOWL	SHELL	20	10	16	63	1.9	.6	.9	ROUND	STICK		BURN						BURN			1	30.1	eroded int bowl portion
IU-140	Surface, NE of Big Mound	BOWL	GROG	30	4				.6	.8	FLAT	CORD		CORD		140	S	.1	.2	PLAIN			1	8.3	entire ext surface is cordmarked, slightly smoothed
IU-26	59d	BOWL	SHELL	12	10				.6		FLAT		LUG	BURN						PLAIN			1	11.7	red slip on lug?
34-2	B1-64-54	BOWL	SHGG	18	7				.5	.5	ROUND			SLIP	BKSLP					SLIP	BKSLP		1	13.9	slightly pinched in under rim
IU-24	59d	BOWL	GROG	INDET	INDET		53		.6		ROUND		LUG	PLAIN						SLIP	RSLIP		1	12.7	
IU-22	59d	BOWL	SHGG	12	10				.7	.6	ROUND		LUG	BNSLP	BKSLP					BNSLP	BKSLP		1	23	
IU-21	59d	BOWL	SHGG	12	12				.6	.4	ROUND			BNSLP	BRSLP					BNSLP	BRSLP		1	19.8	
IU-20	59d	BOWL	GROG	20	5		75		.5		FLAT			BURN						BURN			1	9	
IU-19	59d	BOWL	SHELL	INDET	<5		70		.5		ROUND			SLIP	RSLIP					PLAIN		SOOT	1	14.2	
IU-25	59d	BOWL	SHELL	22	7				.7	.6	EXBEV			SLIP	BRSLP					SLIP	BRSLP		1	15.2	

FUNNELS, PANS, COARSE WARES

Common Field 2010-2012 - funnels, pans, coarse wares																	
Bag No	Fea	Provenience	Vessel Type	Temper	Orifice Diam	% of Orifice	Rim Angle	Lip Thickness	Thickness Base Lip	Lip Form	Ext Dec	Ext Fabric Orientation	Int Dec	Use Wear	No Sherds	Weight	Notes
F25-12	25	S1/2, ZB	FNNL	SHGG	33	10	63	1.6		ROUND	PLAIN		PLAIN		1	169.2	(in 13 pieces) slab construction
EB2-3	EB2	Backdirt	FNNL	GGSH	12	15		.9	1.2	ROUND	PLAIN		PLAIN		1	45.9	in 4 pieces
F26-1	26	Machine scraped surface	PAN	SHELL	>60	5	52	1.9	1.3	ROUND	FABR	90	PLAIN		1	26	very well preserved, coarse shell temp. Cannot determine fabric twist
F13-8	13	N1/2, ZB	THCK	GGSH	12	10	85	.9		FLAT	PLAIN		PLAIN		1	29.9	photo - exposed temper (grog made from shell sherds)
F13-8	13	N1/2, ZB	THCK	LSGG	16	5	85	.8		FLAT	PLAIN		PLAIN		1	6.7	
F26-2	26	S1/2, ZA	THCK	GGSH	8	8	90	1.3	1.4	FLAT	PLAIN		PLAIN		1	72.2	cylinder vessel, slab construction
F26-2	26	S1/2, ZA	THCK	GGSH	10	12	82	1.0	.9	EXBEV	PLAIN		PLAIN	BRNT	1	27.4	possible cylinder lid, burning around rim
F25-2, F25-7	25	NW1/4 ZA, N1/2 ZA	THCK	GGSH	13	25	100	1.6		FLAT	PLAIN		PLAIN		1	114.9	in 2 pieces, slab construction, excess clay from rim folded onto interior
F10-4	10	ZA	THCK	SHGG	20	<5		1.1		EXBEV	PLAIN		PLAIN		1	5.4	funnel lid?
F25-6, F25-12	25	N1/2 ZA, S1/2 ZB	THCK	GGSH	12	35	90			FLAT	PLAIN		PLAIN		1	292.1	in 7 pieces, may refit with F25-2
SC-21	Surface	Grid F, Zone 1	THCK	GROG	INDET	INDET		.6	1.0	ROUND	PLAIN		PLAIN		1	2.1	lid/funnel? Hematite inclusions
UN3-2	UN3	plow zone, 12-17cmbs	THCK	SHGG	16	5	75	1.5		FLAT	PLAIN		PLAIN		1	10.6	crushed shell temp grog
EB1-3	EB1	Backdirt	THCK	GROG	INDET	INDET		1		ROUND	PLAIN		PLAIN		1	4.7	funnel or lid? Too small for orientation
EB3-1	EB3	Gen collection	THCK	GGSH	INDET	INDET		1.1		ROUND	PLAIN		PLAIN		1	11.7	funnel base? Too small for orientation
EB3-1	EB3	Gen collection	THCK	GGSH	INDET	INDET				INDET	PLAIN		EROD		1	3.4	too broken for orientation or lip form
SC-59	Surface	Grid P, Zone 3	THCK	SHGG	10	10	105	2.0	1.5	EXBEV	PLAIN		PLAIN	RESD	1	37.9	crudely made with thick coils (breaks visible in profile), funnel?
F25-2	25	NW1/4, ZA	THCK	GGSH	INDET	INDET		1.4		FLAT	PLAIN		PLAIN		1	19.9	cylinder vessel, some crushed shell sherds used as grog

Common Field 1980 - Funnels, Pans, Coarse wares

Bag No	Provenience	Vessel Type	Temper	Orifice Diam	% of Orifice	Lip Bevel	Lip Length	Lip Thickness	Thickness base of lip	Lip Form	Ext Dec	Ext CM twist	Ext Fabric Orientation	Ext Fabric width weft/warp	Ext No weave imp/2cm	Int Dec	Use Wear	No Sherds	Weight	Notes
IU-122	59d	FNNL	GROG	INDET	INDET			1.0	1.4	ROUND	PLAIN					PLAIN		1	85.1	in 2 pieces
IU-121	59d	FNNL	SHGG	18	15			1.5	1.9	ROUND	PLAIN					PLAIN		1	328.3	in 2 pieces
IU-123	59d	FNNL	GROG	2	25			1.4	1.1	ROUND	PLAIN					PLAIN		1	36.1	base
IU-124	59d	FNNL	GGSH	2	25					FLAT	PLAIN					PLAIN		1	76.5	base, burning on interior orifice, interior broken off so no thickness measurements
IU-125	59d	FNNL	SHGG	2	20			1.4 - 1.6		ROUND	PLAIN					PLAIN		1	32.6	base, burning, interior orifice
630-1	B5-62-28	PAN	SHELL	>60	<5		1.2	2.7	1.3	FLAT	FABR	S	42	.3/.2	10	PLAIN		1	104.4	
72-242		PAN	SHELL	INDET	<5			1.9	1.3	FLAT	PLAIN					PLAIN		1	20.6	
877-2	B5-60-70	PAN	SHELL	>60	INDET		1.2	2.5	.9	EXTRD	FABR	S	15	.3/.2	6	PLAIN		1	73.7	very loose weave, some impressions on
48-1	B1-66-56	PAN	SHELL				2.0	2.2	.9	EXTRD	FABR	S	132	.2/.1	11	PLAIN	SALT	1	67.7	
745-1	B5-76-42	PAN	SHELL	>60	INDET		1.8	3.9	1.2	EXTRD	FABR	S	52	.3/.2	7	PLAIN		1	214.1	finger impressions under rim, fabric imp
IU-117	59d	THCK	GROG	12	5		1.3	1.5-1.7		FLAT	PLAIN					PLAIN		1	606.6	cylindrical vessel, slab made (finger imp), int. heat discoloration
IU-119	59d	THCK	GGSH	12	15					FLAT	PLAIN					PLAIN		1	72.7	
IU-118	59d	THCK	GROG	12	15			1.6	1.8	FLAT	PLAIN					PLAIN		1	34.6	
IU-116	59d	THCK	SHGG	14	12			1.6		INBEV	PLAIN					PLAIN		1	38.6	
IU-115	59d	THCK	SHGG	14	12			1.3		FLAT	PLAIN					PLAIN		1	83.1	
IU-120	59d	THCK	SHGG	16	20			1.6		FLAT	PLAIN					PLAIN		1	138.7	
1216	B7-82-74	THCK	GGSH	8	10			1.5		EXBEV	PLAIN					PLAIN		1	97.5	
IU-5	59d	THCK	GROG	10	10			1	1.1	ROUND	PLAIN					PLAIN		1	13.5	
IU-6	59d	THCK	GROG	12	10			.9	1.1	ROUND	PLAIN					PLAIN	SOOT, BRNT	1	13.1	vessel cap?
IU-7	59d	THCK	GROG	16	10			1.1	1	ROUND	PLAIN					PLAIN	SOOT	1	49.2	pink/red splotches on both int and ext, finger impressions on ext
IU-8	59d	THCK	GROG	14	15			1	.9	ROUND	PLAIN					PLAIN		1	63.0	pink/red on ext
IU-9	59d	THCK	GGSH	10	10			1.1	1.2	ROUND	PLAIN					PLAIN		1	18.9	
IU-10	59d	THCK	SHGG	12	18			1	.8	FLAT	PLAIN					PLAIN		1	35.2	
IU-11	59d	THCK	GROG	12	20			1.4		ROUND	PLAIN					PLAIN		1	47.3	
IU-12	59d	THCK	SHGG	14	10	60		.7		ROUND	PLAIN					PLAIN		1	13.7	
IU-13	59d	THCK	GROG	12	15			1.2		FLAT	PLAIN					PLAIN		1	41.3	very coarse grog
IU-14	59d	THCK	GROG	10	20	50		1		ROUND	PLAIN					PLAIN		1	84.4	lid?
IU-15	59d	THCK	SHGG	9	50	37		1		FLAT	PLAIN					PLAIN	BRNT	1	123.5	lid with handle broken off
IU-16	59d	THCK	GROG	5	>50			.6 - .8		ROUND	PLAIN					PLAIN		1	60.9	lid with handle broken off, in 5 pieces
IU-17	59d	THCK	GROG	16	20			.8		ROUND	PLAIN					PLAIN		1	229.2	2 feet broken off, 3-4 feet total, mortar/dish?,
IU-114	59d	THCK	SHGG	INDET	<5			1.6	1.6	FLAT	PLAIN					PLAIN	SOOT	1	62.7	hematite inclusions

MINIATURE VESSELS

Common Field 2010-2012 - Minature vessels																				
Bag No	Fea	Provenie nce	Vessel Type	Temper	Orifice Diam	% of Orifice	Rim Angle	Lip Length	Lip Thickness	Thickness Base Lip	LP	LS	Lip Form	Ext Dec	Ext Slip	Int Dec	Int Slip	No Sherds	Weight	Notes
F9-3	9	W1/4, ZA	MBOT	SHELL	4	8	90		.4				ROUND	SLIP	BKSLP	SLIP	BKSLP	1	.9	mini bottle
F25-9	25	S1/2, ZA	MJAR	GGSH	INDET	INDET		1.8	.5	.5	0.28	0.28	EXBEV	PLAIN		PLAIN		1	1.1	

Common Field 1980 - Miniatures																							
Bag No	Prove nienc	Vessel Type	Temper	Orifice Diam	% of Orifice	Rim Angle	Lip Bevel	Lip Length	Lip Thickness	Thickness base of lip	LP	LS	Rim Curv	Shoulder Angle	Lip Form	Ext Dec	Ext Slip	Int Dec	Int Slip	Use Wear	No Sherds	Weight	Notes
IU-133	59d	MBOWL	SHELL	12	18		30	1.2	.3	.5 - .7				64	ROUND	PLAIN		PLAIN			1	22.3	
IU-134	59d	MBOWL	SHELL	12	5		38	1.9	.5	.5				58	ROUND	SLIP	BKSLP	SLIP	BSLIP		1	6.7	
IU-135	59d	MBOWL	SHELL			19		1.6	.4	.5				50	ROUND	PLAIN		PLAIN			1	11.5	
IU-136	59d	MBOWL	SHELL	8	5		45	.9	.5	.6					EXBEV	PLAIN		PLAIN		SOOT	1	8.4	in 2 pieces
IU-137	59d	MJAR	SHELL	16	9-5		53	1.8	.4	.4	0.22	0.22			ROUND	PLAIN		PLAIN			1	5.9	
IU-138	59d	MJAR	SHELL	18	8-10		62	2.1	.5	.4	0.19	0.24	.125		ROUND	PLAIN		PLAIN			1	14.4	
IU-139	59d	MJAR	SHELL	6	15		85	1.7	.5	.7	0.41	0.29			ROUND	PLAIN		PLAIN			1	9.5	

MISC. AND INDETERMINATE

Common Field 2010-2012 - Misc. and Indeterminate

Bag No	Fea	Provenience	Vessel Type	Temper	Orifice Diam	% of Orific	Rim Ang	Lip Length	Lip Thickness	Thickness Base Lip	Lip Form	Ext Dec	Ext Slip	Int Dec	Int Slip	Use Wear	No Sherds	Weight	Notes
F25-4	25	NE1/4, ZA	INDET	SHELL	INDET	INDET			.6		BEV	PLAIN		PLAIN			1	.7	
UN4-2	UN4	Interface	INDET	SHELL	INDET	INDET			.9		FLAT	SLIP	BKSLP	SLIP	BKSLP		1	2.3	possible refit with 4-2A, too small for orientation
UN1-3	UN1	Level 3, 15-20cmbs	INDET	SHELL	INDET	INDET			.6		FLAT	PLAIN		PLAIN			1	1.7	too small for orientation
F9-3	9	W1/4, ZA	INDET	SHELL	INDET	INDET			.8		ROUND	EROD		PLAIN			1	6.1	
UN1-1	UN1	Level 1, 0-10cmbs	INDET	GROG	INDET	INDET			.7		ROUND	PLAIN		PLAIN			1	3.2	too small for orientation
F25-12	25	S1/2, ZB	INDET	SHELL	INDET	INDET			.7		FLAT	PLAIN		PLAIN			1	1	
F25-12	25	S1/2, ZB	INDET	SHELL	INDET	INDET			.7		FLAT	PLAIN		PLAIN			1	1.6	
F25-3	25	NE1/4, ZA	INDET	SHELL	INDET	INDET			.7		ROUND	PLAIN		PLAIN			1	3.6	in 2 pieces
UN2-2	UN2	plow zone	INDET	SHELL	INDET	INDET			.7		BEV	PLAIN		PLAIN			1	2.5	too small for orientation, in 2 pieces
F25-9	25	S1/2, ZA	INDET	SHELL	INDET	INDET			.7		ROUND	SLIP	BKSLP	SLIP	BKSLP		1	1.7	
UN2-2	UN2	plow zone	INDET	SHELL	INDET	INDET			.6		ROUND	PLAIN		PLAIN			1	1.1	too small for orientation
F13-1	13	Machine scraped surface	INDET	SHELL	INDET	INDET			.9		FLAT	PLAIN		PLAIN		BRNT	1	1.5	
F10-3	10	ZA	INDET	GGSH	INDET	INDET			.5		ROUND	SLIP	BKSLP	PLAIN			1	.6	
F10-3	10	ZA	INDET	SHELL	INDET	INDET			.4		ROUND	PLAIN		PLAIN		SOOT	1	.3	
F10-3	10	ZA	INDET	SHELL	INDET	INDET			.5		ROUND	PLAIN		PLAIN			1	1.4	hematite inclusions
F10-2	10	Transition	INDET	SHELL	INDET	INDET			.7		FLAT	PLAIN		SLIP	RSLIP		1	2.5	very large vessel but frag too small to acurately determine size
F9-5	9	W1/4, ZA	INDET	SHELL	INDET	INDET			.4		ROUND	PLAIN		EROD			1	.2	
F9-3	9	W1/4, ZA	INDET	GGSH	8	10	58		.7		ROUND	PLAIN		PLAIN			1	7.5	funnel lid?
F25-2	25	NW1/4, ZA	INDET	SHELL	INDET	INDET			.5		FLAT	PLAIN		PLAIN			1	0.7	
G-4	Gen	Backdirt	INDET	SHELL	INDET	INDET			.8		BEV	PLAIN		PLAIN			1	2.8	too small for orientation
SC-16	Surface	Grid D, Zone 4	INDET	SHELL	INDET	INDET			.5		ROUND	PLAIN		PLAIN			1	1.2	hematite inclusions
SC-39	Surface	Grid K, Zone 1	INDET	SHELL	INDET	INDET			.5		BEV	PLAIN		PLAIN			1	1.5	fine shell temp, some possible grog
SC-46	Surface	Grid L, Zone 4	INDET	SHELL	INDET	INDET			.8		FLAT	PLAIN		PLAIN			1	7.3	
SC-46	Surface	Grid L, Zone 4	INDET	SHELL	INDET	INDET			.4	.6	EXBEV	PLAIN		PLAIN			1	0.9	hematite inclusions, lid to funnel?
SC-43	Surface	Grid L, Zone 1	INDET	GGSH	INDET	INDET					FLAT	INDET		PLAIN			1	1.7	hematite inclusions - exterior surface missing, unable to make thickness measurements
SC-37	Surface	Grid J, Zone 3	INDET	GGSH	INDET	INDET			.5		ROUND	BURN		BURN			1	1.0	
UN1-2	UN1	Level 2, 10-15cmbs	INDET	GGSH	INDET	INDET			.8		FLAT	PLAIN		PLAIN			1	2.8	too small for orientation
SC-44	Surface	Grid L, Zone 2	INDET	SHELL	INDET	INDET			1.0		EXBEV	SLIP	BRSLP	SLIP	BRSLP		1	10.9	likely a pan, coarse shell

Bag No	Fea	Provenience	Vessel Type	Temper	Orifice Diam	% of Orific	Rim Ang	Lip Length	Lip Thickness	Thickness Base Lip	Lip Form	Ext Dec	Ext Slip	Int Dec	Int Slip	Use Wear	No Sherds	Weight	Notes
UN2-3	UN2	Interface 1, 17-23cmbs	INDET	SHGG	INDET	INDET			.6		ROUND	PLAIN		PLAIN			1	.6	small lid/cap?, too small for orientation
G-2	Gen	Backdirt	INDET	SHELL	INDET	INDET			.7		BEV	EROD		EROD			1	4	too small for orientation
UN6-1	UN6	plow zone, 0-17cmbs	INDET	GROG	INDET	INDET					INDET	EROD		PLAIN			1	1	one surface eroded, too small for orientation
UN6-1	UN6	plow zone, 0-17cmbs	INDET	SHELL	INDET	INDET			.6		FLAT	PLAIN		PLAIN			1	.4	too small for orientation
UN4-3	UN4	Clay level, 24-29cmbs	INDET	SHELL	INDET	INDET			.7		FLAT	PLAIN		PLAIN			1	1.5	too small for orientation
UN3-1	UN3	plow zone	INDET	SHELL	INDET	INDET			.7		ROUND	PLAIN		PLAIN			1	.8	too small for orientation
UN3-1	UN3	plow zone	INDET	SHELL	INDET	INDET			.5		ROUND	PLAIN		PLAIN			1	.7	too small for orientation
F25-12	25	S1/2, ZB	JPLAT	SHELL	INDET	INDET	35		.7		ROUND	PLAIN		PLAIN		SOOT	1	4.1	
F22-3	22	SE1/2, ZA	JPLAT	SHELL	INDET	INDET			.8	.7	ROUND	SLIP	BRSLP	PLAIN			1	7.0	likely a jar
UN4-2	UN4	Interface	JPLAT	SHELL	INDET	INDET			.8		FLAT	SLIP	BKSLP	SLIP	BKSLP		1	3.6	possible refit with 4-2B, too small for orientation
F10-1	10	Plow zone	JPLAT	SHELL	30	5	37	3.2	.7	.5	EXBEV	PLAIN		PLAIN		SOOT	1	8.7	hematite inclusions
SC-14	Surface	Grid D, Zone 2	JPLAT	SHELL	32	5	35		.6		ROUND	PLAIN		PLAIN			1	8.0	hematite inclusions
UN2-6	UN2	Clay level	JPLAT	SHELL	INDET	INDET	25		.8		ROUND	PLAIN		PLAIN			1	3.1	maroonish paste, too small for orientation
F25-15	25	S1/2, ZC	JPLAT	SHELL	20	5	35		.7		EXBEV	PLAIN		PLAIN			1	4.4	hematite inclusions

Common Field 1980 - Misc.

Bag No	Provenience	Vessel Type	Temper	Orifice Diam	% of Orifice	Rim Angle	Lip Bevel	Lip Length	Lip Thicknes	Thickness base of lip	Lip Form	Lip Mod	Lip Attachment	Ext Dec	Ext Slip	Int Dec	Int Slip	Use Wear	No Sherds	Weight	Notes
IU-27	59d	BLPLT	SHELL	34	<5	25		2.4	.6	.9	ROUND	STICK		PLAIN		PLAIN			1	12.4	
IU-142	59d	BLPLT	SHELL	24	10	55			.8	.8	ROUND		LUG	PLAIN		PLAIN			1	53.4	
IU-87	59d	BLPLT	SHELL	24	>5	10		2.5	.7		ROUND			PLAIN		INCIS			1	12.2	similar to Vogel 1975
IU-18	surface, NE of Big Mound	INDET	SHELL	INDET	INDET				.8		EXBEV			SLIP	RSLIP	SLIP	RSLIP		1	8.5	possible black slip on int
IU-3	59d	INDET	SHELL	40	4				.8	.6 - .7	FLAT		TAB	BURN		BURN			1	33.2	no idea what kind of vessel this is
1376-1	B9-54-56	INDET	GTGG	INDET	INDET		50		.9		INBEV			BNSLP	RSLIP	SLIP	RSLIP		1	20.8	
989	B6-30-87	INDET	INDET	INDET	<5		48		.4		ROUND			PLAIN		PLAIN			1	1.7	
960	B6-44-81	INDET	SHELL	28	4		42	4.1	.7	.8	EXBEV			PLAIN		PLAIN			1	20.2	broken at shoulder, unable to tell if plate or strongly everted
943	B6-34-79	INDET	SHELL	INDET	INDET				.6		ROUND		IHAND	PLAIN		PLAIN			1	9.2	lug on handle
27-1	B1-50-54	INDET	SHELL	10	10				.5	.9	ROUND			BURN		BURN			1	11.4	hematite inclusions, orangey paste, possible bottle rim/neck, coil welds visible
72-242		INDET	LIME	INDET	<5				.9		ROUND			SLIP	BKSL	SLIP	BKSLP		1	10.9	hematite inclusions
34-3	B1-64-54	INDET	SHELL	INDET	<5				.6		ROUND			PLAIN		PLAIN			1	3.8	folded lip
18-1	B1-58-52	INDET	SHELL	INDET	<5				.6		ROUND			SLIP	RSLIP	SLIP	RSLIP	SOOT	1	6.7	drilled
IU-109	59d	JPLAT	SHELL	30	10	53	53		.5 - .6		ROUND			PLAIN		PLAIN			1	29.4	in 4 pieces

Appendix C – Other Artifacts

Common Field 2010-2012 - Tools								
Bag No	Fea No	Prov	Object	Wt	Max Thickness (cm)	Length (cm)	Width (cm)	Other/notes
EB1-1	EB1	Backdirt	projectile point base	0.2	0.2	1.5	0.6	Burlington?
EB2-4	EB2	Backdirt	ground ss	601.5				
EB2-4	EB2	Backdirt	ground, etched ss	71.8	1.6	6.7	4.2	silicified, hematite pigment?
EB3-1	EB3	Backdirt	ground ss	133.0				2 pieces
EB3-3	EB3	Backdirt	ground ss	46.4				2 pieces
F10-4	Fea 10	ZA	ss abrader	219.4	3.6	9.8	6.3	
F10-2	Fea 10	Transition	ground ss	9.4				
F13-2	Fea 13	S1/2, ZA	ground ss	38.1				2 pieces
F13-2	Fea 13	S1/2, ZA	projectile point frag	.2	.3	1.6	.7	possible Burlington chert triangular point
F22-	Fea 22	Floor, North WT	ground ss	18.4				hematite pigment?
F25-3	Fea 25	NE1/4, ZA	worked hematite	5.3	.9	2.2	1.5	ground
F25-9	Fea 25	S1/2, ZA	drill	1.9	0.5	4.0	1.1	burnt, chipped stone drill (Burlington?)
F25-12	Fea 25	S1/2, ZB	ground ss	103.3				small ground platform
F25-15	Fea 25	S1/2, ZC	ss abrader	79.7	2.9	6.0	5.8	at least 5 grooves
F25-15	Fea 25	S1/2, ZC	ground ss	40.0				
SC-17	Grid E	Zone 1, surface	ground limestone	0.8				
SC-22	Grid F	Zone 2, surface	biface	4.0	6.4	21.9	25.2	heat treated
SC-21	Grid F	Zone 1, surface	projectile point	0.4	2.0	18.2	11.3	
SC-45	Grid L	Zone 3, surface	biface frag	3.2	6.4	29.6	19.8	
SC-68	Grid R	Zone 4, surface	projectile point frag	0.3	3.3	1.3	1.1	made from a flake
G-4	N1000E 1060	Surface	Mill Creek hoe frag	152.1	1.9	12.1	9.2	
SC-70	Surface	N4204826.886m E762718.627m	Mill Creek hoe frag	163.3	2.1	11.8	7.3	silica sheen
UN1-3	Unit 1	Level 3 (15-20 cmbs)	projectile point	1.1	4.9	27.4	10.7	heat treated?
UN1-7	Unit 1	Level 5 (30-45 cmbs)	ss abrader	173.6	49.7	83.3	44.7	at least 4 grooves
UN2-2	Unit 2	Plow zone	celt	316.2	38.2	110.3	52.0	snowflake basalt?
UN4-1	Unit 4	Plow zone	drill/projectile point	0.5	5.4	16.9	10.7	burnt
UN6-1	Unit 6	Plow zone (0-17 cmbs)	projectile point	0.7	3.3	23.2	11.4	Reed point?

Common Field 2010-2012 - Other artifacts

Bag No	Fea No	Prov	SS no	SS wt	LS no	LS wt	Galena no	Galena wt	Chert no	Chert wt	celt deb no	celt deb wt	Pebble no	Pebble wt	BC no	BC wt	Daub no	Daub wt	C14	Other/notes
SC-1		South of Grid A																	FALSE	1 clay ball (2.8g)
EB1-1	EB1	EB 1, backdirt	2	69.1	3	248.1			8	123.6			1	2.4					FALSE	
EB1-2	EB2	EB 1, backdirt							2	49.7									FALSE	
EB2-4	EB2	EB 2, backdirt	4	116.1					20	314.6							4	11.9	FALSE	painted daub (red)
EB2-2	EB2	EB 2, backdirt	1	37.7	2	169.3			4	226.3									FALSE	
EB3-1	EB3	EB 3, backdirt	2	123.0					6	472.0									FALSE	
EB3-3	EB3	EB 3, backdirt	5	279.0					13	90.1			1	2.8	1	2.5			FALSE	
EB1-3	EB3	EB 1, backdirt	3	78.0					26	355.5									FALSE	
EB3-2	EB3	EB 3, PM1, ZA, NE1/2													1	0.5			FALSE	
F1-1	Fea 1	Trench, ZA	1	1.2					2	.8					8	1.6	1	4.9	TRUE	
F1-4	Fea 1	East quarter, ZA							2	.4					3	.8			TRUE	
F1-5	Fea 1	W1/2, ZA																	TRUE	
F1-2	Fea 1	W1/4, UN 2,3	6	4.9					12	13.4			10	8	20	18.3			TRUE	
F1-8	Fea 1	PM 9, W1/2, ZA							1	33.3									FALSE	
F10-7	Fea 10	PM 5							1	25.9									FALSE	
F10-5	Fea 10	ZA							1	0.4			3	1.6					FALSE	
F10-6	Fea 10	Floor							5	2.6			5	3.0	8	4.4			TRUE	
F10-4	Fea 10	ZA	13	417.4	3	.8			33	26.5			22	27.3	20	10.1	4	5.1	TRUE	1 canel coal (17.1)
F10-3	Fea 10	ZA	27	335.4	10	40.5			36	110.5	1	.5	53	34.8	17	9.0			TRUE	
F10-2	Fea 10	Transition	2	5.8					13	99.7			5	11.7					FALSE	
F10-1	Fea 10	Plow zone	3	143.6	4	82.1			16	134.7			1	4.2					FALSE	
F11-3	Fea 11	W1/2, floor			1	.3			1	.7									FALSE	
F11-2	Fea 11	W1/2, ZA											5	3.3					FALSE	
F11-5	Fea 11	E1/2, ZA							6	30.5			1	.3	6	3.3			TRUE	
F11-4	Fea 11	E1/2, ZA							3	1.8					1	4.9			TRUE	
F11-1	Fea 11	W1/2, ZA							2	.1			4	2.5	1	1.4			FALSE	pink pigment (<0.1)
F11-5	Fea 11	E1/2, ZA, burned area	1	8.6	2	1.8			5	31.4					11	4.2	2	1	FALSE	
F11-6	Fea 11	W1/2,			1	.4			1	.3									FALSE	
F11-8	Fea 11	E1/2, floor											1	.2					FALSE	

Bag No	Fea No	Prov	SS no	SS wt	LS no	LS wt	Galena no	Galena wt	Chert no	Chert wt	celt deb no	celt deb wt	Pebble no	Pebble wt	BC no	BC wt	Daub no	Daub wt	C14	Other/notes
F11-10	Fea 11	PM 13, E1/2, ZA	1	5									1	.1					FALSE	
F11-11	Fea 11	Machine scraped surface	2	87.2	5	196.9			4	77.1					1	.2	1	1.1	FALSE	
F11-16	Fea 11	PM 15, E1/2, ZA	2	2.0											5	1.3			FALSE	
F11-18	Fea 11	PM 16, W1/2, ZA							1	2.9									TRUE	
F11-20	Fea 11	Slot trench 2							1	6.1									FALSE	
F13-8	Fea 13	N1/2, ZB							3	2.3			4	2.6	11	5.3	1	.3	TRUE	
F13-1	Fea 13	Machine scraped surface	1	8.0					1	176.0					1	34			FALSE	
F13-2	Fea 13	S1/2, ZA	32	708.7	1	202.5	2	5.3	56	140.7			5	15.3	221	196.	12	34.6	TRUE	1 iron ore (4.0)
F13-5	Fea 13	N1/2, ZA	5	52.0	2	89.7			29	84.3			4	4.8	207	205.	3	12.3	TRUE	1 hematite (>0.1)
F13B-2	Fea 13B	N1/2, ZA			1	.5									1	.9			TRUE	
F13B-1	Fea 13B	S1/2, ZA													3	6.7			TRUE	
F17-1	Fea 17	E1/2, ZA			1	16													FALSE	
F1-3	Fea 1b	Unit 3, ZA							1	14.2									FALSE	pink pigment sample (hematite)
F22-8	Fea 22	Floor, north WT	1	.2															FALSE	
F22-7	Fea 22	SE1/2, ZA	2	2.4	1	1.5			7	4.8			3	1.6					FALSE	
F22-6	Fea 22	NW1/2, floor							1	.2									TRUE	
F22-5	Fea 22	NW1/2, ZA	1	9.1					6	38.4					5	3.1			FALSE	
F22-3	Fea 22	SE1/2, ZA	1	1.9					9	8.3			3	2.3	7	2.3			FALSE	
F22-1	Fea 22	Machine scraped surface	1	41.0	2	62.1			3	36									FALSE	rhyolite frag (312.6)
F24-3	Fea 24	PM 4, N1/2, ZA							1	1.2									FALSE	
F24-1	Fea 24	PM 2, N1/2, ZA													1	1.6			TRUE	
F24-2	Fea 24	PM 2, S1/2, ZA																	TRUE	
F24-2	Fea 24	PM 4, S1/2, ZA																	TRUE	
F25-6	Fea 25	N1/2, ZA	2	4.2					6	76.2			1	3.1	2	.4	1	4.8	FALSE	
F25-2	Fea 25	NW1/4, ZA	14	30.0					30	159.7			2	4.8	18	8.6			TRUE	

Bag No	Fea No	Prov	SS no	SS wt	LS no	LS wt	Galena no	Galena wt	Chert no	Chert wt	celt deb no	celt deb wt	Pebble no	Pebble wt	BC no	BC wt	Daub no	Daub wt	C14	Other/notes
F25-4	Fea 25	NE1/4, ZA	11	16	2	24.8			17	35.4			7	6.4	13	2.6			TRUE	
F25-3	Fea 25	NE1/4, ZA	4	25.8					14	22.5			2	1.6	9	3.6			FALSE	
F25-9	Fea 25	S1/2, ZA	5	2.1			1	1.3	11	36.8			1	2.1	17	4.0			FALSE	
F25-7	Fea 25	N1/2, ZA	42	499.1	8	237.1			81	330.9			10	24.5	73	43.8			TRUE	unfired clay ball
F25-11	Fea 25	Profile, ZB			1	65.9													FALSE	
F25-1	Fea 25	NW1/4, ZA	10	54.4	4	111.0			17	58.2			1	.3	15	6.1	1	.5	TRUE	unfired clay ball
F25-12	Fea 25	S1/2, ZB	17	52.9	4	62.8			75	176.9			18	38.1	22	5.9			TRUE	
F25-15	Fea 25	S1/2, ZC	3	16.7					10	9.0			4	1.4	23	15			TRUE	
F26-5	Fea 26	ZA. S1/2			1	0.2			5	1.6			1	0.1	6	2.1			TRUE	
F26-4	Fea 26	ZA, S1/2	6	236.0	2	171.8	2	15.2	10	15.3					6	2.4	2	0.2	TRUE	
F26-2	Fea 26	ZA, S1/2	16	277.0	2	61.2	1	1.1	48	154.9	1	0.4	2	1.3	32	33.8			TRUE	1 limonite (0.4), 3 crystal (8.1)
F26-2	Fea 26	PP3, machine scraped surface, ZA, S1/2																	TRUE	burnt corn cob and kernels
F26-2	Fea 26	PP1, machine scraped surface, ZA, S1/2			10	710.1													FALSE	
F26-1	Fea 26	EB 4, Machine scraped surface	1	72.8	4	406.4			4	46.1							1	4.8	FALSE	
F3-1	Fea 3	Trench, ZA							1	14.6									FALSE	
F9-8	Fea 9	W1/4, ZA											2	1.5	1	.1			FALSE	
F9-10	Fea 9	E wall, ZA-1			1	3													FALSE	
F9-9	Fea 9	W1/4, wall cleaning							1	.5			2	3.3	3	1.5			FALSE	
F9-5	Fea 9	W1/4, ZA	2	5.6	4	98.7	1	5.3	13	4.6			15	6.4	7	2.9			TRUE	
F9-3	Fea 9	W1/4, ZA	23	18.3	6	20.2			29	31.3			89	62	20	8.3			TRUE	
F9-2	Fea 9	W1/2, ZA	21	24.6	2	14.8	1	1.7	26	24.3	1	.3	152	109.1	18	9.4			TRUE	
F9-1	Fea 9	Machine scraped surface							1	2.8			1	4.2					FALSE	
G-2	Gen	General collection, Backdirt	2	66.4	1	39.7			11	131.7			1	5.5	1	2.7			FALSE	
G-5	Gen	General collection, backdirt	1	0.9	6	42.6			3	4.6			1	1.2					FALSE	

Bag No	Fea No	Prov	SS no	SS wt	LS no	LS wt	Galena no	Galena wt	Chert no	Chert wt	celt deb no	celt deb wt	Pebble no	Pebble wt	BC no	BC wt	Daub no	Daub wt	C14	Other/notes
G-3	Gen	General collection, backdirt							20	226.7									FALSE	
G-1	Gen	General collection, backdirt	2	215.0	4	219.2			4	54.8			1	3.1			1	12.6	FALSE	
SC-3	Grid A	Zone 2, surface			1	36.9			1	1.6									FALSE	
SC-4	Grid A	Zone 3, surface			1	20.8													FALSE	
SC-2	Grid A	Zone 1, surface							1	17.8									FALSE	
SC-8	Grid B	Zone 4, surface											1	3.1					FALSE	
SC-5	Grid B	Zone 1, surface							2	3.8									FALSE	
SC-6	Grid B	Zone 2, surface							1	4.0									FALSE	
SC-9	Grid C	Zone 1, surface	2	347.8															FALSE	
SC-10	Grid C	Zone 2, surface							5	17.2									FALSE	
SC-12	Grid C	Zone 4, surface			1	6.6			3	2.8									FALSE	
SC-11	Grid C	Zone 3, surface	2	4.6									1	1.9					FALSE	
SC-13	Grid D	Zone 1, surface	2	8.4	2	133.2			2	4.1			1	2.3			1	0.8	FALSE	
SC-15	Grid D	Zone 3, surface	3	28.8	1	7.2			8	47.7									FALSE	
SC-16	Grid D	Zone 4, surface	1	0.9	2	17.4			6	18.5			2	7.4					FALSE	
SC-14	Grid D	Zone 2, surface	3	16.4	2	52.5			3	5.3									FALSE	
SC-20	Grid E	Zone 4, surface	2	6.8					5	15.2	1	3.5							FALSE	
SC-17	Grid E	Zone 1, surface	1	17.0					6	27.9					1	4.3			FALSE	
SC-19	Grid E	Zone 3, surface							9	39.8									FALSE	
SC-18	Grid E	Zone 2, surface	2	200.3	2	22.9			10	55.1									FALSE	
SC-23	Grid F	Zone 3, surface	5	214.4	1	21.3			8	272.5			3	28.1					FALSE	

Bag No	Fea No	Prov	SS no	SS wt	LS no	LS wt	Galena no	Galena wt	Chert no	Chert wt	celt deb no	celt deb wt	Pebble no	Pebble wt	BC no	BC wt	Daub no	Daub wt	C14	Other/notes
SC-22	Grid F	Zone 2, surface	2	41.5	1	2.3			7	173.3			2	4.7					FALSE	
SC-21	Grid F	Zone 1, surface	1	6.1	3	204.4			3	13.9			3	45.1					FALSE	
SC-24	Grid F	Zone 4, surface							1	12.6									FALSE	
SC-26	Grid G	Zone 3, surface			1	0.8			2	3.7									FALSE	
SC-25	Grid G	Zone 1, surface							1	0.8									FALSE	
SC-27	Grid G	Zone 4, surface	1	26.2					1	17.5			1	0.3					FALSE	
SC-29	Grid H	Zone 3, surface							1	1.1									FALSE	
SC-28	Grid H	Zone 2, surface							2	43.0			1	1.5					FALSE	
SC-30	Grid H	Zone 4, surface							1	16.1									FALSE	
SC-31	Grid I	Zone 1, surface							4	29.9					1	3.5			FALSE	
SC-32	Grid I	Zone 2, surface			1	17.4			3	38.9									FALSE	
SC-34	Grid I	Zone 4, surface	1	17.9					7	30.7									FALSE	
SC-33	Grid I	Zone 3, surface	1	0.3	3	11.3			6	4.0					2	1.3			FALSE	
SC-37	Grid J	Zone 3, surface	3	40.5					8	82.5									FALSE	
SC-35	Grid J	Zone 1, surface	2	8.4					9	119.9									FALSE	
SC-36	Grid J	Zone 2, surface							2	3.2									FALSE	
SC-38	Grid J	Zone 4, surface	4	54.1	1	11.0			11	21.8			1	1.3					FALSE	1 historic plastic wood paneling (0.4)
SC-41	Grid K	Zone 3, surface	2	71.2	1	3.1			11	360.9									FALSE	
SC-42	Grid K	Zone 4, surface							6	29.2									FALSE	
SC-39	Grid K	Zone 1, surface			2	46.0			13	246.2									FALSE	
SC-40	Grid K	Zone 2, surface	3	29.7					11	126.3									FALSE	
SC-43	Grid L	Zone 1, surface	3	67.4					4	26.1									FALSE	

Bag No	Fea No	Prov	SS no	SS wt	LS no	LS wt	Galena no	Galena wt	Chert no	Chert wt	celt deb no	celt deb wt	Pebble no	Pebble wt	BC no	BC wt	Daub no	Daub wt	C14	Other/notes
SC-44	Grid L	Zone 2, surface	1	80.5	2	112.9			10	110.3	1	114.0	1	0.6					FALSE	
SC-46	Grid L	Zone 4, surface	6	101.3					15	93.3			1	3.7	1	1.5			FALSE	
SC-45	Grid L	Zone 3, surface	5	242.0	1	10.4			3	10.0			2	13.6					FALSE	
SC-48	Grid M	Zone 4, surface							1	1.7									FALSE	
SC-47	Grid M	Zone 1, surface							2	3.0									FALSE	
SC-51	Grid N	Zone 3, surface	1	1.6															FALSE	
SC-49	Grid N	Zone 1, surface							1	1.6									FALSE	
SC-50	Grid N	Zone 2, surface							1	0.3			2	1.7					FALSE	
SC-55	Grid O	Zone 3, surface							4	9.5									FALSE	
SC-56	Grid O	Zone 4, surface	1	10.1	3	2.8			7	109.4					1	1.1			FALSE	
SC-54	Grid O	Zone 2, surface			2	0.9							1	18.6					FALSE	
SC-53	Grid O	Zone 1, surface	1	3.2					5	76.4									FALSE	
SC-58	Grid P	Zone 2, surface			1	2.7			2	5.8			2	4.8					FALSE	
SC-57	Grid P	Zone 1, surface	2	7.0					7	28.0									FALSE	
SC-59	Grid P	Zone 3, surface	3	27.4	2	2.2	1	23.9	8	31.5					1	3.6			FALSE	
SC-60	Grid P	Zone 4, surface							12	96.4			2	74.6					FALSE	
SC-62	Grid Q	Zone 2, surface	2	6.7					3	129.1									FALSE	
SC-61	Grid Q	Zone 1, surface	2	18.8	2	2.0			11	70.7			1	2.1			1	1.8	FALSE	
SC-64	Grid Q	Zone 4, surface			1	170.8			3	20.4									FALSE	
SC-63	Grid Q	Zone 3, surface	1	15.9	1	52.0			5	12.7					2	6.1			FALSE	
SC-65	Grid R	Zone 1, surface			3	33.3			8	32.6					2	3.2			FALSE	
SC-67	Grid R	Zone 3, surface	3	56.7	1	1.4			4	23.5									FALSE	

Bag No	Fea No	Prov	SS no	SS wt	LS no	LS wt	Galena no	Galena wt	Chert no	Chert wt	celt deb no	celt deb wt	Pebble no	Pebble wt	BC no	BC wt	Daub no	Daub wt	C14	Other/notes
SC-68	Grid R	Zone 4, surface	1	2.3	1	26.1			8	175.4			3	20.3					FALSE	
SC-66	Grid R	Zone 2, surface	2	4.2					10	70.1									FALSE	
UN1-7	Unit 1	Level 5 (30-45 cmbs)	1	40.2	1	0.4			10	22.8			3	6.6					FALSE	
UN1-1	Unit 1	Level 1 (0-10 cmbs)	2	130.3	1	2.0			5	30.3									FALSE	1 iron ore (7.5), 1 clear glass (2.2)
UN1-2	Unit 1	Level 2 (10-15 cmbs)	9	11.4	38	19.8	1	6.5	23	16.6			32	14.6	12	4.0	4	1.9	FALSE	1 machine cut nail (0.9), 2 clear glass
UN1-3	Unit 1	Level 3 (15-20 cmbs)	12	31.2	50	26.7			16	10.2			15	8.8	24	7.6			FALSE	1 crystal (0.1), 4 clear glass (7.1), 1
UN1-4	Unit 1	Level 3 (20-25 cmbs)	10	5.2	21	20.0	2	3.0	15	18.1			17	7.2	28	6.8			FALSE	2 clear glass (9.8)
UN1-6	Unit 1	Level 4 (25-30 cmbs)	3	5.2					8	47.2			4	1.4					FALSE	
UN1-8	Unit 1	Level 6 (45-50 cmbs)													1	0.6			FALSE	
UN1-5	Unit 1	SW corner (25-35 cmbs)							5	6.5					1	0.1			FALSE	
UN2-1	Unit 2	Plow zone	9	55.2	4	17.2			18	124.6			5	6.3	7	2.1			FALSE	
UN2-2	Unit 2	Plow zone	14	29.5	14	9.3			19	92.8			3	1.5	12	10.6			FALSE	
UN2-3	Unit 2	Interface 1 (17-23 cmbs)	3	6.5	9	69.8			10	22.6			8	35.1					FALSE	
UN2-4	Unit 2	Interface 1 (23-25 cmbs)			3	33.3			4	20.6									FALSE	
UN2-5	Unit 2	Clay level (25-27 cmbs)							4	4.6			1	7.3					FALSE	
UN2-6	Unit 2	Clay level	8	161.1	3	2.4	1	13.8	20	54.9			4	4.9	3	0.7			FALSE	
UN2-7	Unit 2	Scraping above features							2	1.1			1	0.8	2	1.1			FALSE	
UN3-6	Unit 3	Scraping above features	6	40.3					6	11.9			1	1.5	8	21.7			FALSE	
UN3-1	Unit 3	Plow zone	14	39.5	7	26.0			36	177.8			14	16.3	12	5.1			FALSE	1 clear glass (8.6)
UN3-2	Unit 3	Plow zone (12-17 cmbs)	1	5.2	2	5.3			5	37.0			3	6.1	1	0.9			FALSE	
UN3-3	Unit 3	Interface 1	5	36.2	5	29.9			14	30.6			8	26.8	5	4.9			FALSE	2 clear glass (1.3)

Bag No	Fea No	Prov	SS no	SS wt	LS no	LS wt	Galena no	Galena wt	Chert no	Chert wt	celt deb no	celt deb wt	Pebble no	Pebble wt	BC no	BC wt	Daub no	Daub wt	C14	Other/notes
UN3-4	Unit 3	Clay level (24-26 cmbs)	6	73.3	4	1.6			9	12.8			4	8.0	6	2.3			FALSE	
UN3-5	Unit 3	Clay level (26-30 cmbs)	8	52.1	4	19.8			13	33.4			5	6.7	16	21.3			FALSE	1 burnt clay removed (1.6) for XRD but included in total
UN4-4	Unit 4	Scraping above features	1	12.1					4	12.3			2	3.4					FALSE	
UN4-3	Unit 4	Clay level (24-29 cmbs)	12	29.7	16	45.9			24	169.8			5	8.8	8	6.6			FALSE	
UN4-1	Unit 4	Plow zone	3	12.4	9	108.7			15	156.6			8	16.0	2	0.9			FALSE	1 piece of plastic "wood" molding (2.3
UN4-2	Unit 4	Interface	11	122.4	4	26.2			17	23.2			4	5.7	5	2.9			FALSE	
UN5-4	Unit 5	Scraping above features	1	2.3					3	2.1									FALSE	
UN5-3	Unit 5	Clay level			2	1.1			5	25.7					2	0.5			FALSE	
UN5-1	Unit 5	Plow zone	2	8.1	2	100.1			10	26.2			3	3.0					FALSE	
UN5-2	Unit 5	Interface			2	1.0			2	8.6			1	0.6	1	0.6			FALSE	
UN6-1	Unit 6	Plow zone (0-17 cmbs)	10	126.4	6	150.7			17	187.7			14	32.6	3	0.9	1	0.6	FALSE	
UN6-2	Unit 6	Interface (17-24 cmbs)	3	161.6	4	27.7			11	104.4			6	14.9	1	0.1	1	3.3	FALSE	
UN6-3	Unit 6	Clay level (24-29 cmbs)	4	22.9	7	4.6			10	8.9			6	3.8	3	1.0			FALSE	
UN6-4	Unit 6	Scraping above features	1	11.8	1	0.8			2	38.3							1	1.9	FALSE	1 pumice (0.3)

Meghan Elizabeth Buchanan, Ph.D.

Updated: 15 March 2015

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Glenn A. Black Laboratory of Archaeology
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meghbuch@indiana.edu

EDUCATION

INDIANA UNIVERSITY BLOOMINGTON

Ph.D. Department of Anthropology (Outside Minor: Geography/GIS) 2015
Dissertation Title: *Warfare and the Materialization of Daily Life at the Mississippian Common Field Site*
Dissertation Committee:
Susan M. Alt (chair), Laura L. Scheiber, Stacie M. King, Rinku Roy Chowdhury

SOUTHERN ILLINOIS UNIVERSITY CARBONDALE

Master of Arts, Department of Anthropology 2007
Thesis Title: *Patterns of Faunal Utilization at Kincaid Mounds, Massac County, Illinois*
Thesis Committee:
Paul D. Welch (chair), Heather Lapham (chair), Brian M. Butler, David Sutton

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

Bachelor of Arts, Department of Anthropology 2003

RESEARCH INTERESTS

Midwestern and Southeastern U.S. archaeology, Mississippian societies, violence, conflict, warfare, complexities, spatial analysis, GIS, geophysics, materiality, social theory, relational ontologies, zooarchaeology, ceramic studies, curation and collections research, foodways, landscape

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EXTERNAL GRANTS

Submitted: **Indiana Department of Historic Preservation and Archaeology** Historic Preservation Fund Grant, $30,070, "Late PreColumbian Inter- and Intra-Site Settlement and Ceramic Variability in Posey County, IN: Geophysical Testing and Reanalysis of Ceramic Materials from Four Multicomponent Sites"

2011 **Wenner-Gren Foundation** Dissertation Research Grant, $15,325, Grant #8366, "Warfare and the Materialization of Daily Life at the Mississippian Common Field Site"

2009 **Foundation for Restoration of Sainte Genevieve** Research Award, $1000

INTERNAL GRANTS AND FELLOWSHIPS

2015 (submitted) **Office of the Vice Provost for Research**, Pooled Funds request for the "Angel Foodways Project" (co-PIs April K. Sievert and Dru E. McGill), $30,000, Indiana University

2015 **College of Arts and Sciences** Themester Grant for "The Legacy of WPA Archaeology" exhibit and co-curricular programming at the Glenn A. Black Laboratory of Archaeology, $1170, Indiana University

2014 **Indiana University** Future Faculty Teaching Fellowship at IU South Bend, $19,520 (declined)

2014 **College of Arts and Sciences** Themester Grant (with April K. Sievert) for an "Archaeology of Food" exhibit at the Glenn A. Black Laboratory of Archaeology, $1200, Indiana University

2012 **College of Arts and Sciences** Dissertation Year Fellowship, $20,000, Indiana University

2010 **David C. Skomp Research Feasibility Award**, $2700, Indiana University Department of Anthropology

CONFERENCE TRAVEL GRANTS

2014 **Travel Award**, $150, Indiana University Department of Anthropology

2014 **Travel Award**, $500, Indiana University Graduate and Professional Student Organization

2013 **Travel Award**, $150, Indiana University Department of Anthropology

2012 **Travel Award**, $200, Indiana University Department of Anthropology

AWARDS AND HONORS

Student Paper Prize, First Place, Southeastern Archaeological Conference, 2014

Outstanding Associate Instructor Teaching Award, Indiana University, Department of Anthropology, 2011

REFEREED JOURNAL ARTICLES

Accepted, In Revision: Jayne-Leigh Thomas, **Meghan E. Buchanan**, Carrie Wilson, and Adam Crane. Violence and Trophy-Taking: A Case Study of Head and Neck Trauma in Two Individuals from the Gant Site (3MS11). Submitted to the *International Journal of Osteoarchaeology*.

In prep: **Meghan E. Buchanan** and Elizabeth L. Watts. What's Grog Got to do With It? Ceramic Temper, Technological Production, and Social Change in the Pre-Columbian Midwestern US. Article intended for *Journal of Social Archaeology.*

Accepted, In Revision: **Meghan E. Buchanan**. Patterns of Faunal Utilization and Sociopolitical Organization at Kincaid Mounds. *Midcontinental Journal of Archaeology.*

2011 Alt, Susan M., **Meghan E. Buchanan**, and Elizabeth L. Watts. Looking for Yankeetown in Posey County. *Journal of Indiana Archaeology* 6(1):12-23.

REFEREED EDITED VOLUMES

Accepted, In Press: **Meghan E. Buchanan** and B. Jacob Skousen, editors. *Tracing the Relational: The Archaeology of Worlds, Spirits, and Temporalities*. University of Utah Press.

REFEREED BOOK CHAPTERS

Accepted, In Press: **Meghan E. Buchanan**. Landscapes of Violence, Lingering Spirits, and the Mississippian Vacant Quarter. In *Untangling the Relational: The Archaeology of Worlds, Spirits, and Temporalities*, edited by Meghan E. Buchanan and B. Jacob Skousen.

Accepted, In Press: B. Jacob Skousen and **Meghan E. Buchanan**. Introduction: Advancing an Archaeology of Movements and Relationships. In *Untangling the Relational: The Archaeology of Worlds, Spirits, and Temporalities*, edited by Meghan E. Buchanan and B. Jacob Skousen.

NON-REFEREED PUBLICATIONS

Submitted: Meghan E. Buchanan. Reconfiguring Regional Interactions in the Face of Cahokia Decline: A View from the Common Field Site, MO. In *What Happened on the Fringe?: Testing a New Model of Cross-Cultural Interaction in Ancient Borderlands*, edited by Ulrike Matthies Green and Kirk E. Costion, University of Florida Press.

Submitted: **Meghan E. Buchanan**. Tempering Practices in a Mississippian War-Scape: Ceramics and Technological Production at the Common Field Site. Proceedings of the 45th Annual Chacmool Conference.

RESEARCH REPORTS

2015 **Meghan E. Buchanan** and April K. Sievert. *Summary Report on Restorations of the Temple Mound (Mound F) at Angel Mounds State Historic Site (12Vg1), Vanderburgh County, Indiana*. Final report to be submitted to the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology.

2015 Dawn M. Rutecki and **Meghan E. Buchanan**. *Archaeological Survey of the Historic Chicken Coop, Hinkle Garton Farmstead (12Mo1509), Bloomington, IN*. Final report to be submitted to the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology.

In prep: **Meghan E. Buchanan** and Zachary I. Gilmore. Faunal Remains. In *Kincaid Mounds Platform Excavations,* edited by Brian Butler. Final report to be submitted to Illinois Historic Preservation Agency.

PROFESSIONAL EXPERIENCE

Research Scientist/Staff Archaeologist: Glenn A. Black Laboratory of Archaeology, Indiana University, *Sept. 2014-present*

Collections Manager: Glenn A. Black Laboratory of Archaeology, Indiana University, *Sept. 2013-August 2014*

Faunal Analyst: Cahokian Religion, the Emerald Pilgrimage Center, and Cultural Innovation, *June-July 2013*

Analysis of faunal remains (Susan M. Alt and Timothy R. Pauketat, Directors)

Magnetometry Consultant and Analyst: Cahokian Religion, the Emerald Pilgrimage Center, and Cultural Innovation, *June 2012*

Conducted magnetometry survey, data processing, and analysis at Emerald Mound in Illinois (Susan M. Alt and Timothy R. Pauketat, Directors)

Magnetometry Consultant and Analyst: University of Illinois Department of Anthropology Dissertation Feasibility Study, *May 2012*

Conducted magnetometry survey, data processing, and analysis of the Collins and Richter sites in Illinois (Amanda Butler, Director)

Magnetometry Consultant and Analyst :Mississippianization, Religious Conversion, and Identity Formation in Pre-Columbian Wisconsin, *May-June 2011*

Conducted magnetometry survey, data processing, and analysis at two sites in Wisconsin (Timothy R. Pauketat, Ernie Boszhardt, and Danielle Benden, Directors)

Director: Warfare and the Materialization of Daily Life at the Mississippian Common Field Site, *June 2010-present*

Directed large-scale excavations, magnetometry survey, surface survey, and artifact analysis

Magnetometry Consultant and Analyst

Conducted magnetometry survey, data processing, and analysis at Emerald Mound in Illinois (Timothy R. Pauketat, Director)

Field Director: Indiana University Solving the Mystery of Yankeetown Field School, *June-July 2009*

Designed and implemented Phase I and magnetometry surveys, oversaw undergraduate excavations, reviewed and maintained field paper work, supervised lab processing, all from the Dead Man's Curve site, Indiana (Susan M. Alt, Director)

Field Technician: Acquiring History at Spring Mill State Park, *May 2009*

Used Sokia Total Station to establish datums and excavation unit corners in advance of "Archaeology Weekend" (April K. Sievert and Melody Pope, Directors)

Research Assistant: Southern Illinois University Carbondale, *August-December 2007*

Field Supervisor: University of Illinois Urbana-Champaign, Archaeological Field School, June-July 2004

Conducted test excavations at Cahokia Mound's Grand Plaza, oversaw field school student lab processing and excavations at the Loyd, Peiper, and Washausen sites in Illinois (Timothy R. Pauketat and Alleen M. Betzenhauser, Directors)

Field Supervisor: University of Illinois Urbana-Champaign, Archaeological Field School, *June-July 2003*

Conducted excavations, oversaw field school student lab processing and excavations at the John Chapman site in Illinois (Timothy R. Pauketat and Philip G. Millhouse, Directors)

Field Technician: Reconstructing Trincheras: A Study of the Role of Cerros de Trincheras in the South-West United States and Northern Mexico, *January 2003*

Conducted surveys and mapped archaeological sites in Sonora, Mexico (Bridget M. Zavala, Director)

Participant: University of Illinois Urbana-Champaign Archaeological Field School, *June-July 2003*

Field school student at the Grossmann site, Illinois (Susan M. Alt and Timothy R. Pauketat, Directors)

CULTURAL RESOURCE MANAGEMENT PROJECTS

Assistant Faunal Analyst: Center for Archaeological Investigations, Southern Illinois University Carbondale, *August 2007-July 2008*

Analyzed faunal materials from projects in Virginia and South Carolina (Heather Lapham, Director)

Faunal Analyst: Center for Archaeological Investigations, Southern Illinois University Carbondale, *August 2006*

Analyzed and wrote up results of analysis for faunal materials recovered from Phase III mitigation at Kincaid Mounds, Illinois (Brian M. Butler, Director)

Laboratory Supervisor: Center for Archaeological Investigations, Southern Illinois University Carbondale, *August 2005-July 2007*

Supervised undergraduate artifact processing, conducted Phase II archaeological excavations at the Black Beauty Coal Mines, Illinois, analyzed Historic and Pre-Columbian artifacts (Brian M. Butler, Director)

Field and Laboratory Technician and Supervisor: Public Service Archaeology and Architecture Program, University of Illinois at Urbana-Champaign, *August 2002-August 2008*

Conducted Phase I-III archaeological reconnaissance, lab processing of artifacts and flot samples, artifact analysis for projects in Illinois, Indiana, Kansas, Kentucky, Missouri, Tennessee, Wisconsin (Kevin McGowan, Brian Adams, and Paul Kreisa, Directors)

TEACHING EXPERIENCE

Instructor, Department of Anthropology, Indiana University Bloomington (2 semesters)

2012: Archaeological Curation
2011: Anthropology of Corn

Assistant Instructor, Department of Anthropology, Indiana University (6 semesters)

2010: Rise and Fall of Ancient Civilizations (Stacie M. King)
2010: Introduction to Archaeology (Stacie M. King)

2009: People and Animals (Laura Scheiber)
2009: Field Work in Archaeology (Susan M. Alt)
2008-2009: Introduction to Archaeology (Stacie M. King, April K. Sievert)

Teaching Assistant, Department of Anthropology, Southern Illinois University (6 semesters)
2007-2008: Introduction to Anthropology (Kyle Lubsen, Anthony K. Webster)
2005-2006: Archaeological Field School (Paul D. Welch)
2004-2005: Introduction to Anthropology (Chris Stojanowski, Leo Vournelis)

TEACHING INTERESTS

Introduction to Archaeology
Archaeological Method and Theory
GIS and Remote Sensing in Anthropology
Pre-Columbian Cultures of the Southeast
Rise and Fall of Ancient Civilizations
Faunal Analysis
Archaeological Field Methods
Archaeological Curation
Food and Archaeology
Violence and Conflict in Prehistory
Anthropology of Corn
Ceramic Analysis
Archaeology of North America

EXHIBITS

2014 **Archaeology of Food**. Glenn A. Black Laboratory of Archaeology, Indiana University. Part of the IU Themester, "Eat, Drink, Think."

PROFESSIONAL PRESENTATIONS
Papers and Posters Presented at Professional Conferences

2014 **Making Pots, Making War: Mississippian Plate Iconography in the Midcontinent**. Paper presented at the 71st Annual Southeastern Archaeology Conference, Greenville, SC. *Winner of the Student Paper Prize

2014 **Rehousing the Glenn A. Black Laboratory of Archaeology Comparative Collections** (with Cailey Mullins, Amanda Klenk, Catherine Qualls, Megan Dunphy, and Emma Woodruff). Poster presented at the 60th Annual Midwestern Archaeology Conference in Urbana, IL.

2014 **All Cooped Up: Documenting the Chicken Coop at the Hinkle-Garton Farmstead in Bloomington, Indiana** (with Dawn M. Rutecki and Danielle Bachant-Bell). Poster presented at the 60th Annual Midwestern Archaeology Conference in Urbana, IL.

2014 **Tempering Agents, Tempering Arguments: Negotiating Mixed Tempered Ceramics in the PreColumbian Midwest (ca. AD 800-1275)** (with Elizabeth Watts-Malouchos). Paper presented at the 8th Annual North American Theoretical Archaeology Group Conference in Champaign-Urbana, IL.

2014 **What's Grog Got to Do With It? Ceramic Temper, Technological Processes, and Social Change in the Pre-Columbian Midwestern US** (with Elizabeth Watts-Malouchos). Paper presented at the 79th Annual Society for American Archaeology Conference in Austin, TX

2012 **Violence and Daily Life in the Mississippian Midwest: A View from the Common Field Site in Southeast Missouri**. Paper presented at the 45th Annual Chacmool Conference *War and Peace: Conflict and Resolution in Archaeology*, in Calgary, Alberta, Canada

2012 **Late Mississippian Violence and Abandonment: A View from the Common Field Site in SE Missouri**. Paper presented at the Cahokia Mounds Mississippian Conference

2012 **The Mississippian Vacant Quarter: Conflict, Vanished Mississippians, and Missing Agents**. Paper presented in the symposium *Entangled Webs of Worlds: Movement and Culture Change* organized by Meghan E. Buchanan and B. Jacob Skousen at the 77th Annual Society for American Archaeology Conference in Memphis, TN

2012 **Relationships, Movement, and Entanglement: Theories on Viewing the World** (with B. Jacob Skousen). Paper presented in the symposium *Entangled Webs of Worlds: Movement and Culture Change* organized by Meghan E. Buchanan and B. Jacob Skousen at the 77th Annual Society for American Archaeology Conference in Memphis, TN

2011 **Remote Sensing and Flood Damage at the Common Field Site**. Paper presented at the 68th Annual Southeastern Archaeological Conference in Jacksonville, FL

2011 **Investigating Craft Production and Resource Utilization at a Mississippian Mound Center: A Mineralogical Analysis of Clays and Ceramics from the Common Field Site** (with Rebecca M. Barzilai and Maura E. Hogan). Poster presented at the 68th Annual Southeastern Archaeological Conference in Jacksonville, FL

2011 **The Mighty Mississippi and Magnetometry; Assessing Flood Impacts at the Common Field Site**. Paper presented at the 57th Annual Midwest Archaeological Conference in La Crosse, WI

2011 **Investigating Craft Production and Resource Utilization at a Mississippian Mound Center: A Mineralogical Analysis of Clays and Ceramics from the Common Field Site** (with Rebecca M. Barzilai and Maura E. Hogan). Paper presented at the 57th Annual Midwest Archaeological Conference in La Crosse, WI

2010 **Food, Pottery, and Personhood at a Mississippian Village: Ceramics from the Common Field Site**. Paper presented at the Indiana University Anthropology Graduate Student Association 4th Annual Symposium

2010 **Excavations at a Burned Mississippian Village: Preliminary Results from the Common Field Site in Ste. Genevieve, MO**. Paper presented at the 56th Annual Midwest Archaeological Conference in Bloomington, IN

2009 **Searching for Nuances in Mississippian Faunal Consumption: Digesting (Un)Dependable Dichotomies**. Paper presented at the Indiana University Anthropology Graduate Student Association 3rd Annual Symposium

2009 **It's Better to Burn Out Than to Fade Away: The Tale of a Burned Wall Trench House at a Yankeetown Site in SW Indiana** (with Susan M. Alt and Elizabeth L. Watts). Paper presented at the 66th Annual Southeastern Archaeology Conference in Mobile, AL

2009 **Looking For Yankeetown at Dead Man's Curve** (with Susan M. Alt) Paper presented at the 2009 Annual Midwest Archaeological Conference in Iowa City, IA

2009 **Investigating Yankeetown: Understanding Mississippian Transitions in Southern Indiana** (with Susan M. Alt, Rebecca Barzilai, Andrew Bradley, and Matthew Park). Paper presented at the Kincaid Field Conference, Metropolis, IL

Invited Presentations

2015 **Absences, Abandonments, and Living Life in the Mississippian Midwest.** Paper to be presented in the symposium *Mind the Gap*, organized by Zenobie Garrett at the 80th Annual Society for American Archaeology Conference in San Francisco, CA.

2014 **Reconfiguring Regional Interactions in the Face of Cahokian Decline: A View from the Common Field Site, MO**. Paper presented in the symposium *What's Happening on the Fringe: Testing a New Model of Cross-Cultural Interaction in Ancient Borderlands*, organized by Ulrike Matthies Green and Kirk Costion at the 79th Annual Society for American Archaeology Conference in Austin, TX

2013 **Carl Chapman's Legacy in Missouri Archaeology: Past, Present, and Future**. Paper to be presented in the symposium *Old Archaeologists, New Digs: Rethinking Mississippianization from Original Collections and Excavations*, organized by Sarah Baires at the 70th Annual Southeastern Archaeological Conference in Tampa, FL

2013 **Faunal Practices in a Mississippian Period Warscape and their Implications for Food Insecurity at the Beleaguered Common Field Site**. Paper to be presented in the symposium *Food: It's What's for Dinner*, organized by Sheena Ketchum and Tekla

Schmaus at the 112th Annual American Anthropological Association Meeting in Chicago, IL

2013 **Warfare and Daily Life in the Mississippian Midwest: A View from the Common Field Site, MO**. Invited presentation in Susan M. Alt's course 'Midwestern Prehistory' at Indiana University

2012 **Invited Guest Scholar** for the Crow Canyon Archaeological Center's "Chaco, Cahokia, and Mesoamerican Connections" Travel Program

2012 **Invited Speaker** on Magnetometry for the Indiana University/University of Illinois Archaeological Field School 'Discovering Cahokia's Religion'

2012 **Mississippian Salt Practices in the Midwest**. Invited presentation in Elizabeth Konwest's course 'Salt: The Rock We Eat' at Indiana University

2011 **Invited Speaker** on Magnetometry for the University of Illinois Archaeological Field School 'Mississippianization, Religious Conversion, and Identity Formation in Pre-Columbian Wisconsin'

2010 **Dwelling in the Bois Brule Bottom, Missouri: Reflections on the Mississippian Landscape in the Common Field Region**. Paper presented in the symposium *Mobility, Temporality, and Social Memory: Locating Objects and Persons in the Southeast* organized by Melissa Baltus and Sarah Otten at the 67th Annual Southeastern Archaeological Conference, Lexington, KY

2010 **Making Pottery and People: Materializing Shifting Mississippian Identities** (with Susan M. Alt). Paper presented in the symposium *Memory, Materiality, and Archaeology in the Indigenous Americas* organized by John Norder and Meghan Howey at the 75th Annual Society for American Archaeology Conference in St. Louis, MO

2010 **Violence and Warfare at the Common Field Site: Mississippian History in the Ste. Genevieve Region**. Paper Presented at the 1st Annual Ste. Genevieve History Conference

2009 **Materiality and Personhood at a Mississippian Village: Ceramics from the Common Field Site**. Paper presented in the symposium *Identity and Essence: Pathways to Personhood in the Southeast* organized by Alleen Betzenhauser, Melissa Baltus, and Sarah Otten at the 66th Annual Southeastern Archaeology Conference in Mobile, AL

2007 **Faunal Utilization at the Kincaid Mounds Site**. Paper presented in the symposium *New Research at Kincaid* organized by Paul D. Welch at the 64th Annual Southeastern Archaeological Conference in Knoxville, TN

Organized Sessions

2011 *Entangled Webs of Worlds: Movement and Culture Change* (with B. Jacob Skousen). For the 77th Annual Society for American Archaeology Conference in Memphis, TN

Invited Discussant/Panelist

2014 Invited panelist for the Midwest Archaeological Conference Student Workshop, "Current Issues in Midwestern Archaeology"

PROFESSIONAL SERVICE

MEMBERSHIPS

American Anthropological Association, Society for American Archaeology, Midwest Archaeological Conference, Southeastern Archaeological Conference, Missouri Archaeological Society

POSITIONS

Indiana University NAGPRA Policy Committee, 2014-present

Listed on the Indiana Department of Natural Resources Qualified Professionals Roster as a Principle Investigator for Prehistoric Archaeology, 2013-present

Social Media Outreach Coordinator, Organizing Committee for Theoretical Archaeology Group Annual Conference at the University of Illinois Urbana-Champaign, 2013-2014

Society for American Archaeology Student Affairs Committee, 2013-present

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UNIVERSITY SERVICE

MEMBERSHIPS

Anthropology Teaching Interest Group, Indiana University, 2009-present

Anthropology Graduate Student Association, Indiana University, 2008-present

Association of Graduate Student Anthropologists, Southern Illinois University, 2004-2008

POSITIONS

Co-leader, Anthropology Teaching Interest Group, Indiana University, 2011-2013

Secretary, Anthropology Graduate Student Association, Indiana University, 2010-2011

Co-Chair, Anthropology Graduate Student Association 3rd Annual Symposium, 2009

President, Anthropology Graduate Student Association, Indiana University, 2009-2010

President-Elect, Anthropology Graduate Student Association, Indiana University, 2008-2009

Secretary, Association of Graduate Student Anthropologists, Southern Illinois University Carbondale, 2007-2008

Treasurer, Association of Graduate Student Anthropologists, Southern Illinois University Carbondale, 2005-2006

PUBLIC OUTREACH

Lotus Blossoms Bazaar Educational Outreach Program, 2014
Documentation of Hinkle-Garton Farmstead Chicken Coop (with Dawn Rutecki), 2013
Brownie Girl Scouts Archaeology Try-It Badge Event at Indiana University, 2013
Brownie Girl Scouts Math and Science Day at Indiana University, 2011
Mississippian Peoples of the Midwest. Presentation and handouts prepared for Valle Catholic Grade School (with teacher Brenda Sumner)

PROFESSIONAL REFERENCES

Susan M. Alt (susalt@indiana.edu) Associate Professor of Anthropology, Indiana University Bloomington
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