

PREHISTORIC CULTURES OF THE CITY OF WILDWOOD ST. LOUIS COUNTY, MISSOURI

Prepared for:
City of Wildwood



Prepared by:
Joe Harl and Robin Machiran
Archaeological Research Center of St. Louis Inc.
2812 Woodson Road
St. Louis, Missouri
Phone: 314-426-2577, FAX: 314-426-2599
Email: arc@arcstl.com, Web Site: arc-stl.com

TABLE OF CONTENT

Introduction.....	1
Pre-Clovis Period (Before 9500 B.C.).....	7
Paleoindian Period (9500-8000 B.C.).....	9
Dalton Period (8900-7900 B.C.).....	12
Early Archaic Period (7900-6500 B.C.).....	17
Middle Archaic Period (6500-3500 B.C.).....	18
Late Archaic Period (3500-700 B.C.).....	23
Early Woodland Period (700-150 B.C.).....	31
Middle Woodland Period (150 B.C.-A.D. 300).....	34
Late Woodland Pottery (A.D. 300-900).....	39
Emergent Mississippian Period (A.D. 900-1050).....	46
Mississippian Period (A.D. 1050-1400).....	55
Protohistoric Period (A.D. 1400-1700s).....	64
Conclusions.....	67
Works Cited.....	73

FIGURES

Figure 1: Location of Wildwood in Eastern Missouri.....	3
Figure 2: Location of Prairie Communities Prior to European American Settlement.....	4
Figure 3: Surface Exposures of Burlington Chert.....	5
Figure 4: Tools Used By Groups In Siberia Also Found In America.....	8
Figure 5: Clovis and Folsom Points.....	9
Figure 6: Typical Display Wrongly Depicting Paleoindian Hunters Driving a Mammoth Into the Mud to Kill It.....	11
Figure 7: Rockshelter In Babler State Park Used For Storage Or Temporary Shelter.....	13
Figure 8: Storage Pit Containing Items Used For Making Chert Tools.....	13
Figure 9: Using An Atlatl To Throw A Spear.....	14
Figure 10: Spear Points Attached To Foreshafts.....	14
Figure 11: Dalton Points.....	15
Figure 12: Early Archaic Points.....	17
Figure 13: Depiction Of Middle Archaic Life.....	18
Figure 14: 1590 Engraving By DeBry Of Native Americans Cooking Fish.....	19
Figure 15: Hematite Plummets Used As Net Sinkers.....	19
Figure 16: Middle Archaic Points.....	20
Figure 17: Half Excavated Nut Processing Pit.....	22
Figure 18: Nut Processing Pit.....	22
Figure 19: Half Excavated Earth Oven With Some of the Limestone Slabs Left In Place.....	23
Figure 20: Burlington Chert Processing Stations Found at the Hayden Site.....	25
Figure 21: Late Archaic Projectile Points.....	26
Figure 22: Cache of Burlington Chert Preforms.....	27
Figure 23: Remains of a Permanent Late Archaic House.....	28
Figure 24: Aerial Photograph of a late Late Archaic Community Only Partially Excavated.....	29
Figure 25: Spear Points Used At the End of the Late Archaic Period.....	30
Figure 26: Early Woodland Projectile Points.....	31
Figure 27: Marion Thick Pottery Vessels.....	32
Figure 28: Black Sand Vessel.....	33
Figure 29: Some Ornate Vessels Produced During the Middle Woodland Period.....	34
Figure 30: Casper the Ghost Figurine.....	36
Figure 31: Middle Woodland Projectile Points.....	38
Figure 32: Late Woodland Pottery.....	39
Figure 33: Native Starchy Seed Plants Domesticated by Late Woodland Groups.....	41
Figure 34: Late Woodland Elbow Tobacco Pipe.....	42
Figure 35: Spear Points Used During First Half of the Late Woodland Period.....	43
Figure 36: Smaller Arrow Points Used During Late Woodland Period After A.D. 700.....	44
Figure 37: Cordage Twist Exhibited on Pottery.....	47
Figure 38: Emergent Mississippian Arrow Points.....	48
Figure 39: Late Emergent Mississippian Jar.....	49
Figure 40: Redslip Bowl.....	49

FIGURES continued

Figure 41: Lugs and Loop Handles.....50
Figure 42: Effigy Loop Handles and Lugs.....51
Figure 43: Globular Vessel.....52
Figure 44: Stumpware.....52
Figure 45: Burlington Chert Hoe.....53
Figure 46: Discoidals and Catlin’s Painting of Mandan Playing Chunkey.....53
Figure 47: Samples of Emergent Mississippian Effigy and Tobacco Pipes.....54
Figure 48: Bushnell’s 1904 Map of Mound Centers in the St. Louis Area.....55
Figure 49: Artist Recreation of Central Portion of Cahokia.....56
Figure 50: Sample of Marine Shell Beads and Whelks Shells From the Dampier Site.....59
Figure 51: God’s Mask Ear Ornaments.....60
Figure 52: Jar Introduced During Mississippian Period.....61
Figure 53: Arrow Points Produced During the Mississippian Period.....62
Figure 54: Oneoto Pottery Vessels from Western Missouri.....66

Introduction

Most people mistakenly think that the original inhabitants of eastern Missouri, who were here prior to the arrival of European settlers in the 1700s, had only simple cultures. They believe that these “Indians” wore little clothing, lived in Plains-style tepees, were guided by fear and superstition, generally deprived of many material goods, and had unsophisticated lives. They often are depicted as wild “savages” who constantly murdered each other in an endless cycle of blood feuds. It also is assumed that these people responded to their environment in a similar fashion as any plant or animal species, without culture and technology to free them from these constraints. These stereotypical views of prehistoric Native Americans are far from fact. Prehistoric groups were no different than people living today. Although their technology and aesthetic tastes differed from our own, they had many of the same desires and wants as us today, i.e.: to have a comfortable life, to find relief from the daily toil, to improve their standard of living, and hope that their children's lives would be better than their own. They developed very rich and vibrant cultures that only now we are beginning to appreciate. Understanding this past gives us a better comprehension of their amazing accomplishments. Even more importantly, some of their foods, medicines, and ideas could be reintroduced today to improve our lives.

Other than the few impressive earthen mounds that have survived into the present, the majority of these people's accomplishments, unfortunately, are hidden; buried beneath the ground. Their achievements are further minimized as many objects they produced did not survive into the present. Unlike the Egyptians, or various groups who lived in Mexico, who built magnificent cities out of stone, the people of this area had a resource not available to these groups, wood. They used wood to construct buildings, forming magnificent cities. Wood also was used to produce tools, make watercraft, cook their food, light their homes, and produce their art. Unfortunately, wood does not survive the ravages of time. We can only infer how wood was used by the stains left in the ground, or from charred fragments that managed to survive. In order to understand these past people, archaeologists in this region have to depend on careful detective work to gather as much information as possible from the fragile clues that did survive. This information can only be obtained if the objects are carefully excavated, and, similar to clues at a crime scene, it is important that the artifacts be documented in place along with their association from other remains. From this evidence, archaeologists can determine activities that took place and even infer the motivation behind these activities by past people.

Even simple things, such as differences in the surrounding soil color or texture can be important. Any time someone digs a hole into the ground, they change the color and feel of that earth. When people build a camp fire, the ground beneath that fire becomes scorched, turning a reddish color. Pieces of fire wood are carbonized and survive. Carbonized pieces from ancient fires can be sent to a radiocarbon laboratory, which can tell the approximate date of the fire. Other carbonized pieces can be sent to a paleoethnobotanist (an ancient plant specialist) who can determine what type of wood was preferred in the fires, and even whether the wood had been cut or picked off the ground as rotten logs. It is from these clues that we are just beginning to understand the remarkable cultures developed by the prehistoric inhabitants.

Past people were able to engineer such elaborate societies because eastern Missouri contains a wealth of natural resources that could be exploited. This land was a virtual “Garden of Eden” with a wide range of plants and animals that could be acquired for food, fuel, medicines, construction, or art. Native Americans had no problem in obtaining needed resources. In fact, these people generally worked far fewer hours and spent more time on leisure activities than we do today. The rivers: Mississippi, Missouri, Illinois, Meramec, and Cuivre, and tributary streams, such as Wildhorse Creek, today within the City of Wildwood, offered a wealth of fish and migratory birds (Figure 1). These waters also drew various mammals, reptiles, and amphibians. The nearby river valleys were filled with lush oak-hickory forests that provided a wide range of plant and animal species such as various nuts, fruits, deer, turkey, squirrel, or bear. Portions of the uplands, especially to the north and northeast of Wildwood, contained tall grass prairies, which supported other types of plants and animals including various grasses, berries, prairie chickens, and elk (Figure 2). Residents of this region had a “smorgasbord” of foods from which to choose. Life was anything but hard, and it certainly was not a constant struggle to survive.

In addition, this region offered an abundance of raw materials. Chief among these resources was Burlington chert present within the bedrock underlying most of Wildwood (Figure 3). This silica based stone could be easily worked into a wide variety of tools (Ray 2007:194-196). When first produced, these tools were sharper than any modern metal tool. This resource would have attracted the first humans to Wildwood. Burlington chert continued to be an important part of the local economy and at various times it was quarried and represented one of the earliest items traded to other regions.

Additional resources were acquired from the region near Wildwood, such as hematite and galena from the upper Meramec River valley. Hematite, the softest variety of iron ore, was used to produce a red pigment for secular and religious purposes, and for plummets (net sinkers). Galena (lead) was utilized to produce ornaments. Additionally, it was ground and added to objects to give them a glittery effect or used as a pigment. Sandstone, from portions of St. Louis, Jefferson, and Franklin counties, was used to smooth wood or bone objects similar to sandpaper today. Sandstone was further made into slot abraders, which served to dull the edges of spear points so that they could be more easily resharpened. Other times, abraders were used to produce pointed sticks or bones used as spears, spikes, awls (for perforating hides), fish hooks, needles, and hair pins. Sandstone slabs also were favored as grinding stones (metates) which were utilized to crush plants into a flour or paste. Salt was available from the many saline springs in this region. Animals were attracted to these springs, where they could be easily hunted. A thousand years ago, salt from these springs was extracted and widely traded, to preserve foods and enhance their taste.

Figure 1: Boundaries of the City of Wildwood in Western St. Louis County, Missouri

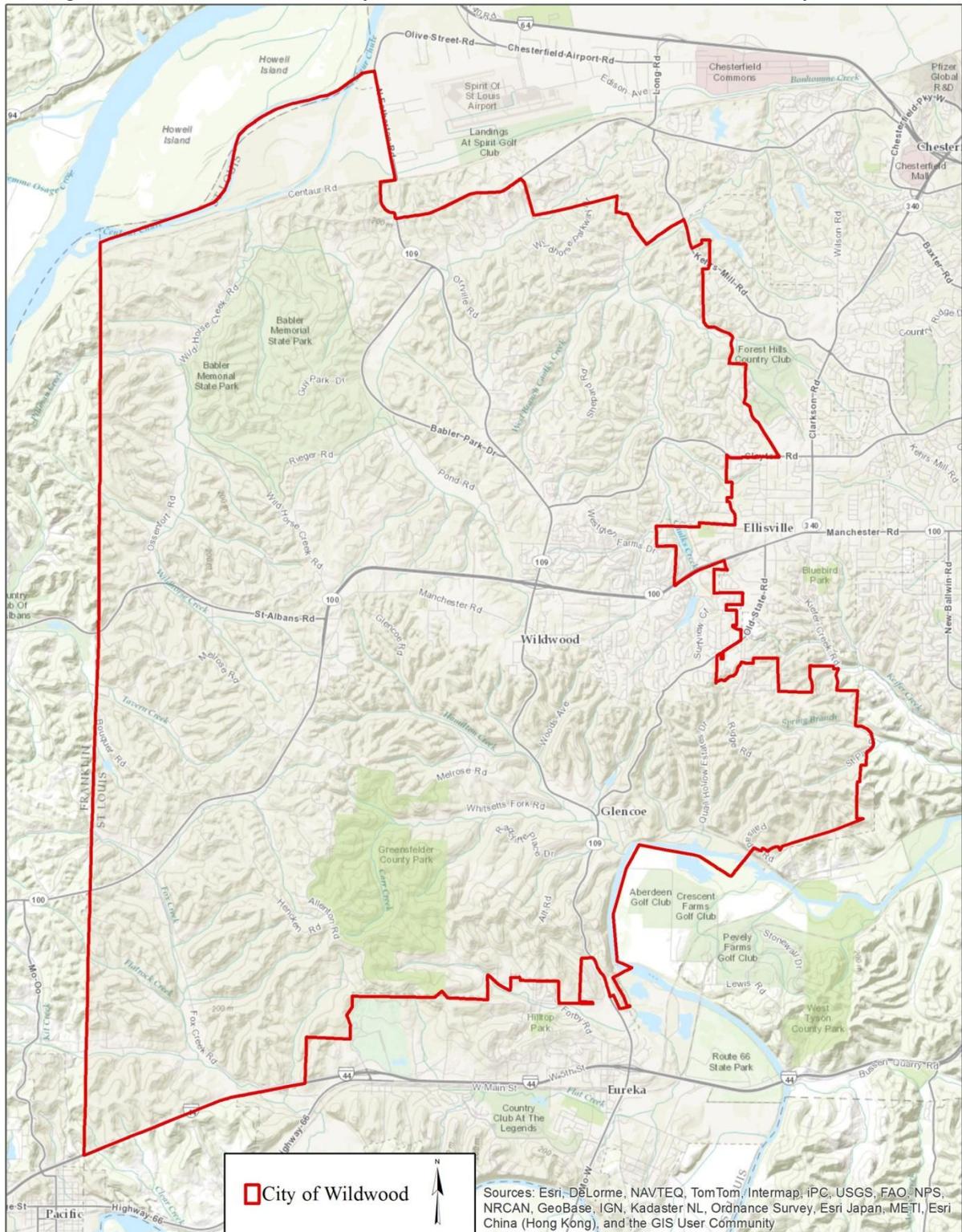


Figure 2: Location of Prairie Communities Prior to European American Settlement (Schroeder 1981: Map)

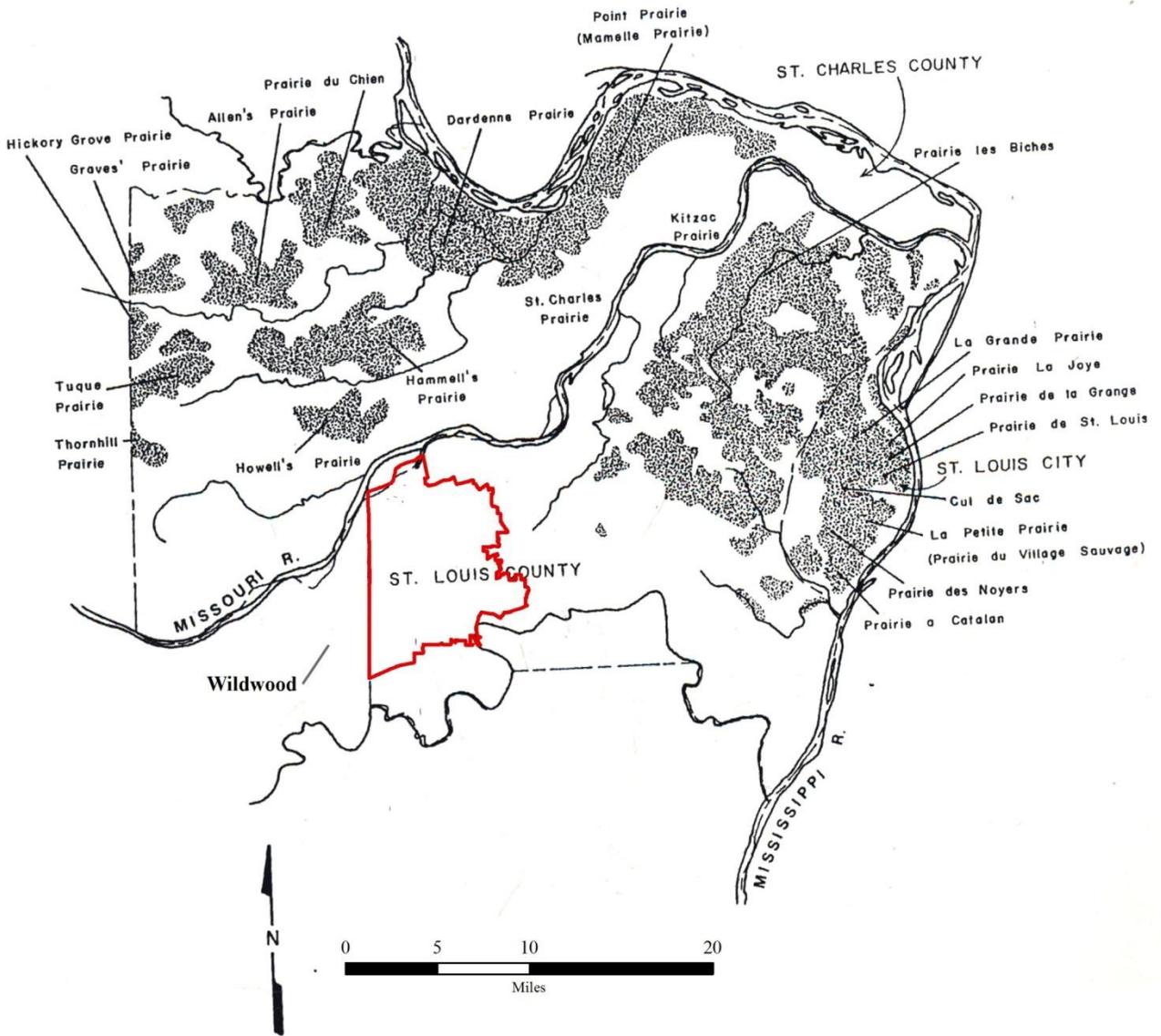
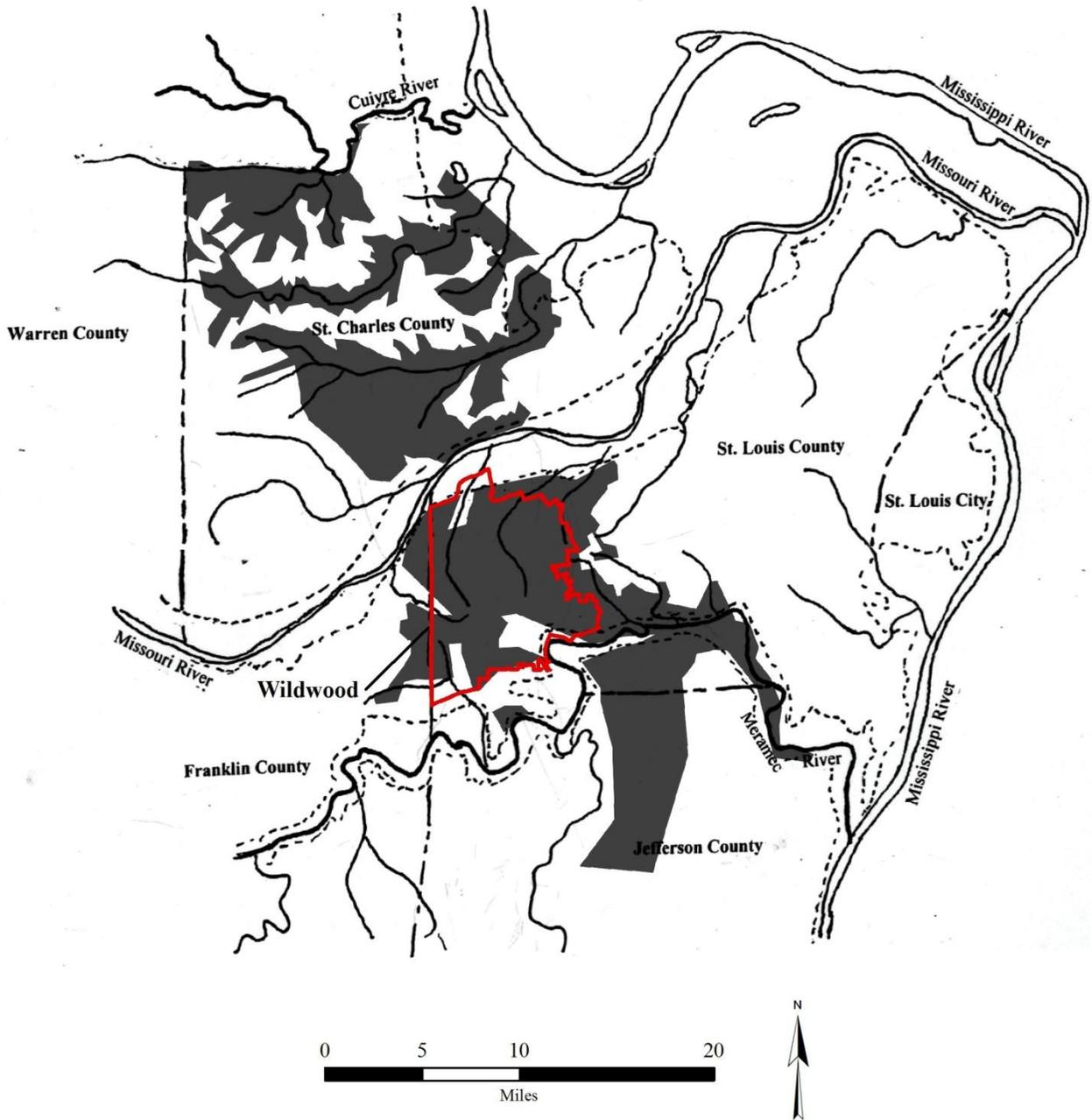


Figure 3: Surface Exposures of Burlington Chert
(after Anderson 1979)



The local waterways had an even more important function as they served as natural transportation routes. Residents of this area used watercraft to travel to distant locations to gather resources not locally available. Water routes enabled people to bring home more of these distant goods than they could carry on their backs. Some watercrafts were designed to hold over 50 people, and others carried large quantities of freight. At certain periods, traders traveled the waterways and obtained goods from as far away as the Rocky Mountains, the Great Lakes, the East Coast, and the Gulf of Mexico. People also established social ties with these distant groups; networking was as important in prehistory as it is for us today. These lines of communications allowed the residents of this region to keep up with the latest technologies and ideas.

Due to the rivers, Wildwood was at an important crossroads in this commerce and communications system. Ideas from across the country came to this area and influenced the prehistoric inhabitants. Wildwood, thus, has a potential wealth of cultural information that only can be obtained by further archaeological investigations.

Archaeological investigations in this area only have begun in earnest within the past 30 years, due to the passage of cultural resource protection laws. These laws require that all construction projects using federal funding, or located on federal lands, have a cultural resource study prior to initiation of construction. These studies document and determine the significance of archaeological sites (prehistoric and historic), architecture, or landscapes that could be impacted by the proposed development. They also identify burial grounds or burial mounds that are protected by various state and federal laws. The developer is expected to pay for these investigations, not the tax payers, since the developer will profit from the destruction of the community's cultural resources. It only has been due to the passage of these cultural resource laws that an appreciation of the amazing accomplishments of the prehistoric inhabitants has started to be developed.

Past people of this region changed their culture over time in order to take advantage of new economic and social opportunities. Unfortunately, few archaeological investigations have been conducted in Wildwood at this time. Most of these efforts were only surface surveys that identified only a small portion of the archaeological sites that exist. Information based on excavations in the surrounding region does provide some insights into the magnificent cultures developed by these people. The cultural sequence is based on overviews of eastern Missouri and western Illinois prepared by Chapman (1975, 1980), O'Brien and Wood (1998), Bareis and Porter (1984), Fortier et al. (2006), and is supplemented by recent cultural resource investigations.

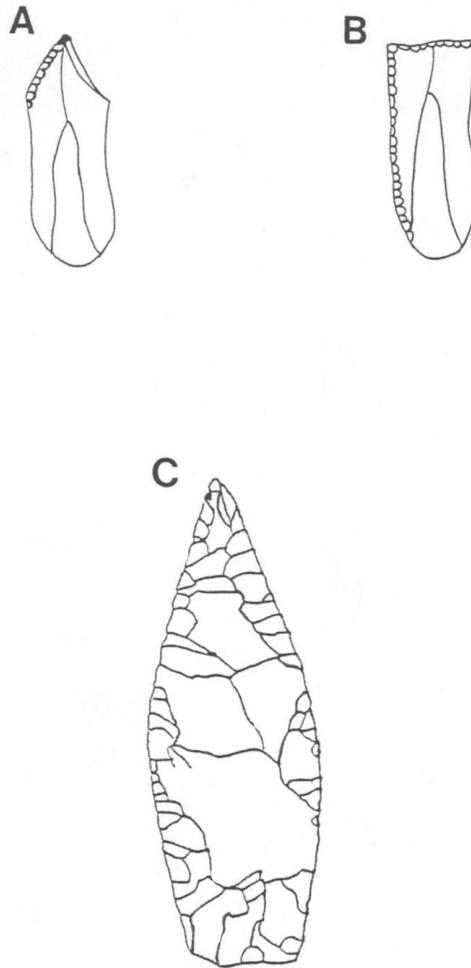
Pre-Clovis Period (Before 9500 B.C.)

The earliest defined cultural period is termed the Pre-Clovis. Sites dating to this time are extremely rare and are usually controversial. Many ideas have been proposed as to how people first came to this continent. Emerson Greenman (1963), and more recently Dennis Stanford (1983; 1997), of the Smithsonian Institution, have hypothesized that people from Europe walked across pack ice or became trapped on ice floes during the last “Ice Age”, the Pleistocene. They also suggest that Europeans may have crossed the Atlantic in hide covered, wooden frame boats. Similar watercraft are depicted on cave wall drawings in Europe dating to the Upper Paleolithic (40,000 - 10,000 B.C.). It is doubtful that people could have made such a journey (Straus 2000). Pack ice is not as solid as its name implies. Traveling across this ice would have been very dangerous due to the ice’s shifting nature; constantly forming fissures and changing patches of thin ice. In addition, the ice packs would have had few food resources that would have attracted people to make such a hazardous journey. Even if the cave paintings do depict boats, the small craft would have had little chance of surviving a trip across the Atlantic Ocean. The few individuals that could have made such a trip would not have been enough to populate the Americas as rapidly as took place.

More “fantastic” claims for the origins of the first people in America have been proposed such as the “Lost Tribe of Israel”; refugees from Carthage; sailors from Phoenicia, Iberia, China, or Africa; or survivors from Atlantis (Williams 1991; Feder 1990). These notions are particularly popular today with a number of books and television productions supporting these fantastic claims, even claiming that people from other planets populated or were the cause of many of magnificent accomplishments of these past people. The acceptance of these views is instructive for what it indicates about our society today, with a push to develop new “revisionist” histories regardless of the validity of the facts.

Although “revisionist” ideas have gained support among some of the general public, scientific evidence does not support these hypotheses. Instead, the first inhabitants of America appear to have come from Asia. Physically, Native Americans are similar to people of Asia. They have a similar skeletal system, dentition, blood make-up, and DNA. Cultural similarities also are evidenced by the presence of tools in Alaska and other parts of America (Chapman 1975:37-41) similar to ones used by the inhabitants of northeastern Siberia after 18,000 B.C. (Figure 4). The first people likely came to America across a land bridge where the Bering Strait is now located. The natural bridge, known as Beringia, was exposed at various times during the Pleistocene, from 100,000 years ago until 14,000 years ago, when sea levels dropped as much as 330 feet, due to water being incorporated into glaciers. It is most likely that people crossed the land bridge the last time it was exposed between 23,000 and 14,000 years ago. A single migration, however, did not take place, but as suggested by DNA analysis, various waves of people came across this land bridge at different times (Wilford 2012; Wade 2012).

Figure 4: Tools Used By Groups In Siberia Also Found In America
A. Graver, B. Gouge, C. Lanceolate/Spear Point



It is assumed that the earliest human populations lived in small nomadic groups pursuing megafaunal species such as mastodon, mammoth, and ground sloth. However, like most hunting and gathering groups, the subsistence base of these populations was probably diversified. It is likely that these populations utilized a settlement scheme similar to that used by later Paleoindians with habitations placed near Pleistocene lakes or bluff tops overlooking floodplains. The lack of identifiable sites could indicate that most of Missouri was not occupied at this time. It is more likely that these sites have simply been overlooked and would be difficult to distinguish from small sites dating to other periods. There are no temporally diagnostic artifacts which can be used to readily identify these sites. It is possible that such a site could exist within the limits of Wildwood, but has simply been overlooked at this time.

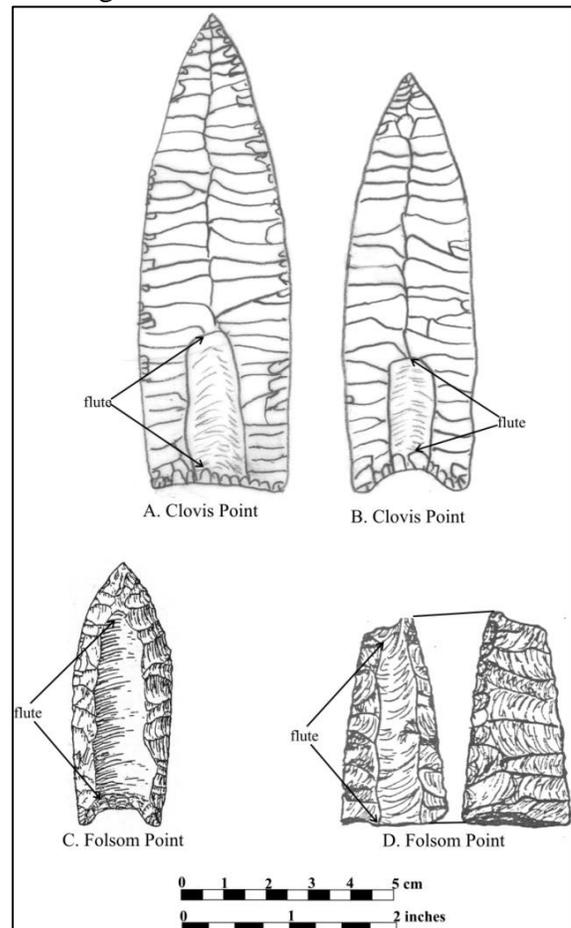
Paleoindian Period (9500-8900 B.C.)

The first definitive evidence of humans in North America was during the Paleoindian Period. Sites dating to this time have been identified at various locations across North America, including near Wildwood. Unfortunately, only a few of these sites have been excavated so little is presently known about the lifestyles of these people.

It is known that Paleoindian hunters used wooden spears tipped with stone projectile points. These early spear points were very delicately crafted, with collateral flaking. It is often assumed by most people that the earliest spear points would be more crudely made, because they are the oldest, with points becoming more refined with age. However, by the time people came to the Americas, they had been making spear points for over 100,000 years. In fact, Paleoindian points were the most delicately crafted points, likely due to people applying aesthetic values to these objects. Spear points created later tended to be more “crudely” manufactured as the value of hunting was reduced. A distinguishing characteristic of these points is the presence of a large flute, or flake removed from their bases. The flute was used to haft the point onto a wooden or bone foreshaft. The most common type of spear points used was Clovis (Figure 5:A-B). Near the end of the period, Folsom, with a long flute extending near the point tip (Figure 5:C-D); and various lanceolates, similar to long bladed spear points used by Plains groups during historic times, also were produced.

The Martens Site, named for Richard Martens, the current Treasurer of the Missouri Archaeological Society who discovered the site, was excavated just east of Wildwood, near Faust Park. Martens not only was able to show archaeologists artifacts representing many different prehistoric occupations collected across the 80 acre property, but was able to pinpoint the location of Clovis points within two acres. This property was scheduled for development in 1996, so Juliet and Toby Morrow, Richard Martens, and various volunteers excavated the site (Martens 2007; Martens et al. 2004; Morrow 1998). Their excavations revealed that Clovis points and other tools, made of local Burlington chert were repaired and sharpened at this location. Nine pieces of a greenish-gray felsite from Iron County, Missouri, nearly 75 miles to the south, also were used. Another piece was made from Penters Bluff Station chert, which came more than 260 miles away from IZARD County, Arkansas (Martens et al. 2004). Sites dating to this period commonly have tools made of stones coming

Figure 5: Clovis and Folsom Points



from hundreds of miles away suggesting that Paleoindian groups had a nomadic lifestyle traveling great distances (Koldehoff and Walthall 2004).

The Martens Site probably served as a hunting camp from which hunters could monitor the large sink holes to the north, near the Missouri River bluff margins, within the present location of Faust Park. These sink holes were plugged and would have been filled with water, attracting large megafaunal species. Ethnographic analogy of living hunters and gatherers can be used to explain the Martens Site. Lewis Binford (1983) found that the Nunamiut Eskimo used hunting stands placed along migratory trails and other locations that attracted game. Since the exact timing of the arrival of the game was unknown, one or two people would watch while others in the party, a short distance away, worked or repaired tools, made crafts, ate, conversed, slept, or played games. Similar activities took place at the Martens Site. Lookouts stationed at the bluff crest watched for herds attracted to the water filled sink holes. The rest of the party were located down the southern slope at the Martens Site where artifacts suggested they butchered or portioned meat with cutting tools, prepared animal hides with scrapers, worked wood, bone, or ivory with bipolar gravers (limaces), and prepared stone tools (Kay and Martens 2004). The southern slope also afforded a good view of the uplands towards the south, which could be watched for distant animals or to identify plants ready for harvesting.

At another Paleoindian site excavated in northeastern Jefferson County near Imperial, now Mastodon State Park, a group from the Illinois State Museum discovered direct evidence of tools with mastodon remains (Graham 1980; Graham et al. 1981). It appears that a Paleoindian group used this spot to ambush a female mastodon and her calf. Two Clovis points were found directly associated with the mastodon bones. This represented the first site in the eastern U.S. where a direct association between human tools and mastodon remains was established. Since then, other sites have been identified. Kill sites are often located near bodies of water. Nearly every depiction of Paleoindian hunters shows them driving large animals into the mud around lakes or marshes, supposedly to mire them down and make them easier to kill (Figure 6). However, if an animal is mired down in the mud, the hunters would be as well, not a good place to be with a wounded animal. Also this was not a good spot to butcher animals as muddy meat would spoil quicker. It is more likely that areas near waters were monitored similar to Paleoindian hunters watching the plugged sink holes from the Martens Site. Hunters would then pick out the weaker members who lagged behind as the herd was leaving these watering places. This could be what happened at Mastodon State Park where hunters attacked a calf as it remained behind the rest of the herd leaving the nearby salt springs. The mother trying to protect her offspring also was killed. Even more likely is that the mother was sick or hurt, remaining behind the rest of the herd, and her calf stayed with her.

Figure 6: Typical Display Wrongly Depicting Paleoindian Hunters Driving A Mammoth Into the Mud To Kill It



Most of the recorded Paleoindian sites in eastern Missouri region were situated on bluff tops, or high terraces along the major rivers, with the majority being along the Missouri River. It may be that this river valley was preferred over other locations, but it is more likely the result of incomplete reporting of sites. Upland locations may have been selected for habitation because the river bottoms would have been wet and swampy during this period. Elevated positions also allowed the people to monitor the surrounding area for resources.

Present evidence suggests that Paleoindian groups hunted megafaunal species, but Meltzer and Smith (1985) argued that these people's diet was more diverse. Similar to other hunting and gathering groups, they also collected smaller animals, and various plants species of nuts, seeds, berries, and fruits. No Paleoindian sites are presently recorded within Wildwood, but this would have been a very good location for such a site, which likely has been overlooked at this time.

Dalton Period (8900-7900 B.C.)

The Dalton Period represents a transition from more nomadic settlement schemes, covering large areas, to strategies based on seasonal rounds within more restricted territories. Family units moved from one area to another as resources were available for exploitation within their territories. They then returned to the original location the following year to repeat the cycle. In this way, people would not have to carry all of their equipment with them. Why carry nut processing tools from a fall camp to a winter or spring camp where they were not needed? Instead, these tools were stored in pits or rockshelters (Figure 7), where they would be ready for use the following year. Although it is falsely assumed that these early people lived in rockshelters and caves, they actually resided in shelters constructed of wood. However, since the shelters were occupied only for a short duration, these homes were not substantial and left little evidence behind. Storage pits, within these habitations (Figure 8), would have been covered when people left, and their locations sometimes marked by large stones making them easier to find when people returned. Groups continued to use this round until resources were depleted, then would shift to a new location, either within their territory or to a new territory, allowing the resources to replenish.

This switch from a nomadic lifestyle to a seasonal round may have been precipitated by a climatic change after the Pleistocene Epoch, in which changes in atmospheric patterns resulted in an increasingly warmer and drier climate. The spruce/cedar forests were replaced by oak/hickories, and broader portions of the uplands were covered by grasses. Large numbers of animal species became extinct due to this climate change. Graham (1980), however, found that the environs had already changed to oak/hickory forest when the mastodons were killed at the Mastodon State Historic site in Jefferson County. This suggests that mastodon could have survived within these forests. Horses and camelids (ancestors of modern camels, llamas, and alpacas) could have survived after this environment changed as well. Some species may have become extinct due to overhunting. A more likely explanation is that a combination of climatic change, and overkilling by Paleoindian hunters, contributed to the extinction of many animal species in the Americas; e.g., mastodon, mammoth, ground sloth, Pleistocene bison, camelids, and horse.

At the end of the Pleistocene, groups across North America diversified as they altered their cultures to best take advantage of unique environments. In the Wildwood area, large animals such as deer were hunted, but small game also was important. Animals were captured using snares, traps, or spears thrown with the aid of atlatls (Chapman 1975:125-129).

Figure 7: Rockshelter In Babler State Park Used For Storage Or Temporary Shelter



Figure 8: Storage Pit Containing Items Used For Making Chert Tools



An atlatl, an Aztec word for spear thrower, was made from wood or bone, with a hook at one end. Although a deceptively simple device, it allowed prehistoric hunters to throw a spear further and with more accuracy than thrown by hand (Figure 9). The atlatl made the hunter's arm longer and produced a greater whipping motion. It also provided additional force needed to propel the spear. Atlatls were probably used by the earliest humans in the Americas and by Paleoindian hunters, but this tool was certainly widely used by the time of the Dalton Period. Spears thrown from atlatls had a stone projectile point hafted onto a short, wooden foreshaft approximately 2 to 6 inches long, which was pushed into a longer spear (Figure 10).

Figure 9: Using An Atlatl To Throw A Spear
(Ohio Historical Society n.d.)

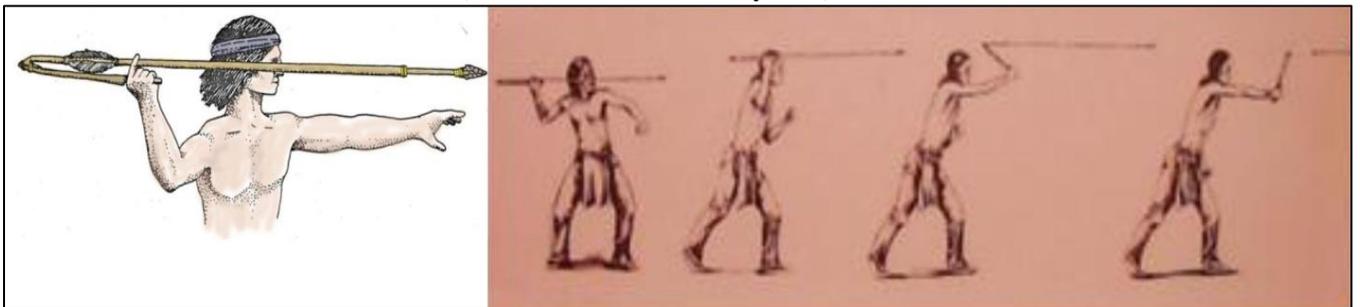


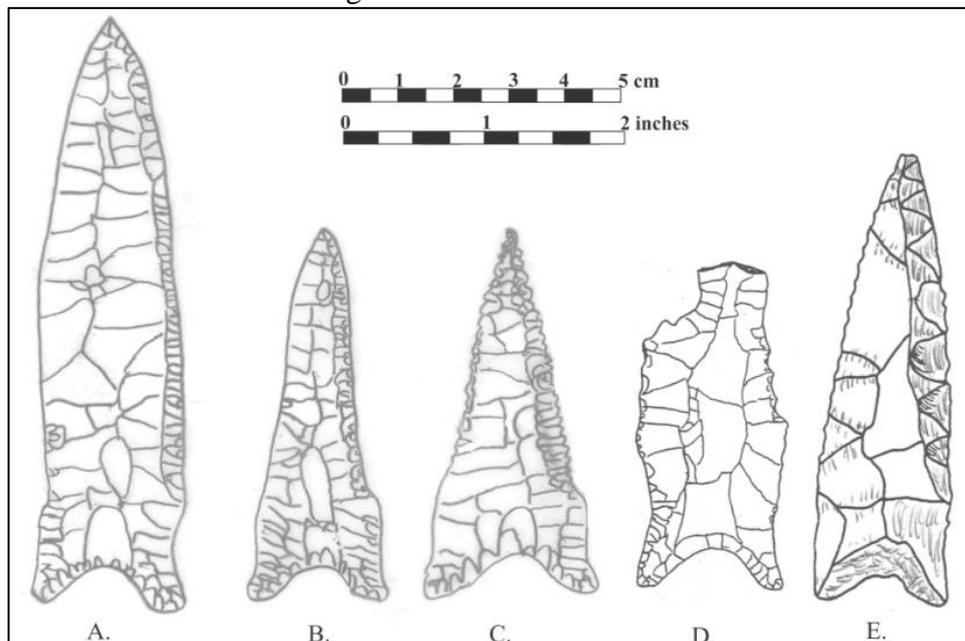
Figure 10: Spear Points Attached To Foreshafts



When the spear stuck an animal, the blow caused the longer shaft to fall off, leaving only the spear head and short foreshaft imbedded in the animal. A hunter could then pick up the long shaft, reload another spear attached to a foreshaft, and shoot again if needed. The short foreshaft made it less likely for the animal to pull the spear point out and kept the hunter from having to constantly replace the larger shaft, which would have broken if imbedded in a wounded animal. Further, it would have been difficult to carry several large spears, especially when hunting in dense forests. Instead, hunters carried one or two of these longer shafts and kept numerous spear points on foreshafts in a pouch. The sharp spear tips also could have been used as knives to butcher killed animals, with the foreshaft serving as a handle.

During the Dalton Period, fluted spears were replaced by partially fluted Dalton points (Figure 11) and lanceolate shaped tools. When reworking a Dalton point, it was generally sharpened only on its right side. The point was then flipped over and the right side sharpened resulting in the point's blade having a parallelogram shape in cross-section. O'Brien and Wood (1998:96) suggest "that beveling helped in stabilizing the flight of the dart . . . The next time you pick up an arrow shaft, notice that the fletching is applied slightly diagonal to the long axis of the spine, creating a beveled affect." They further argue that beveling was necessary due to the introduction of the atlatl during the Dalton Period. Yet as noted by Koldehoff and Walthall (2009:145), "This idea has no technological merit, having been discounted a century ago . . . and it ignores the dynamic nature (or 'life cycle') of chipped-stone tools, especially hafted bifaces. The occurrence of similarly massive distal impact fractures on fluted points, Dalton and Hi-Lo points, and notched Early Archaic points . . . indicates that a similar delivery system was used: the spear thrower." Thus, the atlatl was probably around as long as humans were in America and having a beveled spear tip did not cause the point to spin in flight. It may be that spear points were alternately sharpened in order to increase the longevity of their use. A parallelogram point would tend to be thicker and last longer than a point sharpened on both sides.

Figure 11: Dalton Points



Other tools used during the Dalton Period included blunt ended scrapers for working hides; digging tools to obtain plant roots and excavate features; nutting stones and milling stones for processing plants; and adzes, spokeshaves, and drills for working wood or bone. These tools indicate that a diversity of activities was performed at the seasonal camps, with woodworking being especially important. Gaertner's (1994) microscopic analysis of wear patterns on the edges of adzes revealed that some were used to work charred wood. Ethnohistorical accounts indicate that burning logs and hollowing them out using stone adzes was a preferred way of making watercraft. The bottomland locations of some Dalton sites also support the use of adzes in making watercraft (Koldehoff and Walthall 2004, 2009).

Many Dalton sites have been found in eastern Missouri, especially in western St. Louis County, near the City of Wildwood, where Burlington chert was exposed at the surface. Dalton groups highly prized this chert for tool production. Koldehoff and Walthall (2009:144) write:

Burlington chert, particularly from the Crescent quarries [of western St. Louis and northwestern Jefferson Counties], was one of the raw materials routinely exchanged by Dalton groups, often in the form of large Sloan-style Dalton points. Morse (1997:14) suggests that the Dalton chert trade was driven as much by sociological needs as by technological needs and that this trade helped to maintain social networks.

Unfortunately, the Dalton Sites near Wildwood represent only surface finds and no archaeological investigations have been conducted at any of these sites, so little is presently known about the lives of these people. Their habitation sites did tend to be located on bluff tops near the major waterways. Chapman (1975:107) suggested that bottomland locations only were used for short terms such as kill locations, or places where plant or chert resources were collected. The Nohta Site, however, discovered within the American Bottom just east of St. Louis, was located on a sandy terrace near a meander scar of the Mississippi River (Higgins 1990:31-58). It contained numerous Dalton points; eight adzes; and various flake tools used as hide scrapers, knives for butchering and cutting, and graters for notching wood or bone. Also recovered were storage pits, large hearths, and burned areas on the ground suggesting that this site was more than a processing camp or kill site, but a substantial habitation occupation, used as part of a seasonal round. A few Dalton sites were located within the interior uplands, far from apparent water sources. It is unclear if these represented habitation sites, gathering camps, or kill sites, but the uplands would have been lush than during later periods.

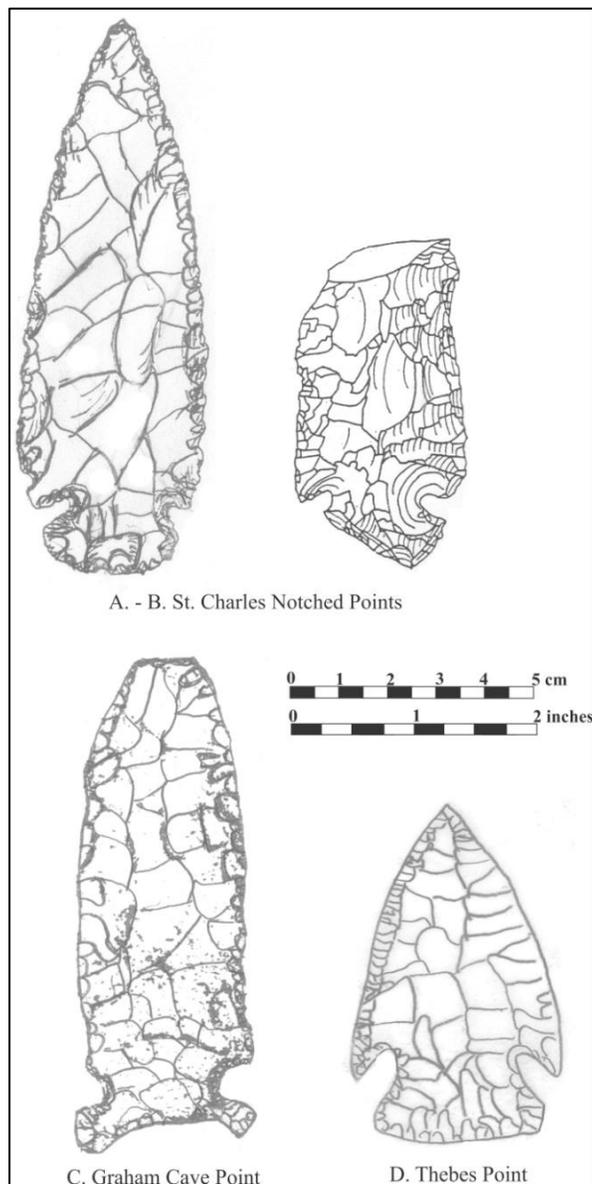
Early Archaic Period (7900-6500 B.C.)

Trends that started during the Dalton Period were modified during the Early Archaic as people continued to use a seasonal round within a defined territory (Chapman 1975:127-129). Although territories covering more than a 100 miles were used by Arctic hunters (Binford 1983), the very rich environment of the St. Louis region with its numerous waterways, surrounding lush oak-hickory forests, and tall grass prairies within the uplands, allowed people within this region to use a territory covering only 10-20 miles.

Spear points produced during this time included a number of diagonally flaked forms with corner notched or side notched hafting elements such as St. Charles, Thebes, Hardin, Graham Cave, and Rice lobed (Figure 12). A good explanation of these various point types has previously been presented by Carl Chapman (1975), and O'Brien and Wood (1998). Lanceolates continued to be produced during the first half of this period, albeit in small numbers, whereas fluted types were no longer created. The point blades typically were sharpened on only one side and have a parallelogram shape in cross section. These points, however, differed from those used during the Dalton Period (sharpened only on the right side) in that they were sharpened only on the left side of the blade (Figure 12:D). It is assumed by some artifact collectors that this change was due to more Early Archaic people being left handed than right handed. In reality, the change may have been due to cultural preference, with sharpening on the right side being considered "old fashioned".

Most Early Archaic sites were placed within the uplands near major streams, with only short term use of the river bottoms and the interior uplands. The Nocht Site in the American Bottom of Illinois discussed above, also had an Early Archaic occupation that "reads like the Who's Who in Early Archaic points" suggesting an intensive use as a habitation site occupied as part of a seasonal round (Higgins 1990:59). It's likely that similar bottomland sites could exist in eastern Missouri that were used as habitations as part of a seasonal round, but this can only be confirmed through excavation. Unfortunately, without excavation information from other Early Archaic sites, little is known about these people and their culture. It is likely that sites dating to this time exist within Wildwood.

Figure 12: Early Archaic Points



Middle Archaic Period (6500-3500 BC)

During the Middle Archaic Period, evidence of global warming took place between 6500 and 3000 B.C., known as the Hypsithermal Climatic Episode. During this warmer and drier time, the prairies expanded within the uplands and broader portions of the bottomlands. Asch et al. (1972) argued that the Illinois River valley, similar to the Missouri River and Wildhorse Creek valleys, acted as a buffer against the drying Hypsithermal Climatic Episode. Investigations along the Illinois River indicated that the more protected valleys were exploited heavily by Middle Archaic populations because of the varied resources available within these bottoms (Brown and Vierra 1983; Jeffries and Lynch 1983; Lewis 1983). Warren (1982) discovered a similar settlement pattern in northeastern Missouri, along the Salt River. In eastern Missouri the number of sites doubled, with most placed on bluff tops overlooking the major rivers or their tributaries. At least six sites dating to this time have been discovered within the City of Wildwood.

These sites were placed at marginal zones between the forest, prairie, and riverine environments, providing a variety of resources easily accessible to inhabitants. One of the results of the drier climate was that the water table dropped, exposing terraces along the rivers and their major tributaries. These terraces were high enough that they were rarely inundated and could be used for habitation. Shallower streams allowed increasing numbers of mussel and fish as well as making these resources easier to collect. By using nets, hundreds of fish could be caught at one time (Figure 13). These were placed over a smoky fire in order to preserve the meat (Figure 14). The nets were held down by using tear dropped shaped plummets made of hematite, the softest form of iron ore (Figure 15). In addition to fish, the nets occasionally captured amphibians and reptiles, e.g., turtles, frogs, and snakes that also could be eaten. Further, the dropping water table would have exposed new lands that would have been conducive to the growth of first line plant species, such as lambsquarter and knotweed. These plants produce starchy seeds, similar to corn. Interior upland sites were occasionally used, but less commonly than during the previous periods, and may represent short term hunting camps or plant gathering stations.

Figure 13: Depiction Of Middle Archaic Life (Fagan 1991:370)

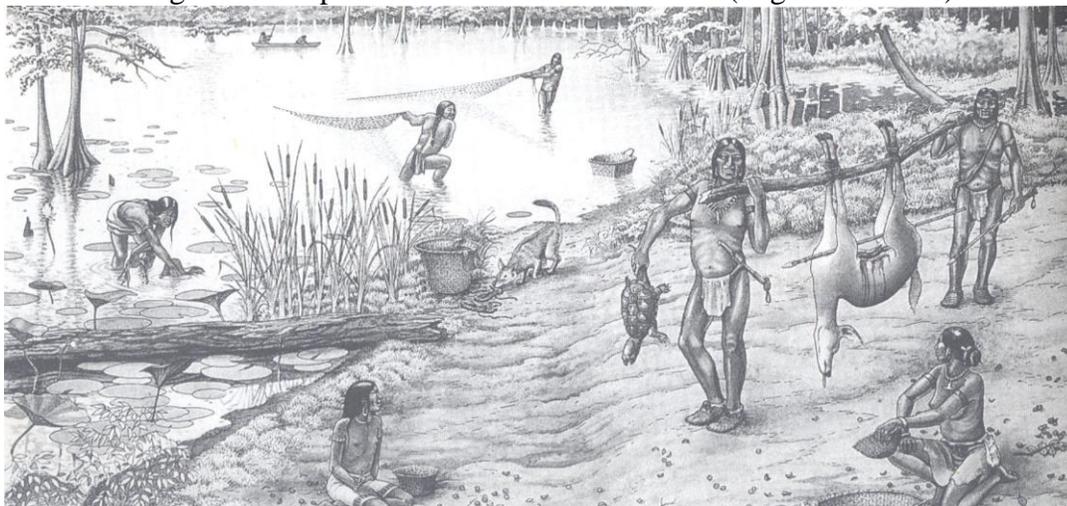


Figure 14: 1590 Engraving By DeBry Of Native Americans Cooking Fish
(Fundaburk 1958: Image 55)

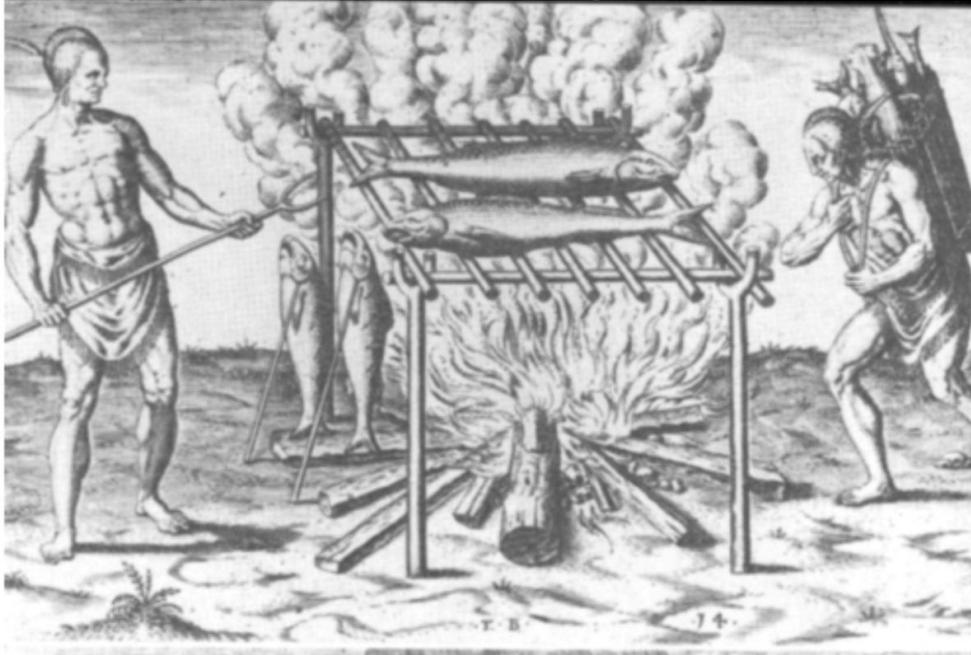
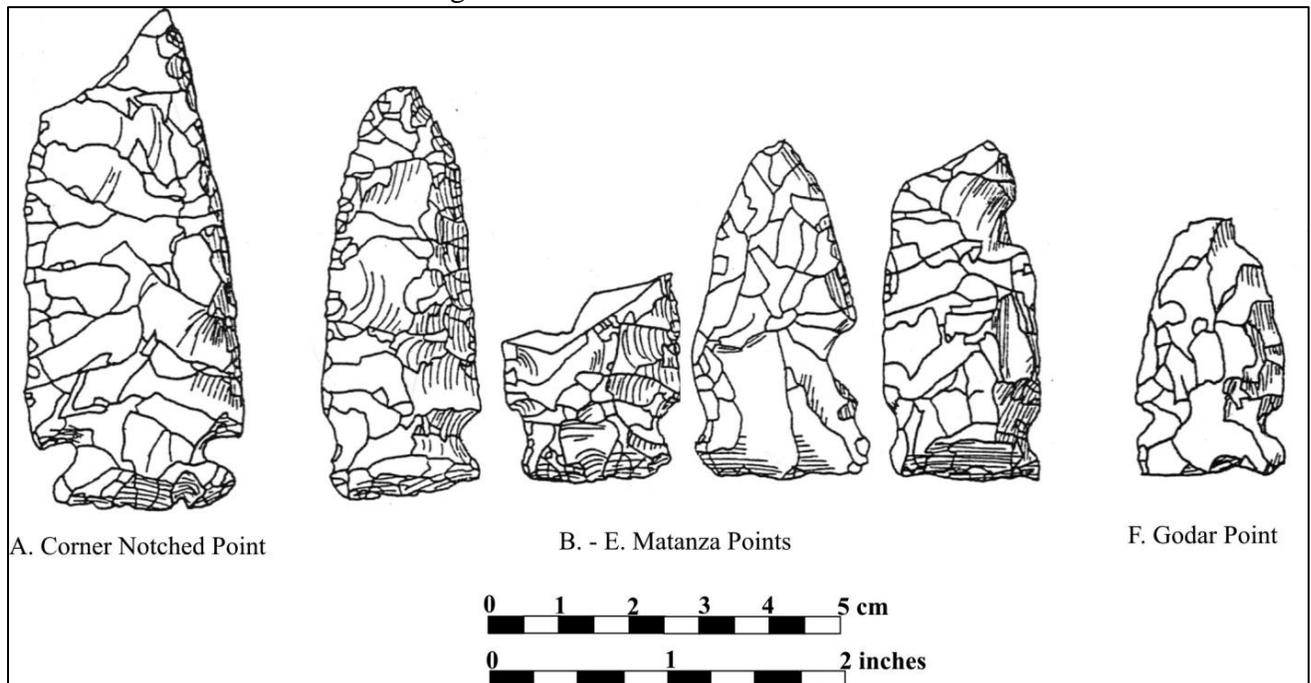


Figure 15: Hematite Plummets Used As Net Sinkers



Spear points recovered from Middle Archaic sites tended to be side notched forms (Figure 16). They were no longer alternately beveled from sharpening only one side, instead both sides were sharpened. These points were less carefully made than earlier varieties, perhaps suggesting a decreased reliance on hunting and an increased reliance on plant and fish in people's diet.

Figure 16: Middle Archaic Points



Although a diversity of resources was utilized during this period, certain items were favored. The quantity of certain species, in particular hickories and mussel shells, resulted from people being more selective in the foods that they consumed. Specialized tools were developed to more efficiently procure and process these preferred foods. A favored food was nuts. Nuts could be cracked open and their meat extracted, but Middle Archaic groups developed a more efficient technique for extracting nut meat. As McElrath (1986:83-84) writes:

Most techniques of processing large quantities of nuts involve parching and/or boiling. These methods are not necessary for processing walnuts or hickory nuts since they can be eaten raw simply by cracking the nuts open and picking out the meat. As several researchers have pointed out, however, this is not an economical way of capturing energy because of the length of time necessary to process a relatively small amount of nuts. It is much more efficient to boil the already cracked nuts, which will serve to separate the nut oil, which can be skimmed off the surface, and which will cause the nut meat to float in suspension for easy straining.

This process was achieved by using shallow basin pits lined with hides or mats to hold water, but as noted by McElrath and Fortier (1983:8) and Emerson (1984:330), these features were often situated in clay subsoils which could hold water. Nuts were processed by placing several of them within a concave depression on a nutting stone (Figure 17); then, a hammerstone or a mano was used to crush them. The crushed nuts, including the shells and nut meat, were then placed into a pit filled with water. The water may have been brought to a boil by adding a heated stone (Figure 18). Nut oils, rich in fats and proteins, would float to the top of the water solution, and was skimmed off by using a gourd or wooden ladle. The oils high in fat and protein could be added to meals, or drunk as a high energy drink, the first “sports drink”. Nut meats, due to their density, would float near the center of this watery solution and were removed by using strainers made of grass fiber. The nut meat could be eaten raw, mixed with foods, or ground on a metate to produce flour or a nut soup. Heavier nut shells settled on the bottom of the pit, and were collected and used as fuel in fires. In fact, Middle Archaic groups were so efficient at processing nuts that nutshells generally outnumbered wood in their fires. This process also was used to remove tannic acids from acorns, poisonous to humans, making these nuts edible. Processing walnuts within pits did not work as effectively, however, because the meat would not float in suspension and its oils would have contaminated the meat. Walnuts had to be cracked open and the meat extracted from the shell by hand. Middle Archaic groups, similar to us today, looked for labor saving devices to improve their daily existence. Nut processing pits allowed large quantities of nuts to be easily processed and in less time.

Recent evidence also suggests that the first cultigen, *Cucurbita pepo* (field pumpkin, Ozark melon, or Summer squash), was grown during this period (Asch and Asch 1982). Although it could be eaten, its rind was probably just as valuable and used to produce containers, ladles, or net floats. Although only six Middle Archaic sites have been identified within Wildwood, the protected location of Wildhorse Creek and other stream valleys and the presence of the Missouri and Meramec rivers, would have been an ideal location for sites dating to this time period.

Figure 17: Half Excavated Nut Processing Pit.
Stone Served As A Nutting Stone, Side Showing, With A Metate On The Opposite Side.



Figure 18: Nut Processing Pit. Stone On Right Used To Heat Watery Solution,
Stone On Left Was Attached To A Wooden Handle
And Used To Stir The Water/Nut Solution.



Late Archaic Period (3500 – 700 B.C.)

The Late Archaic Period is characterized by a greater diversity and number of sites than associated with the previous cultural periods. This has been interpreted as being due to a relatively rapid increase in human population levels. It is often assumed that this overpopulation resulted in people having to use smaller territories and fewer resources (Binford 1983:203-204; Zubrow 1975; Cohen 1977). Supposedly, these events forced people to settle down and start living in permanent communities. In order to improve their economic base, these groups had to modify certain plant and animal species to increase their productivity beyond what the natural environment could normally support, resulting in the development of horticulture. As they became less mobile, trade was necessary in order to obtain minerals and foods that were no longer available.

Population and food pressure models have produced a biased view of past human behavior, depicting prehistoric people as passively reacting to changes in their environment as would any plant or animal species. Prehistoric humans appear “. . . as predictable automata, driven by covering laws . . . controlled by ritual according to universal expectations; there is no sense in which they actively manipulate and negotiate ideologies” (Hodder 1986:25). Past models also fail to account for the opportunity costs, the initial start up costs, incurred when adopting a new strategy. These costs can be material as well as social and psychological (Schneider 1974; Limp 1977). A group in a declining economy, such as predicted by the population and food pressure models, would find it difficult to take on these added costs of experimenting with domesticating plants, with its many attempts and failures.

Evidence from eastern Missouri suggests that instead of the economy declining, it was actually expanding through improved food technologies, e.g., utilizing pits to more effectively process nuts (Stafford 1985; McElrath 1986:83-84), increased reliance on diverse and easy to capture riverine resources, and experimentation with plant cultivation. Another innovation that was adopted by the beginning of the Late Archaic Period was the use of deep earth ovens. Instead of cooking foods over a fire placed on the ground, a pit was dug two to three feet below the surface (Figure 19). Heated limestone cobbles were placed in this pit. Food was placed on top of these heated stones and then more hot limestone added. The pit was then sealed with earth. The narrow confines of the pit tended to radiate heat for many hours, cooking the foods inside (Hough 1926). Experimental archaeology using earth ovens revealed that

Figure 19: Half Excavated Earth Oven
With Some of the Limestone Slabs
Left In Place



foods could be cooked in them just as quickly as in a modern oven, but it comes out juicier and has a smoked flavor.

These innovations were not rapidly adopted, but were experimented with, and gradually added to the existing subsistence system over several hundred years. Harl and Nixon (1992) suggested that the Late Archaic Period, in eastern Missouri, could be divided into several distinct temporal phases, similar to those defined by McElrath et al. (1984) immediately across the Mississippi River within the American Bottoms, Illinois. The main change that occurs throughout this time was a shift towards a more sedentary lifestyle and the addition of horticulture to the hunting and gathering system.

At the start of the Late Archaic Period (3500-2700 B.C.), people continued to use a seasonal round, but apparently during the fall and likely during the winter months, some of the scattered groups came together into a larger community. These gatherings were important because for hunters and gatherers the most uncertain times were when resources began to be depleted within their territories. They devised several schemes to offset this eventuality. By the beginning of the Late Archaic Period, hunting was probably as important in terms of reconnaissance as in the meat it provided. During these expeditions, hunters would note which resources were ready to be harvested and spot new ones. Another practice was to explore new territories looking for open lands and new resources; sometimes, this was a rite of passage for children into adulthood. It also was important to network, or exchange information, with adjacent groups. This was conducted since at least the Dalton Period (Walthall and Koldehoff 1998, Koldehoff and Walthall 2009).

Fall gatherings, however, increased the opportunities for these interactions, allowing diverse groups to bond together by performing joint hunting or gathering expeditions. Friendships were established, which resulted in the exchange of goods and information concerning potentially new territories, resources, or technologies. Even marriage partners may have been chosen from different groups, preventing the harmful effects of inbreeding within a single population. Most hunting and gathering groups, documented by anthropologists during the 19th and 20th centuries, understood the problems that can result from intermarrying, often requiring that marriage partners come not from adjacent groups, but distant ones. These kinship ties promoted harmony between groups. If food resources became depleted within a territory, or if dissension developed within the group, then a person or family could move in with their in-laws. It is often assumed that hunters and gatherers were stagnate, segregated groups, who had little to do with outsiders. The opposite seems to be true as these societies were very fluid; people easily moved from one group to another based on the best opportunities. Ceremonial activities also appear to have been conducted during these fall gatherings, which would have served to further bind these different groups (Morse and Morse 1983:128-131; Harl 1999).

By the middle of the Late Archaic Period (2700-1900 B.C.), groups began exchanging goods over long distances. Most of the objects traded were luxury items, exotic pieces that brought the user increased prestige. For example, galena used to make ornaments, and hematite used to produce a red pigment in sacred and secular activities from the upper Meramec River valley has been found as far away as the Poverty Point Site, located near the mouth of the

Mississippi River (Walthal 1981). A precious resource available in the Wildwood area that was widely sought after was Burlington chert.

An understanding about the exchange of this chert was obtained by excavations at the Hayden Site, just east of Wildwood (Harl and Wright 1995). This site was placed on a bluff top above where Bonhomme Creek cut into the lower slope, exposing a bed of Burlington chert. This chert was worked at lithic processing stations (Figure 20), placed south of the habitation area, where it was made into preforms and completed projectile points

Spear points popular during the Late Archaic Period tended to have a very long blade (Figure 21). These longer points may have been popular because they were conspicuously appealing, bringing the user increased prestige. Preforms and completed spear points were widely traded, and often found in caches (Figure 22).

Figure 20: Burlington Chert Processing Stations Found at the Hayden Site



Figure 21: Late Archaic Projectile Points
 A.-D. Etley, E.-F. Stone Square Stemmed, G.-H. Burkett,
 I.-K. Osceola, L.-M. Corner Notched Forms, N.-O. Afton

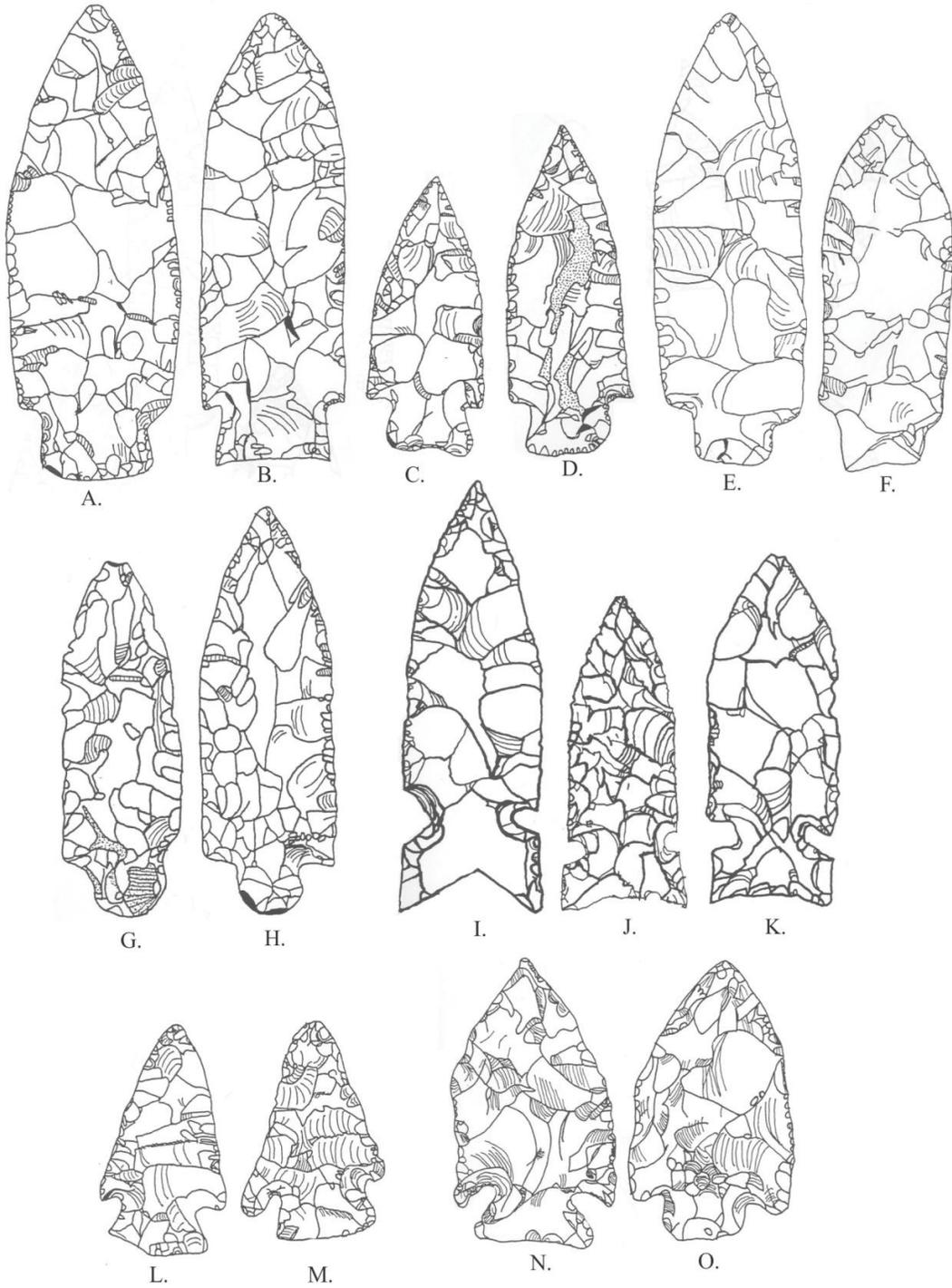


Figure 22: Cache of Burlington Chert Preforms



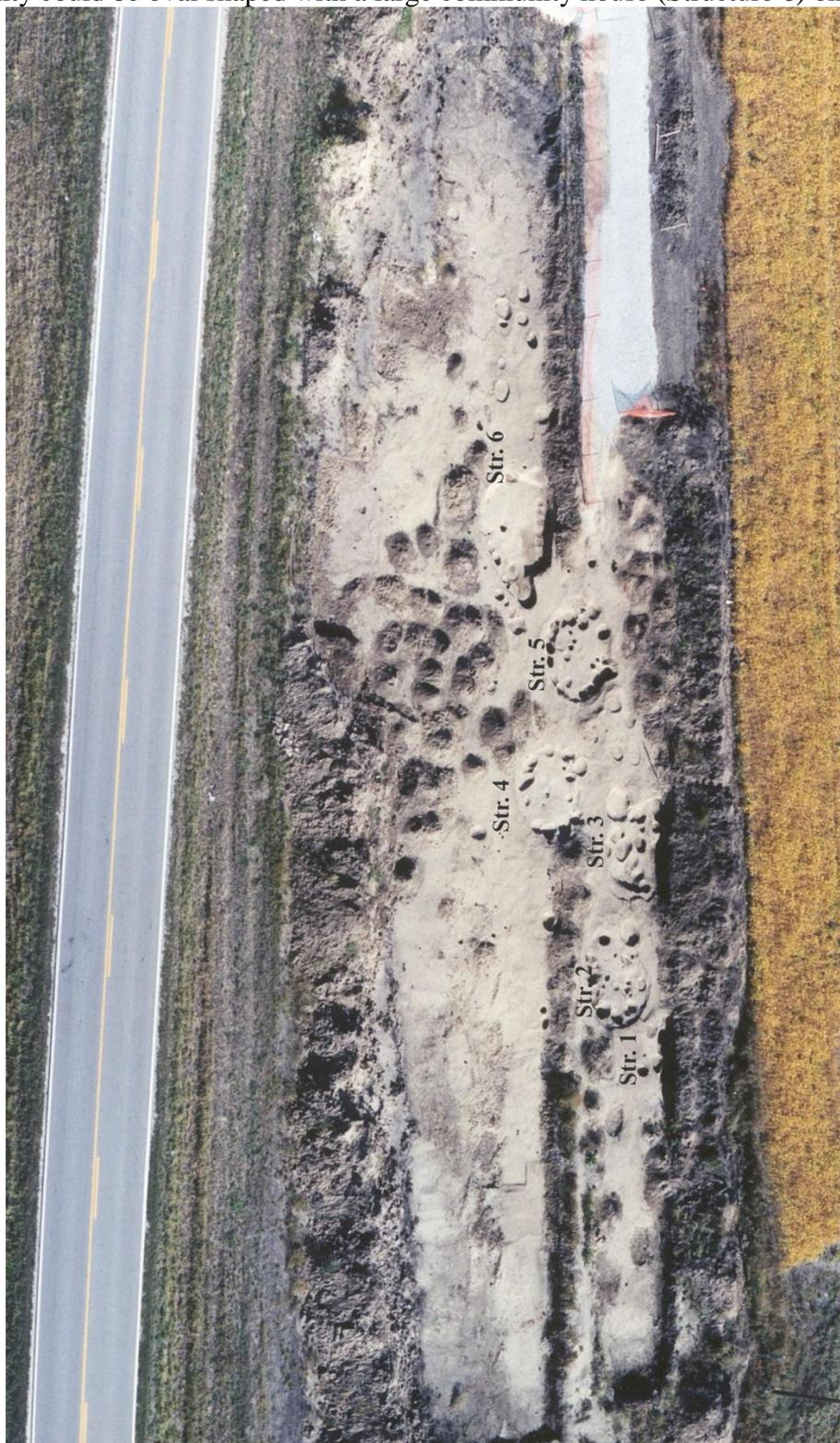
It likely was due to the growing desire for certain resources, such as Burlington chert, that some groups began claiming these resources, and established permanent or nearly permanent settlements near these places. Instead of permanent communities developing due to population pressure or declining resources, they more likely occurred because people were taking advantage of new social/economic opportunities. The Hayden Site also had a burial mound placed on the Bonhomme Creek bottoms near the exposed Burlington chert. Other communities had burials capped with limestone slabs to mark and protect these graves. Similar to permanent communities, these burials were meant to reinforce a group's claim to local resources, which had previously been accessible for all to use. Although these societies were predominately egalitarian, some inhabitants benefitted more from the trade than others, resulting in the beginnings of social differentiation. These elite individuals probably had access to more of the trade goods, especially exotic items, and were buried in mounds instead of a common burial ground.

The end of the Late Archaic Period (2700-700 B.C.) is marked by the decline in the long distance trade networks. Resources utilized were acquired from local sources. However, despite the decline in trade, people continued to live in permanent communities as suggested by the presence of hundreds of earth ovens and storage pits, and the first evidence of more substantial, permanent homes (Figure 23). These communities also were more organized (Figure 24). Although these groups still hunted and gathered, they did experiment with cultivating a number of plants including lambsquarter (chenopodium), knotweed, and maygrass, which originally came from the southern U.S. As indicated above, these plants produced a starchy seed that were altered so that they were larger and had a thinner seed coat. Marshelder (sumpweed) also was raised which had an oily seed.

Figure 23: Remains of a Permanent Late Archaic House
Note: House was placed in a partially subterranean basin.
Holes at edge of basin were not for posts, but various storage pits
excavated at different times. Remains of four other homes are in background.

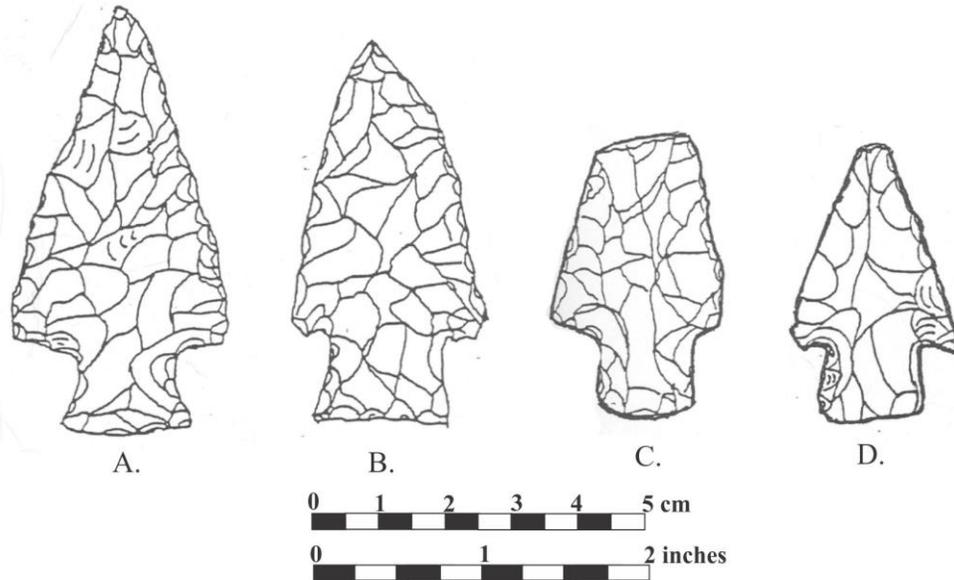


Figure 24: Aerial Photograph of a late Late Archaic Community Only Partially Excavated. Community could be oval shaped with a large community house (Structure 6) on east side.



Although some long bladed Etley spear points continued to be used, most projectiles produced at this time were smaller dart forms (Figure 25). It could be that with the lost of trade spurring on point production that having a long conspicuous point was no longer desired. The longer points would not have been very effective within the forest of the eastern U.S. because they would more likely break upon hitting a tree than the smaller dart forms.

Figure 25: Spear Points Used At the end of the Late Archaic Period

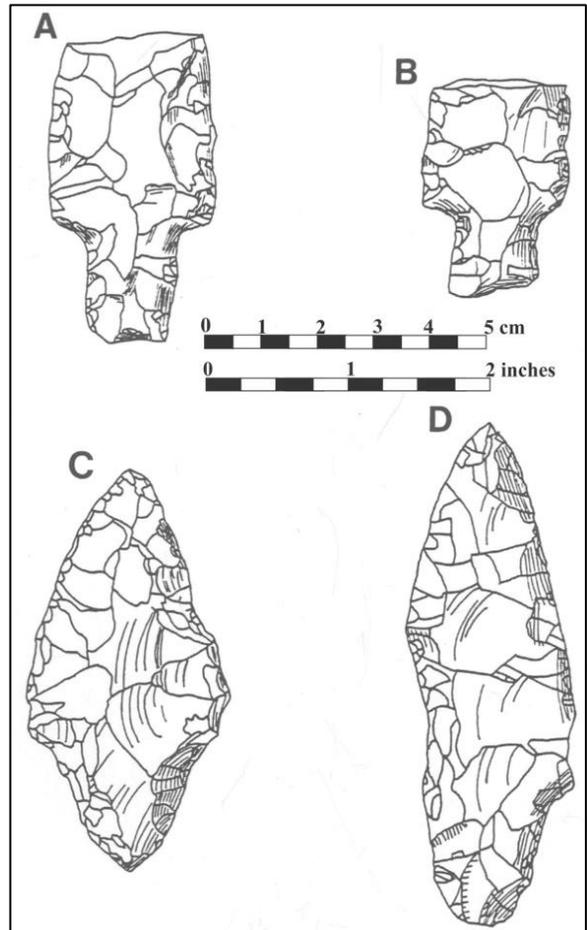


As archaeologists are unraveling this period of prehistory, it is becoming apparent that far from being “Archaic” that life was not a struggle to survive. Instead, people became more selective in the foods that they consumed, they experimented with other modes of production, established claims over local resources, and acquired a number of luxury goods, not necessary for survival, to make their lives more fulfilling and to set themselves apart from their neighbors. People also established permanent communities and experimented with horticulture, although overall they continued to be hunters and gatherers. Further work is needed at sites dating to the various phases of the Late Archaic Period to better understand the remarkable changes that occurred during this time. Wildwood presently has nine sites dating to this time, but there are likely many unrecorded sites, including two near the Coleman Slave Cemetery along Wildhorse Creek.

Early Woodland Period (700-150 B.C.)

In eastern Missouri, the Early Woodland Period may represent a continuation of the Late Archaic lifestyles. However, spear points preferred at this time were long stemmed Kramer, and contracting stemmed Burkett, Adena, and Gary (Figure 26). For the first time, pottery was introduced into the region as cooking vessels. Pottery first was manufactured along the east coast of South Carolina around 2500 B.C., during the Late Archaic Period (Sassaman 1993). These vessels were shallow, bowl-shaped, with thick walls. Grass fiber was used to hold the clay together during firing. Pottery technology may have spread south from that area along the coast line to Florida, and then across the northern portion of Florida to the Gulf Coast. From there, it could have spread north along the Mississippi River valley to eastern Missouri. Another possible route for the spread of this technology was along the Ohio River to the Mississippi River valley. It should be noted that pottery tempered with grass fiber also was associated with the Nebo Hill Site in western Missouri, at about the same time during the Late Archaic Period, and may have been independently developed in that area (Reid 1983, 1984). Regardless of the route by which this technology spread, pottery manufacturing was known by people at the mouth of the Missouri River by 700 B.C.

Figure 26: Early Woodland Projectile Points
A.-B. Kramer, C.-D. Contracting Stemmed



During the Early Woodland Period, pottery vessels were larger than those originally produced along the East Coast, or in western Missouri. They have a conical shape with thick walls, sometimes decorated with incised lines, and had flattened or rounded bases. A large quantity of sand or crushed quartzite was mixed with the clay as a tempering agent. A tempering agent was mixed in with the clay to prevent cracks from forming, when the clay vessel was fired. The most common types of vessels produced during this period are referred to as Marion Thick and Black Sand. Marion Thick is distinguished by having thick walls tempered with crushed rock. The exterior of these vessels was cordmarked and they typically have a flat, “flower pot” like bottom (Figure 27). Black Sand pottery, typically found north of St. Louis, contains a large amount of sand tempering giving the paste a sandy appearance. These vessels have medium thick walls, and their exterior has closely spaced cordmarkings (Figure 28).

Figure 27: Marion Thick Pottery Vessels

Rim



Bases

Exterior View



Exterior View



Lateral View



Lateral View



Figure 28: Black Sand Vessel (Chapman 1980:17, Figure 2-7B)

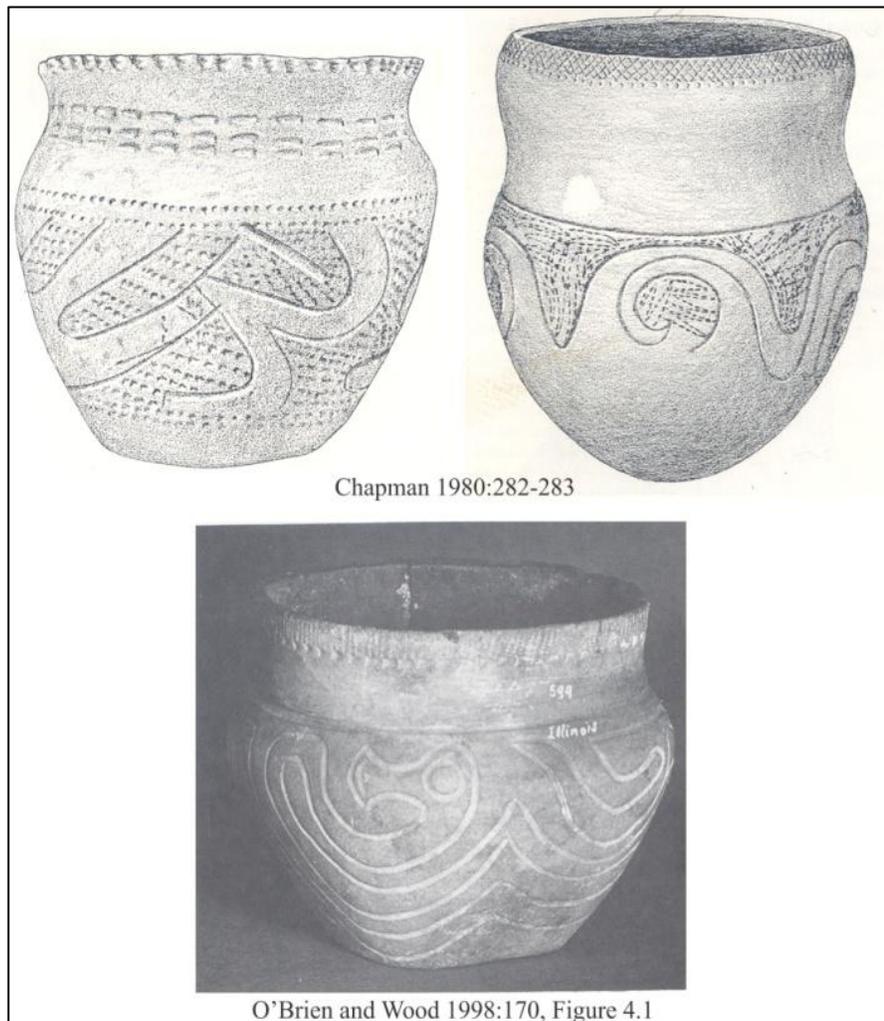


Few sites dating to this period have been identified in Missouri. It is possible that this region was abandoned during this time, but it is more likely that groups did not readily accept pottery, but continued to use a Late Archaic type of lifestyle, making these sites difficult to distinguish from earlier ones. Early Woodland sites also may be under recorded because most researchers identify them based solely on the presence of Early Woodland pottery and not by projectile points. The sites that have been found typically tend to be small temporary encampments that are situated on floodplains and terraces near rivers or major tributaries (Martin 1997:88-89), similar to those in Wildwood, but at present no Early Woodland site have been identified in this area.

Middle Woodland Period (150 B.C.-A.D. 300)

The Middle Woodland Period is known by the wide spread adaptation of pottery manufacturing. Most of these vessels, even those used in everyday cooking, were highly ornate and decorated (Figure 29). This reflects the large number of goods that was available to people as the result of the establishment of interregional exchange and communications network. Groups along the major rivers participated in this exchange system on an opportunistic basis with some communities becoming more involved in this network than others. Exchanged items typically consisted of exotic goods from distant locations. Shared ideas are implied by the widespread construction of burial and effigy mounds, and the widespread use of certain pottery decorations, such as the spoonbill duck image that represented a popular story of the time (Figure 29). Populations clustered into villages that were usually situated near perennial streams.

Figure 29: Some Ornate Vessels Produced During the Middle Woodland Period



Kay (1979, 1980) suggests that some settlements served as nodal communities where raw materials or manufactured goods obtained from smaller settlements in the surrounding area were gathered and exchanged for commodities in the larger trade network. These redistribution centers generally were placed at key locations along the trade routes, such as near highly desired resources or major intersections, such as at the confluence of waterways affording easy access to the smaller interior sites via the streams, but close to the major trade routes along the river. The centers often had mounds located on nearby bluff tops or next to them, further suggesting the importance of these settlements and their leaders.

The leaders of redistribution centers (also known as “Big Men”) gained social and economic advantage over the other residents. They probably achieved this status by manipulating the economic system. Most hunting, gathering, and horticultural economic systems operated through reciprocity in which a gift was expected to be repaid in the future (Mauss 1967). The exchanges did not have to take place at the same time, but the person who received the gift was expected to return an item of at least equal value within a certain length of time. Leaders in other places, for example, New Guinea, Africa, Asia, and along the Northwest Coast of America, where a similar economic system was utilized, exploited this system by entering into a form of economic and social competition. Middle Woodland leaders of larger communities may have manipulated the economic system in a similar fashion to gain control. Giving away gifts, throwing elaborate feasts, or granting special favors, may not have been altruistic, rather an attempt to gain prestige through generosity, cementing alliances, and generating obligations. As Mauss (1967:1) writes, the gift was actually “formal pretense and social deception”. Receiver was obligated to not only return a gift of equal value, but to better it. The gift was in essence a loan to be repaid with interest. If a person was not able to return the gift materially, they were obliged to return it in nonmaterial means, through friendship or allegiance to the leader (Schneider 1974). In this fashion, successful leaders were able to attract followers. This redistribution of wealth also guaranteed poorer individuals items which they could display or give away. As the status of those on the lower rung of society improved, these individuals increased their support of the local leaders.

The elite also used gift exchanges and other forms of social competition, in order to gain an advantage over elite members of other villages. Successful leaders were able to dominate competing villages by indebting them by giving away more extravagant gifts or throwing more elaborate feasts. If a village leader could not reciprocate, they would eventually lose prestige and the trust of the people. Residents of those villages would move to communities with successful leaders in order to take advantage of their economic success. The newcomers, in turn, would produce more goods for the leaders to trade, further improving their position. These elite individuals and their advisors, similar to bankers and brokers today, had to keep track of the changing patterns of debts, rates of exchange, and consumer tastes in order to maintain their position. Yet, they did not have the benefit of market analysis, or computers, and were apparently without any type of known writing system.

The economic and political power of these leaders was symbolized by the materials that they possessed. Similar to affluent members of modern day societies who acquire luxury items such as French champagne, Russian caviar, or Italian shoes; burials of Middle Woodland leaders

revealed that they also acquired exotic objects, such as obsidian from Yellowstone, fossilized shark's teeth from Florida, whelk shells from the Gulf of Mexico, and copper ornaments from the Great Lakes. These objects were important because they reflected the leaders' diverse trade alliances, symbolizing their economic and political strengths. These objects were made to be prominently displayed to intimidate rivals and attract followers. It was through this sort of economic competition that leaders gained and maintained their power. The elite, however, ruled more by diplomacy than by force. They would have been the ultimate politicians, giving out gifts to followers, encouraging everyone to work hard, and settling disputes that arose among members of the community. In this way, they kept everyone working for the same goals and prevented harmful dissension.

There is little evidence of warfare or raiding during this period. Villages were not fortified, and burials rarely showed evidence of a traumatic death. This is surprising considering the competition between communities. Certainly disputes arose that led to fighting or raiding, but these occurrences were kept to a minimum. A successful leader had to prevent the disruptive effects of such confrontations. Again, this was achieved through diplomacy or intimidation, rather than actual use of warfare.

Figure 30: Casper the Ghost Figurine
(Drawn by Zarley Zafe)



Successful leaders may have solidified their position by associating themselves with the supernatural or supreme beings. This idea is reflected in some of the goods associated with these leaders. Objects representing birds of prey, such as hawks, falcons, owls, and vultures, have been found within some of their tombs. These were symbols that leaders used in life, perhaps in an attempt to associate themselves with the powers of these birds reflecting their strength, flight, ferocity, and sharp vision. These creatures also were associated with the upper world, the world of the gods. Human figurines and ghost-like, "Casper the Ghost" figurines (Figure 30) have been found at many Middle Woodland sites (Struever 1965). These could represent gods, but may imply that Middle Woodland groups had some form of ancestor worship.

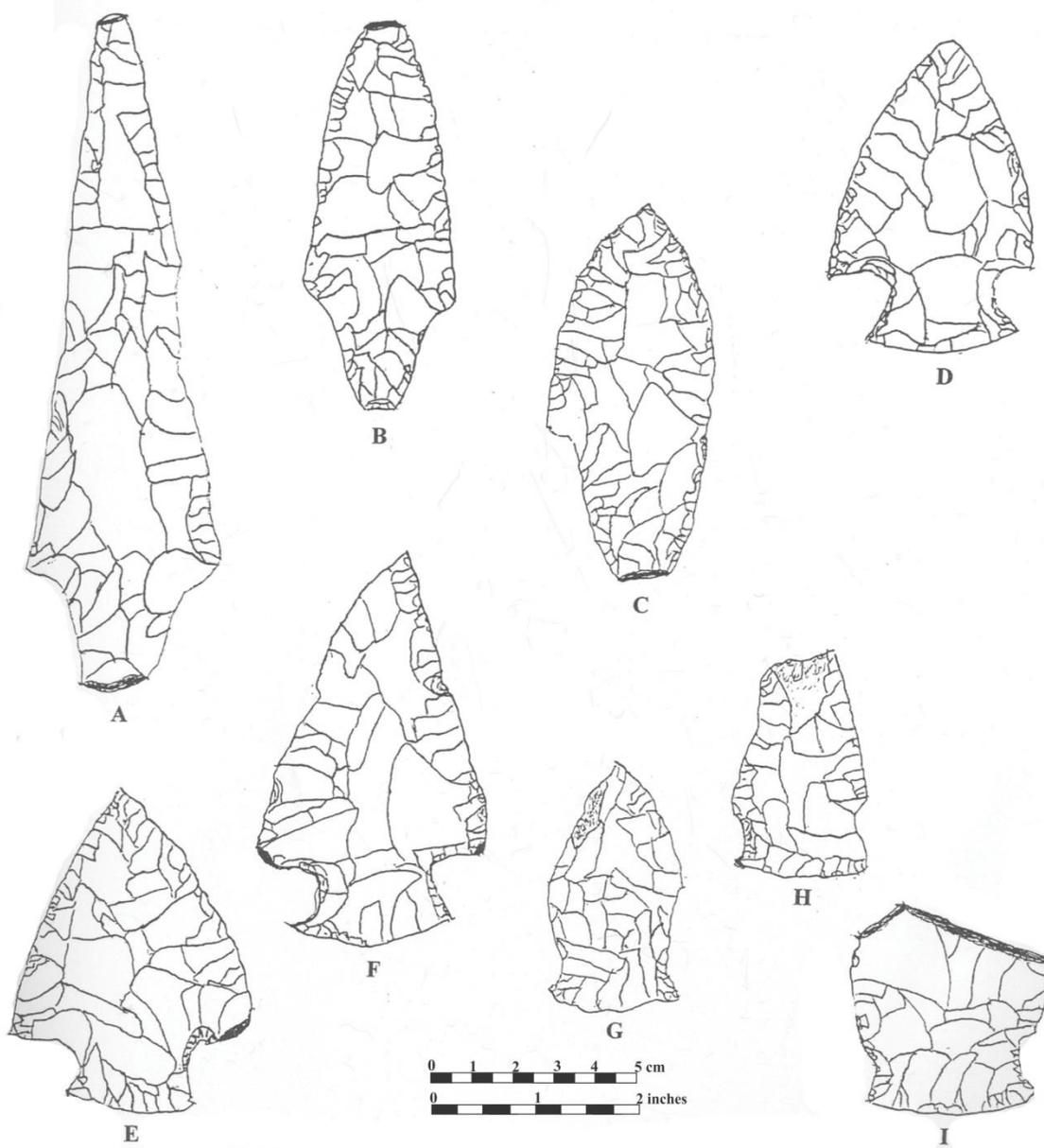
The Middle Woodland groups of eastern Missouri did not construct effigy mounds, similar to groups in Ohio, but ceremonial activities did take place near their large conical and elliptical shaped burial mounds. The location of mounds on bluff tops or on terraces near major communities could indicate that they served as territorial markers reflecting the group's rights to control the surrounding land and its resources. It also is possible that these earthworks represented monuments of civic pride. The inhabitants of Middle Woodland communities probably willingly built mounds for their leaders, reflecting the greatness and economic success of their communities. The few mortuary sites that have been excavated suggest that feasting may have occurred when the remains were placed into the charnel house or when this building was finally sealed. Feasting might have been used to legitimize the position of the new leaders, who gave away offerings of food and gifts to guests. Perhaps food

offerings were made to the dead to legitimize the new leader's position. Feasts may have been held at other times to worship dead ancestors, further reaffirming the new leader's elite position.

Most people lived in smaller communities where they subsisted by hunting, gathering, and raising a growing number of plants. Although Kramer and contracting stemmed points continued to be utilized, most spear points produced at this time were oval shaped (Figure 31).

Major redistribution centers are present at nearly every major waterway onto the Mississippi River bottoms and along the Missouri River in the western part of the state, but similar market centers have not yet been identified along the lower 100 miles of the Missouri River. It is likely that these centers have just been overlooked. Middle Woodland points have been found at the location of the Coleman Slave Cemetery and adjacent properties on the lower portion of Wildhorse Creek. These could represent one of these lost market centers, or perhaps just a small Middle Woodland village. Further archaeological investigations are needed to better understand this phenomenon, and other aspects of the Middle Woodland society.

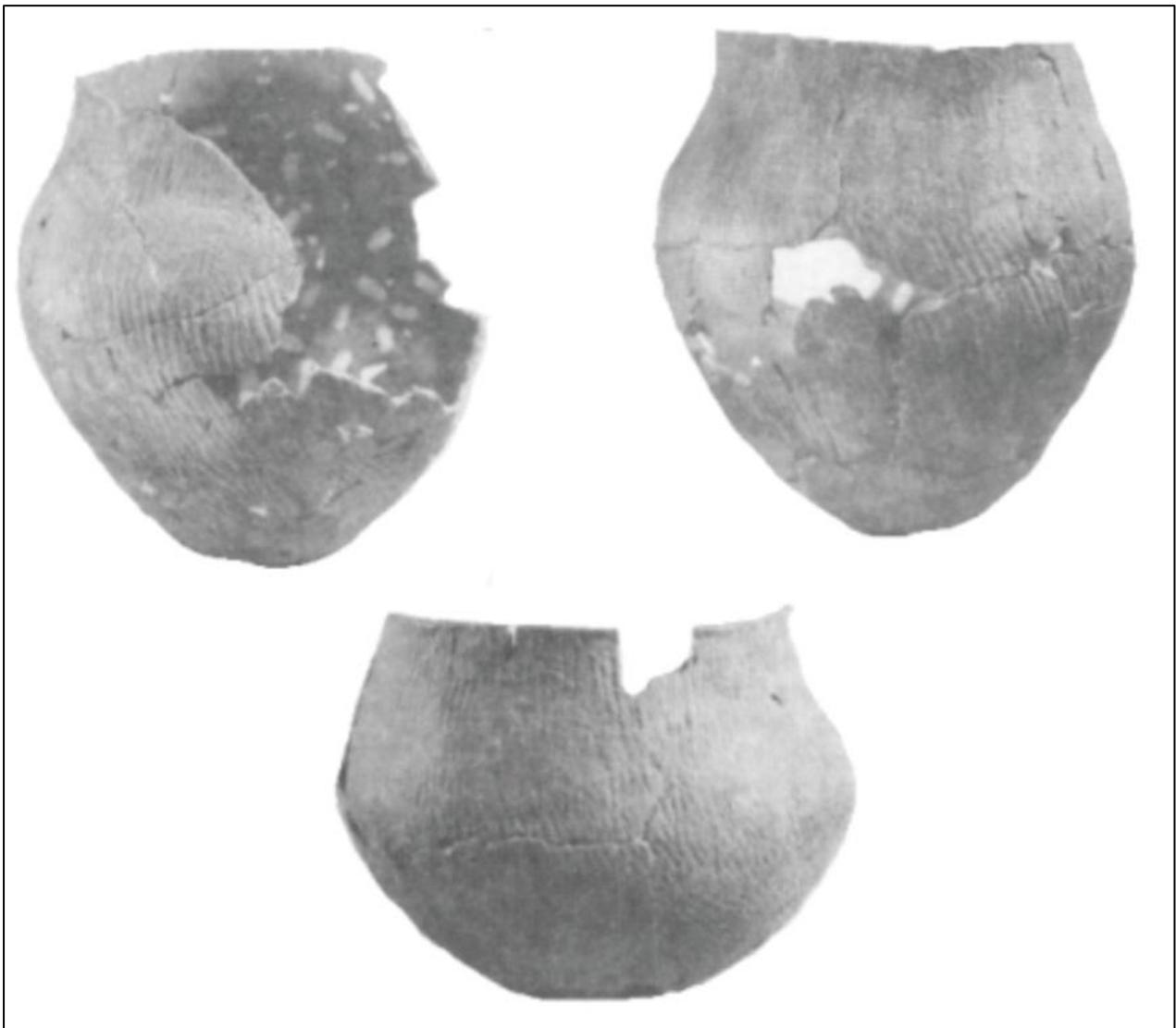
Figure 31: Middle Woodland Projectile Points
A.-C. Contracting Stemmed, D.-E. Snyder's, F. Norton, G.-I. Ansell



Late Woodland Period (A.D. 300-900)

People made several changes to their culture at the beginning of the Late Woodland Period. Extensive trade networks were discontinued and the large redistribution centers were abandoned. People resided in smaller communities sometimes consisting of only a few families. Fewer burial mounds were constructed and these were smaller than those of the Middle Woodland Period. The graves within the mounds differed in that they generally lacked associated grave goods. Pottery made at this time was less elaborately decorated having only cordmarked exterior surfaces, produced as a normal part of the manufacturing process (Figure 32). No attempt was made to smooth over these coils, nor to incise or impress decorations in them as was done on Middle Woodland vessels.

Figure 32: Late Woodland Pottery
(Geller and Crampton 1988)



These changes have led some researchers to suggest that this time represented a “Dark Age”, a period of cultural degeneration (Ford 1974). Interestingly, this period corresponds to the “Dark Ages” which took place in Europe at the same time, after the fall of the Roman Empire, leading some researchers to argue for global trends, such as changes in the weather pattern. There have been many attempts to explain the causes for this cultural “decline” (for a review see Braun 1977 and Emerson et al. 2000). The explanation favored by earlier researchers is that these changes resulted from food shortages caused by overpopulation or a shift in the environment, which affected the corn crops. However, evidence indicates that the Middle Woodland groups were primarily hunters, gatherers, and horticulturalists. Corn was introduced into this area from Mexico by the Middle Woodland Period, but this crop was grown in only limited amounts probably representing an exotic food consumed by the elite (Reidhead et al. 1980). Failure of the corn crop would not have had a drastic effect on the subsistence system. In addition, the environment did not radically change during this period, certainly not enough to have affected the wide variety of food resources available in this region. It also has been suggested that social unrest occurred during this period due to the introduction of the bow and arrow, which supposedly resulted in increased raiding and warfare. However, as Braun (1977) pointed out, there is no evidence to support this conclusion. The bow and arrow came into the region around A.D. 700, well after the Middle Woodland Period had ended. There must be other explanations for these changes.

Braun (1977) argues that this was not a period of social degeneration, but rather a time of continued evolutionary development, creating more social connections. He suggests that the similarity of pottery styles throughout the Midwest was due to widespread trade and increased interaction between groups throughout the region. However, Wolf (1982:32) asserts that traders “... tended to favor luxury goods, that is, goods that yielded a high profit per unit sold”. Exotic goods were more common during periods of extensive trading and pottery vessels tend to be more elaborately decorated in order to appeal to consumers. The relatively undecorated, conical shaped vessels of the Late Woodland Period could have been produced anywhere. The low demand for these undecorated pieces would not offset the costs of transportation nor the risks (both economical and physical) of entering new territories. Instead, the change in pottery style, the decline in the exchange of exotic goods, and less elaborate burials could represent a shift in social values, moving from objects that reflect individual prestige toward those emphasizing more egalitarian societies and group homogeneity. Similar to the socialists’ movement during the first half of the 20th century, and the “hippies” movement during the late 1960s, Late Woodland groups appear to have rejected materialism in favor of equalitarian symbols. Leaders may have been favored for their altruistic behavior rather than displays of social prestige. Thus, this was not a “Dark Age”, but a reflection of social change.

At the start of the Late Woodland, groups altered their subsistence strategy, relying more on cultivated foods than on wild species. Corn, even though it was known, was rejected by the Late Woodland inhabitants. This could be due to its association as a high status item acquired by the Middle Woodland “Big Men”, or maybe Late Woodland groups were uncertain how to use corn in their daily diet, or perhaps it was more difficult to grow. Instead, Late Woodland groups preferred to raise native starchy seed plants of goosefoot, knotweed, maygrass, and little barley (Figure 33).

Figure 33: Native Starchy Seed Plants Domesticated by Late Woodland Groups

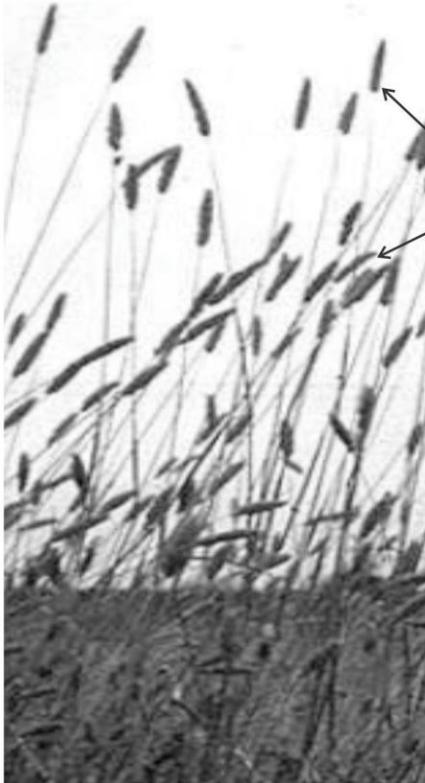


Starchy
Seeds

Goosefoot



Knotweed



Starchy
Seeds

Maygrass

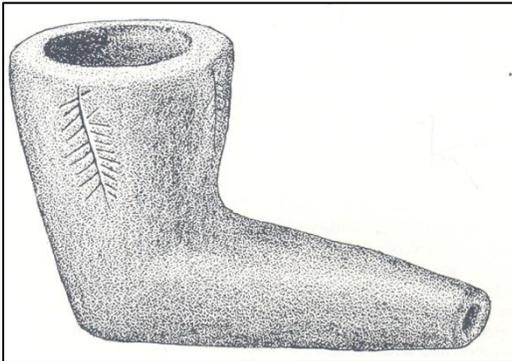


Little Barley

Goosefoot and knotweed were among the first plants to grow in any disturbed context such as around buildings or in agricultural fields. While farmers and home owners today are constantly battling to eradicate these “weeds”, prehistoric farmers perceived goosefoot and knotweed to be an important food source. These plants were easy to grow since they were native to the region, and did not deplete the soil in the same manner as corn. As early as the Late Archaic Period, people began to alter native plants, selectively growing a thinner seed coat and a larger seed. The domesticated species required human assistance in order to survive because the thin seed coat would germinate too soon during warm spells at the end of winter, only to be killed by another cold snap. Humans could keep the seeds until spring and then plant them to ensure germination. Processing of the seeds after harvest was necessary since the seed coats are composed primarily of silica that cannot be digested by humans. This coat was removed by boiling in pottery jars or grinding the seeds. The seeds were then eaten, mixed with other foods, or ground into flour.

Maygrass and little barley are native to the southern U.S. These plants were domesticated by the Late Archaic Period, and transported far from their natural range by being grown in eastern Missouri. Unlike goosefoot and knotweed, which were planted in the spring and harvested in the fall, maygrass and knotweed were planted in the fall and harvested in the spring.

Figure 34: Late Woodland
Elbow Tobacco Pipe
(Chapman 1980:129, Figure 4-28A)



Other plants cultivated during the Late Woodland Period were gourds, squash, and oily seed plants, such as marshelder and sunflowers. Tobacco, also introduced into this region during the Middle Woodland Period, was widely grown based on the number of seeds found at Late Woodland sites and the number of smoking pipes. Elaborately decorated smoking pipes were no longer manufactured, instead people preferred to smoke from plain elbow shaped pipes (Figure 34). Cultigens were supplemented by various naturally available species of fruits, seeds, and nuts. However, nuts, were less important in diet than they had been during the previous periods.

Instead of agriculture being adopted by starving people, it freed them from the Middle Woodland “Big Men”. Agriculture allowed people to live in smaller, self sufficient farmsteads, using fields cleared by a slash and burn technique. In this method, Late Woodland farmers cut down trees or ringed them in order to kill the trees, and then burned the fields to get rid of the vegetation, releasing nutrients, and making the plots suitable for agriculture (Koldehoff and Galloy 2006). Within the tropics, these fields could only be used for a few years before their nutrients were used up, requiring at least 20 years to rejuvenate. In eastern Missouri, the fields were used for longer periods due to greater soil nutrition and less rain fall. In addition, spring floods replenished nutrients, making floodplains more suitable for agriculture. Thus, farming supported smaller, scattered settlements. These self sufficient and equalitarian communities could exist free from the demands of “Big Men” and his store of goods.

Fauna consumption did not change significantly from that noted since Archaic times, with riverine species (fish, waterfowl, and mussels) continuing to be the main sources of protein, followed by deer. During the first half of the Late Woodland Period, people hunted with a spear thrown by an atlatl. The spear points utilized were similar to those produced during the Middle Woodland Period (Figure 35). However, between A.D. 600-700, the bow and arrow was introduced and rapidly adopted in this region. This change is reflected by the sudden appearance of smaller chert projectiles, less than 1 inch (2.5 cm) long (Figure 36). These smaller points are often mistakenly referred to as “bird points” with people assuming that they only were used to hunt birds. Large spear points (commonly referred to as “arrow heads”, but actually spear points) would have been a poor choice to use as a projectile, as these heavy points would not have gone very far when shot from a bow.

Figure 35: Spear Points Used During First Half of Late Woodland Period

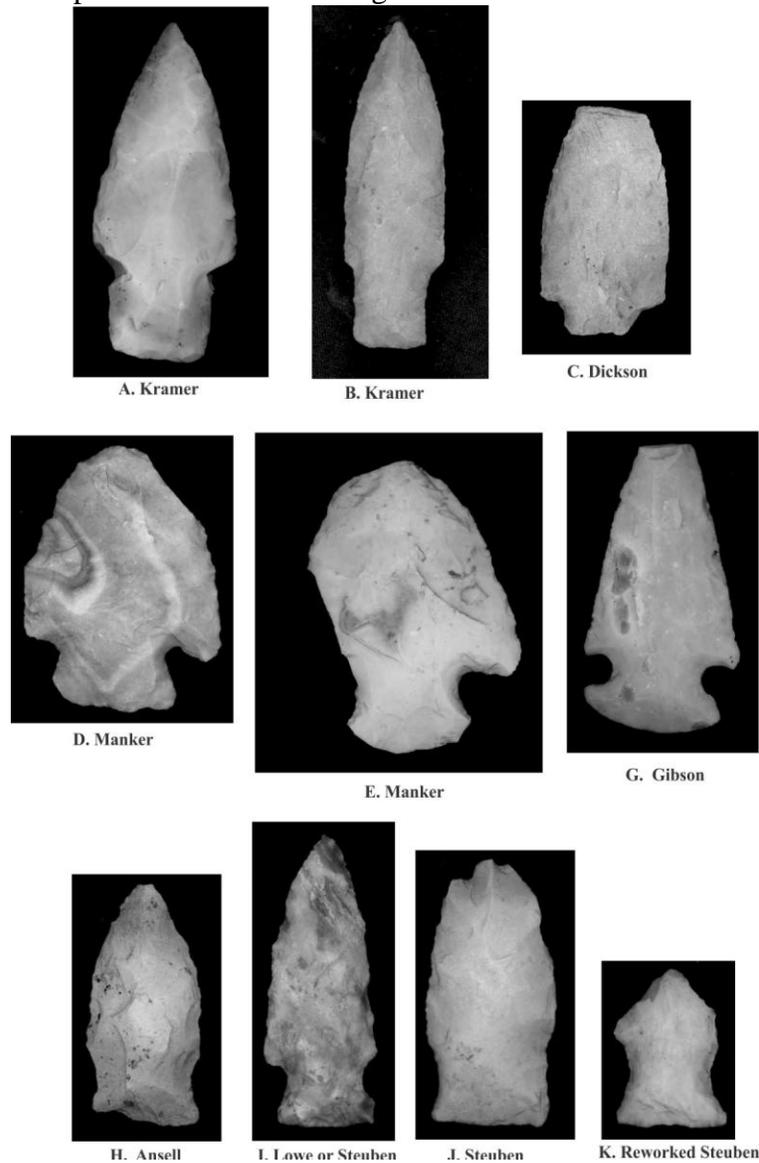
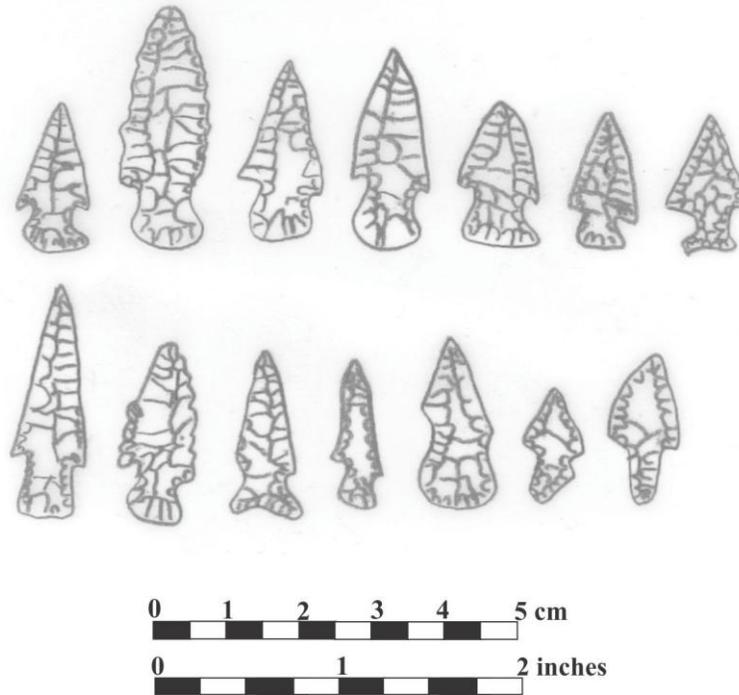


Figure 36: Smaller Arrow Points Used During Late Woodland Period After A.D. 700



Bow and arrow was first used by Arctic groups in Alaska and northern Canada as early as 2000 B.C. (Fagan 1991:181). This technology was likely acquired from Siberian groups in Asia, who used similar types of bows and arrows. Siberian groups, in Asia, and Arctic groups, in North America, regularly traveled across the Bering Sea using watercraft. Goods and information were exchanged between these groups until about 700 years ago. It is surprising that the bow and arrow did not spread from that region sooner, since groups in the Subarctic of Canada and along the Pacific coast did have occasional contact with Arctic people and accepted some of their tools. The bow and arrow may have spread to the U.S. after Siouan speaking groups, from the Subarctic region, began moving into the northern Plains around A.D. 400-500. Another possibility is that the bow and arrow was independently invented in America as it appears in the Great Basin of the western U.S. around A.D. 400. Regardless, by A.D. 700, groups at the confluence of the Missouri and Mississippi Rivers had access to this “new” technology. Smaller Scallorn points were similar in style to spear points (Steubens) popular just prior to the introduction of the bow and arrow, indicating this technology was adopted by indigenous groups and not the result of a migration of new people into the area.

By the second half of the Late Woodland Period (after A.D. 700) people settled into larger communities, especially near the major waterways and more fertile soils. It has been suggested that these sites represented only short term settlements occupied for a year or two, or that there was a return to the seasonal round. Roper (1979:140-141) working on sites in the Sangamon River valley in Illinois, found that sites placed within the bottomlands generally had an analogous site on the nearby bluff margin. She speculated that these communities were used on a seasonal basis; the

upland villages representing summer occupations and the bottomland villages winter occupations. Recently, Koldehoff and Galloy (2006) argued that even large occupations, such as those at the Range Site within the American Bottom (Kelly 1987a, b), represented only short term use. They based their conclusions on a series of implications: poorly constructed houses that showed little evidence of rebuilding, the lack of evidence of superimposing pits, deep features with multiple fills implying abandonment and then reuse, and lack of large celts and hoes. Lopinot (1991:22) questioned the seasonal use of these habitation sites, noting, "A different scenario . . . Some multi-seasonal or year-round usage of the site could be suggested. The abundance of cultivated plant foods, particularly of spring-harvested and fall-harvested starchy seeds (about 90% of the seed assemblage), the diversity of faunal remains, and the variety of pit features are suggestive of more than sporadic usage of the site." He further argued that thick, heavy, pottery jars filled with items would have been difficult to transport from one site to another. It would not have been economical to duplicate the pottery assemblage at both the summer and winter villages. Baskets used prior to the start of the Middle Woodland Period should have remained popular for groups engaged in seasonal rounds. Hence, it seems more likely that even small sites were occupied on a year round basis.

The limited information available on communities occupied during the second half of the Late Woodland Period suggested that they were larger than those used during the first half, but there continued to be an emphasis on community cohesion and group unity versus individual success. Houses were often clustered together with communal cooking and storage pits placed outside the residential clusters. Artifacts also reflect social cohesion. Pottery continued to be undecorated except for cordmarked exterior surfaces. The only attempt to individualize these vessels was the placement of small impressions, limited to the lip interior. These impressions may have made picking up filled jars easier, but the impressions may instead represent hidden attempts to individualize or decorate pottery, without appearing to be presumptuous. Subsistence remained unchanged, even after the introduction of the bow and arrow, although this would have made killing birds or deer easier. People evidently raised surplus crops at this time, stored in larger and deeper storage pits. These larger storage facilities were probably needed to support a larger community.

There have been only seven Late Woodland sites identified in Wildwood, but there are likely many more of these sites that have been identified. More Late Woodland sites have been identified than any other period of prehistory, except for the Late Archaic times. Despite this number of sites, there still is a great deal that is not understood about this time. The rejection of material goods in favor of the group benefit favored by the Late Woodland inhabitants, however, changed with the next period of prehistory.

Emergent Mississippian Period (A.D. 900-1050)

The Emergent Mississippian Period represents a transition from Late Woodland to Mississippian lifestyles (Kelly 1981a, 1981b; Kelly, Ozuk, et al. 1984; Kelly 1990a). Recently, this name has been challenged because:

... Mississippian emergence should not be regarded as gradual, directed evolutionary progress, but rather, as a historical process, involving nondirected historical events underlain by negotiation and renegotiation of human agents. . . the largely descriptive model of Emergent Mississippian, we believe, suffers by implicitly imposing a gradualist, evolutionary framework on what is better viewed as a unique regional history of social interaction and a succession of events whose outcome was unforeseeable by participants. . . What we question is the validity and explanatory utility of a model that posits 'Mississippian' as the outcome of undefined processes of gradual accretional change. Although most scholars acknowledge that the 'Emergent Mississippian' concept is based on retrodictive rather than predictive logic and recognize that Mississippian culture was not preordained, we maintain that by defining an archaeological manifestation in terms of what follows, we unavoidably imply predestination.

(Fortier and McElrath 2002)

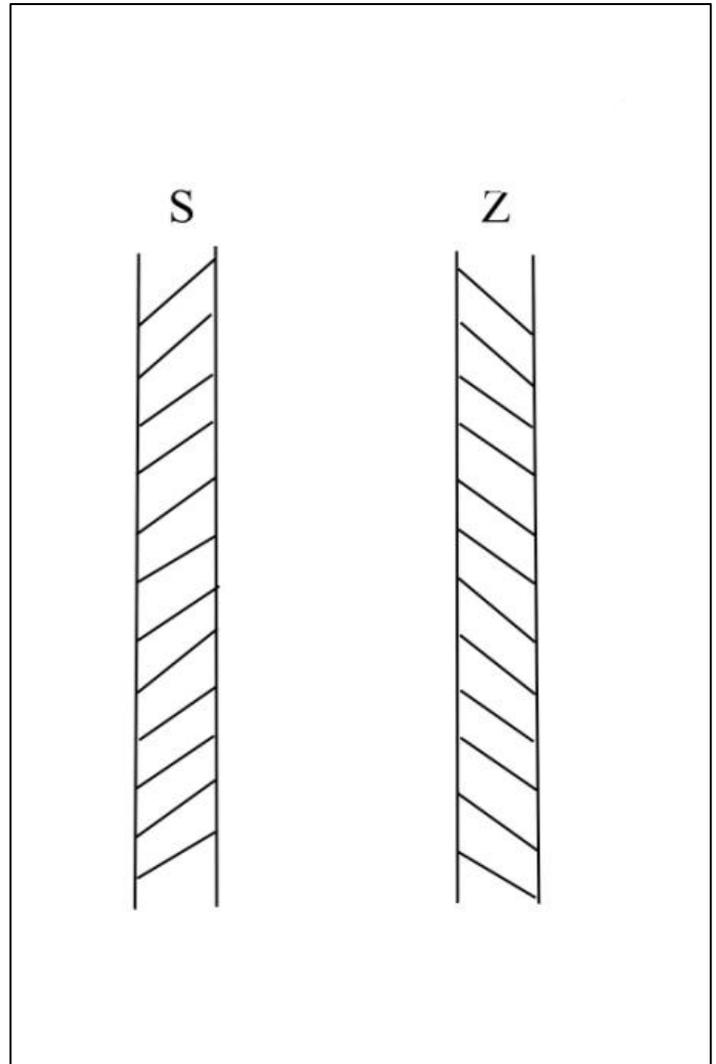
They suggest that instead, this time be referred to as "Terminal Late Woodland".

Pauketat and others (1994, 1997, 1998, 2004, 2007, 2009; Fortier and McElrath 2002; Emerson 1997) assert that the development of Mississippian society did not represent a naturally advancing social system from bands to tribes to chiefdoms to states, or cultural evolution towards ever more complex societies. Instead, societies were historical, reflecting the actions and decisions of the participants. These actions can be materialistic, with people interested in increasing their material wealth such as during the Late Archaic Period and during the Middle Woodland Period. At other times, people rejected materialism in favor of social issues, such as by the later phases of the Late Archaic Period and the Late Woodland Period. Economists have identified a concept of "marginal utility" whereby a person will highly desire a product until a certain point and then their demand for the product declines. As suggested by Schneider (1974), people will have a similar reaction to social issues as reflected by changes in modern pop culture in movies, music, and the arts. By this transitional period, the acquisition of material goods and reflections of individual wealth were again important over symbols of group homogeneity and de-emphasizing signs of personal success important during the preceding Late Woodland Period. By being historical, societies are not totally divorced from the past. Their past represents the techno-ideological background from which they choose. It was due to people's changing desires during the Emergent Mississippian Period that provided the impetus for the development of Mississippian society. This appears to be particularly true as evidenced by sites in eastern Missouri.

During the first half of the Emergent Mississippian Period several changes took place. Although pottery continued to resemble Late Woodland forms with cylindrical shaped jars that were completely cordmarked, at the start of this time cordmarkings exhibited a Z-twist versus a S-twist used previously (Figure 37). A paddle wrapped in cordage was used to shape wet clay into a vessel prior to pottery being fired. Z-twisted cord markings could reflect a shift in the way cordage was produced. Hall (1980) attributes this to a change in how cordage was manufactured from a hand-and-thigh rolled method to a spindle and whorl method. Pottery discs with holes drilled through their centers were produced after A.D. 900. The discs were attached to strands of twine and spun to produce cordage. It is more likely that this shift from S-twisted to Z-twisted cordage represented a change in people's aesthetic tastes in textiles as the spindle and whorl method could be used to produce either S- or Z-twisted cordage.

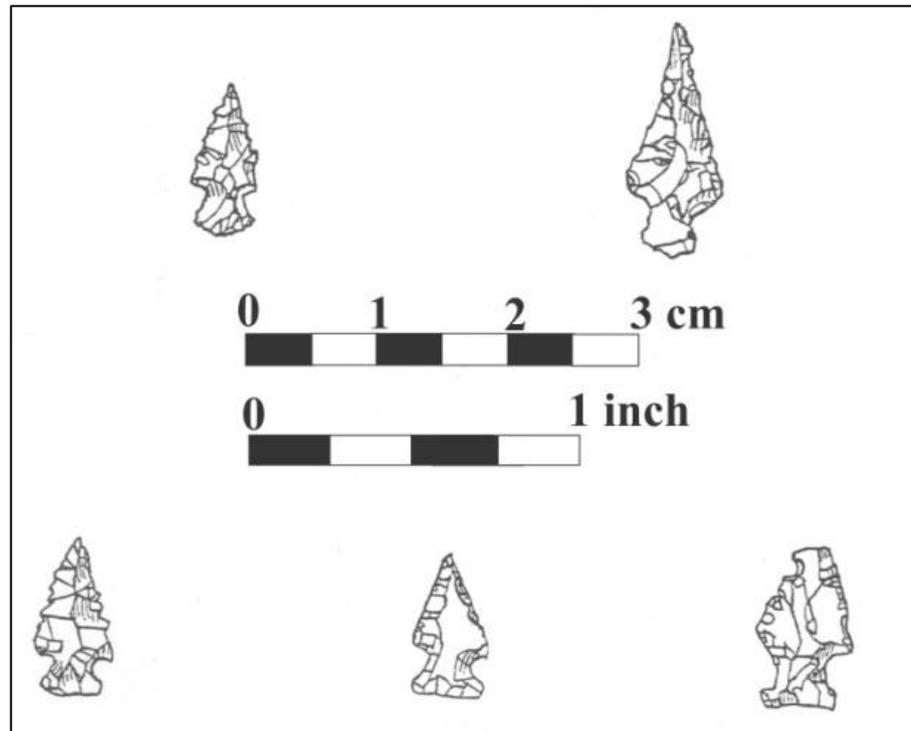
There also was a change in the tempering agent used in vessels. While grog (clay) or grit (crushed rocks or sand) were added as tempers prior to A.D. 900, afterwards crushed limestone was used. "Limestone as a temper has two advantages: its chemical composition (CaCO_3) greatly increases the work ability of clay over that gained through using other tempers . . . and its expansion rate is similar to that of most clays" (O'Brien and Wood 1998:206). As a result, pottery tempered with limestone is stronger than vessels tempered with either grit or grog, allowing for thinner vessels to be produced. The use of limestone as a tempering agent spread to this region from central Missouri, where limestone tempered pottery was produced throughout the Late Woodland Period (Chapman 1980; Reeder 1982, 1988, 2000, 2007; Hoard 2000; Ahler et al. 2010).

Figure 37: Cordage Twist Exhibited on Pottery
Note Pottery Cordmarkings Are Mirror Image of the Original Cordage Twist



Arrow points used during the Emergent Mississippian Period were similar to forms made during the second half of the Late Woodland Period, except the points were slightly smaller, averaging about 1/4 - 3/4 inches (1 - 2 cm) long (Figure 38). Subsistence remained relatively unchanged, consisting predominately of fish, water fowl, and deer. Cultigens continued to be dominated by the native starchy seed and oily seed plants, although corn was widely grown for the first time.

Figure 38: Emergent Mississippian Arrow Points



Various large and small communities existed. However, the larger ones appear to have been more organized than during the Late Woodland Period, with the houses and pit features arranged in a circular pattern around a central plaza. The center of the plaza was marked by a large post or a larger central building that may have served as the home of the community leader or had a ceremonial/social use (Kelly 1990a; Kelly et al. 1990). Kelly (1990b:92) suggested that this community plan was:

. . . symbolic of the 'cross' within a 'circle' of houses. The large structures especially those with hearths, . . . is symbolic of the sun and its role as the source of life, while the cross-in-circle concept is part of the 'fire-sun-deity' complex as defined by Waring (1965). Finally, the two different types of central facilities -below ground storage pits and above ground structure- may reflect the duality of the upperworld and underworld, another important theme in southeastern Indian mythology.

The cross within a circle concept represented the world view. The cross symbolized the four cardinal directions, the four winds, or the four quadrants of the earth. The circle represents the sun as it moves across the sky and earth (Waring 1965; Howard 1968:19-26; Iseminger 2010:134-135). This spiritual conception for the changing of the seasons and the cycles of life was first expressed during the Emergent Mississippian Period, but becomes even more important as reflected in various rituals, building designs, and motifs, during the following Mississippian Period. Pit features were clustered near each house suggesting de-emphasis of communal cooking pits and

group homogeneity important during the Late Woodland Period, instead stressing various family or kin groups. These relations also were reflected in the subdividing of the communities.

During the second half of the Emergent Mississippian Period a wider range of jars, bowls, and miniature vessels were produced. Jars were made with angled or everted lips, and the cordmarkings were smoothed over on their upper halves (Figure 39). This upper portion was sometimes decorated with a red slip as was some of the bowls produced at this time (Figure 40). This form of decoration was introduced into this area from the Bootheel portion of southeastern Missouri where Varney red film pottery was made since at least A.D. 700 (Morse and Morse 1983:218-222). Another innovation obtained from that region was the use of mussel shell as a tempering agent, used in 5-30% of the vessels. Similar to limestone, shells allowed for even thinner vessels to be produced. Another innovation was the placement of small triangular or rounded lugs (Figure 41:A-E), loop handles (Figure 41:F-G), and effigy lugs made into the shapes of various animals or humans, onto the rims (Figure 42). Similar decorations were expanded upon during the following Mississippian Period.

Figure 39: Late Emergent Mississippian Jar

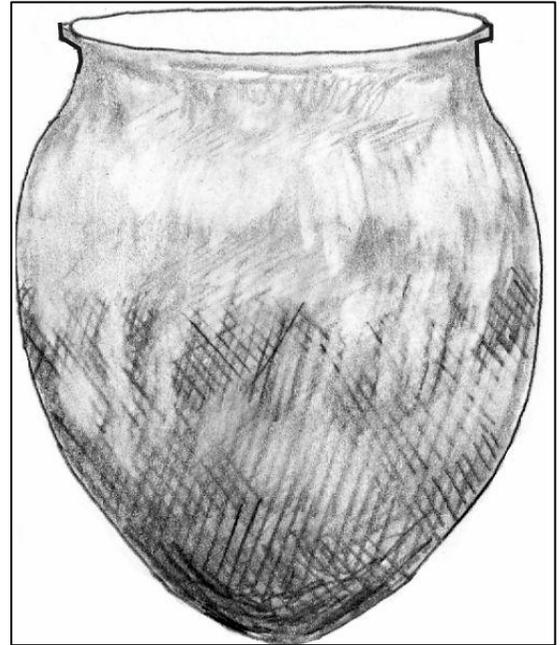


Figure 40: Portion of a Red Slip Bowl



Figure 41: Lugs (A.-E.) and Loop Handles (F.-G.)

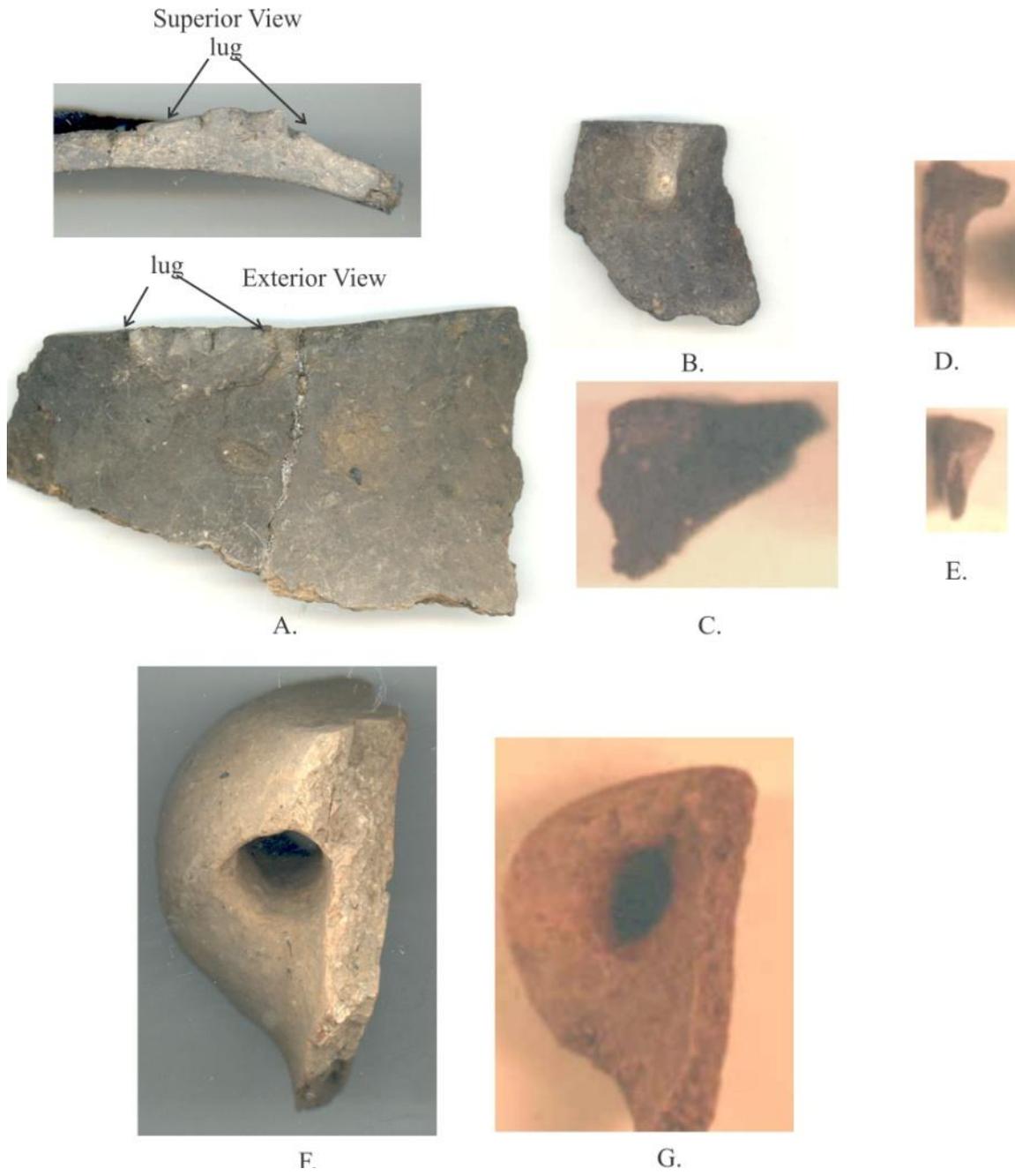


Figure 42: Effigy Loop Handles and Lugs
(A. Possible Effigy Lug, B. Loop Handle with Bi-Lobed Lug Possibly Resenting an Animal
C.-D. Dog Effigy Lugs, E.-F. Owl Effigy Lugs



A.



B.



C.



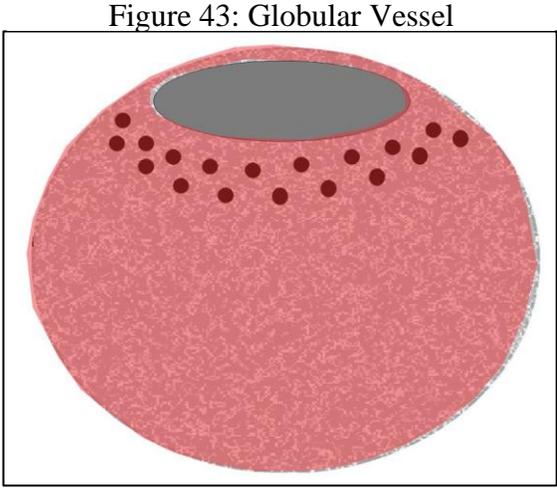
D.



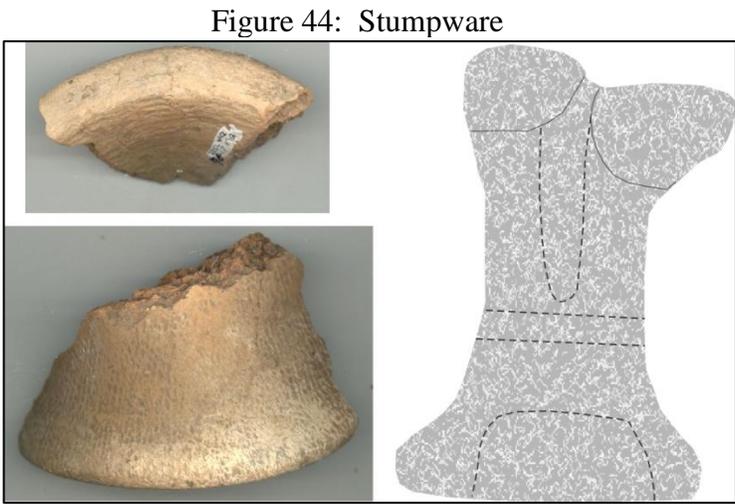
E.

F.

A new vessel type introduced into this area, likely from southeastern Missouri, has been referred to as a seed jar (Emerson and Jackson 1984:69; Holley 1989:54; Kelly, Ozuk et al. 1984), or globular vessel (Harl 1991:114-116). Overall, this vessel has a rounded shape with an incurved rim (Figure 43). Typically, they are decorated with a red slip, and have one or more rows of punctates just below the lip. Globular vessels were predominately tempered with limestone, but sometimes other tempers were used. As their name implies, it was originally believed that these vessels served as storage containers for cultivated seeds, predominately corn. Pauketat (1994:57), however, suggested that they were “manufactured especially for public or high-ranking uses or exchange”. These vessels typically represent only 1 -3% of the vessels recovered from latter portion of the Emergent Mississippian Period in Missouri, but become more common during the subsequent Mississippian Period (Harl 1991:128).



Another unusual pottery vessel produced at this time was stumpware. As the name implies, stumpwares resembled tree stumps (Figure 44). They were once thought to have been incense burners, juice presses, lamps, and ceremonial vessels, but were typically poorly fired and mixed with a large quantity of tempering agents. A channel was placed partially or completely through these vessels.



Porter (1974) suggested that instead of stumpware being used with the root-like projections on the bottom that these projections actually were the top of these objects. He further speculated that stumpware was used to hold up conical shaped jars within cooking fires. The holes in these pieces allowed them to be moved with sticks while still hot. A charred residue usually exists within these holes indicating that the stumpware was moved with charred sticks. Stumpware found in eastern Missouri is usually broken and located with other trash discarded into earth ovens, supporting the mundane use as a pot holder.

There is increased evidence of trade during this time. Pottery made in southeastern Missouri, southern Illinois, western Kentucky, and western Tennessee have been found at sites within the American Bottom (Kelly 1991) and eastern Missouri (Harl 1995:258-259).

In addition, hoes made from St. Louis Burlington chert (Figure 45) and southern Illinois Mill Creek chert were traded over greater distances. Hematite and galena, from the upper Meramec River valley, were present at these sites, as was mica from the Appalachian Mountains. Storage pits were larger, revealing that surplus crops were being saved, possibly for exchange. Distant items are present in such large numbers that it suggests that trade was established during this time as opposed to items being acquired from down-the-line exchanges between adjacent groups or obtained by marriages.

Figure 45: Burlington Chert Hoe



The exchange of ideas also appears to have occurred. A game widely popular at this time was chunky. Discoidals used in this game have been found at various Emergent Mississippian sites (Figure 46). The game was played by one person rolling a discoidal along the ground and two other players tossing spears on the ground after it, with the winner being the person whose spear was closest to where the discoidal fell over. Players and watchers of the game would place bets on who would win (Catlin 1973). The game became even more popular during the following Mississippian Period and took on religious overtones and social prestige (Fowler 1974, 1991).

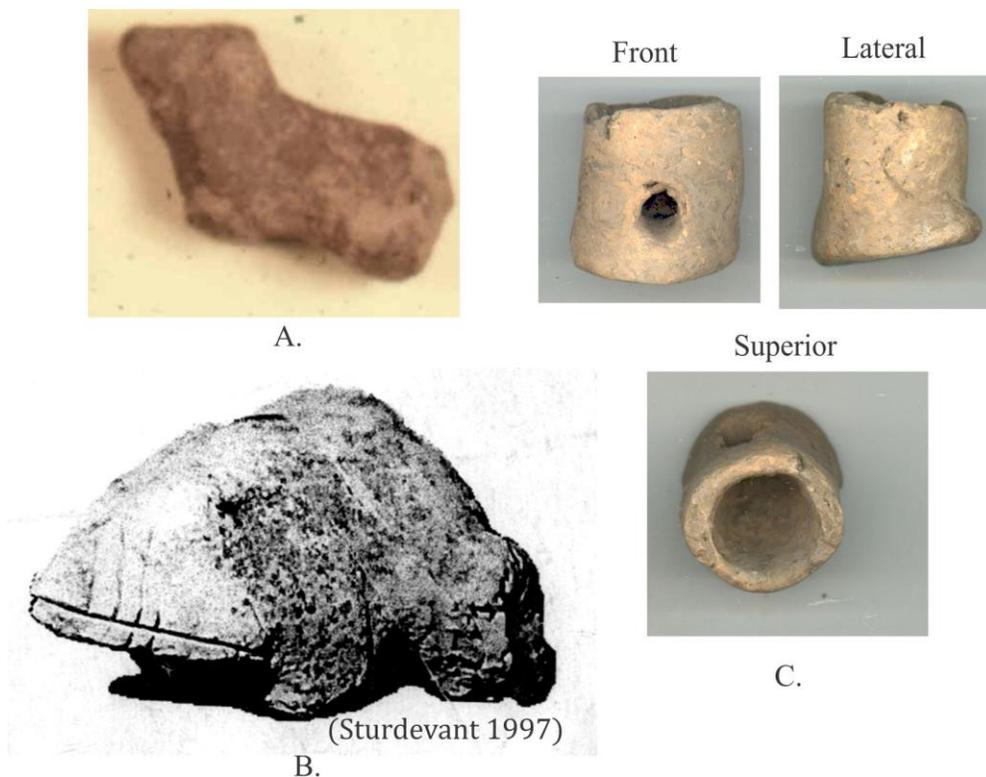
Figure 46: Discoidals and Catlin's (1973:136) Painting of Mandan Playing Chunky



Also reflecting this exchange of ideas was the wide spread making of effigy figures (Figure 47:A). Tobacco pipes were more ornate and exotic (Figure 47:B-C), with a frog effigy pipe made of limestone found at an Emergent Mississippian Site, just east of Wildwood (Sturdevant 1997).

The archaeological information from eastern Missouri suggests that changes during the Emergent Mississippian Period did not develop locally, but were the result of a pan Mississippi River valley phenomenon in which ideas from various regions were shared and adopted. The gradual acceptance of these changes implies that this was not a migration of new groups into the region, but the spread of ideas. It appears that many of the precursors of the Mississippian Period were developing during this time. No Emergent Mississippian sites have been identified within Wildwood, but generally it is assumed that this period is associated with the Late Woodland (Sturdevant 1997). Excavations are needed at Emergent Mississippian sites to obtain a better understanding of the changes that took place during this important period of prehistory.

Figure 47: Samples of Emergent Mississippian Effigy (A.) and Tobacco Pipes (B.-C.)



Mississippian Period (A.D. 1050-1400)

A greater amount of archaeological investigations have been conducted on Mississippian sites than for any other time period. However, there is still much that is unknown about this time. Communities of various sizes have been identified. Fowler (1978) believed that these reflected the Mississippian social hierarchy. He suggested that Cahokia served as the paramount civic/ ceremonial center of this region. This center contained more than 100 mounds (Figure 48), including conical burial mounds, and ridge or elliptical shaped mounds marking important locations and also holding burials. A mound type, widely used at this time, was a flat top or platform mound, which supported important buildings such as temples and the homes of the community's elite. Monks Mound, the largest earthwork in North America at nearly 100 feet high, was placed in the center of Cahokia, and supported the leader's home and other important buildings. In front of this mound was a large central plaza where important events took place, including a large chunky court (Figure 49).

Figure 48: Bushnell's 1904 Map of Mound Centers in the St. Louis Area

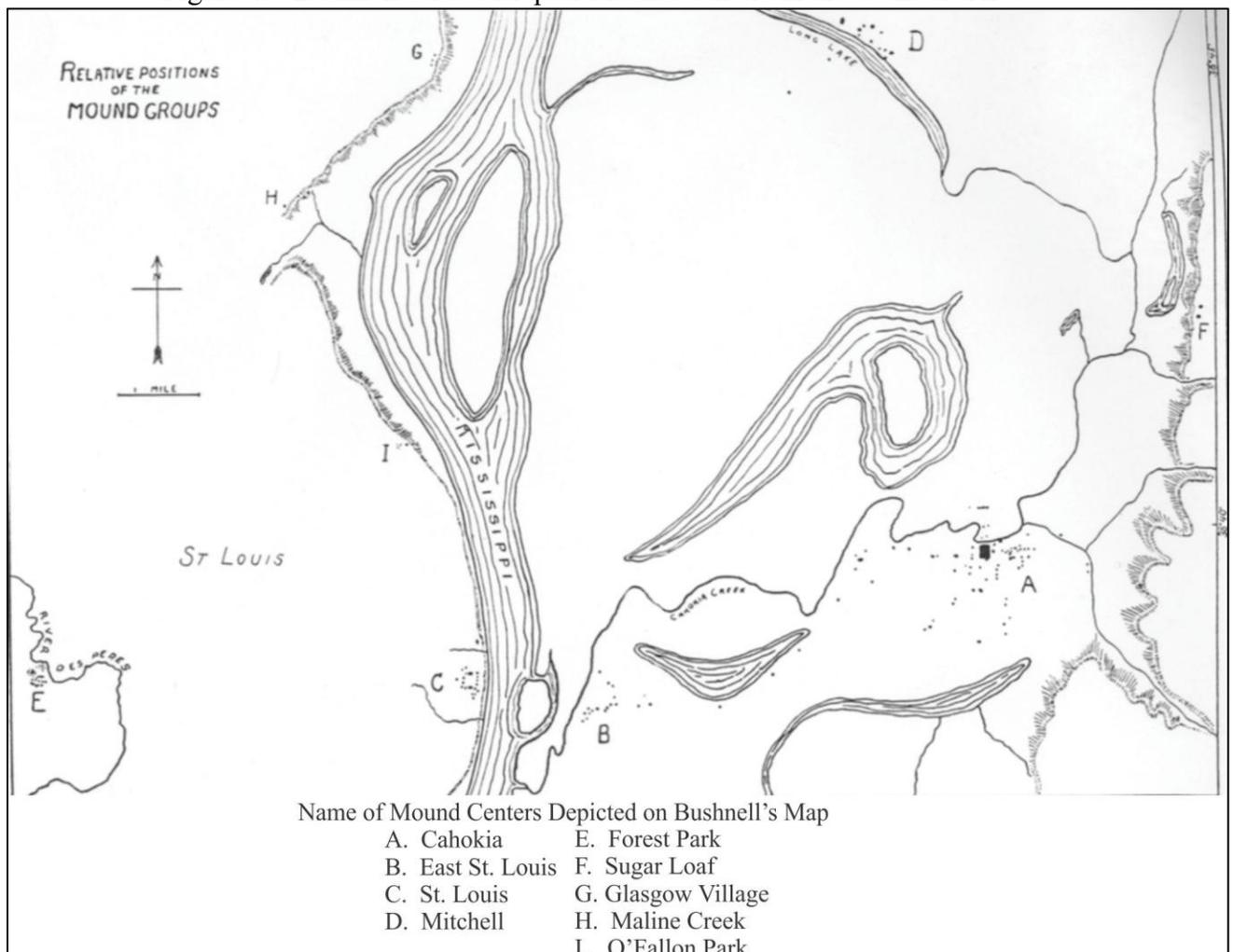


Figure 49: Artist Recreation of Central Portion of Cahokia (National Park Service n.d.)



The next settlement level consisted of secondary multi-mound complexes such as Mitchell, Pulcher, East St. Louis, and St. Louis. St. Louis and East St. Louis were situated on either side of the Mississippi River, similar to the modern day cities. In fact, the East St. Louis Mound group was connected to Cahokia by a series of mounds that were constructed along the Cahokia Terrace, where Collinsville Road now extends along this terrace (depicted on Figure 48 as a series of dots between A. Cahokia, and B. East St. Louis). This terrace is a natural levee formed by the Mississippi River, representing the highest, and driest, land formation within this portion of the Mississippi River bottoms surrounded by marshes, wetland prairies, and oxbow lakes. Cahokia Creek ran along the northern side of the terrace. The land bridge formed by the Cahokia Terrace and the narrow confines of Cahokia Creek could have been a way of controlling access to Cahokia. This may be why this civic/ceremonial center was established in the middle of the Mississippi River floodplain as opposed to being placed adjacent to the main line of travel/communications /commerce along the river.

Fowler's third line communities were represented by villages with a platform mound for the residence of the community leader and usually featured a burial mound. These sites could be locally important economic or political centers. Sugar Loaf Mound, still standing on the southeastern edge of St. Louis City, was probably one of these communities, as could be the Kuhs Site located at the eastern end of the Missouri River bluffs overlooking the confluence of this river with the Mississippi.

Fowler suggested that most Mississippian people lived in fourth line communities consisting of isolated farmsteads, farming hamlets, and small villages. These smaller places interacted with Cahokia, and nearby centers, through trade of surplus crops and craft production. This settlement pattern is similar to later historic American society in which large, influential cities, and smaller communities or single family farmsteads served each other's reciprocal needs, but the rural towns and isolated farmsteads still maintained some autonomy.

Fowler's criteria for dividing sites into various levels based on the number of mounds they contain have been criticized for several reasons (Emerson 1997; Milner 1990). The number of mounds may not reflect the importance of a community. Some sites may not contain earthworks, but still be important local centers. Additionally, the number of mounds present on a site may only reflect the length of time that the site was utilized, with settlements used for longer periods having a greater number of mounds. Furthermore, Fowler's settlement hierarchy assumes that all of these communities were part of the same society. Instead, communities may be unrelated, except through trade, with the leaders of Cahokia having only limited influence especially in Missouri. Although people today in China, Japan, Europe, and the U.S. exchange and utilize similar material goods, they clearly represent different cultures related only by trade.

Other researchers have argued the opposite suggesting that the leaders of Cahokia were not only able to control the local economy, but because of this site's location near the confluence of several major waterways, were able to influence other regions. These researchers suggest that Cahokia was the center of a Mississippian state level society, sometimes referred to as the "Ramey" state, for a distinctive type of pottery widely used throughout the Midwest (Gibbon 1974; O'Brien 1972, 1989, 1991, 1993). They base their arguments on the presence of:

1. monumental mound construction, some of them the largest in the U.S., and other public works (e.g. Woodhenge)
2. highly organized communities, some with large populations
3. development of a structured social hierarchy with vast differences between members of various ranks and attempts by the privileged class to validate their unique positions by associating themselves with special powers or with spiritual beings
4. control by leaders over the economy and social lives of the commoners
5. encouragement of long distance trade and support of craft specialists

These researchers further argue that the presence of exotic goods from other regions of the U.S. is evidence of the influence exerted by Cahokia's leaders. It also is argued that the wide use of goods from Cahokia, for example, Ramey incised pottery, at other sites confirms the influence that Cahokia's leaders had on distant regions.

Other researchers (Pauketat 2004, 2007, 2009; Pauketat and Emerson 1997) argue that Cahokia never had the political or military force needed to directly influence an area this vast. They suggest that Cahokian society was similar to those encountered by the first European explorers in the southeastern U.S. consisting of complex chiefdoms (Barker and Pauketat 1992; Pauketat 2007). These southeastern chiefdoms share many of the same attributes identified at Cahokia and the surrounding Mississippian communities. For example, they exhibit mound construction, a social hierarchy, control over the local economy, and long distance trade, but the influence of these leaders was generally limited to only a small territory. This is not to argue that Cahokia did not develop into a powerful chiefdom. The leaders of Cahokia were able to amass a great deal of wealth and power. They also were able to elicit the support of the local population using enticement or direct force. There, however, is little evidence of fighting or warfare in this region. It is more likely that people in the surrounding farmsteads willingly accepted domination by the leaders of Cahokia. This dominance was probably more economical than political. By

being part of a larger economic system, the standard of living for the scattered farmers would have improved. They would have had access to larger markets in order to exchange their surplus crops for other goods. This system also provided security. If a village's crops failed, the leaders of Cahokia could redirect surplus crops from other regions to the stricken community. Cahokian elites' economic and political position was probably made even stronger by establishing ties with the leaders of other centers, exchanging gifts and establishing alliances. They also appear to have established distant colonies with sites being found as far away as the upper Mississippi River valley in Wisconsin, which contained artifacts similar to those found at Cahokia (Pauketat 2010;personal communication).

Pauketat (1994, 1998, 2002, 2007, 2009) suggested a "Big Bang Model" for events that occurred relatively rapidly at A.D. 1050 "around a political leader, a religious movement, or a kin abolition that rapidly centralized the social relations and the political economy of the American Bottom". A number of changes "domestic material culture, architectural shifts, spacial reorganization, resettlement, mound construction, public feasts, and public deaths" took place within the American Bottom and its surrounding uplands (Pauketat 2002). Since many of the new objects and ideas were first developed in southeast Missouri, Pauketat argues that one of the causes of this "Big Bang" was a migration of groups from that area to Cahokia (Pauketat 2004, 2007, 2009). Susan Alt (2002, 2006) also argued for an influx of people into the uplands near Cahokia, the Richland complex, based on differences in the settlement organization, and by the appearance of Varney jars, a conical shaped vessel with recurved rims, interior red slipping, and tempered with mussel shell, first used in southeastern Missouri. But what was the draw for southeastern Missouri groups to move to the Cahokia region? Why wouldn't these people simply remain at the confluence of the Ohio and Mississippi rivers where similar rich agricultural fields and trade opportunities existed? It would seem more likely that migrations to Cahokia and surrounding communities would have taken place after Cahokia had become established as the preeminent center and began exerting its influence across the Mississippi valley.

Instead of Mississippian culture developing suddenly as a "Big Bang" at Cahokia, new ideas were added and experimented with over a period of 200 or 300 years, during the Emergent Mississippian Period and the beginnings of the Mississippian Period. This would suggest that these changes were not suddenly forced upon the inhabitants by population pressure, environmental degradation, or even by migrations of groups, instead the new technologies and ideas were developed slowly, experimented with, and mixed into the existing society. These new innovations did not originate at Cahokia, but were part of pan-regional events that took place during the Emergent Mississippian Period, with many groups across the central Mississippi River valley contributing to the development of the new Mississippian society. The excavation of sites in eastern Missouri, including those in Wildwood, could provide valuable information for understanding the culture developed by these people, and how closely related they were to Cahokia and other Mississippian sites.

Fortunately, some of these sites have been excavated in eastern Missouri including isolated farmsteads, small farming hamlets, and small local trade centers. Although a number of larger civic/ceremonial centers have been known within this region, until recently none of these had been investigated. However, during improvements to the Chesterfield Levee, a portion of a previously

unknown market/ceremonial center was unearthed within the Missouri River bottoms just northeast of Wildwood, the Dampier Site (Harl et al. 2011). The remains of this center were exposed about 5 feet below the surface, on either side of a borrow pit where soils were being used to make the levee higher. Although an area of only 30 feet (9 meters) could be examined on either side of this borrow pit, it provided a wealth of information on major Mississippian centers in eastern Missouri. Fortunately, these excavations appear to have been placed in the center of this community exposing the market place, a temple, mortuary facilities including a charnel house, a larger marker post that stood at least 30 feet high, and various earth ovens and fire hearths. Features and associated artifacts provided insights into ceremonial feasting and a wide range of exotic objects available to the occupants of this community, including nearly 800 shell beads and whelk shells from the Gulf of Mexico (Figure 50), copper from the Great Lakes, mica from the Appalachian Mountains, and pumice possibly from the Rocky Mountains. In addition, four pieces from three God's Mask made of whelk shells were recovered (Figure 51:A). Only 20 of these objects have been found so far across the U.S. (Pauketat 2009:145), so three from this one site is a significant find. These masks, representing the head of a person with a long bird-like beak nose, were worn in the ears of the most important community leaders and reflected a recreation myth (Figure 51).

Figure 50: Sample of Marine Shell Beads and Whelks Shells From the Dampier Site

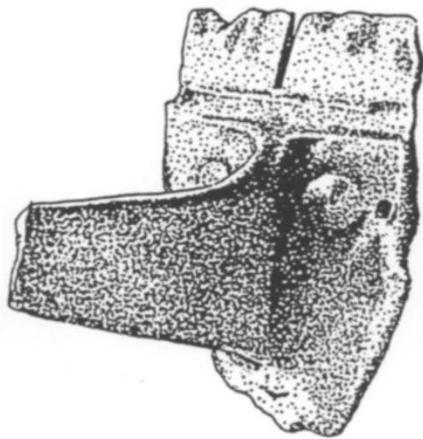


Figure 51: God's Mask Ear Ornaments

- A. Welk Shell God's Mask Recovered from the Dampier Site
- B. God's Mask Found Near the Ears of An Elite Individual Buried in the Big Mound of the St. Louis Mound Group (Williams and Goggin 1956:10)
- C. Statue from the Spiro Site in Oklahoma Possibly Reflecting the Resurrection Myth of Red Horn Wearing Human Head With a Long Noses in His Ears (Pauketat 2009)



A.



B.

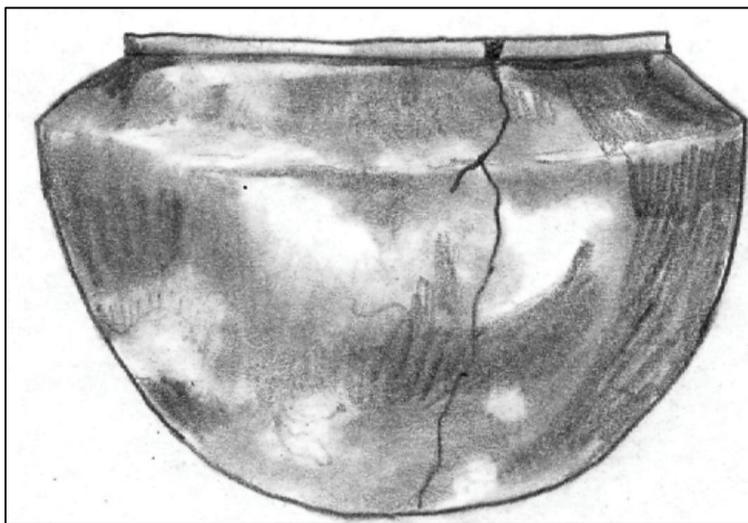


C.

The Dampier Site was remarkable because it was so similar to Cahokia. Does this community represent a colony from Cahokia, were the inhabitants under its control, or did they represent an independent community that just emulated Cahokia and was part of the wider economic system? Excavations at smaller Mississippian sites produced different artifacts. Although some researchers have suggested that the people in eastern Missouri maintained a Late Woodland type of lifestyle into the Mississippian Period (Sturdevant 1997), it appears that these smaller communities had access to goods and ideas spread by the wider Mississippian system. However, these occupants were more concerned with daily living than social competition.

For example, a new jar style was introduced at the start of the Mississippian Period. This jar, usually tempered with a mussel shell, had an oval shape, angled shoulders, and an inslantad rim with short angled (everted) or pinched-out (extruded) lips (Figure 52). Most of these vessels have been named Powell plain because their exterior surfaces were smoothed over, but some of jars had burnished surfaces. This polished-like effect results from a stone being rubbed over the vessel's surface prior to firing. Other vessels were decorated with slips, effigy lugs, or loop handles. This new type of vessel was more common at the

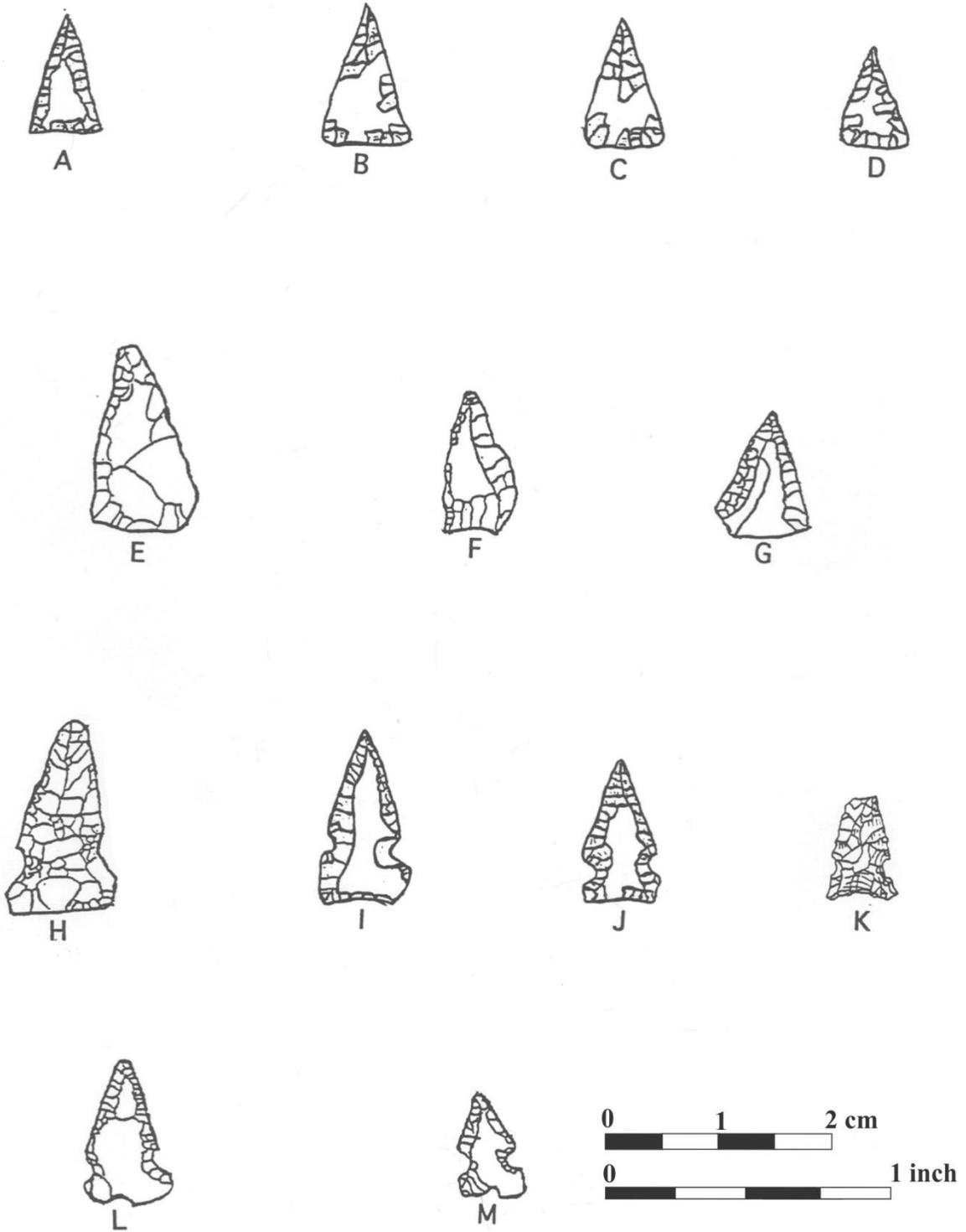
Figure 52: Jar Introduced During Mississippian Period



major market and ceremonial centers where social and economic competition was more prevalent between families. Residents of isolated farmstead and small farming communities, where family competition would not have been prevalent since most members of these communities would be friends or relatives, preferred partially cordmarked conical shaped jars similar to those produced during the second half of the Emergent Mississippian Period. These vessels, because of their conical shape, allowed for a more even distribution of heat across the jar's surface, cooking foods more evenly and requiring less stirring than the new flatter bottom jars (Braun 1983). These residents appear to have been more concerned with daily activities than family competition.

Arrow points introduced during the Mississippian Period also differed from earlier varieties in that they were triangular in shape and lacked a stem. Some of these had side and/or basal notches (Figure 53). However at the market/ceremonial centers, the points appear to be more carefully bifacially flaked than at the farmsteads where arrow points were produced by only retouching the edges of flakes. Although at both sites, some points with stems, similar to those made during the Emergent Mississippian Period continued to be produced, these types of points were more common at the smaller farming communities.

Figure 53: Arrow Points Produced During the Mississippian Period



Foods consumed by the inhabitants of both types of sites were similar, consisting predominately of fish, water fowl, and deer. However, better cuts of deer meat and larger fish were more common at the market/ceremonial centers. Also present at these locations was a larger quantity of small song birds and birds of prey, principally hawks and owls. These birds were probably collected more for their colorful feathers than for their meat. The feathers were likely used to adorn headdresses and clothing.

Agricultural production intensified during the Mississippian Period as indicated by the presence of larger in-ground storage pits and above ground granaries. Starchy seed crops continued to be the major crop raised, but corn also was an important part of the diet. Several new species of corn were developed and raised. Some varieties produced kernels that were similar to modern day popcorn, and were probably roasted in the husk or eaten while still green. Other maize species had larger kernels in fewer rows. The kernels of these plants were ground into flour or mixed with lime to produce hominy.

Increased food production does not appear to have resulted from population pressure nor the depletion of natural resources as has been suggested for the development of Mississippian society (see discussion in Kelly 1990a). If affected by population pressure, inhabitants would have been forced to live in more densely packed communities, and would have established farmsteads at less desirable locations within the uplands, or in areas of less fertile soils. Although larger communities developed during this period, the vast majority of people resided in isolated farmsteads and small farming hamlets, where homes were widely spaced, sometimes more than 100 feet apart.

How much influence the Cahokian leaders had over the rest of the American Bottom, eastern Missouri, or even influenced more distant communities in the Midwest and South is still in question. Although there are numerous similarities between sites in the American Bottom and eastern Missouri, does this represent direct influence or just close trade ties? Were the elite at local markets under control of Cahokia or did they just immolate those leaders? Archaeological investigations are needed at these sites to better understand the Mississippian society, especially at sites in eastern Missouri. Wildwood likely has a diversity of these sites that could provide significant information.

Protohistoric Period (A.D. 1400-1700s)

For a variety of reasons, the large Mississippian centers, such as the Dampier Site, started to be abandoned by A.D. 1200, and by A.D. 1400 the Mississippian society ceased to exist. There have been many theories for the decline of Mississippian society, most of these involved environmental degradation (Lopinot and Woods 1991, Lopinot 1991, Milner 1990). It has been argued that the climate became warmer and drier after A.D. 1200, resulting in the failure of the corn crops (Benson et al. 2009). Other theories center on erosion of sediments caused by increased deforestation of the uplands to support the mound centers as the wood was needed for construction and fuel. In order to maintain their standard of living, people may have reacted to the decline in agricultural production by shortening the period of time they left the fields fallow, or increased the number of plantings per year. Ultimately, this would have caused an even greater decline in the fertility of the sediments and increased erosion, further reducing productivity. Erosion of the top soil increased sedimentation in the local streams, reduced the fish and mussel populations, an important part of Mississippians' diet (Lopinot and Woods 1991; Lopinot 1991).

Explanations other than environmental degradation have been offered (Pauketat 2004, 1991:326-327, Emerson 1997, Collins 1990). The failure of Mississippian society may have been due to the declining economic power of Cahokia and other local centers that faced increasing competition from a growing number of newer market centers that were developing within the southeastern U.S. The established centers near the confluence of the Missouri and Mississippi Rivers were unable to maintain their hold on the market. Another possibility is that the elite found it increasingly difficult to maintain their exalted positions. After A.D. 1150, people's alliances were being split among an increasing number of elite at the mound centers, and at the rural local centers as well. As Emerson (1997:259-260) writes:

Another factor that may have played a role in the disintegration of the center was the inherent stability of the rural population organization. Once established, those dispersed communities provided a stable, kin-based rural organization that was not easily influenced by political developments in the center. . . I think the creation of an organized stable rural population may ultimately have been a major factor in the decentralization process. Such external, destabilizing, even threatening central control. . . In a similar, Natchez analogue, the Great Sun lived in the central ceremonial complex with "control" over a number of villages (that were very similar, if not identical, to our dispersed villages). The Great Sun's authority was constantly thwarted by low-ranking elite status . . . Even tribute was denied at times.

Similar changes have been noted at Cahokia (Collins 1990). During the first part of the Mississippian Period, the entire community was organized so the houses were oriented to Monks Mound. After A.D. 1150, a number of smaller platform mounds were constructed around Cahokia, with a subcommunity of homes facing them. This would suggest that the power of Cahokia elite was lessening as people's alliances began to be divided.

After A.D. 1200, the Cahokian elite intimidated and distanced themselves from the common people, stressing the elites association with the gods in order to justify and maintain their exalted positions. This intimidation is reflected in the shift to black pottery instead of red slip vessels, in some of the images used on pottery--Ramey incised and beakers, the construction of Woodhenge used to institutionalize important calendar events, and the separation of the inner part of Cahokia by a palisade (Collins 1990, Emerson 1997, Isminger et al. 1990). Cahokia's polity also was losing power to the growing number of local communities, who increased their influence over the local people and nearby resources. Elite of Cahokia did not have access to vast quantities of goods that they once had, which was used to expand trade into distant regions, and the rural leaders did not have the economic clout to establish such trade. Further investigations on Mississippian sites in eastern Missouri, including sites within Wildwood, are sorely needed to begin to answer questions associated with the social and economic decline of the Mississippian culture.

With the end of Mississippian society around A.D. 1400, groups in eastern Missouri may have reverted to a lifestyle similar to that practiced at the start of the Late Woodland Period with people living within small farming hamlets, dependent on local resources, stressing group homogeneity, and praising selfless leaders. In western Illinois, and possibly eastern Missouri, Moffat (1985) and Woods (1986) found that near the end of the Mississippian Period groups moved away from urban centers and up the major stream valleys, establishing smaller communities in more secluded locations away from the major waterways. Some groups continued to rely on agriculture for subsistence, while others may have even returned to a hunting/gathering lifestyle. After A.D. 1400, a new type of incised and trailed pottery known as Oneota, was found in western Illinois and western Missouri (Figure 54). These vessels represented styles used along the upper Mississippi River, near the Great Lakes region, during the Mississippian Period, and could suggest the movement of people from those localities.

No Oneota pottery has been found in eastern Missouri. Even more significant is that no sites dating between A.D. 1400 and the early 1700s, have been discovered. When the French Colonial settlers settled this region, they described eastern Missouri as an open territory, which was temporarily used by various tribes for short durations to hunt, trap, and gather minerals. Periodically, people attempted to establish communities here, but these were abandoned after only a few years. For example, the Missouri's oral tradition suggests that they once had villages at the mouth of the river that later bore their tribal name, but they were forced to abandon this area, moving further west, because of the constant threats of attack. The Kickapoos also were reported to have had a village just east of the present community of Portage Des Sioux (McElhiney n.d.). This village too was abandoned after only a short time. The Sac and Fox who lived near the Missouri and Iowa border, claimed lands along the Mississippi River to the mouth of the Missouri River, but did not establish any villages further south than near the Iowa/Missouri border. The Osage organized settlements in the western half of the state, about A.D. 1400-1500. Although it has recently been suggested that the Osage represented the remnants of Cahokia society (Kehoe 2007, Welch 2006, Kelly 2006), the Osage used pottery similar to northern Mississippian Oneota groups. Earlier vessels used locally during the Mississippian Period were no longer manufactured, implying that the Osage had moved into western Missouri from the north at the start of the Protohistoric Period. Various Illini tribes moved into western Illinois, just across the Mississippi

River, although they did establish a major settlement in Missouri near the Iowa/Missouri border at the Illiniwek Site (Grantham 1993, Langoria 1998). These different tribes, and others, gathered resources from eastern Missouri and used short term camps sites, but none of these were permanent communities and at the present no sites dating to this time have been verified within this region. The reason that eastern Missouri was abandoned after A.D. 1400, when it still had a wealth of natural resources and viable transportation, communication, and commerce routes along the waterways, is still a mystery. Finding and excavating such a site in Wildwood would be of crucial importance.

Figure 54: Oneoto Pottery Vessels from Western Missouri
(Chapman and Chapman 1983)



Conclusion

The City of Wildwood likely has a number of significant prehistoric archaeological resources. Presence of Burlington chert, an abundance of plant and animal resources, and access to waterways, including the main avenues for travel, commerce, and communications along the Missouri and Meramec rivers, would have attracted the earliest settlers in the Midwest and continued to be a draw to settlement throughout the various prehistoric periods. At present, only 170 prehistoric sites (and 21 historical sites) have been identified within the limits of Wildwood. This is only a small fraction of the archaeological sites as few surveys have been conducted in order to document sites. No major excavations have taken place at any of these sites.

Unfortunately, there are many threats to the remaining prehistoric sites, including burial grounds. One threat is from the destruction of sites by people only interested in recovering ancient relics. Collecting artifacts off the surface does not harm a site's integrity since these remains have been moved from their original context. But, people digging for ancient remains that they can sell or keep in their own private collections, results in the destruction of these sensitive cultural resources. As Americans, we seem to value an individual's right to "get rich quick" by digging for these artifacts, even over respect for the dead. "Treasure hunters" are often depicted as "living the American dream" by becoming rich overnight. These images are often propagated by the media, who glorify this search for ancient treasures with a number of television shows presently depicting these exploits. The development of "Ebay" and similar internet trading places has drastically increased the looting and selling of prehistoric artifacts, for these internet sites have opened an international market for the sale of significant objects. People from other countries have a great fascination with North American prehistory, and are willing to pay almost any price for ancient objects.

How do we put a price on the past? The destruction of these sites is analogous to ivory hunters killing an elephant only for its tusk; whole species have been destroyed for the greed of a few individuals. Similarly, information available on ancient cultures is being destroyed at an alarming rate. It is the hidden stories that the artifacts tell about the lives of past people that are the most amazing and fascinating part of doing archaeology.

Another threat is from the rapid development of eastern Missouri. Development has been more destructive in recent years, due to the use of larger earth moving equipment that can alter vast areas. Cultural resources only are protected when construction is using federal funding or it is taking place on federal lands. This covers only a small percentage of development. Further, Missouri does not have any state laws protecting cultural resources that exist in the surrounding states. There even have been movements to limit the few cultural resource laws that protect these ancient places. For example, the National Park Service grants, that once funded reconnaissance surveys across various areas in Missouri, including Wildhorse Creek valley, are now limited to Certified Local Governments. The few cities and counties that can take part in this program use the dwindling funds to document historic buildings. Also, a congressional committee discussed limiting cultural resource management laws to cover only construction projects involving properties on the National Registers of Historic Places. If this law had passed, it would have ended all research into prehistoric sites as very few are on the National Register. Although developers

are obligated to pay for archaeological documentation when federal funding or permits are involved, these costs are minuscule, less than 1% of the overall construction budget.

Archaeologists are often perceived as preventing development from taking place. In actuality, no development in eastern Missouri has ever been stopped by the finding of prehistoric remains or even burials. In reality, developers could actually benefit from these investigations. The general public is becoming increasingly sensitive to the destruction of cultural resources. Archaeological investigations can be used as a way of portraying developers with a positive public image. Media is often attracted by these excavations. For example, the archaeological investigations at the Hayden Site, where the first evidence of Burlington chert being produced for trade to other regions nearly 4000 years ago, was reported by the *St. Louis Post Dispatch* (Allen 1993). This article, carried by the Associated Press, was reproduced in newspapers across the country, giving the developer a favorable public image as well as attracting possible home buyers to his property. Remains from this site are now displayed at Chesterfield City Hall, and Dennis Hayden was given an award by the City of Chesterfield in 2008 for his efforts in protecting this valuable part of the community's cultural heritage.

Developers in England have learned that archaeological investigations can even be profitable. During the construction of a new shopping center within the City of York, the remains of a Viking village were discovered dating to A.D. 1000-1100 (Renfrew and Bahn 1991:482-483). This site was investigated by archaeologists and their excavations attracted visitors from countries around the world. This site drew so much attention, that the developer decided to recreate a portion of the village. The Jorvik Viking Center opened in 1984, underneath the shopping center. Visitors ride electric cars:

. . . past thatched houses, workshops, and ships at the riverside wharf. In and around these structures are lifesize, fiber-glass figures of people in period costume. A soundtrack provides the noisy atmosphere of a busy street, with adults and children speaking authentic Old Norse. Even appropriate smells have been included. . . The cars then move on and pass through part of the excavation, left as if the archaeologists were still at work, with the original timbers conserved and replaced *in-situ* in the humidity controlled atmosphere. The visitors leave the cars, and enter a mock-up of a laboratory showing how artifacts and organic remains are studied. The visit concludes with a display area housing the principal finds, and a lucrative souvenir shop.

(Renfrew and Bahn 1991:482)

This site not only informs the public as to how archaeological investigations are performed, and presents information on the lives of the Viking inhabitants, but has drawn numerous visitors to this shopping mall that would otherwise be no different from any other mall any place in the world. This project has been so financially successful, that funds from this center have been used to support other excavations in the City of York.

Further information has been lost due to improperly performed archaeological investigation. Too often those involved in cultural resource management studies assume that sites

in eastern Missouri have been destroyed by past agricultural activity and urbanization, and the sites are written off without any attempt to recover information. There also is a push in these studies to increase profits by performing only cursory investigations, using fewer people, or utilizing staff not properly trained or supervised. Reports provide only the bare minimum of information, usually a listing of the artifacts recovered, and there is no attempt to interpret this data or provide further understanding of the past. Those hired the most are the ones who find the least. Some archaeologists are no longer collecting artifacts, but are simply making a list of materials observed in the field. An accurate list cannot be prepared in this fashion because objects are often covered by dirt and many remains need to be examined under high magnification in order to be properly identified. Smaller artifacts, and plant and animal remains, are not even documented.

It is important that archaeologists not only procure collections, but that they are properly documented and a report completed on the findings. Other archaeologists can then view these artifacts and the field notes in order to determine the validity of the conclusions made about these remains, which is a necessary part of any scientific investigations. These materials also will be available for future archaeologists to investigate when improved techniques have been introduced. It has been discovered that blood hemoglobin can survive on portions of stone tools (Renfrew and Bahn 1991:262). Hemoglobin can be used to determine what animal was last killed or butchered with these tools because blood particles are unique to each animal species. Another technique allows archaeologists to examine the wear pattern on the edge of stone tools. It can now be determined if a tool was used for cutting, scraping, or boring, as well as if the tool was used to work wood (either soft or hardwoods), grass, bone, meat, or hide (Yerkes 1987). Chemical residue left in cooking pots can be analyzed and used to determine the recipe of the meal last cooked within these pots (Renfrew and Bahn 1991:263). Other major advances have recently been developed using DNA and computer analysis. In the future, investigators will have valuable techniques to unlock the secrets from the past that we cannot even imagine today. For this reason, most archaeologists not only collect artifacts from sites, but carefully label and store these materials properly.

Federal guidelines covering cultural resource management studies require that all artifacts be stored in acid free boxes in climate controlled rooms. All notes, drawings, and photographs associated with the investigations also are stored at these curation facilities. In this way, future researchers, from all fields, will be able to examine these materials.

The public and government officials should hold archaeologists accountable for performing proper investigations and making certain that this information is available to the public. The purpose for conducting archaeological investigations is not to collect another spear point or pottery vessel to place in a university collection or in a museum display. Certainly, these pieces touch our imagination and interest, but it is not the object itself that piques our curiosity, it is the people who produced these artifacts. Objects are only symbols of the past and contain valuable information for understanding past people and their cultures. Working like crime scene investigators, archaeologists are able to understand what took place at sites, but more importantly the motivation behind the inhabitants.

The remains from the past should not belong to any one individual or a specific group; they should be available for all to study and appreciate. Archaeologists have no more claims on this past than others, and have an obligation to share their information with the general public. Atrocities sometimes occur when one group takes control of the past. Governments have used information supplied by archaeologists to justify their claims of superiority or to justify domination over other people. The Nazis of Germany during the 1930s and 1940s sent teams of archaeologists out to excavate sites in order to prove their audacious beliefs in Aryan racial superiority. Napoleon, likewise, sent teams of archaeologists to Egypt to prove that France represented the legacy of Egypt, and therefore justified his establishment of a new empire. During the 19th century, U.S. officials used archaeology to justify the subjugation of Native American groups, arguing that they had destroyed the “Mound Builders” society, who was falsely believed to be of Indo-European stock. The same officials argued that a similar fate could await American society unless these “savages” were stopped. A new generation of “revisionist historians” has begun to argue yet again that the many wonders created by the indigenous populations were produced by people from the “greater societies” in the Old World, or even from other planets! The recent discovery of skeletal remains in Washington state dating to the end of the Ice Age with “Caucasoid-like” features, the Kennewick Man, has some people again talking about Caucasian people having been in America first and later killed off by the savage Native American populations. This is only a misinterpretation of the archaeological data. The subject was not Caucasian, but a Native American whose ancestors came from southern Asia (Chatters 2000). There appears to have been many waves of migrations from Asia with individuals having classic Native American features representing later waves from northern Asia. The misuse of archaeological data can be prevented if significant information is shared by everyone.

Data from the past can be used by researchers in many fields to improve our lives today. Archaeologists do not want to stop progress and return to the “good old days”. But, there are many lessons we can learn from the past, and there are aspects of these cultures that can be used to improve our lives today. Information from the past can be utilized to reintroduce or develop new technologies, medicines, foods, and ideas. For example, stone blades have been employed in heart surgery. Although stone tools are not as durable as metal ones, they are sharper than any metal scalpel. During surgery, stone blades produce a finer incision allowing the patient to heal faster, bleed less, and have no scarring.

Similarly, new food sources can come from studying the past. It used to be accepted that corn was immediately adopted by prehistoric groups, but it is now believed that plants native to this region, such as goosefoot, knotweed, maygrass, and little barley were the primary plants grown by prehistoric agriculturalists. These plants produced starchy seeds that could be used for all the same purposes as corn. Corn, a domesticated plant from Mexico, has to be carefully tended in order to grow in this region. This plant so depletes the soils of nutrients that it has to be rotated with other crops. Native starchy seed plants are often eradicated from fields since corn cannot compete against these “weeds” for nutrients and light. These native starchy seed plants are among the first plants to grow in a cleared field, and can be observed growing around homes or even between cracks in the sidewalk. The domesticated versions of these plants, with their larger seed and thinner seed coat, no longer exist in this region. However, domesticated varieties of goosefoot (chenopodium) have survived in Peru, where they recently have been introduced as a novelty food

in health food stores, because these plants are actually beneficial to the digestive system. It is possible that domesticated varieties of the native starchy seed plants could be redeveloped. These plants could then be used as alternative food sources that have the potential of being better for our health and easily grown; where even vacant urban lots could be used to raise these plants. Starchy seeds could address other problems such as the production of ethanol, an alternative to gasoline.

Further, insights would come from understanding past social systems. By studying the past we can learn how social changes occur and how to best help people going through these changes. We once assumed that people only altered their lifestyles when they were forced to change. Thus, it was believed that people adopted agriculture, or lived in permanent settlements only when they were forced to by a declining environment or overpopulation. This is not to deny that forced changes occurred, certainly they do, with the rise of dictators, when one group conquers another, or when a person loses their job. Recent excavations are beginning to suggest, however, that people are more willing to accept changes that will improve their lives socially or economically. Also, altering one portion of a person's life can affect many other aspects. During periods of economic up turns, people are more willing to accept innovations and new ideas. But during periods of economic decline, they tend to become more conservative in their consumer and social behavior. Research and experimentation becomes less important. People also become more entrenched in their old beliefs. That is why late 19th century Native American groups, which were under severe economic and social distress, often rejected change being forced on them so vehemently and violently by European Americans. They became even more ingrained in their traditional ways; even their religious beliefs became more conservative. The Ghost Dance, where it was believed that deceased ancestors and buffalo would rise up driving out the European American invaders, became widely popular during the late 19th century, reflecting the hope in the return of the old ways.

Additional information also can be extricated by examining past social systems. We still debate many of the same issues faced by our ancestors. Issues such as central authority versus local rule, and group rights versus those of the individual are concerns both today and in the past. Prehistoric societies appear to have fluctuated between these contrasting ideas. During the Middle Woodland Period, entrepreneurial and individual success was stressed evidenced by the accumulation of exotic goods and wide availability of material goods. These beliefs are not much different than ours today. During the Late Woodland Period, however, more emphasis was placed on group unity and less on individualism as reflected by the presence of less conspicuous elite objects and in the organization of communities. Leaders were judged by their abilities like hunting, or their altruistic behavior, instead of the materials they accumulated. Similar transitions appear to have occurred during the Mississippian and Protohistoric periods. Historically, American society went through the same changes, at times stressing national unity, such during the early 1800s; at other times stressing the family, such as during the Victorian age; and at other times stressing group rights over that of the individual as expressed in socialist movements at the start of the 20th century and the hippies movement in the late 1960s to early 1970s.

Today we again stress individualism. This is reflected in our movies with an individual figure taking on whole armies defeating them single handedly, even enlisting the aid of an archaeological hero, Indiana Jones. Our homes and modern communities are not designed for

social interactions with others, but are self contained units where many forms of entertainment are available for personal enjoyment. Entertainment often stresses individuality-- televisions, DVDs, iPods, X-boxes, Wii systems, and computers. This is especially true with the movement to virtual reality, where an individual can escape into a world of their own design. More than ever before our communities are becoming more uniform with the same type of housing and same businesses.

What makes a community special? What separates it from all others? It is its cultural heritage. This heritage can be a source of community pride. Cultural heritage also can be used to entice tourists to visit communities. Why do people travel to London, England? Do they go for the shopping malls, with many of the same stores present in the U.S., more often it is to visit London's unique cultural sites.

Wildwood's cultural resources could provide a better understanding of human behavior, attract tourists, serve as sources of community pride, and used to reintroduce new technologies and ideas that would improve our lives today. These resources also can provide us with a better appreciation of the accomplishments of people in the past, which in turn allows us to appreciate cultural differences today, so important in our increasingly global society. Biologists warn of the importance of biodiversity in order to insure our future existence. A declining cultural diversity can have the same dire consequences on our futures. Studying the past can help ensure that we always have new sources of information and insights. At the very least, these cultural resources provide us with a better appreciation of the human spirit. We often view our problems today as overwhelming, yet the archaeological sites of eastern Missouri show how people can overcome any problem and accomplish any goal that they desire.

Destruction of eastern Missouri's archaeological resources would have negative and long lasting ramifications. It is a shame that the average school age child knows more about the cultural heritage of Egypt or Mexico than they know about what is directly beneath their feet. Much of the local cultural heritage has already been destroyed because of looting, development, and poorly conducted archaeological investigations. Once a site is destroyed, it is gone forever, along with the unique information that it contained. Pauketat (2004:176) put it succinctly by writing that:

. . . each settlement holds critical historical information about the variability, intra-polity plurality, and social history of the real people of the past. Losing one of them is an insult to history. It has been compared repeatedly and justifiably to ripping chapters out of history books. To extend the analogy, the destruction of the monuments, cemeteries, and settlements of entire polities is nothing less than **book burning**. (emphasis added)

Eventually all prehistoric sites within eastern Missouri will be destroyed or severely altered, except for the few places that exist within public lands or those protected by a few enlightened individuals on private land. Hopefully, these resources will be more carefully managed in the future and the information used to inform researchers in all fields and enlighten the general public about the wonders left by the prehistoric inhabitants. Otherwise, future generations will certainly criticize us for our greed and shortsightedness in denying them the opportunity to appreciate and learn from this past.

Works Cited

- Ahler, Steven R., Paul P. Kreisa, and Richard Edging
2010 *Marginality and Continuity: The Archaeology of the Northern Ozarks*. Missouri Archaeological Society, Special Publication No.9, Springfield, Missouri.
- Allen, William
1993 Area Site is Link to Past: Artifacts Are Clues to Life in 2000B.C. *St. Louis Post Dispatch*, May 23, 1993, Page 1, Section D.
- Alt, Susan M.
2002 The Knoebel Site: Tradition and Change in the Cahokian Suburbs. Masters Thesis, Department of Anthropology, University of Illinois, Urbana-Champaign.

2006 The Power of Diversity: The Roles of Migration and Hybridity in Culture Change. In *Leadership and Polity in Mississippian Society*. Brian M. Butler and Paul D. Welch, Editors, pp 289-308, Occasional Papers No. 33, Center for Archaeological Investigations, Southern Illinois University, Carbondale.
- Anderson, Kenneth H.
1979 Geologic Map of Missouri. Missouri Geological Survey, Missouri Department of Natural Resources, Jefferson City.
- Asch, Nancy B. and David L. Asch
1985 Archaeobotany. In *Deer Tract: A Late Woodland Village in the Mississippi Valley*, Charles R. McGimsey and Michael D. Conner, Editors, Technical Report No. 1, pp. 80-85, Center for American Archeology, Kampsville.
- Asch, Nancy B., Richard I. Ford, and David L. Asch
1972 *Paleoethnobotany of the Koster Site: The Archaic Horizons*. Illinois State Museum Reports of Investigations 24, Springfield, pp. 191-247.
- Bareis, Charles J. and James W. Porter, Editors
1984 In *American Bottom Archaeology: A Summary of the FAI-270 Project Contribution to the Culture History of the Mississippi River Valley*. University of Illinois Press, Urbana.
- Barker, Alex W. and Timothy R. Pauketat, Editors
1992 *Lords of the Southwest: Social Inequality and the Native Elites of the Southeastern North America*. American Anthropological Association, Washington D.C.
- Benson, Larry V., Timothy R. Pauketat, and Edward B. Cook
2009 Cahokia's Boom and Bust in the Context of Climate Change. *American Antiquity* 74(3):467-483.

- Binford, Lewis R.
 1983 Researching Formation Processes: My Style. In *Working at Archaeology*. 213-378, Academic Press, New York.
- Braun, David P.
 1977 Middle Woodland - (early) Late Woodland Social Change in the Prehistoric Central Midwestern US. Unpublished Ph.D. dissertation, Department of Anthropology, University of Michigan, Ann Arbor.
 1983 Pots as Tools. In *Archaeological Hammers and Theories*. James A. Moore and Arthur S. Keene, Editors, pp. 107-134, Academic Press, New York.
- Brown, James A. and Richard K. Vierra
 1983 What Happened in the Middle Archaic? Introduction to an Ecological Approach to Koster Site Archeology. In *Archaic Hunters and Gatherers in the American Midwest*. James L. Phillips and James H. Brown, Editors, pp. 165-196, Academic Press, New York.
- Bushnell, David L. Jr.
 1904 *The Cahokia and Surrounding Mound Groups*. Peabody Museum of American Archaeology and Ethnology, Volume III, Number 1, Harvard University, Cambridge.
- Catlin, George
 1973 *Letters and Notes on the Manners, Customs, and Conditions of North American Indians: Written During Eight Years' Travel (1832-1839) Amongst the Wildest Tribes of Indians in North America, Volume I*. Dover Publications Inc., New York.
- Chapman, Carl H.
 1975 *Archaeology of Missouri I*. University of Missouri, Columbia.
 1980 *Archaeology of Missouri II*. University of Missouri, Columbia.
- Chapman, Carl H. and Eleanor F. Chapman
 1983 *Indians and Archaeology of Missouri*. University of Missouri Press, Columbia, Missouri.
- Chatters, James C.
 2000 The Recovery and First Analysis of an Early Holocene Human Skeleton from Kennewick, Washington. *American Antiquity* 65(2):291-316.
- Cohen, Mark N.
 1977 *The Food Crisis in Prehistory: Over Population and Origins of Agriculture*. Yale University Press, New Haven, Connecticut.
- Collins, James M.
 1990 *The Archaeology of the Cahokia Mounds ICT-II: Site Structure*. Illinois Cultural Resources Study 10, Illinois Historic Preservation Agency, Springfield.

Emerson, Thomas E.

1984 *The Dyroff and Levin Site*. American bottom Archaeology, FAI-270 Site Reports, Volume 9, University of Illinois Press, Urbana.

1997 *Cahokia and the Archaeology of Power*. University of Alabama Press, Tuscalosa.

Emerson, Thomas E. and Douglas K. Jackson

1984 *The BBB Motor Site*. American Bottom Archaeology, FAI-270 Site Reports, Volume 6, University of Illinois Press, Urbana, Illinois.

Emerson, Thomas E., Dale L. McElrath, and Andrew C. Fortier

2000 *Late Woodland Societies: Tradition and Transformation Across the Midcontinent*. University of Nebraska Press, Lincoln.

Fagan, Brian M.

1991 *Ancient North America: The Archaeology of a Continent*. Thames and Hudson Ltd., London.

Feder, Kenneth L.

1990 *Frauds, Myth, and Mysteries: Science and Pseudoscience in Archaeology*. Mayfield Publishing Company, Mountain View, California.

Ford, R.I.

1974 Northeastern Archaeology: Past and Future Directions. *Annual Review of Anthropology* 3:385-413.

Fortier, Andrew C., Thomas E. Emerson, and Dale L. McElrath

2006 Calibrating and Reassessing American Bottom Culture History. *Southeastern Archaeology* 25(2):170-211.

Fortier, Andrew C. and Dale L. McElrath

2002 Deconstructing the Emergent Mississippian Concept: The Case for the Terminal Late Woodland in the American Bottom. *Midcontinental Journal of Archaeology* 27(2).171-216.

Fowler, Melvin L.

1978 Cahokia and the American Bottom: Settlement Archaeology. In *Mississippian Settlement Patterns*, Bruce Smith, Editor, Academic Press, New York.

Fundaburk, Emma L.

1958 *Southeastern Indians Life Portraits: A Catalogue of Pictures 1564-1860*. Alabama Engraving Company, Birmingham, Alabama.

Gaertner, Linda M.

1994 Determining the Function of Dalton Adzes from Northeastern Arkansas. *Lithic Technology* 19:97-109.

Geller, J. Elaine H. and David B. Crampton

1988 *The Boschert Site (23SC609): A Late Woodland Extraction Site in the Uplands of St. Charles County, Missouri*. Missouri Department of Transportation, Jefferson City.

Gibbon, Guy E.

1974 The Mississippian Presence in Red Wing Area, Minnesota. In *New Perspectives on Cahokia: Views from the Periphery*, J.B. Stoltman, Editor, pp. 281-305, Prehistoric Press, Madison, Wisconsin.

Graham, Russell W.

1980 Final Report on Paleontological and Archaeological Excavations and Surface Surveys at Mastodon State Park. Prepared for Illinois State Museum Society and Missouri Department of Natural Resources, by Illinois State Museum, Springfield.

Graham, Russell W., Vance C. Haynes, Donald L. Johnson, and Marvin Kay

1981 Kimmswick: A Clovis-Mastodon Association in Eastern Missouri. *Science* 213: 1115-1117.

Grantham, Larry

1993 The Illini Village of the Marquette and Joliet Voyage of 1673. *The Missouri Archaeologist* 54:1-20.

Greenman, Emerson F.

1963 The Upper Paleolithic and the New World. *Current Anthropology* 4(1):41-91.

Hall, Robert L.

1980 Ceramics. In *Investigations at the Labras Lake Site, Volume I, Archaeology*. James L. Phillips, Robert L. Hall, and Richard W. Yerkes, Report of Investigations No. 1, pp. 366-406, Department of Anthropology, University of Illinois, Chicago.

Harl, Joe

1991 An Alternative Explanation for the Shift from a Late Woodland to a Mississippian Lifestyle Based on Evidence from the Bridgeton Site (23SL442) and Other Sites Along the Lower Missouri River Valley. Unpublished Master's Thesis, Department of Anthropology, Washington University, Missouri.

1995 *Master Plan for the Management of Archaeological Cultural Resources within St. Louis City and County, Missouri*. Archaeological Services, Research Report #203, University of Missouri, St. Louis.

1999 *Data Recovery Investigations at the Truman Road Site (23SC924) with St. Charles County, Missouri*. Research Report #7, Archaeological Research Center of St. Louis.

- Harl, Joe, Sophie Kohn, Lucretia Kelly, and Marjorie Schroeder
2011 *Data Recovery Investigations at the Dampier Site (23SL2296): A Mississippian Center in the City of Chesterfield, St. Louis County, Missouri*. Research Report 607, Archaeological Research Center of St. Louis.
- Harl, Joseph L., Dennis Naglich and Joseph M. Nixon
1990 Phase I Reconnaissance Level Survey of Prehistoric and Historic Cultural Resources in the Wildhorse Creek drainage Basin in South St. Louis County, Missouri. Survey report SL-128 on file at the Missouri Department of Natural Resources, State Historic Preservation Office, Jefferson City, Missouri.
- Harl, Joe and Joseph M. Nixon
1992 *Phase III Mitigation of Sites 23SL49, SL619, and SL629, Lost Hill Airport Site, St. Louis County, Missouri*. Archaeological Survey, Research Report #119, University of Missouri, St. Louis.
- Harl, Joe and Patti J. Wright
1995 *Data Recovery Investigations at the Hayden Site (23SL36) and the Rabanus Site (23SL859), Chesterfield, St. Louis County, Missouri: New Insights into the Titterington/Sedalia Phase in East Central Missouri*. Archaeological Services, Research Report #182, University of Missouri-St. Louis.
- Higgins, Michael J.
1990 *The Nochtka Site: The Early, Middle, and Late Archaic Occupations*. American Bottom Archaeology, FAI-270 Site Reports Volume 21, University of Illinois Press, Urbana, Illinois.
- Hoard, Robert J.
2000 Late Woodland in Central Missouri: The Boone Phase. In *Tradition and Transformation Across the Midcontinent*, Edited by T.E. Emerson, D.L. McElrath, and A.C. Fortier, pp. 211-239, University of Nebraska Press, Lincoln, Nebraska.
- Hodder, Ian
1986 *Reading the Past: Current Approaches to Interpretation in Archaeology*. Cambridge University Press, Cambridge.
- Holley, George R.
1989 *The Archaeology of the Cahokia Mounds ICT-II: Ceramics*. Illinois Cultural Resources Study 10, Illinois Historic Preservation Agency, Springfield, Illinois.
- Hough, Walter
1926 *Fire As An Agent in Human Culture*. U.S. National Museum, Bulletin #139, Smithsonian Institution, Washington D.C.

- Howard, James H.
1968 *The Southeastern Ceremonial Complex and Its Interpretation*. Memoir, Missouri Archaeological Society, Number 6, Columbia, Missouri.
- Iseminger, William R.
2010 *Cahokia Mounds: America's First City*. The History Press, Charleston, South Carolina.
- Iseminger, William R., Timothy R. Pauketat, Brad Koldehoff, Lucretia S. Kelly, and Leonard Blake
1990 *The Archaeology of the Cahokia Palisade: The East Palisade Investigations*. Illinois Cultural Resources Study 14, Illinois Historic Preservation Agency, Springfield.
- Jeffries, Richard W. and B. Mark Lynch
1983 Dimensions of Middle Archaic Cultural Adaptation at the Black Earth Site, Saline County, Illinois. In *Archaic Hunters and Gatherers in the American Midwest*, James L. Phillips and James H. Brown, Editors, pp. 299-322, Academic Press, New York.
- Kay, Marvin
1979 On the Periphery: Hopewell Settlement in Central Missouri. In *Hopewell Archaeology*, David Brose and N'omi Greber, Kent State University Press, Kent, Ohio.
1980 *The Central Missouri Hopewell Settlement-Subsistence System*. Missouri Archaeological Society, Research Series #15.
- Kay, Marvin and Richard E. Martens
2004 Clovis Scrapers from the Martens Site. *The Missouri Archaeologist* 65:44-67.
- Kehoe, Alice B.
2007 Osage Texts and Cahokia Data. In *Ancient Objects and Sacred Realms: Interpretations of Mississippian Iconography*. F. Kent Reilly III and James F. Garber, Editors, pp. 246-262, University of Texas Press, Austin.
- Kelly, John
1981a Annual Report of Investigations at the Range Site. In *Annual Report of 1980 Investigations*, pp. 14-23, Department of Anthropology, University of Illinois, Urbana-Champaign.
1981b Variability in Early Bluff Culture in American Bottom Region. Paper Presented at 1981 Midwestern Archaeological Conference, Madison, Wisconsin.
1987a Patrick Phase Features. In *The Range Site: Archaic Through the Late Woodland Occupations*. By John E. Kelly, Andrew C. Fortier, Steven J. Ozuk, and Joyce A. Williams, pp. 144-200, American Bottom Archaeology, FAI-270 Site Reports, Volume 16, University of Illinois Press, Urbana.

Kelly, John continued

1987b Interpretation of the Late Woodland Occupation at the Range Site. In *The Range Site: Archaic Through the Late Woodland Occupations*. By John E. Kelly, Andrew C. Fortier, Steven J. Ozuk, and Joyce A. Williams, pp. 144-200, American Bottom Archaeology, FAI-270 Site Reports, Volume 16, University of Illinois Press, Urbana.

1990a Range Site Community Patterns and the Mississippian Emergence. In *The Mississippian Emergence*, Bruce D. Smith, Editor, pp. 67-112, Smithsonian Institution Press, Washington D.C.

1990b The Emergence of Mississippian Culture in the American Bottom. In *The Mississippian Emergence*, Bruce D. Smith, Editor, pp. 113-152, Smithsonian Institution Press, Washington D.C.

1991 The Evidence for Prehistoric Exchange and Its Implications for the Development of Cahokia. In *New Perspectives on Cahokia: Views from the Periphery*, Edited by James B. Stoltman, pp.65-92, Monographs in World Archaeology No. 2, Prehistory Press, Madison, Wisconsin.

2006 The Ritualization of Cahokia: The Structure and Organization of Early Cahokia Crafts. In *Leadership and Polity in Mississippian Society*. Brain M. Butler and Paul D. Welch, Editors, pp 236-265, Occasional Papers No. 33, Center for Archaeological Investigations, Southern Illinois University, Carbondale.

Kelly, John E., Steven J. Ozuk, Douglas K. Jackson, Dale L. McElrath, Fred A. Finney, and Duane Esarey

1984 Emergent Mississippian Period. In *American Bottom Archaeology: A Summary of the FAI-270 Project Contribution to the Culture History of the Mississippi River Valley*. Edited by Charles J. Bareis and James W. Porter, pp. 128-157, University of Illinois Press, Urbana, Illinois.

Kelly, John E., Steven J. Ozuk, and Joyce A. Williams

1990 *The Range Site 2: The Emergent Mississippian Dohack and Range Phase Occupations*. American Bottom Archaeology, FAI-270 Site Reports, University of Chicago Press, Urbana.

Koldehoff, Brad and Joseph M. Galloy

2006 Late Woodland Frontiers in the American Bottom Region. *Southeastern Archaeology* 25(2):275-299.

Koldehoff, Brad and John A. Walthall

2004 Settling In: Hunter-Gatherer Mobility During the Pleistocene-Holocene Transition in the Central Mississippi Valley. In *Aboriginal Ritual and Economy in the Eastern Woodlands: Essays in Memory of Howard Dalton Winters*, Annie-Marie Cantwell, Lawrence A. Conrad, and Johnathan E. Reyman, Editors, pp. 49-72, Scientific Papers 30, Illinois State Museum, Springfield.

2009 Dalton and the Early Holocene Midcontinent: Setting the Stage. In *Archaic Societies: Diversity and Complexity Across the Midcontinent*. Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, Editors, pp. 137-154, State University of New York Press, Albany.

Langoria, Linda

1998 Stone Artifacts from the Iliniwek Village Site, Northeast Missouri. *The Missouri Archaeologist* 50:125-151.

Lewis, R. Barry

1983 Archaic Adaptations to the Illinois Prairie: The Salt Creek Region. In *Archaic Hunters and Gatherers in the American Midwest*, James L. Phillips and James H. Brown, Editors, Academic Press, New York.

Limp, W. Fredrick

1977 The Economics of Agricultural Dispersal. Paper Presented at the Society of American Archaeology, New Orleans.

Lopinot, Neal H.

1991 A New Crop of Data on the Cahokian Polity. In *Agricultural Origins, Development, and Significance in Eastern North America*, William Green, Editor, University of Iowa Press, Iowa City.

Lopinot, Neal H. And William I. Woods

1991 Wood Overexploitation and the Collapse of Cahokia. In *Forager, Farmer, Indian Chief: Plant Production and Social Relations in the Prehistoric Eastern Woodlands*, C. Margaret Scarry, Editor, University of Florida Press, Gainesville.

McElhiney, Charles J.

n.d. Site Form for 23SC6, St. Charles County, On File Missouri Archaeological Society, Missouri Department of Natural Resources, State Historic Preservation Office, Jefferson County, Missouri.

McElrath, Dale L.

1986 *The McLean Site*. American Bottom Archaeology, FAI-270 Site Report, Volume 14, University of Illinois Press, Urbana.

- McElrath, Dale L., Thomas E. Emerson, Andrew C. Fortier, and James L. Phillips
 1984 Late Archaic Period. In *American Bottom Archaeology*, pp.34-58, Charles J. Baeris and James W. Porter (Editors), University of Illinois Press, Urbana.
- McElrath, Dale L. and Andrew C. Fortier
 1983 *The Missouri Pacific #2 Site*. American Bottom Archaeology, FAI-270 Site Report, Volume 3, University of Illinois Press, Urbana.
- Mauss, Marcel
 1967 *The Gift: Forms and Functions of Exchange in Archaic Societies*. Translated by Ian Cunnison, W.W. Norton and Company, New York.
- Martens, Richard E.
 2007 Amateur and Professional Accomplishments During the 1997 Excavation of the Martens Clovis Site (23SL222). *Missouri Archaeological Society Quarterly* 24(4):12-19.
- Martens, Richard E., Brad Kodehoff, Juliet E. Morrow, and Toby A. Morrow
 2004 The Surface Collection from the Martens Site, 23SL222. *The Missouri Archaeologist* 65:1-43.
- Martin, Terrell L.
 1997 The Early Woodland Period in Missouri. *The Missouri Archaeologist*, Volume 58, Columbia.
- Meltzer, David J. and Bruce D. Smith
 1985 Paleoindian and Early Archaic Subsistence Strategies in Eastern North America. In *Foraging, Collection, and Harvesting: Archaic Period Subsistence and Settlement in the Eastern Woodland*, Sarah J. Neusius, Editor, Center of Archaeological Investigations, Occasional Paper #6, pp. 3-32, Southern Illinois University, Carbondale.
- Milner, George R.
 1990 The Late Prehistoric Cahokia Cultural System of the Mississippi River Valley: Foundations, Fluorescence, and Fragmentation. *Journal of World Prehistory* 4(1):1-43.
- Moffat, Charles R.
 1985 The Mississippian Occupation of the Upper Kaskaskia Valley: Problems in Culture History and Economic Organization. Ph.D. Dissertation, Department of Anthropology, University of Illinois, Champaign-Urbana.
- Morrow, Juliet E.
 1998 Excavations at the Martens Site, 23SL222. *Missouri Archaeological Society Quarterly* 5(1):4-7.
- Morse, Dan F.
 1997 *Sloan: A Paleoindian Dalton Cemetery in Arkansas*. Smithsonian Institution Press, Washington D.C.

Morse, Dan F. and Phyllis A. Morse

1983 *Archaeology of the Central Mississippi Valley*. Academic Press, New York.

National Park Service

n.d. Photo of Cahokia Mounds Mural. <http://www.nps.gov/history/worldheritage/cahokia.htm>, Accessed January 26, 2012.

O'Brien, Michael J. and W. Raymond Wood

1998 *The Prehistory of Missouri*. University of Missouri Press, Columbia.

O'Brien, Patricia

1972 *A Formal Analysis of Cahokia Ceramics from the Powell Tract*. Illinois Archaeological Survey, Monograph #3, Springfield.

1989 Cahokia: The Political Capital of the "Ramey" State. *North American Archaeologist* 10:275-292.

1991 Early State Economics: Cahokia Capital of the Ramey State. In *Early State Economics*, Henri J.M. Claessen and Pieter van de Velde, pp. 143-175, Transaction, London.

1993 Cultural Taxonomy, Cross-Cultural Types and Cahokia. *Illinois Archaeology* 5:481-497/

Ohio Historical Society

n.d. Development of the Atlatl. <http://www.ohiohistory.org/resource/audiovis/photodup.html>, Accessed January 21, 2013.

Pauketat, Timothy R.

1994 *The Ascent of Chiefs: Cahokia and Mississippian Politics in Native North America*. University of Alabama Press, Tuscaloosa.

1997 Cahokian Political Economy. In *Cahokia: Domination and Ideology in the Mississippian World*. Timothy R. Pauketat and Thomas E. Emerson, Editors, pp. 30-51, University of Nebraska Press, Lincoln.

1998 Refiguring the Archaeology of Greater Cahokia. *Journal of Archaeological Research* 6:45-89.

2002 A Fourth-Generation Synthesis of Cahokia and Mississippianization. *Midcontinental Journal of Archaeology* 27(2).149-170.

2004 *Ancient Cahokia and the Mississippians*. Cambridge University Press, Cambridge, England.

2007 *Chieftoms and Other Archaeological Delusions*. AltaMira Press, Lanham, Maryland.

Pauketat, Timothy R. continued

2009 *Cahokia: Ancient America's Great City on the Mississippi*. The Pelican Library of American Indian History. Viking Group, Inc., New York, New York.

Pauketat, Timothy R. and Thomas E. Emerson

1997 *Cahokia: Domination and Ideology in the Mississippian World*. University of Nebraska Press, Lincoln.

Porter, James W.

1974 *Cahokia Archaeology as Viewed from the Mitchell Site: A Satellite Community at A.D. 1150-1200*. Ph.D. Dissertation, Department of Anthropology, University of Wisconsin, Madison.

Ray, Jack H.

2007 *Ozarks Chipped-Stone Resources: A Guide to the Identification, Distribution, and Prehistoric Use of Cherts and Other Siliceous Raw Materials*. Special Publication No. 8, Missouri Archaeological Society, Springfield, Missouri.

Reeder, Robert L.

1982 *The Feeler Site, 23MS12: A Multi-component Site in the Central Gasconade Drainage, Volume I*. An Archaeological Project Conducted for the Missouri State Highway Commission and Federal Highway Administration. Department of Anthropology, University of Missouri, Columbia, Missouri.

1988 *Prehistory of the Gasconade River Basin*. Unpublished PhD dissertation, Department of Anthropology, University of Missouri-Columbia, Missouri.

2000 *The Maramec Spring Phase*. In *Late Woodland Societies: Tradition and Transformation Across the Midcontinent*, Edited by T.E. Emerson, D.L. McElrath, and A.C. Fortier, pp. 187-210, University of Nebraska Press, Lincoln, Nebraska.

2007 *Late Prehistoric Occupation of the Gasconade River Drainage*. *The Missouri Archaeologist* 68:29-93.

Reid, Kenneth C.

1983 *The Nebo Hill Phase: Late Archaic Prehistory in the Lower Missouri Valley*. In *Archaic Hunters and Gatherers in the American Midwest*. James L. Phillips and James H. Brown, Editors, pp. 165-196, Academic Press, New York.

1984 *From Fire and Ice: New Evidence for the Production and Preservation of Late Archaic Fiber-Tempered Pottery in the Mid-Latitude Lowlands*. *American Antiquity* 49:55-76.

Reidhead, Van A., Laura Kling, and Joe Harl

1980 *Prehistoric Plant Cultivation in Eastern North America*. Paper Presented at the Society for American Archaeology, Minneapolis.

Renfrew, Colin and Paul Bahn

1991 *Archaeology Theories, Methods, and Practice*. Thames and Hudson Ltd., London.

Roper, Donna C.

1979 *Archaeological Survey and Settlement Pattern Models in Central Illinois*. Illinois State Museum, Scientific Papers, Volume XVI, Springfield.

Sassaman, Kenneth E.

1993 *Early Pottery in the Southeast: Tradition and Innovation in Cooking Technology*. University of Alabama Press, Tuscaloosa.

Schneider, Harold

1974 *Economic Man*. Free Press, New York.

Schroeder, Walter A.

1981 *Presettlement Prairie of Missouri*. Natural History Series 2, Missouri Department of Conservation, Jefferson City.

Stafford, C. Russell

1985 *The Campbell Hollow Archaic Occupations: A Study of Intrasite Spatial Structure in the Lower Illinois Valley*. Center for American Archeology, Research Series Volume #4, Kampsville.

Stanford, Dennis

1983 Pre-Clovis Occupation South of the Ice Sheets. In *Early Man in the New World*, R. Shutler Jr., Editor, pp. 65-72, Sage Publications, Beverly Hills.

1997 Northern Clans, Northern Traces, Journeys in the Ancient Circumpolar World: Interview with Smithsonian Paleo Anthropologist Dennis Stanford. http://www.s2nmedia.com/arctic/html/dennis_stanford.html. Smithsonian Institution, Washington D.C.

Stirling, M.W.

1945 *Concepts of the Sun Among American Indians*. Annual Report of the Board of Regents of the Smithsonian Institution, Publication #3817, pp. 387-400, U.S. Government Printing Office, Washington D.C.

Straus, Lawrence G.

2000 Solutrean Settlement of North America? A Review of Reality. *American Antiquity* 65(2):219-226.

Struever, Stuart

1965 Middle Woodland Culture History in the Great Lakes Riverine Area. *American Antiquity* 31(2):211-223.

Sturdevant, Craig

1997 *Greystone Archaeological Data Recovery and Re-Evaluation of the Emergent Mississippian Period*. Environmental Research Center of Missouri, Inc., Jefferson City.

Wade, Nicholas

2012 Earliest Americans Arrived in Waves, DNA Study Finds. *The New York Times, Science*, July 11, 2012, New York, New York.

Walthal, John A.

1981 *Galena and Aboriginal Trade in Eastern North America*. Scientific Papers Vol. XVII, Illinois State Museum, Springfield.

Walthal, John A. and Brad Koldehoff

1998 Hunter-Gatherer Interaction and Alliance Formation: Dalton and the Cult of the Long Blade. *Plains Anthropologist* 43(165):257-272.

Waring, Antonio J., Jr.

1965 The Southern Cult and Muskogean Ceremonial. In the *Waring Papers: The Collected Works of Antonio J. Waring Jr.*, Stephen Williams, Editor, University of Georgia Press, Athens.

Warren, Robert E.

1982 Prehistoric Settlement Pattern. In the *Cannon Reservoir Human Ecology Project: An Archaeological Study of Cultural Adaptations in the Southern Parairie Peninsula*, Michael J. O'Brien, Robert E. Warren, and Dennis E. Lewarch, Editors, pp. 337-368, Academic Press, New York.

Welch, Paul D.

2006 Interpreting Anomalous Rural Mississippian Settlements: Leadership from Below. In *Leadership and Polity in Mississippian Society*. Brain M. Butler and Paul D. Welch, Editors, pp 214-235, Occasional Papers No. 33, Center for Archaeological Investigations, Southern Illinois University, Carbondale.

Wilford, John N.

2012 Spearheads and DNA Point to a Second Founding Society in North America. *The New York Times, Science*, July 13, 2012, New York, New York.

Williams, Stephen

1991 *Fantastic Archaeology: The Wild Side of North American Prehistory*. University of Pennsylvania Press, Philadelphia.

Williams, S. and M. Goggin

1956 The Long Nosed God Mask in Eastern United States. *The Missouri Archaeologist* 18(3):1-23.

Wolf, Eric R.

1982 *Europe and the People Without History*. University of California Press, Berkeley.

Woods, William I.

1986 Prehistoric Settlement and Subsistence in the Upland Cahokia Creek Drainage. Ph.D. Dissertation, University of Wisconsin, Milwaukee.

Yerkes, Richard W.

1987 *Prehistoric Life on the Mississippi Floodplain: Stone Tool Use, Settlement Organization, Subsistence Practices at the Labras Lake Site*, Illinois. Prehistoric Archaeology and Ecology Series, Karl W. Butzer and Leslie G. Freeman, Editors, University of Chicago Press, Chicago.

Zubrow, Ezra B.W.

1975 *Prehistoric Carrying Capacity: A Model*. Cummings Publishing Company, Menlo Park, California.