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South Carolina Antiquities

Volume 42

Jodi A. Barnes, Editor

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IN MEMORIAM

The Effect of Geologic Differences on the Histories of North and South Carolina

John J.W. Rogers and Elena Steponaitis

A geologic uplift that trends east–west causes elevations in North Carolina to be higher than those in comparable regions of South Carolina. This article discusses how topographic differences between North and South Carolina affected the histories of the two states. We survey the consequences of these differences by using U.S. Census data and ArcGIS to create spatial data that show the distribution of densities of population, agricultural activity, and manufacturing activity from 1790 to the 1990s These maps demonstrate that the effect of the differences in elevation has diminished, but not disappeared, with technological advances in the past 200 years. We start with a brief discussion of the geology/geography of North and South Carolina, describe the data and method used, continue with a discussion of rivers and other transportation routes, and then show our conclusions with sets of maps that illustrate U.S. Census data at selected time intervals.

The time intervals discussed include:

1790; the first census.

1820: canal building, or the period in which canals were either completed or being actively constructed across the piedmont of South Carolina.

1850: railroad construction, or the period when a network of railroads was being established across the area.

1880: manufacturing, or the period when manufacturing developed as a major part of the economy as the abolition of slavery reduced the size of farms.

1920: road building, or the period in which highways and interstate trucking were developed.

1960: Interstate highway system construction, or the time during which the Interstate highway system was being constructed.

The Geology/Geography of North Carolina and South Carolina

The Coastal Plain contains mostly soft sedimentary rocks that were deposited on the continental margin as North America and Africa rifted apart. Sediments consisting mostly of sand occur in the western part of the Coastal Plain in a region that generally extends from Fayetteville to the central part of South Carolina. This region is referred to as the Sandhills. Here the soils are poor and support mostly pine trees and very few agricultural crops.

The hard rocks of the North and South Carolina piedmonts consist mostly of two contrasting rock types (Figure 1). A suite of metamorphic rocks known as the "slate

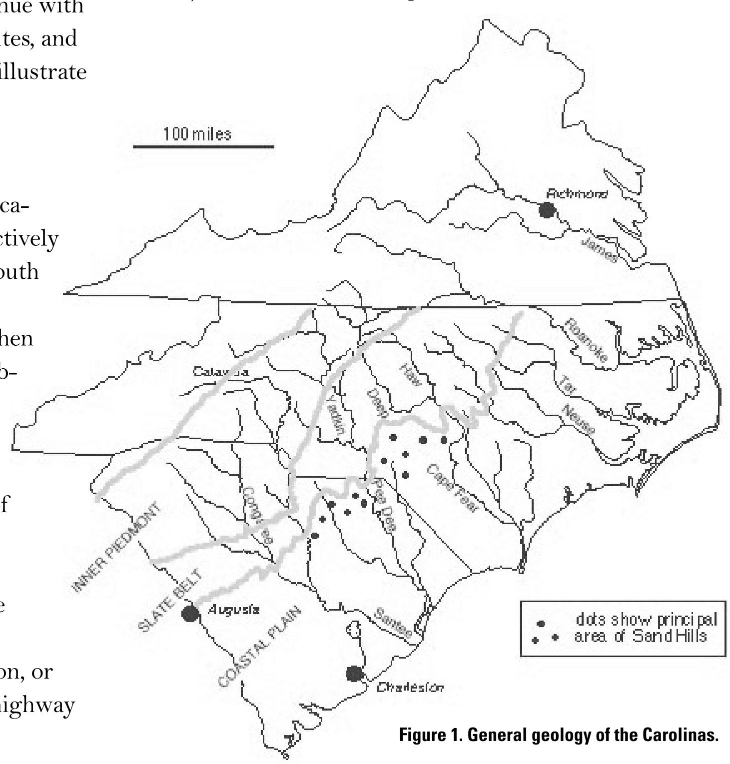

Figure 1. General geology of the Carolinas.

belt" underlies the eastern Piedmont in both states. Because these rocks are difficult to erode, they force rivers to carve deep canyons and are responsible for the abrupt change in elevation along the South Carolina fall line. Rocks between the slate belt and the Appalachians consist of several geologic belts but are mostly composed of granitic rocks (gneisses) of the "inner Piedmont." These granitic rocks are easier to erode than the rocks of the slate belt, and river systems spread more broadly through them than in the slate belt.

A geologic uplift trends east–west across the entire state of North Carolina (Figure 2). Its effect on elevations causes differences between North Carolina and the states of South Carolina and Virginia (Klitgord et al. 1983; Prowell and Obermeier 1991; Rogers 1998; Soller 1988).

Along the North Carolina coast, the high elevation of the sea floor creates the Outer Banks where waves build barrier islands farther offshore than in any other part of the Atlantic seaboard. Farther inland, the Coastal Plain rises to the west more rapidly in North Carolina than in either South Carolina or Virginia. Particularly in South Carolina, elevations in the Coastal Plain are so uniformly low that swamps developed because of the poor drainage. The uplift causes elevations to be more than 600 feet higher in the North Carolina Piedmont and Appalachians than in the South Carolina and Virginia piedmonts and mountains.

The high elevation of the Piedmont prevents North Carolina from having a "fall line" of the type that occurs in South Carolina and Virginia. In most of the Southeastern U.S., an abrupt fall line 20 to 40 feet high separates the soft sedimentary rocks of the Coastal Plain from the hard ("crystalline") rocks of the Piedmont. In North Carolina, however, the eastern edge of the Piedmont is more than 600 feet below the crest of the Piedmont, and rivers that reach it have crossed a "fall zone" approximately 100 miles wide.

The high elevations in North Carolina affect the courses of rivers that have headwaters in the Piedmont (Figure 3). Only three of these rivers remain entirely within North Carolina on their paths to the ocean. One is the short Tar River, which rises on the eastern edge of the Piedmont and runs across the Coastal Plain to Pamlico Sound. The other two are the Cape Fear and Neuse Rivers, both of which rise in the central Piedmont and cut deep valleys on their way to long estuaries.

Rivers with headwaters in the western Piedmont of North Carolina flow out of the state before reaching the ocean. The Dan River flows north into Virginia before joining the Roanoke River and flowing southward to the coast in northeastern North Carolina. Two major river systems flow into South Carolina before leaving the Piedmont. The Yadkin River of North Carolina becomes the Pee Dee River on the Coastal Plain of South Carolina. The Catawba

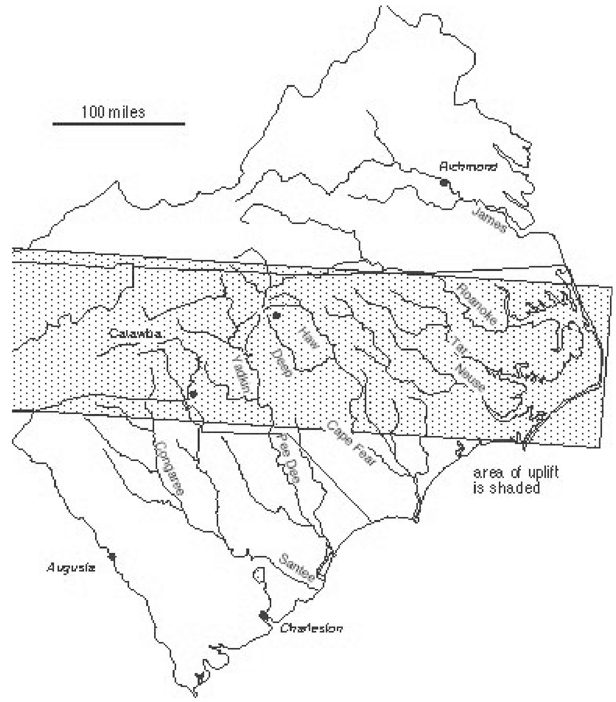

Figure 2. General location of uplift across North Carolina.

River in North Carolina joins several other tributaries to become the Santee River before it enters the South Carolina Coastal Plain.

Data and Methods of Investigation

Geography is important to archaeologists and historians. Its variables exert a strong influence on human behavior today, and archaeologists are aware of the significance of this influence in the past. GIS, or a geographic information system, integrates hardware, software, and data to capture, manage, analyze, and display different forms of geographically referenced information. GIS is a way to view, understand, question, interpret, and visualize data in many ways that reveal relationships, patterns, and trends. Many archaeologists use GIS to facilitate mapping in order to analyze depositional patterns as well as catalog and quantify artifacts. It can provide a well-structured descriptive and analytical tool for identifying spatial patterns. Here we propose that U.S. Census information is another set of data that archaeologists and historians can analyze and map using GIS. We use U.S. Census data to create a broader picture of population density, agricultural activity, and manufacturing in North and South Carolina.

The first census was initiated after the inauguration of President Washington and shortly before the second session of the first Congress ended. Congress assigned responsibility for the 1790 census to the marshals of the U.S. judicial districts under an act which, with minor modifications and extensions, governed census taking through 1840. The law required that every household be visited, that completed census schedules be posted in "two of the most public places within [each jurisdiction], there to remain for the inspection of all concerned..." and that "the aggregate amount of each description of persons" for every district be transmitted to the president (U.S. Census Bureau 2010). This was followed with the Census of Agriculture and the Census of Manufacturing. The Census of Agriculture provides facts and figures about American agriculture. Conducted every five years, the Census provides a detailed picture of U.S. farms and the people who operate them. It is the only source of uniform, comprehensive agricultural data for every state and county in the United States (U.S. Census 2010). In 1812, an act provided for the publication of a digest of manufactures containing data on the kind, quality, and value of goods manufactured, the number of establishments, and the number of machines of various kinds used in certain classes of manufactures (U.S. Census Bureau 2010).

Maps of North and South Carolina were generated in GIS using county population, agriculture, and manufacturing data from the U.S. Census. Data from specific years were mapped in intervals based on changes in technology and transportation. Before 1790, the year of the first Census, reliable and widespread data are unavailable; thus it is the earliest year mapped. Data for 1790 to 1960 are from University of Virginia Geospatial and Statistical Data Center (2004). The data for years more recent than 1970 are from the U.S. Census Bureau (1985, 1990, 1992). County borders changed from time to time, and we used maps for 1990 from the Minnesota Population Center (2007).

The shading on all maps represents densities rather than numbers in order to correct for substantial changes in land areas of the counties as states changed county borders. On each map, shading is based on seven equal intervals within the individual density range. On the maps showing data from 1985, 1990 and 1992, county lines from 1990 were used. The maps created in ArcView GIS were smoothed using Adobe Photoshop. County lines were removed in order to represent trends as occurring over geological areas uninfluenced by human-made borders. In doing this, care was taken to maintain the accurate placement of the represented data.

Rivers and Other Transportation Routes

Transportation routes were very important during the colonial era and throughout the early part of the 1800s (Figure 3). Many of the land routes were the same as those used by pre-Columbian Native Americans (Bense 1994; Klein 2000; Ready 2005; Steponaitis 1986; Ward and Davis 1999). In particular, people reached the North Carolina Piedmont via the Great Wagon Road from the Chesapeake area instead of across the fall zone from the coastal plain. Furthermore, people in the North Carolina Piedmont traded through the ports of Richmond and Charleston instead of through North Carolina (Rogers 1998; Ross 1965; Sprunt 1992).

In Virginia, ocean-going vessels could travel all the way up the James River to Richmond, which is on the fall line (Deans 2007). Ocean vessels could not travel up the Santee or the Pee Dee/Yadkin Rivers, but they could transfer loads at ports to or from smaller vessels that could sail up to the South Carolina fall line at Camden and Cheraw (Hurley 1993; Savage 1968). Similar transfers could be made at Savannah to or from boats that could sail up

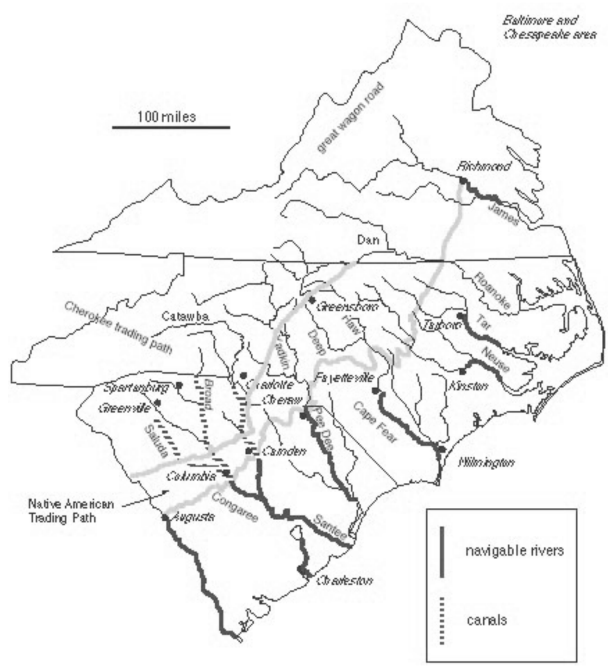

Figure 3. Rivers, canals and other transportation routes in the Carolinas.

the Savannah River to Augusta (Kane and Keeton 1994). Completion of a canal between the Santee and Cooper Rivers in 1800 made it possible for large ships to use the major port of Charleston as a transfer point to smaller vessels that could reach the Piedmont at Camden or Columbia (Bostick 2008; Savage 1968).

In contrast to the ease of river transportation in South Carolina and along the James River, high elevations in North Carolina made rivers inaccessible to significant transport by even small boats (Figure 3). The Tar River was navigable to Tarboro, the Neuse to Kinston, and the Cape Fear to Fayetteville (Ross 1965; Sprunt 1992). None of these rivers was navigable into the Piedmont.

The height of the North Carolina Piedmont not only affected transportation along natural rivers but also along canals (Figure 3). By no later than approximately 1820, several canals crossed the fall line in South Carolina and then across the Piedmont nearly to the Appalachians (Camillo 1976; Moore 1993). By contrast, no successful canals were ever built in the North Carolina Piedmont. The only effort was along a stretch of the Yadkin River at Bean Shoals, and it was abandoned without being completed (Anonymous 1975).

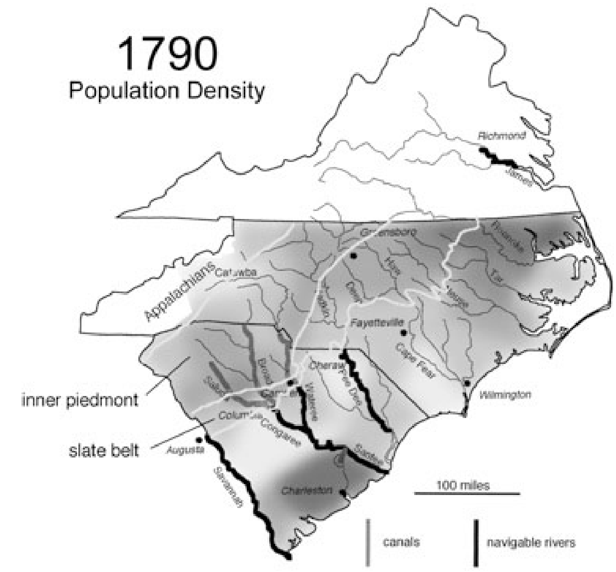

Figure 4. 1790 Population Density Map. Increasing density is shown by increasing darkness.

The Distribution of Population in North and South Carolina from 1790 to 1990

People moving through the Carolinas along riverways shaped early settlement patterns. Figure 4 shows in 1790 that people in the Carolinas arrived mostly by ship, with a few moving south from Virginia. In 1790, population density in North Carolina was greatest around Albemarle Sound and the Pamlico River. In South Carolina, the most densely populated area was also on the coast, in Charleston, and few people had moved very far inland. In North Carolina, although the highest densities were in areas adjoining the estuarine zone, the map also suggests that large numbers of people moved west across the northern counties from the environs of Edenton and Bath or south from the James River. Both states had relatively dense populations in the Piedmont. These dense populations probably resulted mostly from migration south from Virginia along the Great Wagon Road and native trading paths farther south (Figure 3). The map (Figure 4) also shows that people moved into the South Carolina Piedmont along the Congaree and Wateree Rivers upstream from the Santee. After the invention of the cotton gin in 1793, people moved into the Piedmont in great numbers. The cotton gin made it commercially feasible to raise short-staple cotton in upland areas where traditional long-staple cotton could not grow. (We discuss agriculture more completely on page 6.)

By 1820, water transportation and changes in agriculture supported an increase in settlement in the Piedmont as compared to the inner Coastal Plain, particularly the Sandhills (Figure 5). In South Carolina, the navigable Santee River served as a connection between the coast and the Piedmont and allowed rapid migration inland. The highest Piedmont population densities in South Carolina were along canals that gave access to water transport along the Broad, Saluda, Wateree, and Congaree Rivers. In contrast, North Carolina waterways were not navigable inland, and thus the movement of people and the transportation of goods were confined to slower overland routes. As a pos-

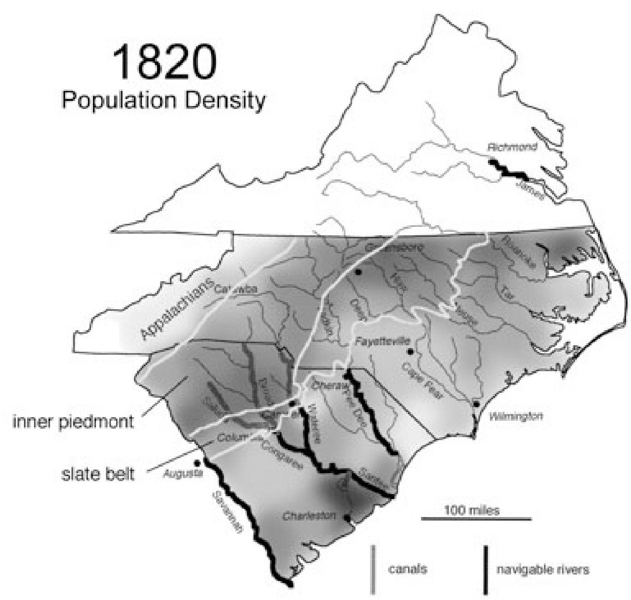

Figure 5. 1820 Population Density Map. Increasing density is \shown by increasing darkness.

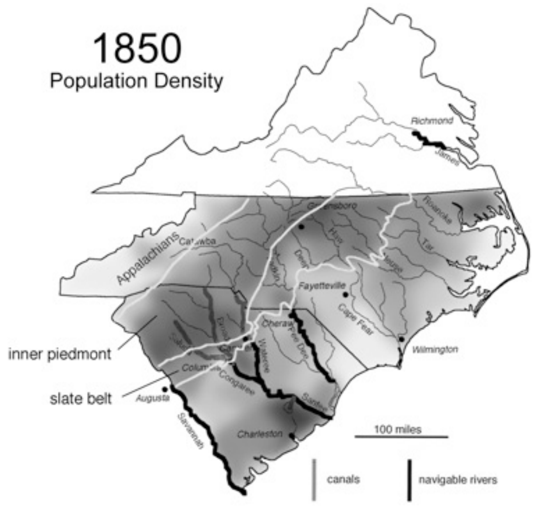

Figure 6. 1850 Population Density Map. Increasing density is shown by increasing darkness.

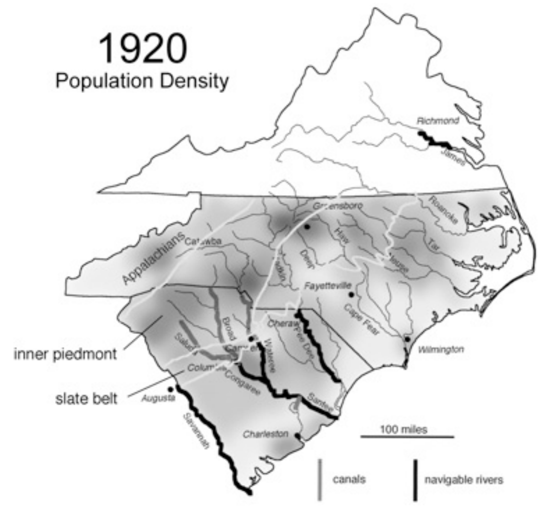

Figure 8. 1920 Population Density Map. Increasing density is shown by increasing darkness.

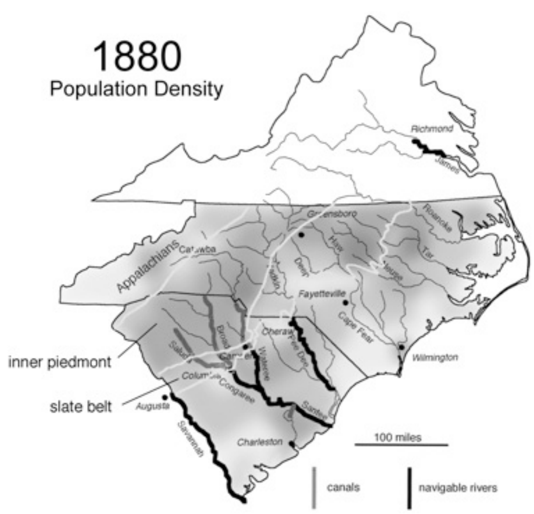

Figure 7. 1880 Population Density Map. Increasing density is shown by increasing darkness.

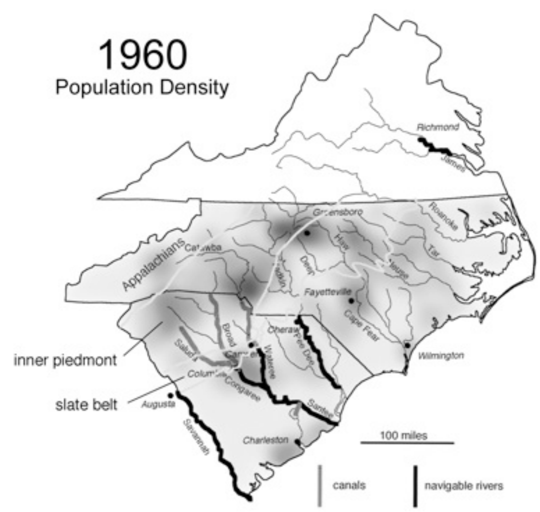

Figure 9. 1960 Population Density Map. Increasing density is shown by increasing darkness.

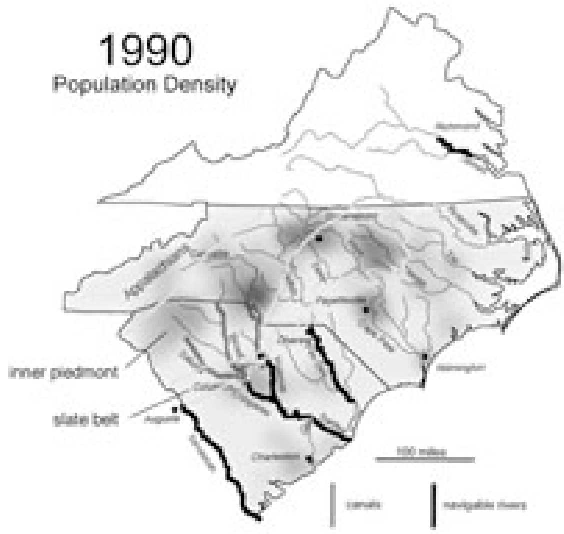

Figure 10. 1990 Population Density Map. Increasing density is shown by increasing darkness.

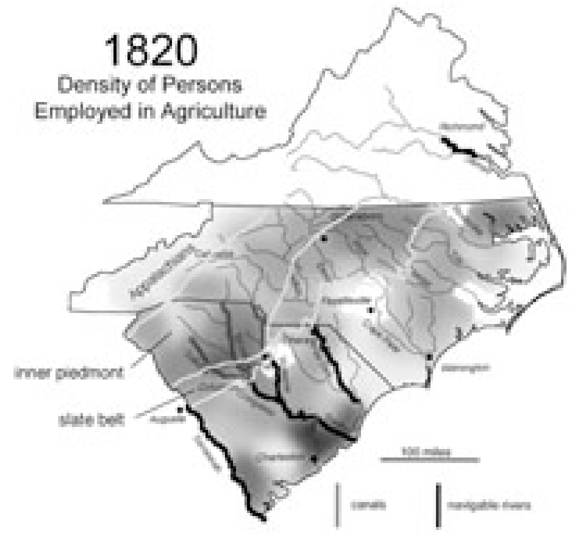

Figure 11. 1820 Agricultural Density Map. Increasing density is shown by increasing darkness.

sible result, the North Carolina portion of the 1820 map shows a more even distribution of population from the coast to the Piedmont, with higher densities in the northeastern part of the state.

Railroad lines had been developed in the Carolinas by 1850, but transportation of people and merchandise was still mostly by water and road (Clarke et al. 1889). Consequently, the population in 1850 was concentrated near Charleston and along routes from there into the Piedmont of South Carolina (Figure 6). People had also spread out through much of the Piedmont, but they avoided the almost inaccessible region south of the Cape Fear River and were sparse in the swampy regions of the South Carolina Coastal Plain.

By 1880, connected railroad lines with a "standard" gauge had replaced the previous network of unconnected lines with different gauges (Black 1998; Clarke et al. 1889). This network made areas that had been relatively inaccessible subject to population growth (Figure 7). Differences in population density between the counties in the Piedmont and elsewhere declined as many areas that were previously inaccessible became easier to reach. However, the central Piedmont areas in both North and South Carolina still had the highest population densities, probably because of rapid increase of manufacturing in the Piedmont of both states. (Manufacturing will be discussed more completely in the following section.)

By 1920, the most populated areas were the large cities of the North Carolina Piedmont, such as Greensboro and Charlotte (Figure 8), presumably because of concentration of manufacturing in North Carolina and agriculture in South Carolina. The maps of 1960 and 1980 show a continuation of this trend, with the greatest population densities concentrated in the central Piedmont (Figures 9 and 10). The Coastal Plain of North Carolina remained more densely populated than that of South Carolina, probably because the North Carolina Coastal Plain was more agriculturally productive than the swampy areas of South Carolina.

Distribution of agriculture in North and South Carolina from 1790 to 1990

In 1820, a relatively high density of agricultural activity dominated the South Carolina Piedmont (Figure 11). This activity began in 1793 after the invention of the cotton gin encouraged people to move into the upland piedmont to grow short-staple cotton. Owners brought large numbers of slaves and established large plantations (Cooper 1975). The canals in the area aided the movement of cotton to Charleston. Employment in agriculture was also high near the mouth of the Santee River and along the Savannah River. In general, non-coastal areas of South Carolina that lacked navigable rivers also lacked a high density of farming.

Compared to South Carolina, agricultural activity in North Carolina was sparse. The elevation and lack of transportation in the North Carolina Piedmont made it difficult to establish large plantations that depended on slave labor, and most North Carolinians depended on subsistence farms with few or no slaves, with the exception being western North Carolina (Dunaway 2003; Inscoe 1984). Small

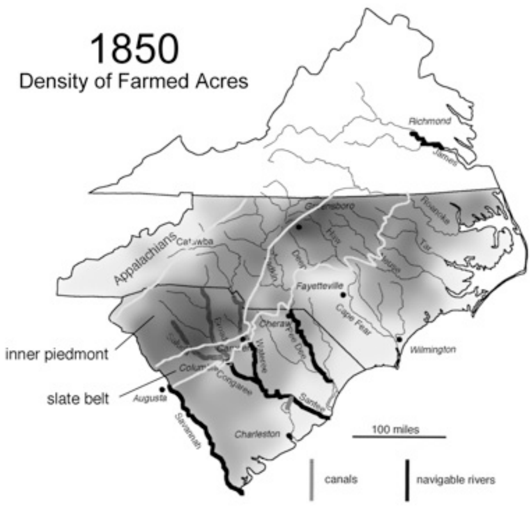

Figure 12. 1850 Agricultural Density Map. Increasing density is shown by increasing darkness.

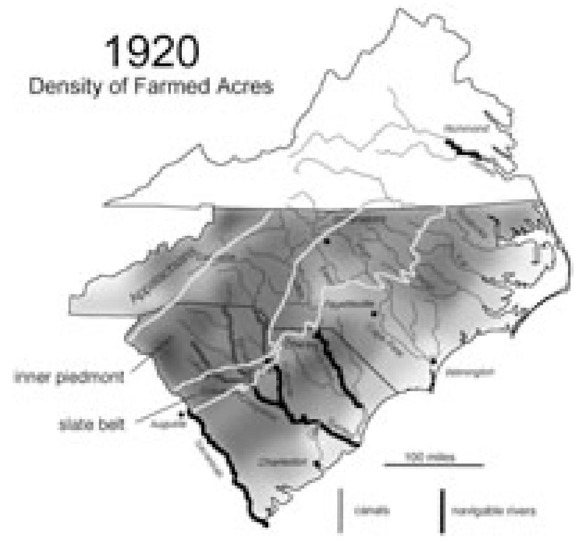

Figure 14. 1920 Agricultural Density Map. Increasing density is shown by increasing darkness.

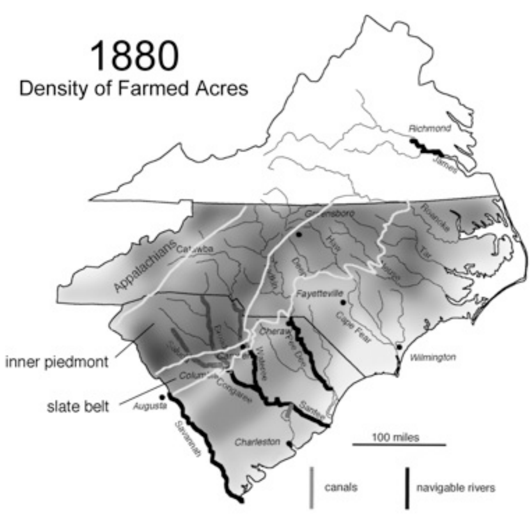

Figure 13. 1880 Agricultural Density Map. Increasing density is shown by increasing darkness.

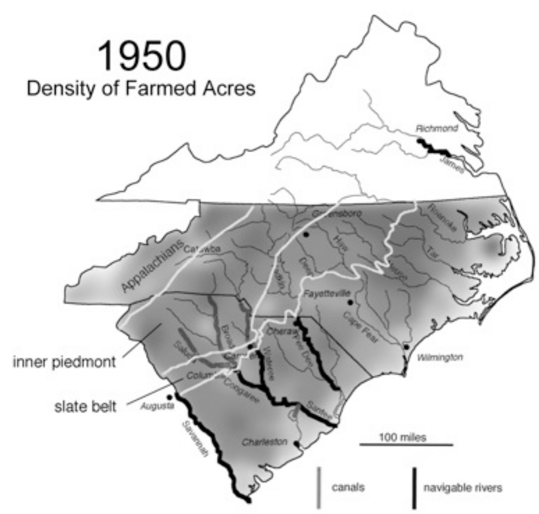

Figure 15. 1950 Agricultural Density Map. Increasing density is shown by increasing darkness.

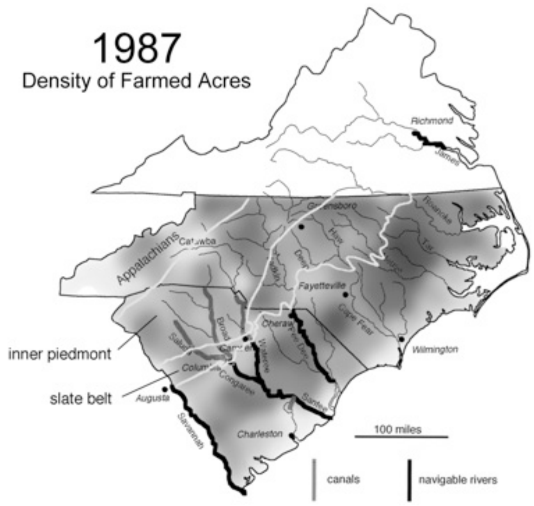

Figure 16. 1987 Agricultural Density Map. Increasing density is shown by increasing darkness.

areas of moderately dense farming existed in the northern North Carolina Piedmont and in the northeastern corner of the state. The larger concentration of farming along the northern border of the state may have resulted from easy access to the navigable James River. With the exception of the barely-farmed mountains, the rest of North Carolina does not show significant agricultural patterns in relation to its non-navigable rivers.

By 1850, agricultural distribution had changed tremendously (Figure 12). The Piedmont of both states was more uniformly farmed, probably because of improvements in transportation. Also, by 1850, the depletion of nutrients in soils made the slave-based plantation agriculture of South Carolina no longer as profitable as it had been earlier in the century (Cooper 1975; Otto 1987).

The only areas where the density of farming was particularly high were near Greensboro in North Carolina and in the eastern part of the inner Piedmont in South Carolina. The uniformity of farming activity may have resulted from the early influence of the railroads. Farming was dense in North Carolina's Neuse River basin and surrounding areas, but The Cape Fear River basin remained relatively devoid of agricultural activity, particularly in the Sandhills.

In 1880, farmers crowded the central Coastal Plain of both Carolinas except along the Cape Fear River (Figure 13). A lower density of farming is seen in the inner (western) Coastal Plain. This may demonstrate that farmers avoided the poor soils of the Sandhills as well as the higher elevations, but farmers were moving into the mountain counties at this time. The increase in agricultural production in the western Coastal Plain by 1920 may have been aided by technological developments, such as the building of highways and access to motor vehicles that could overcome topographic problems (Figure 14).

In 1920, agriculture was slightly more dense in coastal areas, but patterns in the Piedmont remained essentially the same (Figure 15). The level of difference between the 1920 and 1950 maps is also minimal, although farming became slightly more uniformly distributed in 1950. Generally, the coastal areas of both states continued to show low agricultural density.

By 1987, the most densely farmed areas were in the Coastal Plains of both Carolinas as people in the Piedmonts of both states concentrated more on manufacturing (Figure 16). Many farms in the North Carolina Piedmont were abandoned because the poor soils of the area made it more economical for North Carolinians to import food than to grow it locally (Rogers 1998).

The Distribution of Manufacturing in North and South Carolina from 1790 to 1990

In 1820, the densest areas of manufacturing occurred along the coast of North and South Carolina, presumably because of the ease of transportation of goods in that region via boat (Figure 17). In the Piedmont region of both states, slightly higher manufacturing densities can be seen. This differs from the surrounding mountains and Coastal Plain, probably due to the availability of water power. A cluster of manufacturing activity occurred along the Haw River, as well as around the canals of South Carolina's Piedmont. A lack of data for South Carolina in 1820 makes it difficult to see additional trends.

By 1850, manufacturing was concentrated very prominently along the rivers of the North Carolina Piedmont, more so than in South Carolina (Figure 18). The Cape Fear River basin also hosted a manufacturing boom, possibly because of Wilmington's presence directly downstream. In South Carolina, the most significant area of manufacturing was in the Coastal Plain, along the Santee River and near Charleston.

The 1880 map shows a profound distribution of manufacturing activities across both North and South Carolina (Figure 19). The two most dominant local areas are in the vicinity of Charleston and Wilmington, but overall, the Piedmont shows the most activity. Manufacturing was particularly intense in the slate belt of the eastern Piedmont of North Carolina, where hydropower was generated by rivers descending from elevations of 600 to 700 feet. Much of this activity consisted of textile mills (Mock 2010) and tobacco processing plants (Roberts and Knapp

Figure 17. 1820 Manufacturing Density Map. Increasing density is shown by increasing darkness.

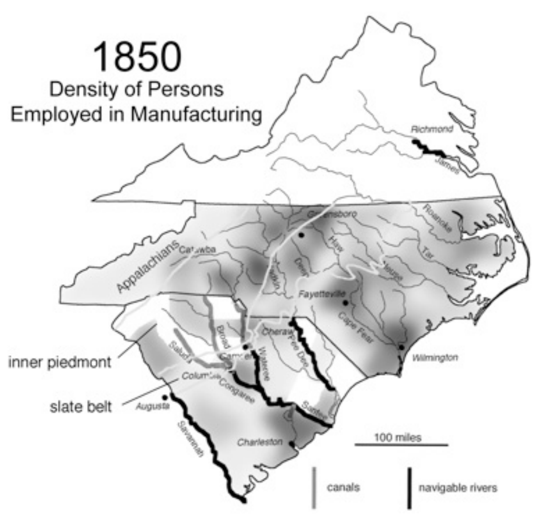

Figure 18. 1850 Manufacturing Density Map. Increasing density is shown by increasing darkness.

Figure 19. 1880 Manufacturing Density Map. Increasing density is shown by increasing darkness.

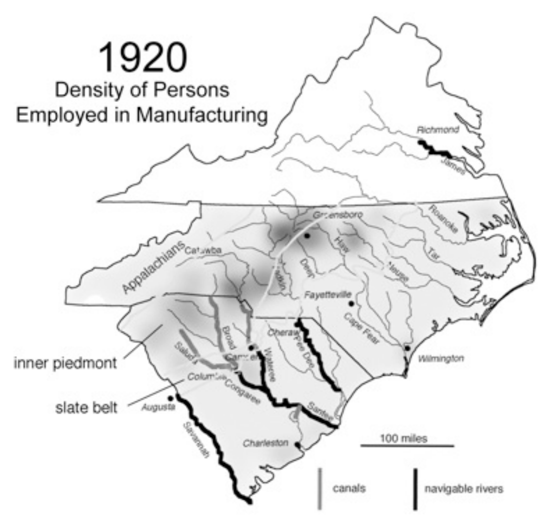

Figure 20. 1920 Manufacturing Density Map. Increasing density is shown by increasing darkness.

1992). Because of inaccessibility, however, few industries developed in the basin of the Yadkin River.

By 1920, the highest densities of manufacturing were along the eastern part of the Piedmont (Figure 20). Manufacturing activities occurred most densely in the areas of Durham, Forsyth, and Mecklenburg counties, which contain the cities, Durham, Winston-Salem, and Charlotte, respectively. The coast had been abandoned as a manufacturing area by this time as railroads and highways now outpaced shipping along the coast.

The map for 1950 (Figure 21) shows more manufacturing in North Carolina than in South Carolina. The previously mentioned cities with dense manufacturing developed more industry, and the surrounding areas relatively less so. The trend continued in 1992, further solidifying North Carolina as the more powerful industrial state (Figure 22).

Figure 21. 1950 Manufacturing Density Map. Increasing density is shown by increasing darkness.

Summary and Conclusions

In summary, the census data mapped using GIS shows broad trends in South Carolina and North Carolina history. In the 1790s, most of the population of both states was near ports, with some occupation of the Piedmont. Data are not available for agriculture and manufacturing activity, but presumably people who lived in the Piedmont were almost entirely farmers, with a mixture of farmers and merchants along the coast. By the 1820s, canals had become important in localizing population density and agricultural activity in the South Carolina Piedmont. Manufacturing was concentrated along the coast of both states plus some activity apparently using water-power in the North Carolina Piedmont.

In the 1850s, the population and agricultural activity in both states was distributed uniformly throughout the Piedmont, but manufacturing was more important in North Carolina. Agricultural activity was also concentrated in the basin of the Neuse River in North Carolina. The Cape Fear basin, the Sandhills and Slate Belt to the west remained comparatively unoccupied except for some expansion of manufacturing. In South Carolina, manufacturing was concentrated around Charleston.

By the 1880s, agricultural activity was spread out in the Piedmont of both states, with a slightly higher concentration in the inner Piedmont. Manufacturing had become more important in the Piedmont but was still strong near Charleston and Wilmington. In the 1920s, population, agricultural activity, and manufacturing were concentrated in the Piedmont, particularly in the major cities of North Carolina. Urbanization and manufacturing in the Piedmont reduced the relative importance of the Coastal Plain in both states by the 1950s. By the late 1900s, population density and manufacturing were concentrated mostly in

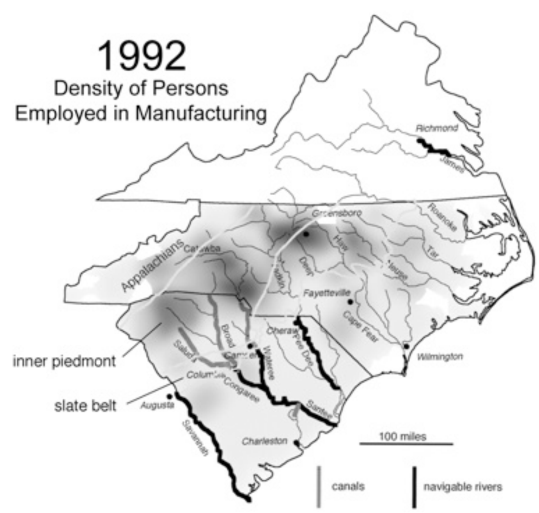

Figure 22. 1992 Manufacturing Density Map. Increasing density is shown by increasing darkness.

the North Carolina Piedmont, and agricultural activity had mostly left the Piedmont for the Coastal Plain.

Increase in transportation and other technologies in the past 200 years have reduced, but not eliminated, the effect of geological features on the histories of North and South Carolina. Populations that were originally restricted to the coast and Piedmont are now more spread out, but they are still low in the Yadkin River valley where the river has a high gradient through the slate belt. Agricultural activity that originally correlated with population when most farming was for subsistence is now concentrated in the fertile soils of the Coastal Plain, although most people now live in the Piedmont, with its concentration of manufacturing. The uplift across North Carolina no longer makes transportation difficult in North Carolina, but the impetus it gave to the development of manufacturing led to the present dominance of North Carolina in manufacturing.

This article discusses the use of U.S. Census information can be analyzed and mapped using GIS. By utilizing GIS and U.S. Census data, we were able to create a broader picture of population density, agricultural activity, and manufacturing in North and South Carolina. These methods could be useful for archaeologists and historians trying to place archaeological sites into broader historical context.

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Clovis Blade Technology at the Topper Site (38AL23)

Douglas Sain

A Technological Analysis of Blades from the Topper Site

Recent excavations at The Topper site, a chert quarry and quarry-related site in Allendale County, South Carolina, have revealed evidence of blades and blade cores in stratified context with other diagnostic Clovis tool forms (Goodyear and Steffy 2003; Steffy and Goodyear 2006). This report presents results of a technological analysis conducted on a sample of Clovis blades recovered from the site. Technological and morphological attributes were recorded for each artifact. A method is presented for characterizing Topper blades, which in turn allows comparisons to be made with other Clovis blade assemblages. Results provide some insight into strategies of blade production at the site. Using the near absence of modified blades, some possible insights are offered about Clovis settlement behavior, the organization of technology in the Savannah River Valley, and related sites external to the chert quarry district.

Blades

One class of artifact that has emerged as distinctive of Clovis stone tool technology in North America is the prismatic blade (Collins 1999). A blade is an elongated type of flake, detached from a specifically designed core (Collins 1999). Blades (Figure 1) have long fascinated prehistorians due to their relatively specialized nature (e.g. Bordes 1961; Collins 1999; Crabtree 1968; Green 1963). A combination of specific attributes, including but not limited to long, sharp, even and acute lateral margins, provides for a flexible and versatile flake form that make blades and tools made on blades useful for a variety of tasks (Boldurian and Hoffman 2009). Blades are considered to have served a number of functions including scraping, cutting, and slicing of organic material. If the original lateral margins became dull through use, simple retouch for resharpening and or the creation of other functional edges allows extension of use-life and the creation of new tools.

The Clovis culture is long considered by many to be the oldest well documented culture complex to inhabit North America (Bonnichsen and Turnmire 1991). Archaeological evidence in the form of fluted projectile points recovered in context with the disarticulated remains of extinct fauna, form the basis of claims for a human presence in North America at the end of the last glacial maximum. Blade research has only recently become a focus of attention in lithic studies of Clovis assemblages (Collins 1999; Dickens 2005). The earliest description of a Clovis blade assemblage was that of a cache of 17 blades recovered from Blackwater Draw Locality No. 1 near Portales, New Mexico (Green 1963). Since this discovery, blades have been recovered from a number of Clovis sites across North America, most notably the Gault and Aubrey sites in central Texas (Collins 1999; Ferring 2001) and the Adams site and Little River Clovis complex in Kentucky (Sanders 1990).

Typically, Clovis blades are recovered from kill and cache sites in the west and plains. In the Mid-south and Southeast, blades are predominantly recovered from habitation and quarry related sites. In the Southeastern United States, a number of Clovis quarry and quarry-related sites have been located. Quarries are areas where lithic material resources were extracted for subsequent manufacture and distribution. Blades and their cores have consistently been recovered from such sites including Sinclaire and Carson-Conn-Short in Tennessee (Broster and Norton 2009; Stanford et al. 1996), the Little River locality in Christian County, Kentucky (Sanders 1990), and from the Williamson site in Dinwiddie County, Virginia (McCary 1975). However, reported blade assemblages from the region are most frequently recovered from deflated contexts or from surface collections where chronologic designation is based only on association with other diagnostic artifacts such as fluted projectile points.

Recent blade research has placed emphasis on defining specific attributes that serve to distinguish Clovis blade assemblages from other time periods (Collins 1999). For example, unlike fluted projectile points, blades are not diagnostic of any one single culture. Consequently, for blades to be classified as a component of the Clovis toolkit, previous investigators have stated that they should be found in stratified contexts with Clovis bifaces. In an influential study of blade assemblages, Collins (1999) found Clovis blades to share a number of attributes in common. These include small platforms, diffuse bulbs of force, strong curvature, and lengths typically greater than 100mm (Collins 1999). However, Collins' analysis was focused on blades recovered from the Plains and Mid-South United States.

The recent discovery of Clovis sites in the Central Savannah River valley in South Carolina has extended the geographic range of Clovis studies to the southern South Atlantic Slope (Goodyear 1999; Goodyear and Steffy 2003). Located in Allendale County, South Carolina, Topper (38AL23) is a stratified quarry site (Figure 2), which has yielded information about Clovis stone tool technology including blades (Goodyear et al. 2007; Miller 2007; Sain 2008, 2009; Steffy and Goodyear 2006). The discovery of blades in stratigraphic context with diagnostic Clovis artifacts at the site offers a rare opportunity to evaluate possible variation in Clovis blade technologies.

Figure 1. A prismatic blade with long, thin flake morphology, parallel lateral margins, evidence of two or more parallel prior detachment scars, and triangular to trapezoidal cross sections. Drawing by Darby Erd, courtesy of SEPAS.

The Topper Site

The Topper Site is a quarry-related lithic reduction site located adjacent to the Savannah River in Allendale County, South Carolina (Figures 2 and 3). The site is one a number of terrestrial and submerged prehistoric chert quarries identified on the property of the Clarient Corporation (Goodyear et al. 2007). The site was first discovered when high concentrations of Allendale chert outcrops were identified above an alluvial terrace along the river (Goodyear et al. 1985). These outcrops are part of the Flint River formation, and extend from Northern Florida, northeast through Georgia, and into South Carolina (Goodyear et al. 1985). They would have provided Paleoindians with ample resources with which to produce flaked stone tools.

Archaeological investigations at Topper have been conducted over a number of topographic features including the uplands of the coastal plain, the hillside or the escarpment, which contains a series of chert outcroppings, and an alluvial terrace adjacent to the Savannah River (Goodyear et al. 2007). Excavations conducted by the Southeastern Paleoamerican Survey (SEPAS), through the Allendale Paleoindian Expedition (www.allendale-paleoindian.net) over the past decade have revealed evidence of human occupation of at least 13,000 years and possibly more (Goodyear 2005). The discovery of fluted Clovis preforms and projectile points in various stages of production indicate a Clovis occupation at the site. Lithic artifacts found in association with these tools include an abundance of utilized flakes, unifaces, prismatic blades and cores, and debitage from the production of these tools. Evidence of intensive blade manufacture is especially evident along a roadbed on the hillside slope adjacent to the chert outcropping. Due in part to the apparent stratigraphic integrity at Topper, technological analyses of the blade assemblage can provide insights into strategies of production for this region, as well as allow comparison in other regions.

Methods

As of the 2009 field season, a total of 472 blades and blade segments were identified, and these blades are the subjects of this analysis. The blades were taken from multiple excavation areas over the entire site from Clovis contexts (see Figure 3). These areas include the hillside, the roadbed, and the alluvial terrace adjacent to the Savannah River. Blades were separated by size. Although smaller blades are present, only blades at least 30mm in length were chosen for analysis in order to focus the analysis on what have been called Clovis macroblades (Collins 1999). Using these criterion, a total of 333 blades and 87 cores were selected for analysis.

I build upon Collins (1999) analysis of blades recovered from 24 archaeological sites. He examined and compared

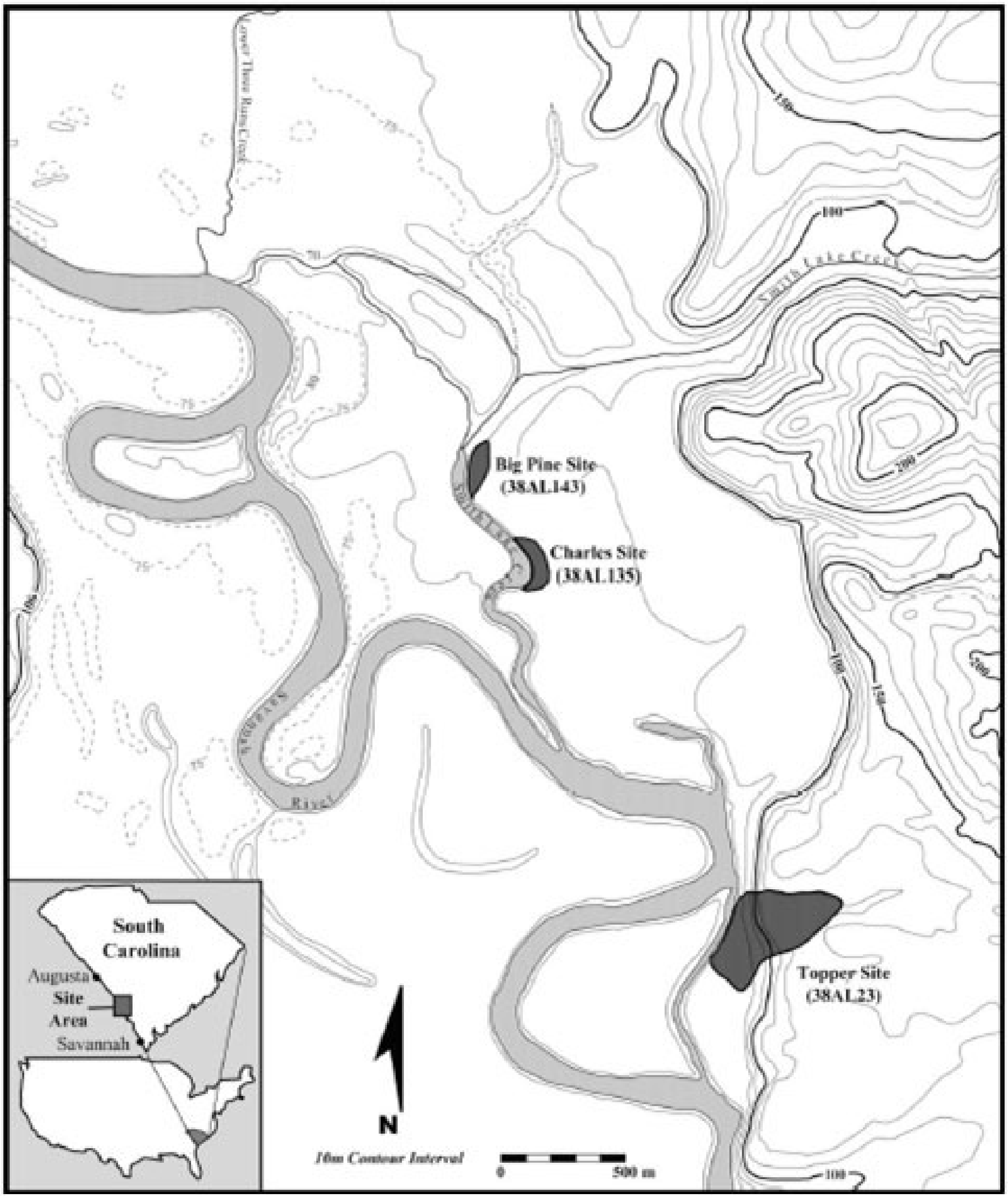

Figure 2. The Location of Topper Site in relation to other lithic manufacture sites in the Savannah River Valley (adapted from Waters et al. 2009).

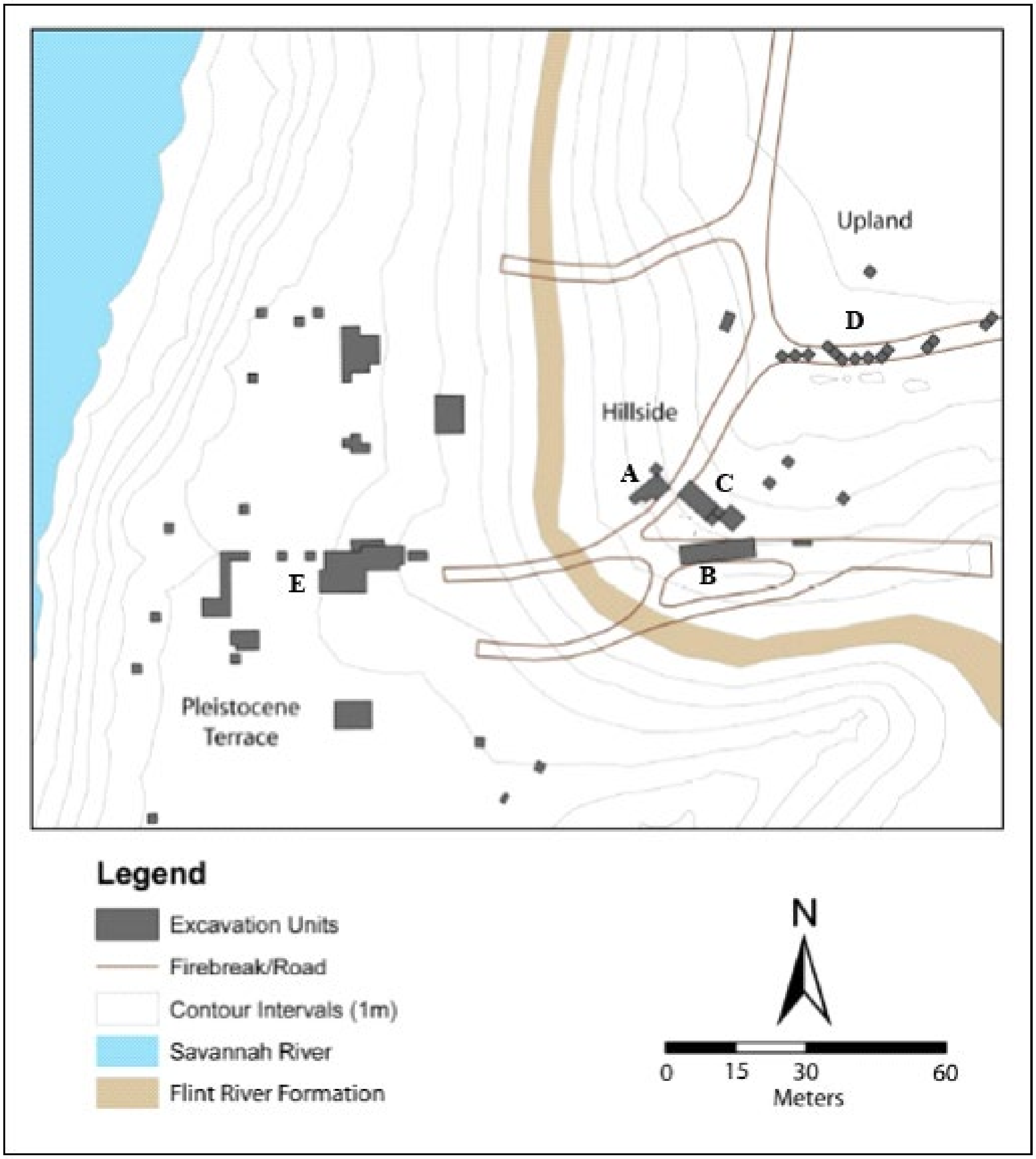

Figure 3. Map of Topper site showing areas of excavation as of 2008 field season. Map courtesy of SEPAS and Shane Miller.

blades of known Clovis origin to those of unknown or probable Clovis origin, observing the extent of similarity among specific morphometric and technological blade attributes. "Plots on triangular graphs of the ratios of blade length, width, and thickness to the sum of each measure were created as a method to determine cultural affinity" (Meltzer and Cooper 2006: 127). Plots were subsequently compared providing visual qualitative evaluation. The current analysis incorporates Collins' morphologic attributes of blade length, width, and index of curvature for comparative purposes. However, my analysis examines a series of additional attributes, and focuses on those that define technology, as a specific, purposeful behavior, as opposed to strictly morphologic variables. More importantly, a method is created that enables results to be quantified.

For the current analysis, attributes of all blades were recorded. In lithic reduction, it is sometimes possible to produce artifacts that appear as blades, though do not share technological attributes of a prepared, intended, blade technology. Such artifacts are referred to as blade-like flakes, and can occur as the product of biface or flake production. These artifacts may share some morphological attributes consistent with technological blade manufacture. As opposed to blades struck from prepared blade cores however, blade-like-flakes vary greatly in size, and are typically wider than their length. Moreover, they have multi-directional, unparallel removal scars on the exterior surface typically found in biface production.

In order to distinguish blades from blade-like flakes a series of six attributes were formulated (Table 1). Each attribute category was ranked with a value ranging from 1-3, with 3 being definitively a blade. Attribute ranks were selected based upon those that prior definitions considered as most diagnostic in identifying blades. This is an objective and rigorous method that takes into account the variation, which occurs in the reduction of a core toward systematic blade production. Attributes and their values (in parentheses) include: presence and directionality of two or more parallel removal scars (3); cross section (3); lateral margin (2); platform remnant angle (2); characteristics of the bulb of force (1); and finally distal termination characteristics (1). Typically, a blade has two or more parallel unidirectional removal scars on the exterior surface (Crabtree 1972). Cross sections are triangular or trapezoidal and lateral margins are parallel as opposed to irregular (Collins 1999). In addition, most blades have platform angles that are greater than 60 degrees. Finally, most blades, depending on how they were struck, have diffuse bulbs of force, and distal terminations that are thicker than the blade proximal.

Each blade or blade-like flake was given a total score, taken as the sum of all values from the attributes. The maximum total value a specimen can have is 12, and would be indicative of an "ideal blade". Thus, using this procedure, specimens receiving a total value of 7 or greater are considered as technological blades. Those with a value less than 7 were considered blade-like flakes. Additional attributes that were recorded include platform condition, bulbar characteristics, and flake termination type.

In addition to the technological attributes listed above, a series of morphological measurements was recorded for each whole blade. Measurements were taken on blade weight, length, width, index of curvature, as well as platform remnant width and thickness. All measurements were taken using metric calipers, and weight was taken in grams. All blades were subsequently classified as to the presence or absence of any post detachment modification. Where modification is observed, location and nature of modification on each specimen was recorded. Modification means that the blade has been retouched and the term applies to any type of bifacial or unifacial trimming, located on any margin of the blade. The presence of modification is identified macroscopically. Finally, all blades were classified, noting condition and type. Condition refers to whole, medial, proximal or distal. Type refers to the stage of a blade in core reduction.

During the manufacture process, a range of blade types can be produced. Blade type is assigned based upon the presence or absence of exterior surface cortex. The assumption being that as core reduction progresses, exterior surface cortex decreases, while the number of removal scars increases. Blade types considered in this analysis include primary, secondary, and interior decortication. Each class is defined as follows: Primary decortication blades are those artifacts in which the entire exterior surface is covered in cortex. Secondary blades are those in which the exterior surface is partially covered in cortex (e.g., White et al. 1963). Interior blades are blades without cortex and exhibit two or more parallel scars from previous detachments.

Cores

In addition to blades, 22 cores were examined. Cores are the objective pieces from which blades are detached and the strategies chosen in blade manufacture may result in a variety of core forms. Such forms can be described in relation to their morphology (size and shape), the direction blades are struck as indicated by the negative removal scars on the core face, and by patterns of core maintenance. By examining specific attributes of these artifacts, we can better understand the strategies employed in Clovis blade manufacture, as well as the extent of such manufacture at Topper.

Clovis blades are produced from prepared cores (Collins 1999), either conical, cylindrical, or wedge in shape. Conical

Attribute Category	Value	Blade	Blade-Like-Flake
Removal scar direction	3	Parallel scars	Multi-Directional
Cross section	3	Triangular/ Trapezoidal	Lenticular
Lateral margin	2	Parallel	Irregular
Platform angle	2	>60	<60
Bulb prominence	1	Diffuse	Salient
Distal thickness	1	Distal >Proximal	Proximal >Distal

Table 1. Blade Attribute Values.

cores are identified by the presence of multiple parallel removals about the circumference of the core. Such scars should originate from a single platform, terminating to one end forming a cone shape. Cylindrical cores also have multiple parallel blade removal scars on the face of the core, and were struck from a single platform. However, cylindrical cores do not exhibit a tapered end like the cone shaped core. Rather, flake removals were taken from the distal end of the core to straighten or guide blade terminations. Wedge shaped cores have two or more platforms from which blades were detached. These cores have acute angles between the platform and removal scar surface (Dickens 2005). Such cores are identified as having bi-directional or overlapping blade removal scars on the exterior surface of the core (Haynes and Huckell 2007). For this analysis, a series of core attributes was recorded for each core. These include number and directionality of removal scars, platform characteristics, and presence or absence of rejuvenation.

Results of Analysis

Table 2 presents the results of the blade analysis, highlighting the total number of blades identified for each attribute class. A total of 257 blades, broken blades, and blade segments were identified. The attribute value is a measure that serves to differentiate blades from blade-like flakes. Blades are those artifacts with attribute values of 7 or greater. Most blades have attribute values that range from eight to nine. The findings here suggest that in most cases, at least one to two attributes of blade manufacture are missing from a given blade. Only 27 blades were found to have attribute values of seven (7) or twelve (12). The presence of so few blades that exhibit all six attributes of blade manufacture indicates that 1; either such blades were not produced in high quantities at the site, or 2; once produced, were removed offsite.

Most blade-like flakes, (71 of 76) have values that range from three to six. Morphologically, Topper blades are longer, and slightly thinner than blade-like flakes (Table 3). An examination of the mean index of curvature for all artifact classes found that blade-like-flakes on average, also exhibit more pronounced curvature than technological blades. In order to examine the Topper blade assemblage more thoroughly, I separated all blades according to completeness. Accordingly, a total of 139 complete blades were identified. Complete blades at Topper (Figure 4) are typically straight in longitudinal cross section, and have wide, thick striking platforms, with diffuse bulbs of force. Morphologically, such blades typically range in length from 50-75mm, though may be as great as 150mm (Figure 4). The blade attribute analysis identified 118 broken blades. Broken blades include proximal (62), medial, (40), and distal fragments (16). Most proximal fragments have uni-directional scars from previous detachments as opposed to bi-directional scars.

In addition, such fragments predominantly exhibit triangular cross-sections and have platform remnant angles that are on average slightly less than those found on com-

	Blades	Blade-Like-Flakes
Length	63.8	59.77
Width	24.5	25.1
Weight	18.11	
Index of curvature	3.98	5.07
Platform width	12.26	12.6
Platform depth	6.18	6.4

Table 2. Mean Morphological properties for complete blades and blade-like-flakes.

Attribute Value	Directionality			Cross Section			Margins		Bulb		Plat. Angle		Thick	Total
	1	2	3	1	2	3	1	2	1	2	1	2	1	2
12	10	3	0	11	2	0	13	0	13	0	13	0	0	13
11	61	14	0	58	17	0	75	0	75	0	75	0	75	75
10	17	3	0	15	5	0	12	8	18	2	15	4	7	20
9	46	7	4	45	11	1	27	30	57	0	34	8	44	57
8	61	11	6	42	30	6	76	2	76	2	13	0	19	78
7	10	3	1	11	1	2	1	13	14	0	3	5	8	14
6	22	2	11	24	4	7	31	4	34	1	15	3	21	35
5	7	1	6	2	2	10	12	2	14	0	4	0	5	14
4	4	0	3	1	0	6	0	7	7	0	2	1	2	7
3	7	2	6	2	0	13	0	15	14	1	4	1	8	15
2	0	0	1	0	0	1	0	1	1	0	0	0	0	1
1	0	0	2	0	0	2	0	2	2	0	0	2	2	2
0	0	0	2	0	0	2	0	2	0	0	0	0	1	2
														333

Table 3. Results of the Attribute Analysis.

Number of artifacts by attribute category: Directionality. 1 uni-directional, 2 bi-directional, 3 multi-directional. Cross section. 1 triangular, 2 trapezoidal, 3 lenticular. Margins. 1 parallel, 2 irregular. Bulb of force. 1 diffuse, 2 salient. Platform angle: 1 greater than 60, 2 less than 60. Distal thickness: 1 thicker than proximal end, 2 thinner than proximal end.

Figure 4. A: Topper blade-like flakes, B: complete blades.

Figure 5. Topper crested blade. Photograph by the author.

plete blades. Topper blade medial fragments usually have cross-sections that are trapezoidal in form. Blade distal fragments make up the smallest broken blade class. At Topper, distal fragments exhibit terminations that are most frequently feathered as opposed to those that are hinged. Step terminations are absent from the distal blade class.

Reduction Stage Classes

To interpret reduction stages at Topper, all blades were examined noting the presence or absence of cortex and prior blade removals. Primary blades, those exhibiting complete cortex, were the fewest in number. A total of three primary blades were identified which include two complete and one proximal fragment. Topper primary blades may be characterized as relatively large, with parallel or irregular lateral margins. They are triangular in cross-section, have diffuse bulbs, exhibit thick, wide platform remnants ranging from cortical, plain, to faceted. Moreover, the index of curvature for primary decortication blades is on average greater than that of blades produced during later stages of the reduction sequence.

The cortical analysis identified 48 secondary blades. Complete secondary blades are shorter and exhibit less pronounced curvature than primary decorticaion blades. These blades generally have cross sections that are triangular in form as opposed to trapezoidal. Striking platforms, are predominantly plain or cortical rather than faceted or multifaceted. Finally, complete secondary blades have greater platform angles than primary decortication blades.

Interior blades lack cortex on the exterior surface, and reflect later stages in the reduction sequence. Interior blades are most abundant at Topper, with 188 identified. Morphologically, complete interior blades are shorter and wider than secondary or primary blades. Interior blades are also straighter in profile, and exhibit cross sections that are more often trapezoidal. Two blade subclasses were identified at Topper and include corner and crested blades. Corner blades are defined as blades that have been removed from the corners, sides, or ends of a core (Dickens 2005). These blades represent core preparation, though may have been produced multiple times throughout the sequence of core reduction. Seven corner blades were identified in this analysis. Theses blades are typically triangular in cross section and terminate in steps or hinges.

Crested blades are a specialized form of blade. When a natural, straight ridge is not present on the core, one is created through the removal of unifacial or bifacial flakes detached perpendicular to the longitudinal axis of the core. Such flaking often continues the length of the core face, and produces longer, thinner, parallel-sided blades, leaving straight scars on the core face that serve as guides for further blade detachments (Crabtree 1972: 31; Whitaker 1994: 106).

At Topper, 11 crested blades were identified. These blades have flaking patterns that are usually bi-directional to multi-directional in form, with removals often perpendicular to the longitudinal axis of the blade. Moreover, removal scars often terminate in hinges or steps below the center ridgeline. All crested blades have triangular cross sections, and diffuse or no bulbs of force. Furthermore, crested blades generally have parallel lateral margins, are rarely irregular, and end in feather terminations. Morphologically, crested blades are long, and are strongly curved in profile when compared to other blade classes. The high curvature present for crested blades may reflect attempts to prepare an artificial ridge on chert nodules.

Post Detachment Modification

All blades were examined for the presence of post detachment modification. Eight blades have evidence of retouch. Blade modification consists of retouch resulting from the systematic detachment of flakes from either the lateral margin or end. Modified blades include six complete blades, one crested blade, and one blade distal. Modified blades are typically long, have four or more scars of previous blade removals, parallel lateral margins, and feathered distal terminations. Although modified blades are mostly interior, the average index of curvature is relatively high (6.2) compared to the unmodified class. Four blades exhibit systematic retouch along a single margin. One blade has retouch along both lateral margins, and two blades exhibit retouch along an end.

Core Analysis

There are three blade core types represented in the Topper assemblage. These include conical (2), cylindrical (1), and wedge (19) forms. The single cylindrical core has two opposing platforms. One serves as the primary platform from which blades were detached. The opposite platform appears to have only been used for core maintenance; to rejuvenate the core, straighten the core face, or to correct errors. There is flaking along the distal end of the core, yet there is no evidence for attempted blade removals from this surface. According to Collins (1999), such flaking may have been conducted as a means to "straighten the core", allowing for the future detachment of blades that are flat as opposed to those that are increasingly stronger in curvature.

The conical cores have a single platform from which multiple uni-directional blades were struck at approximate right angles to the plane of the platform. A single conical core has blade scars around the entire circumference of the platform. The second conical core exhibits flaking on three of four sides. Wedge shaped cores (Figure 6) are the most abundant of all core types at Topper. Initial blades were detached from a single platform, resulting in cores that resemble a horse's hoof. When blades from this face could no longer successfully be detached, the core was rotated on its axis, and reduction continued. Subsequent blades were detached at an angle perpendicular, and sometimes diagonal to the initial striking platform. This pattern of rotation could have been repeated a number of times, utilizing as many as four core platform surfaces. As this process continues, the core becomes smaller precluding the production of macroblades.

Figure 6. Topper wedge shaped cores. Photograph by the author.

Figure 7. South Carolina Modified blades. A: 38LX283, B: Island Site, Calhoun County, C: 38BK1766 (U/W), D: Barnwell County, E: 38AL163. Photograph by Daryl P. Miller.

Discussion and Interpretation

This study examined blades recovered from Clovis contexts at the Topper Site. All blades were examined, first recording technological attributes to interpret lithic reduction strategies in the manufacture of blades at the site. Based on these results, technological blades are present at Topper, though artifacts appearing as blade-like flakes also occur in smaller numbers. The results of this study demonstrate some variation in attributes of Topper blades when compared to more traditional blade definitions (e.g., Collins 1999). For example, Collins (1999: 63, 178) describes Clovis blades as curved in longitudinal cross section, with lengths often exceeding 100mm in length, and having small platforms. At Topper, Clovis blades typically have wide, deep platform remnants, are straight in longitudinal cross section, and are frequently shorter than 100mm in length. Only 14 complete blades are greater than 100mm. It should be of note that the original sample from which Collins defined Clovis blades was largely based upon examples recovered from caches, and not quarry related reduction sites such as Topper. At quarries, tools are frequently recovered in various stages of production. Blades recovered at quarry sites more often represent failed detachments or those unsuitable for use. Such appears the case at Topper. As a consequence, one should expect some variation in blade attributes at or near quarry reduction sites, whereas blades recovered from isolated locales and at greater distances from raw material sources should conform to more traditional blade definitions such as defined by Collins.

In an effort to better understand the role of blades in the organization of Clovis technology in the Savannah River Valley, I examined a sample of blades recovered from surface collections, some at great distances from Topper. These blades were recovered as far north as Columbia and as far east as the Atlantic seaboard. The blades (Figure 7) were found by a number of different surface collectors, and are made of Allendale chert. I recorded technological and morphological attributes for each of these blades. I found that these blades are technologically similar to the Topper assemblage. However, the blades recovered from surface collections from the region are typically longer, with a mean length of 88.6mm. Interestingly, all off-site blades exhibit modification, and a number were probably multifunctional, since two or more technological edge types had been created on a blade. Such multifunctional attributes may be expected on blades recovered where raw material is scarce, and at distances from quarries. Modification most often consists of bilateral unifacial retouch. Four blades exhibit such retouch along both margins and an end, while two additional blades have retouch only along the margins. It should be realized, for sharp cutting edges freshly detached blades are the optimal blade form. Blade modification in the form of retouch is employed as a means of resharpening or rejuvenating the blade edge when margins become dull through use. Such measures allow longer use-life for blades and blade tools. The general infrequent occurrence of modified blades at Topper, combined with the discovery of such artifacts of probable Clovis origin at distances off-site, supports the conclusion that blades best suited for use as tools were transported from the quarry for use elsewhere.

The pattern of Clovis blade production found at Topper and the few found in the surrounding region suggests that on-site technological blade manufacture was geared toward blade production for use away from the quarry. Thus far blade cores are only known from quarry related sites suggesting that blades, not cores were produced for off-site transport. Blades present onsite represent discards of the manufacture process.

There are a number of issues where future research may enable a broader understanding of Clovis blade technology at the Topper site. One area is use-wear studies Such an analysis was beyond the scope of the current study, though may be beneficial in forming additional interpretations regarding the purpose and function of blades and blade manufacture at Topper. For example, a lack of retouch or modification found on blades at Topper does not necessarily preclude a lack of blade use on-site. Blades detached at the quarry may have been used on-site for a number of activities though left unmodified. In such instances, an analysis of polish or residue left along blade margins, if present on un-weathered examples, may aid in forming interpretations as to site function. Because of the evident closed stratigraphic nature of Clovis assemblages at Topper, studies such as these using blades can be combined with other elements of Clovis stone tool technology to illuminate more fully aspects of Clovis settlement systems in the Savannah River Valley.

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A Study of the Availability and Selection of Stone Tool Raw Materials in Relation to the Johannes Kolb Archaeological Site (38DA75)

Christopher Young

People living during the Early Archaic period faced dramatic changes in climate, plant and animal resources, and an increase in population size. They were mobile hunter-gatherers who traversed the landscape in order to maintain their subsistence. The ability of hunter-gatherers to adapt to these changes was vital to their survival and subsistence and settlement patterns, and thus the location of their settlements needed to be planned to maximize the available resources (Anderson and Sassaman 1996). Lithic resources became essential to Early Archaic subsistence because these materials provided the tools for Early Archaic people to effectively exploit their environments. Currently, there are two models that try to explain Early Archaic subsistence-settlement patterns in South Carolina. The first model suggests that people moved along river drainages taking advantage of food resources and making use of stone raw material they encountered along their route (Anderson and Hanson 1988). The second model states that Early Archaic people moved across river drainages and were substantially tied to two specific stone quarries, the Allendale chert quarry in South Carolina and the Morrow Mountain rhyolite quarry in North Carolina (Daniels 2001). This study attempts to explain how people living in the Upper Coastal Plain of South Carolina during the Early Archaic Period, from 10,000 - 8,000 years ago, procured their raw stone material for manufacturing tools.

Earlier interpretations of previously excavated archaeological sites in the Southeast indicate that Early Archaic people had a preference for Morrow Mountain rhyolite, which is a specific type of rhyolite that outcrops some 70 miles upriver of the Kolb site (Daniels 1998). There is a type of rhyolite available in close proximity of the Kolb site that is very hard to distinguish visually from Morrow Mountain rhyolite. By conducting petrographic analysis on the local rhyolite and comparing these results to studies that have already been conducted on Morrow Mountain rhyolite, I will determine if Early Archaic people occupying the Kolb site were flexible enough in their subsistence-settlement patterns to use the local rhyolite and not be tied to a specific raw stone material source. By analyzing the stone material from the Early Archaic component of the Johannes Kolb site (38DA75) located in Darlington County, South Carolina, along with cobbles collected from the Great Pee Dee River, I will determine which model, or models, best explain the subsistence-settlement pattern of this site.

The Early Archaic Period at the Johannes Kolb Site (38DA75)

The Johannes Kolb site is located near the banks of the Great Pee Dee River and is a multi-component archaeological site which was occupied as early as 12,000 years ago (Figure 1). Annual excavations at the Kolb site began in 1997 and have produced many thousands of artifacts associated with the Early Archaic period occupation at the site (Steen 2000). A large portion of the stone artifacts are composed of porphyritic rhyolite, a metavolcanic rock type that is commonly found along the Carolina Slate Belt in North and South Carolina (Sean Taylor, personal communication, 2009). The Carolina Slate Belt is a geological formation that runs from Georgia, through central South and North Carolina and ends in south-central Virginia. This formation is characterized by rocks deposited by volcanic activity and sedimentation. It is also the dividing line between the Upper Coastal Plain and the Piedmont of South Carolina on which the Fall Line rests (Horton and Zullo 1991).

The Early Archaic Period in South Carolina ranges from 10,000-8,000 years ago. During this time glaciers were retreating throughout the northern section of the United States marking the end of the Pleistocene and the beginning of the Holocene Era. The climate became warmer and drier

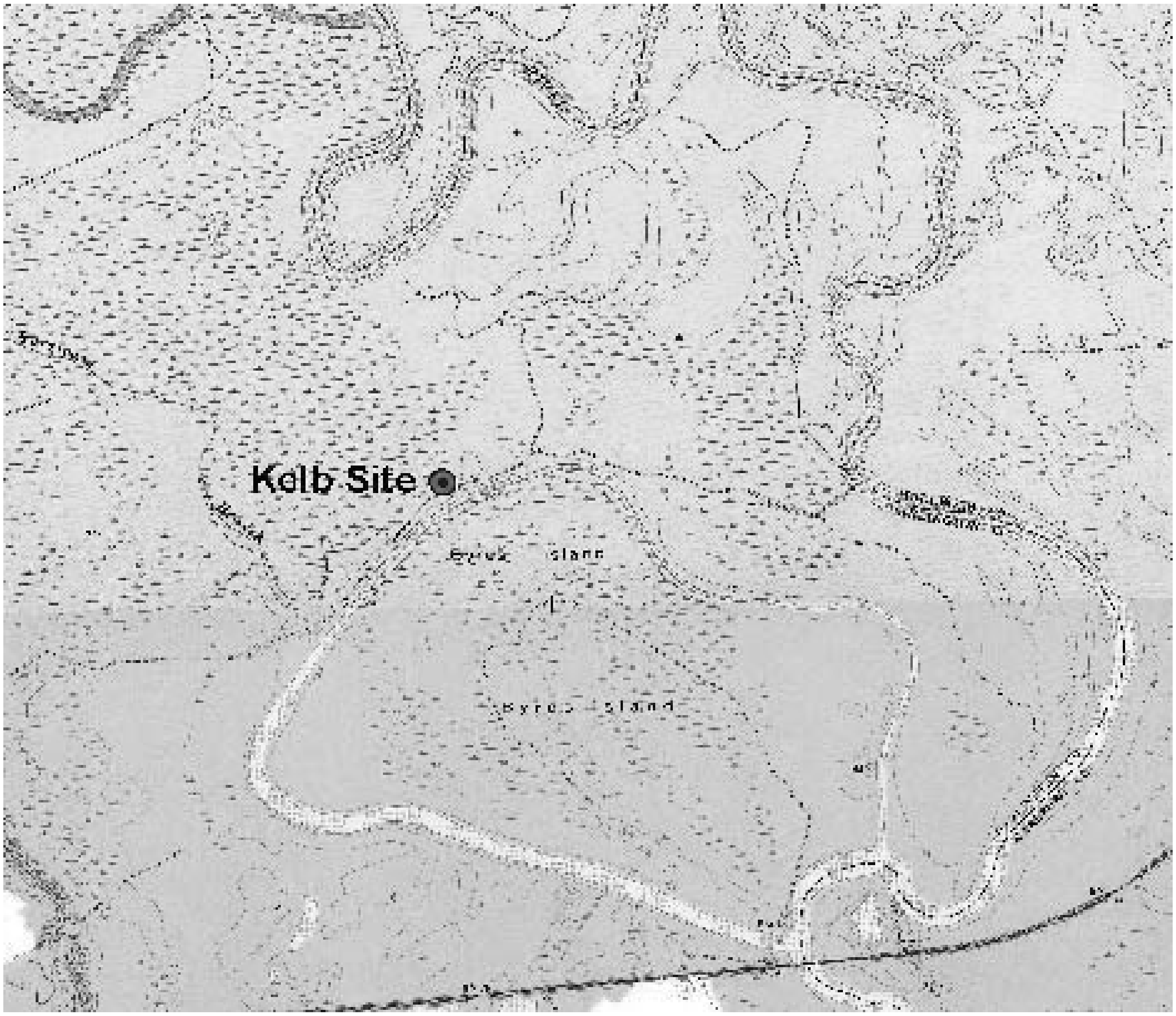

Figure 1. Location of the Kolb Site.

and the sea level was about 90 feet lower than today. These events coincided with the disappearance of megafauna and an increase in smaller game including deer, turkey, fish, and birds which, along with nuts, became the main food source for the Archaic people (Bense 1994). Early Archaic people used stone tools to make maximum use of the available resources, but in order to make stone tools there must be a source of raw material to manufacture the tools. Based on the large quantity of rhyolite artifacts recovered from the Kolb site, Early Archaic people seem to have been selective in their collection of raw stone material.

Early Archaic Subsistence and Settlement Patterns

The two models that best explain Early Archaic subsistence-settlement patterns in the southeast are the Band-Macroband model and the Uwharrie-Allendale settlement model (Anderson and Hanson 1988; Daniel 1998). The Band-Macroband model developed by David Anderson and Glen Hanson (1988) states that small bands of people moved along river drainages in the southeast and made use of the available resources, which included the procurement of stone material. Archaeological sites from the Early Archaic period suggest that these bands periodically aggregated into larger groups, possibly during particular seasons of the year to share information, trade resources, and to find suitable mates (Anderson and Sassaman 1996). The Uwharrie-Allendale model developed by I. Randolph Daniels (2001) suggests that Early Archaic people moved across river drainages in search of raw material to make their stone tools. These Archaic hunter-gatherers appear to have a preference for Allendale chert or Morrow Mountain

Figure 2. Cobble from the Great Pee Dee River.

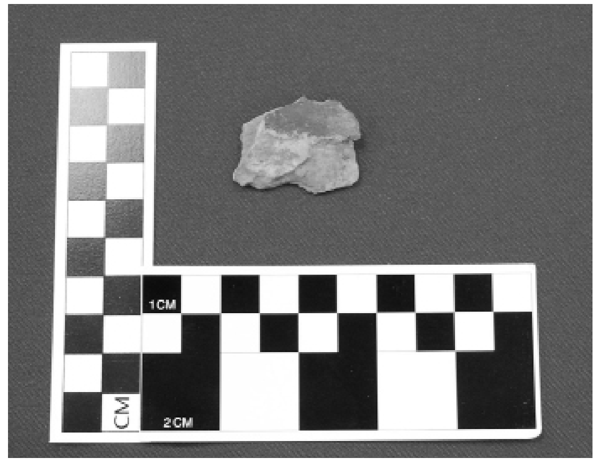

Figure 3. One of the sampled flakes.

rhyolite, and organized their subsistence-settlement activities between the two sources. While these two models try to explain Early Archaic movement, there are other factors that archaeologist should examine when considering Early Archaic mobility: If these people were dependent on one of these two quarries, why would they not make their base camps closer to the stone sources? Are there social, political and economic implications that heavily influenced these people to move across the landscape? An analysis of lithic material from the Early Archaic level at the Kolb site can provide evidence to how people selected camps, which in turn can lead to new questions about the social, economic and political factors that influenced the movement of people in the Early Archaic period.

Selection and Availability of Stone Tool Raw Material at Kolb

If people living in the Upper Coastal Plain of South Carolina were dependent on a specific stone quarry, such as Morrow Mountain rhyolite or Allendale chert, then I would expect to see lithic debitage and stone tools made from these raw materials present at the Kolb site. Therefore, I examined porphyritic rhyolite, a metavolcanic rock that was produced millions of years ago through volcanic activity. Porphyritic rhyolite is recognized by the presence of crystals known as phenocrysts, crystals that form while magma is cooling and are surrounded by a finer grain rock mass (Gene Yogodzinski, personal communication, 2010).

For this study, I sampled local rhyolite flakes and tools that were recovered from excavations at the Kolb site in addition to local cobbles for their comparative value. Stone flakes are an indication of stone tool manufacturing, also known as flintknapping (Whitaker 1994). The size of the flakes and the amount of cortex, the outer layer of the rock, can indicate the stage of flintknapping that was occurring at the Kolb site. If there are larger primary flakes with cortex still attached to the flake, this can indicate that Early Archaic people were using local material. If occupants of the Kolb site were using non-local stone material, there would be a higher number of smaller flakes indicating a later stage in the flintknapping process or the re-sharpening of tools made in another location from a different stone material (Andrefsky 2005). The analysis of the stone tools will show whether they are similar in composition to the cobbles and flakes or if they are from another stone quarry. This would indicate a preference for a certain type of raw stone material.

From the beginning, this project has involved a lot of hands on work. I wanted to collect rock samples from the Great Pee Dee River and compare the rocks with flakes and tools from the Kolb site; however, with the wet winter in 2009/2010, collecting the rocks was not possible. Fortunately, I was able to use 26 samples that Sean Taylor, archaeologist for the South Carolina Department of Natural Resources and one of the directors of the Kolb site, collected from a previous outing to the Pee Dee River. Out of these 26 samples eight were analyzed for this project (Figure 2). Next, I selected 34 rhyolite flakes recovered from the Early Archaic component at the Kolb site. The selection of the flakes was based on their color, amount of visible phenocrysts, size, and the amount of cortex on the flake (Figure 3). Based on these conditions, 16 flakes were analyzed for this project. Three projectile point/knife fragments were selected for analysis (Figure 4), with the understanding that the tools would be destroyed; therefore, whole points were not selected for analysis. Once the selection of the samples was made, the next step was to cut the samples so they could be prepared into thin sections for petrographic analysis. Thin sectioning is the process by which rocks are cut microscopically and placed on a slide

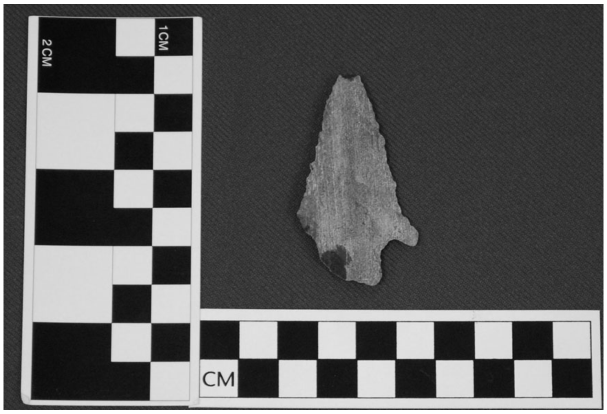

Figure 4. One of the sampled points

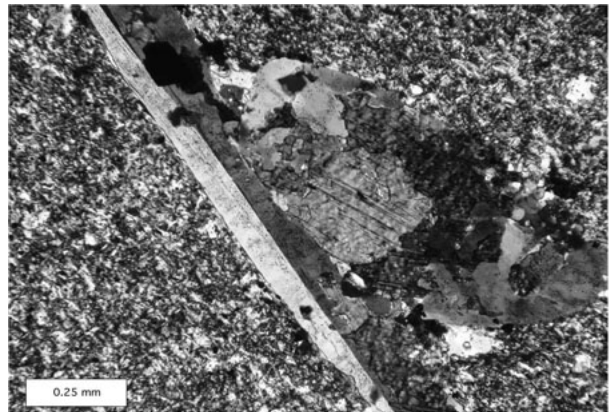

Figure 6. Thin section of cobble KSL-10-15 showing the mineral sanidine.

Figure 5. The author cutting samples to send for thin sectioning.

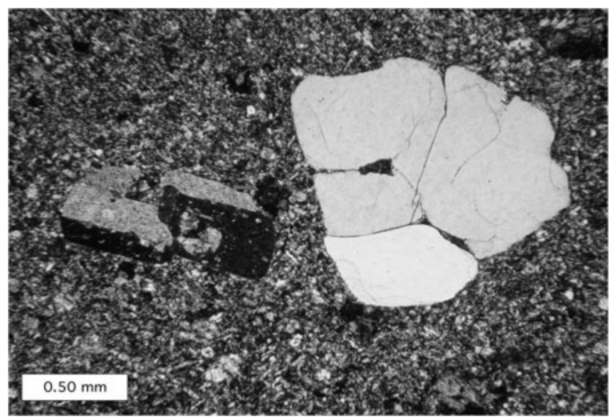

Figure 7. A lithic sample that shows the mineral quartz, the brightly colored mineral in the photo.

to be examined under a microscope for the petrographic analysis. Petrographic analysis is the process of assigning detailed descriptions of rocks by observing the mineral composition under a microscope.

To get the river cobbles prepared for thin sections, I cut the rocks into small rectangles. Under the supervision of University of South Carolina Geologist Gene Yogodzinski and with the help of Mark Wieland, I was able to cut the samples at the Department of Earth and Ocean Sciences (Figure 5). The flakes and tools were put on a lapping wheel, a type of grinding wheel with a diamond blade, to get the desired rectangular shape for the thin sections. Once all of the samples were ready for thin sectioning, they were sent to Spectrum Petrographics in Vancouver, Washington where they were made into thin sections and placed onto slides. Upon the return of the thin sections, I provided Yogodzinski the thin sections for his analysis.

For this project, I compared my data to a recent study conducted on the Carolina Slate Belt in North Carolina. I

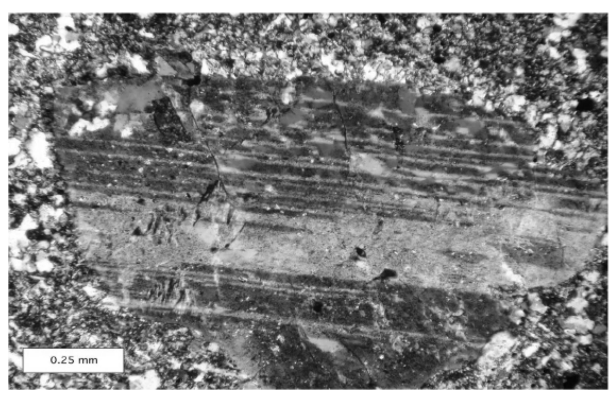

Figure 8. Thin section of a flake showing the multiple-twinning pattern of the mineral plagioclase.

Table 1. Petrographic Data of Thin Sections from Selected Lithic Materials, Site 38DA75 and the Great Pee Dee River.

Field ID	Location	Artifact Type	Primary Minerals*	Secondary Minerals	Petrographic Characteristics
KSL-10-63	38DA75	Point Fragment	plagioclase, sanidine	amphibole, chlorite, biotite	Meta-rhyolite with phenocrysts of plagioclase and sanidine, absent quartz. Secondary amphibole, chlorite and biotite(?). Microcrystalline felsic groundmass. Igneous texture is well preserved.
KSL-10-62	38DA75	Point Fragment	sanidine, quartz	amphibole	Meta-rhyolite with phenocrysts of sanidine and quartz, absent plagioclase. Secondary amphibole. Microcrystalline felsic groundmass.
KSL-10-31	38DA75	Flake	sanidine	epidote	Meta-rhyolite with phenocrysts of sanidine. Secondary epidote on sanidine. Microcrystalline felsic groundmass.
KSL-10-29	38DA75	Flake	none	indistinct	Laminated aphyric meta-rhyolite. Nearly featureless felsic and microcrystalline rock. Faint banding is interpreted to be relict igneous flow banding.
KSL-10-12	Great Pee Dee River & Hwy 34	Cobble	quartz, sanidine	epidote, amphibole, biotite, sericite	Meta-rhyolite with phenocrysts of quartz and sanidine. Secondary epidote, amphibole, biotite (?) and sericite. Epidote is replacing sanidine but also in porphyroblasts, possibly from alteration of mafic phenocrysts. Microcrystalline felsic groundmass.
KSL-10-15	Great Pee Dee River	Cobble	sanidine, plagioclase	amphibole, biotite, garnet	Meta-rhyolite with phenocrysts of sanidine and plagioclase. Secondary amphibole, biotite, and garnet (?) replacing sanidine. Abundant secondary amphibole.
KSL-10-22	Great Pee Dee River	Cobble	none	Fe-oxides, biotite, amphibole	Laminated aphyric meta-rhyolite. Faint banding is interpreted to be relict igneous flow banding. Abundant microcrystalline secondary Fe-oxides, biotite and amphibole.
KSL-10-52	38DA75	Flake	none	zeolites	Aphyric meta-rhyolite. Nearly isotropic zeolites (?) with oxidized rims appear to be relict micro-phenocrysts.
KSL-10-43	38DA75	Flake	sanidine, plagioclase	epidote	Meta-rhyolite with phenocrysts of sanidine and plagioclase (?). Minor secondary epidote replacing sanidine.
KSL-10-1	Great Pee Dee River	Cobble	none	Fe-oxides	Microcrystalline meta-volcanic or volcaniclastic rock. Nearly featureless with scattered Fe-oxide minerals.
KSL10-8	Great Pee Dee River	Cobble	sanidine, plagioclase, quartz	amphibole, Fe-oxide	Meta-rhyolite with phenocrysts of sanidine, plagioclase (?) and rare quartz. Occasional secondary amphibole and Fe-oxide.
KSL-10-26	Great Pee Dee River	Cobble	sanidine	amphibole, epidote	Meta-rhyolite with phenocrysts of sanidine. Secondary amphibole and epidote (?) replacing sanidine.
KSL-10-46	38DA75	Flake	sanidine	quartz, amphibole	Meta-rhyolite with phenocrysts of sanidine. Some polygonal quartz in veins and amphibole filling vug.

KSL-10-46	38DA75	Flake	sanidine	quartz, amphibole	Meta-rhyolite with phenocrysts of sanidine. Some polygonal quartz in veins and amphibole filling vug.
KSL-10-44	38DA75	Flake	none	Fe-oxides	Aphyric meta-rhyolite. Nearly featureless, but with reddish-brown oxide staning. Some open vugs/vesicles.
KSL-10-27	38DA75	Flake	plagioclase, sanidine	amphibole, epidote	Meta-rhyolite with plagioclase and sanidine phenocrystss. Small quantities of secondary amphibole and epidote.
KSL-10-59	38DA75	Flake	none	Fe-oxide, biotite	Laminated aphyric meta-rhyolite. Sample is stained by dark-brown Fe-oxide growth. Abundant secondary biotite. Laminated texture of this rock may be a product of welding, suggesting a volcaniclastic origin.
KSL-10-16	Great Pee Dee River	Cobble	sanidine, plagioclase	epidote	Meta-rhyolite with phenocrysts of sanidine and plagioclase. Minor epidote replacing sanidine.
KSL-10-50	38DA75	Flake	none	indistinct	Laminated aphyric meta-rhyolite. Laminations interpreted to be flow-banding or welding. Recrystallization of groundmass minerals appears to preserve a volcaniclastic texture.
KSL-10-49	38DA75	Flake	none	quartz, epidote	Laminated meta-rhyolite with relict phenocrysts replaced by quartz and epidote. Lamination is of uncertain origin. Could be igneous flow banding or relict layers.
KSL-10-61	38DA75	Flake	none	quartz, amphibole, epidote	Aphyric meta-rhyolite, with recrystallized groundmass showing secondary quartz, amphibole and epidote
KSL-10-6	Great Pee Dee River	Cobble	none	epidote	Laminated meta-rhyolite. No phenocrysts evident. Secondary epidote. Lamination appears rhythmic and could be clastic or volcaniclastic in origin.
KSL-10-36	Great Pee Dee River	Cobble	sanidine	amphibole, epidote, zeolite	Meta-rhyolite with phenocrysts of sanidine. Secondary amphibole and epidote. Groundmass is spotted with abundant zeolite(?) porphyroblasts.
KSL-10-42	38DA75	Flake	sanidine	epidote, amphibole	Meta-rhyolite with sanidine phenocrysts. Abundant epidote replacing sanidine. Secondary amphibole.
KSL-10-35	38DA75	Flake	none	indistinct	Laminated meta-rhyolite. Fine laminations appear rhythmic/graded. Laminations could be relict flow banding or clastic/volcaniclastic in origin.
KSL-10-47	38DA75	Flake	none	quartz	Aphyric meta-rhyolite. Nearly featureless. Felsic and microcrystalline with minor recrystallized quartz in veins.

*** Identification of primary feldspar mineralogy is based on twinning patterns in crystals interpreted to be relict phenocrysts. Relict phenocrysts displaying polysnthetic (albite) twinning are interpreted to be plagioclase. Relict phenocrysts displaying carlsbad twinning are interterpreted to be sanidine. All feldspar are relict, in the sense that all likely share the same Na-rich (albitic) composition, due to the low-grade metamorphic history that all samples appear to have experienced.**

used the archaeological report, *Stone Quarries and Sourcing in the Carolina Slate Belt* (Steponaitis et al. 2006), to compare my findings to the data concerning Morrow Mountain rhyolite from North Carolina. Morrow Mountain is located in the Uwharrie Mountain Range in the south central portion of the Carolina Slate Belt in North Carolina. Morrow Mountain rhyolite does not exhibit any phenocrysts. It is described as a gray, felsite with flow banding (Stoddard 2006). Based on previous archaeological research, it is one of the largest and most extensively used quarries in North Carolina (Moore and Irwin 2006).

Once the analysis of the Pee Dee rhyolite was completed (see Table 1, prepared by Yogodzinski 2010), I was able to determine that Early Archaic people were indeed flexible enough to take advantage of local raw stone material and were not necessarily dependent on a specific stone quarry. The majority of the phenocrysts from the Pee Dee rhyolite display the mineral sanidine, which is distinguished by the twinning planes found within the phenocrysts and is also a common phenocryst mineral found in modern rhyolite (Figure 6). Another common mineral found in phenocrysts of rhyolite is quartz (Figure 7). It is present in all of the samples from the Great Pee Dee River and from the Kolb site. One mineral that is less common than sanidine and quartz is plagioclase, which is distinguished by its multiple twin pattern (Figure 8). The absence of phenocrysts in the Morrow Mountain rhyolite, even within the flow banding, and its variation in color from the Pee Dee rhyolite, indicates that these are two similar rocks but with different primary sources. Based on the analysis, Yogodzinski determined that "Petrographic observations of tools, flakes and cobble samples are consistent with the hypothesis that the artifacts could have been derived from sources local to the Upper Coastal plain of South Carolina." Yogodzinski`s statement supports my hypothesis that Early Archaic people who occupied the Kolb site primarily used local raw material in their subsistence-settlement patterns.

Currently, Chris Moore and Mark Brooks, archaeologists at the Savannah River Archaeological Research Program, are conducting a sourcing project in South Carolina much like the study conducted in North Carolina. The use of geo-chemical testing needs to be conducted on certain rock types for there to be a definitive statement that Early Archaic people used local raw material and to identify the quarry sources for the Kolb site lithic materials. This study was funded through a Magellan Scholar Grant and I intend to secure additional funding to continue this research project, and to continue working with the USC Geology Department. Using stone artifacts to define ancient cultures is an arduous task at best. With the findings of this project and the current research being conducted by Moore and Brooks, I believe that we will soon have a better understanding of how Early Archaic peoples were utilizing stone tools in their subsistence-settlement patterns.

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NOTES FROM THE FIELD

Reports on Archaeology Projects

South Carolina Enslaved African and African American Cemetery Surveys

Christina Brooks, Department of Sociology
and Anthropology, Winthrop University

The objective of this research is to study above-ground features in South Carolina's enslaved African and African American cemeteries. It is an effort to better understand life and death for the enslaved, free blacks, and post-bellum communities as evidenced through their mortuary practices. Topics addressed include gravestone variability, cemetery landscapes, funerary practices, and beliefs about death.

The field surveys of two African American cemeteries in coastal South Carolina utilized a combination of data from archaeological surface survey and historical documentation. The survey was designed to explore the nature of the cemeteries by recording all artifacts and features found within the cemeteries and on individual burials, the orientation of the graves, and the types of markers used. The survey also included computer-based Geographic Information System (GIS) mapping to analyze the cemeteries' layout and develop a database of all burials recorded in each cemetery.

Figure 1. A historic African American cemetery, coastal South Carolina.

Figure 2. The grave marker of a young man who drowned in a boating accident. Note the seashells placed on the burial.

The recording procedures for this project included mapping all burials and taking digital photographs of artifacts and features with high-resolution cameras. The markers were described by type, material, and special features. Marker inscriptions were also transcribed. Features and artifacts associated with each burial were recorded and photographed. Each burial was assigned a unique control number that was used to tie together the written, photographic and map records.

After the recording was complete a survey, using a Global Positioning System (GPS) and GIS data processing, was used to collect data to develop a map and database. Once more cemeteries have been surveyed the GIS information will be made available on-line, along with linked photographs of all of the artifacts and features documented in the cemeteries and the cemetery map.

So far, this project has demonstrated that high quality maps and corresponding databases are an easy yet effective method of cemetery survey, analysis and dissemination of results without negatively impacting the natural environment of the cemetery itself. The internet

will allow for easy access to South Carolina's African American cemeteries by researchers and the general public anywhere in the world.

There are plans to expand this project to include other African American cemeteries, across the state of South Carolina, in the online database. This will, ideally, be completed with the assistance of researchers around the state. Volunteers will survey these cemeteries following archaeological standards and complete a standardized form for each African American cemetery surveyed. Forms will be submitted in order to be included in the online database.

Overall, this project exists to collect remembrances of historic enslaved African and African American cemeteries in South Carolina and document biographical information about local families to reconstruct the history of African Americans throughout the state. The goal is to contribute to the understanding of the African American experience one cemetery at a time.

Data Recovery at Fort Jackson: The Middle Archaic in the Sandhills

Audrey Dawson, Applied Research Division, South Carolina Institute of Archaeology and Anthropology

The Applied Research Division of the South Carolina Institute of Archaeology and Anthropology at the University of South Carolina in Columbia recently conducted intensive archaeological excavations at two sites on Fort Jackson in Richland County, South Carolina. The excavations aimed to locate and isolate discrete occupations dating to the Middle Archaic period.

Fort Jackson is the United States Army's largest Initial Entry Training Center. It covers more than 52,000 acres of land east of Columbia in Richland County, South Carolina. The installation is situated in the Sandhills, a strip of ancient beach dunes separating the Coastal Plain from the Piedmont. Four creeks drain the installation: Gills Creek, Mill Creek, and Cedar Creek originate on the base and flow south to the Congaree River. Colonels Creek drains along the eastern half of the installation southwestwards to the Wateree River. Archaeological remains have been found on Fort Jackson dating from the Paleo-Indian period to the early-20th century.

Sites 38RD843 and 38RD841/842/844 were initially recorded as four separate lithic scatters by a 1992 reconnaissance survey prior to timbering the area (Steen and Braley 1993). The scatters are located near the spring-fed headwaters of an unnamed tributary of Gills Creek in the northwestern part of the installation. Subsequent testing of the sites to investigate their research potential and National Register eligibility merged sites 38RD841, 38RD842, and 38RD844 into one large site. The testing determined sites 38RD843 and 38RD841/842/844 to be eligible for inclusion on the National Register of Historic Places (Dawson et al. 2007). The current project was initiated ahead of development in this area. As noted above, the goal of this data recovery project was to understand the Middle Archaic uses of the Sandhills. A secondary goal of the project was to inform the public about cultural resources on Fort Jackson. The public component included a public day and a variety of media coverage.

Research from the North Carolina Sandhills has shown that Middle Archaic sites were formed through repeated occupations of the same landform by small hunter-gatherer groups (Cable and Cantley 2005). Using ethnographic parallels (Yellen 1977), Cable and Cantley (2005:36-41) have shown that Middle Archaic 'occupation clusters' often cover an area of less than five meters. Since 38RD843 and 38RD841/842/844 are large sites, 8,600m2 and 74,400m2 respectively, excavation methods focused first on identifying areas where discrete occupation clusters could be separated from their surroundings. This limited the area of investigation down to three areas within site 38RD841/842/844. These areas possessed deep, intact stratigraphy, clusters of unique lithic raw materials, and fairly isolated Middle Archaic strata. Micro-interval shovel tests (at 1 and 0.5m intervals) were excavated in these three areas. Additional 2x2m excavation units were then excavated within these blocks of micro-interval shovel tests. In order to maintain horizontal separation, levels in these excavation units were excavated in arbitrary 5cm levels. The excavation of each 5cm level in 25x25cm squares maintained the vertical integrity of the artifacts and will allow for the identification of features. Features are usually identified by changes in soil color and sometimes soil texture. But, due to the nature of the soils on Fort Jackson, coloring quickly leaches out leaving a homogenous tan sandy soil. Thus, on prehistoric sites in the Sandhills, features are identified as clusters of artifacts (Clement et al. 2005). Analysis of the artifacts collected from this project is ongoing.

The homogenous sandy soils and intact cultural deposits provided a unique opportunity to use grain size analysis to identify buried surfaces. Excavations and grain size analysis at 38RD628 in the northeastern corner of Fort Jackson provides strong evidence that stable, buried surface will be identified at 38RD841/842/844 (Clement et al. 2005). Soil samples were collected every 2.5cm from the wall of our excavation units. The analysis of these samples is currently underway.

Once the analysis of both the artifacts and soil samples is complete, the results of this project will expand our knowledge of the Middle Archaic peoples especially in terms of the exploitation of the Coastal Plain by these groups.

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Litchfield Clam Midden Research: Recent Work at the University of South Carolina, Columbia/South Carolina Institute of Archaeology and Anthropology

David J. Goldstein, SCIAA/Department of Anthropology, University of South Carolina, Columbia

Anthropologists are increasingly interested in knowing if the resources we are using today are going to last and if we are using them efficiently. While this worry is often considered a modern concern, we sometimes look to the past to understand how people dealt with unpredictable resources (Marquardt 1994). The Litchfield Beach area of Pawley's Island, Georgetown County, SC is no exception. Here, sustainable resource management is a primary concern given that this part of the South Carolina coastline is overbuilt in some areas, home to both private and public protected lands, and extremely vulnerable to Atlantic Ocean hurricanes (Baden 1971; Cheshire 1971; Kendree 1977; Lewis 1998; WRPDC 1977).

This past spring, the USC graduate and undergraduate students enrolled in a course entitled Historical Ecology (Balee 2006) focused their collective efforts on the archaeological clamshell middens in the Litchfield area. These are unique sources of information as they primarily contain clamshell, *Mercenaria mercenaria*, and are largely devoid of other cultural material from the pre-Colonial era (Claassen 1986). They are distinct from many of the larger shell rings and middens along the southeastern Atlantic Coast that primarily contain oyster shell, *Crassostrea virginica*, which are largely from the Late Archaic Period (Lightfoot and Cerrato 1989). Dr. Chester DePratter (2006) and Jim Legg of the South Carolina Institute of Archaeology and Anthropology have been developing research in the Litchfield Beach portion of Pawley's Island, Georgetown County, for the past five years. It has been slow going, test pitting and dating the remains of more than 20 middens, one midden at a time. Parallel to the dirt and shovel archaeology, their colleague Irv Quitmyer at the Florida Natural History Museum, Gainesville, has been thin sectioning the clams to reveal the average age and season of harvest for over 1,000 specimens from each sampled midden (Quitmyer et al. 1997).

The result of DePratter, Legg, and Quitmyer's collaboration is a sequence of clam shell harvesting that demonstrates changes in population age, as selected for by humans, and an attempt to understand the seasonal use of these features over the past 1200 years. With this in mind, the students ventured out into the modern Georgetown county community to look more carefully at how people use that same marsh today, and how it developed over the past 200 years of historical memory (Cheshire 1971; Dennis 2000; Lewis 1998). While the results of the student's work is preliminary, we were able to appreciate the continued and sustained use of clam and other marshland resources in the Litchfield area up to the present day. Marsh use today includes resources that are presently prohibited or controlled through state and local forces, oyster and clam collection and flounder 'gigging'. We found a vibrant set of community based institutions, family titles and communal shell fishing boundaries that maintain clam and oyster populations, regulate their harvest, and a thriving informal economy of marshland resources.

The students then used existing site file records, soil maps, and land survey data to develop hypothetical record of land use and settlement of the Litchfield area that corresponds to the 1200 year record of clam shell middens (Kowalewski 2008). The most striking part of this model is the persistence of stable high sand bar settlement along the lower Waccamaw throughout this period (Baden 1971; Kendree 1977). These areas were and continue to be home to the safest, most stable, and most resilient settlements on this section of the Grand Strand area of South Carolina (Stuckey 1982). Interestingly enough, these are the places that currently hold the lower property values in the Litchfield area and strikingly indicate the disjuncture between sustainable land use, contemporary development initiatives, and perceptions of what is desirable in the local landscape (WRPDC 1977). Additionally, we were able to see that the state's appropriation of marsh lands in the 1920's and changes in Civil Rights legislation have recently altered how people see and utilize marsh resources today, yet these topics remain poorly researched (Cheshire 1971; Dennis 2000). Establishing the Civil Rights Act radically transformed two largely independent racially segregated tourist industries in the area, altering the way that ethnic segregation at Litchfield is institutionalized. Additionally, a vibrant informal economy of barter and exchange of shellfish supplies local commercial and household consumption in the area while commercial use of these resources is technically forbidden. These two topics, among many others, are ripe for future research at Litchfield.

The archaeological and ethnographic research work continues into the 2010 and 2011 academic years with continued survey of other clam midden sites in the area, their dating, and the clamshell seasonality studies. The research extends towards the Hobcaw Barony areas of the Georgetown Bay and the Waccamaw Inlet. At the same time, we will continue working on the seasonality and dating studies of the shell being recovered from the middens.

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Lithic Raw Material Studies in South Carolina and Their Implications for Paleoindian Mobility Patterns and Exchange

Albert C. Goodyear, South Carolina Institute of Archaeology and Anthropology

The South Carolina Institute of Archaeology and Anthropology at the University of South Carolina has maintained the South Carolina Paleoindian Point Database for over 40 years. Beginning in 1969, over 550 pre-Dalton specimens have been recorded to date. One of the key attributes recorded has been that of lithic raw material. Given the greatly different physiographic provinces of South Carolina with their distinct geological origins and ages, the types of stone used for artifacts can often be reliably traced to their provinces and sources. Archaeologists are interested in knowing the types of lithic raw materials used and their sources in order to gain insights into possible prehistoric movement patterns and exchange.

The southern part of the State is dominated by the Coastal Plain Tertiary age cherts of marine origin that are known to occur in the Flint River Formation (Cooke 1936; Upchurch 1984). Outcrops and prehistoric quarries have been mapped in the central Savannah River Valley, specifically in Allendale County and extending eastward into the Georgia counties of Screven and Burke Counties (Goodyear and Charles 1984). Accordingly, the majority of Paleoindian points made from what has been called Allendale chert have been found in the southern portion of the State (Goodyear et al. 1990).

The northern and eastern areas of South Carolina have more Paleoindian points made from metamorphic and volcanic lithic materials, which are known to occur in the Piedmont Province of Georgia, South Carolina and North Carolina (Figure 1). Although metavolcanic rocks suitable for various stone tools are widespread in South Carolina, prehistoric quarries have been difficult to find. The main concentration of quarries to date has been on U.S. Forest Service land in Edgefield and McCormick counties in the western Piedmont (Benson 2007). Among the metavolcanics, the finer grained materials preferred by Paleoindians, such as flow banded rhyolite and tuff (Novick 1978), no outcrops and quarries are known. The very high quality black and green welded vitric tuffs and differentially crystallized tuffs to date are only known to occur naturally in the Uwharrie Mountains region of south-central North Carolina, particularly in the Asheboro area (Goodyear 2009). Interestingly, examples of these suspected North Carolina lithic types have been excavated in situ within the Clovis floors of the Topper site (38AL23) located at a Coastal Plain chert quarry on the Savannah River (Goodyear et al. 2009). If these metavolcanic artifacts indeed had their origin in the Uwharrie region of North Carolina, it would indicate that some 13,000 years ago, people were interacting over a distance of some 300 kilometers. Within the tuffs, there seems to be a difference between the Clovis (13,000-12,800 yrs) and the following Redstone (12,800-12,500 yrs) period. About 36% of the metavolcanic Clovis points are made from the tuffs, whereas up to 90% of the Redstones are tuff (Goodyear 2009). Some of these differences may be attributable to the need for very fine grained, chert-like raw material to create the long flutes as seen on Redstones.

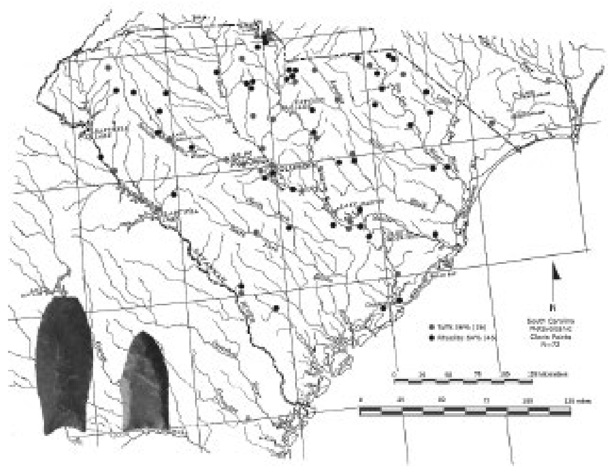

Figure 1. Distribution of metavolcanic Clovis points in South Carolina as of 2009. SEPAS.

Figure 2. A basalt Dalton point from the Kolb site, 38DA75, attached to a magnet. (SCIAA, Jessica Beltman).

More work is needed to develop a comprehensive inventory of metavolcanic quarries in South Carolina to determine if lithic types like those of the North Carolina Uwharries occur in the state. In the North Carolina, the application of petrography and chemical analyses, especially neodymium isotope analysis, have shown some success in identifying sources (Steponaitis et al. 2006). Prospecting by Sean Taylor of the South Carolina Department of Natural Resources has revealed cobbles of tool stone quality rhyolites and basalts in the river bed of the Pee Dee River in the Darlington County area which were fluvially transported downstream from North Carolina. Some of these cobbles respond to a magnet as do certain metavolcanic artifacts near the Pee Dee River (Figure 2). Prehistoric flakes that respond to a magnet are rather common along the Pee Dee in both states suggesting that the original bedrock sources in North Carolina have magnetic properties (Goodyear 2009). As such, it may prove to be an inexpensive means of tracing artifacts found in South Carolina from the Pee Dee River area or the bedrock sources in the Uwharries.

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Military Site Program Returns to Williamson's Plantation Battlefield

Steven D. Smith, Military Sites Archaeological Research Program, South Carolina Institute of Archaeology and Anthropology

In May, York County's Culture & Heritage Museums (CHM) invited SCIAA's Military Sites Program (MSP) back to Historic Brattonsville, South Carolina to continue to search for archaeological remains of the Revolutionary War battle of Williamson's Plantation also called Huck's Defeat. Under the direction of CHM's historian, Dr. Michael C. Scoggins and SCIAA's Steven D. Smith, archaeologists and volunteers spent three weeks conducting a metal detecting survey and hand excavations in an attempt to better define the battlefield that had been discovered by SCIAA in 2006. The May project was funded by the American Battlefield Protection Program of the National Park Service.

The battle of Williamson's Plantation occurred July 12, 1780, when the American militia forces under the overall command of General Thomas Sumter surprised a company of British Provincial troops under the command of Captain Christian Huck camped at the plantation. At dawn on the morning of July 12th, the Americans consisting of between 150 to 300 men under the combined command of William Bratton, Andrew Neel, and Edward Lacey surprised the British and in a short, sharp fight, killed 30 and wounded 35, while the Americans lost only one man. The victory was significant for its morale boost to the American Revolutionary cause, coming close after the May surrender of the American Continental Army in Charleston.

Historical documentation indicated that the James Williamson family settled 300 acres on the South Fork of Fishing Creek in 1766. At the time of the Battle of Huck's Defeat in 1780, the Williamson plantation included a two-story log house, a corn crib, and a stable or barn. Accounts of the battle indicate that the action began several hundred yards south or southeast of the Williamson home place.

In April and December 2006, SCIAA conducted the first reconnaissance level metal detecting survey of the Historic Brattonsville property focused on locating the Williamson's Plantation battlefield. A concentration of 18th century domestic artifacts, lead rifle and musket shot, a British halfpenny, and a brass trigger guard fragment were recovered. This year, SCIAA returned to better define battlefield features and attempted to locate evidence of the Williamson house in the form of non-metallic artifacts and hopefully even features. This year's metal detecting increased the number of lead shot already recovered and also recovered a sword pommel. More colonial buttons and metallic domestic materials including a door strap hinge were found.

After the metal detecting, several 1 x 2 and 2 x 2 meter units were excavated across the site of the metal artifact concentrations. Oddly only a few colonial ceramic sherds were found and these were all of the same type of 18th century redware and could have been from a single plate. No pipestems were found. In addition to these formal excavation units, systematic shovel testing was conducted, yet no evidence of the Williamson house was found.

Despite the lack of archaeological evidence of the house, Scoggins and Smith are convinced they have found a portion of the battlefield and perhaps all that is left in the archaeological record. A careful landscape study was conducted in conjunction with the historic records. This study identified key defining features mentioned in the documents describing the plantation and the battle, including such features as natural springs and a lane or road that documents describe as leading to the Bratton house. Also the location of the metal artifact concentrations fit the recorded distance from the Bratton house (which still stands today) to the Williamson house and the plat records. The only missing element is evidence of the Williamson house itself.

Scoggins and Smith completed a draft report in July and are awaiting comments from the ABPP. A final report is expected by December 2010. Meanwhile the information gained from the battlefield will be used for site interpretation and preservation.

The Last Dave Pot?

Carl Steen, Diachronic Research Foundation

The slave potter who signed some of his vessels with the name "Dave" has previously been thought to have used the mark between 1834 and 1864 (Koverman 1998: 24, 25). A recent visit to the Department of Natural Resources' Gopher Branch Heritage Preserve, site of the Rev. John Landrum's pottery kiln (38AK497) resulted in an interesting discovery. Rev. Landrum was the father-in-law of Lewis Miles, a known owner of "Dave" the potter. "Dave" apparently lived at the adjacent plantation at Stoney Bluff, where, as Dave put it on one of his pots, "Dave belongs to Mr. Miles, Where the Oven Bakes and the Pot Biles" (Baldwin 1993: 194). Another vessel mentions Stoney Bluff by name.

Rev. Landrum had a mill on Gopher Branch below his home and pottery shop that is on a private holding adjacent to the Heritage Preserve. While clearing debris from the channel at the mill the landowner found a large sherd from the base of a cylindrical jug (Figure 1).

Figure 1. The vessel base.

On the base it is inscribed "January 25th 1868" (Figure 2) and beneath that are two letters: "...ve" (Figure 3). The rest is broken off.

There are a few things that make this a questionable identification. First, this is clearly a Miles Mill piece (38AK498), not a Stoney Bluff piece (Steen 1994). Jill Koverman believed that Dave worked at Miles Mill but signed and dated "Dave" vessels from there have not previously been seen. Second, it is slip glazed, not alkaline glazed. Third, it is signed on the bottom. This has not been seen before (Steve Ferrell, personal communication, 2010:; Jill Koverman, personal communication, 2010:). Finally, it just isn't complete. As one colleague pointed out, it could be "Steve" (Chris Espenshade, personal communication, 2009).

So can an argument be made that this is the end of the name "Dave" and by four years the youngest Dave pot? Fortunately there are numerous "Dave" pots and photographs thereof that will allow some amateur handwriting comparison to be made (Figures 4, 5, 6; but see also Baldwin 1993; Koverman 1998; Todd 2008).

Figure 2. Detail of the "ve".

Figure 3. Detail of date.

Figure 4. Dave signature (Koverman 1998:24).

There are clear similarities both in the "ve" and in the letters of the month and numbers of the date. Note the kink on the top of the right arm of the "v" and the tailing flourish on the "e." Note also the straight bottoms on the "J" and "y." Finally, note the distinctive shape of the "2." Figure 7 shows a sherd collected at the Landrum site that is dated, but not signed which has a clear example of this "2."

Figure 5. Detail of date (Koverman 1998: 94).

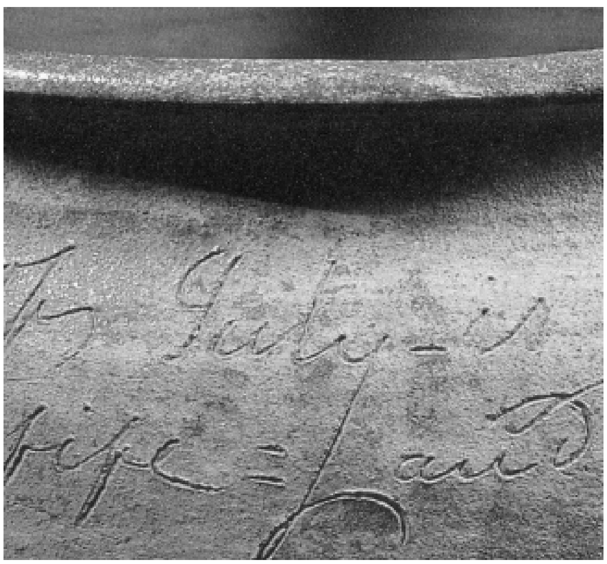

Figure 6. Dated sherd from the Rev. John Landrum site.

Figure 7. Dated sherd from the Rev. John Landrum site.

All of these elements are seen on Dave signed pieces repeatedly. But it is possible that someone who learned to write in the same environment could have handwriting a lot like Dave's, so until the landowner finds that mending sherd with the "Da" on it this will have to stand as a record with an asterisk beside it. For more information on Dave, see Leonard Todd's (2008) recent book *Carolina Clay: The Lives and Works of the Enslaved African American Potter, Dave.*

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Archaeology at Coastal Carolina University

Cheryl Ward, Center for Archaeology and Anthropology,
Coastal Carolina University

Students in Coastal Carolina University's 2010 archaeological field school experienced archaeological methods spanning pedestrian survey to laboratory analysis and report writing in five intensive weeks at prehistoric and historic sites in Horry and Georgetown counties. Sites included a private prehistoric village site, the residential area for enslaved Africans at The Oaks plantation in Brookgreen Gardens, a tract of land burned by a forest fire in 2009 on Sandy Island, and the Waccamaw National Wildlife Refuge visitor center property with historic watercraft and residential areas.

The unexpected discovery of historic artifacts likely related to a Conway shipyard from the late 19th and early 20th century in spoil piles from telecommunication excavations along Second Avenue in downtown Conway took the field school straight to the field to learn the basics of artifact recognition, recovery, cataloging and analysis. Students spent three days excavating and screening spoil piles at the site. The heavy and clayey soils preserved wood artifacts like barrel heads and timbers, along with naval stores (pine resin) in abundance. The stratigraphic sequence of activity, fire, abandonment, and use as a garbage disposal area was reflected by ceramic and glass finds that provided a good chronological picture of the site's history.

The salvage nature of the shipyard site in the riverfront area of Conway also introduced students to significant issues in archaeology. When does an object become an artifact? How are state and federal laws applied in theory and in practice to sites like this? How can local and regional entities manage cultural resources to tell the story of the people that lived there in the past rather than just focus on 'what is the best thing you found today' sorts of questions?These discussions continued in and out of the classroom, especially once we moved to our campground at the visitor center of the Waccamaw National Wildlife Refuge, our host and home for the next four weeks. Previous archaeological survey and excavation at the refuge by former Coastal Carolina University archaeologist James L. Michie and CRM firms in the past 20 years gave refuge staff an excellent framework for understanding prehistoric and historic use of the area, but the CRM investigations focused primarily on the area that would be impacted by the construction of the Refuge's visitor center, and simply identified the approximate location of artifact finds outside of the area of potential effect.

Figure 1. Excavation of a ridge-top structure resulted in finds that spanned about 700 years, from prehistoric pottery to 1920-minted pennies.pennies.

Our group focused on a pedestrian survey from Highway 701 to the waterfront area, and on excavation of a portion of a house occupied in the late 19th and early 20th century. Students worked in pairs to explore the perimeter and western portion of an elevated landform. The extensive assemblage of iron hardware and nails, glass bottles and windowpane fragments (some of which were melted), ceramics from the 18th to early 20th centuries, bottle caps, pennies, clay and glass beads, buttons, and even toy and doll fragments will be analyzed this fall, along with a very few prehistoric lithic and ceramic finds and some small beads typical of early contact period examples.

At Brookgreen Gardens, we continued our aim of building on Jim Michie's work with an intensive survey of the residential street for enslaved Africans at The Oaks. In addition to mapping three additional houses, students placed a test excavation unit at the back of one structure to seek information on brick pier architecture, but instead found a scatter of animal bone and clam shells, colono ware sherds, and personal belongings including fragments of tobacco pipes.

With the kind assistance of Furman Long, we also conducted pedestrian survey over 40 acres Brookgreen property on Sandy Island that is managed by the Waccamaw National Wildlife Refuge. We noted only a historic fence and a few fragments of prehistoric pottery despite the intensive and hot work, giving students a good sense of what a job in cultural resource management can entail.

Guest lecturers and visitors included Chris Judge, who gave a short course in prehistoric pottery; Eric Wright of CCU and Adam Emrick in the planning department for Horry County, who worked with us at several sites with different ground penetrating radar (GPR) equipment; Walter Hill of the Horry County Museum on the regional use of forestry resources; dendrochronologist and ecologist R. Jeffrey Kuhn of Penn State University; Craig Sasser of the Waccamaw National Wildlife Refuge; and Ben Burroughs of the Horry County Historical Society on the shipyard at Conway. Carolyn Dillian, a new assistant professor of

Figure 2. Professor Eric Wright, chair of the Department of Marine Studies at CCU, brought a GPR unit to Brookgreen Gardens to let students get first-hand experience in setting up a test area and the necessary equipment.

Figure 3. Laboratory analysis of finds is a crucial part of archaeology, and processing and cataloging the artifacts from the field school helped students understand why planning for curation and study is so important to project proposals.

anthropology at Coastal Carolina University, served as project co-director.

For more pictures and a 'student's eye view' of the process, visit http://archaeologyatcoastalcarolina.wordpress.com/ for the daily reports they wrote.

We all are most grateful to our generous hosts with the South Carolina National Wildlife Refuge System and archaeologist Rick Kanaski of the U.S. Fish and Wildlife Service; to Charlene Winkler and Brookgreen Gardens; to the City of Conway, Horry County, Santee Cooper, and Kingston Presbyterian Church; to the Burroughs and Chapin Coastal, Marine and Wetland Studies Center and its director Paul Gayes; and to Stephanie Freeman and the other dedicated staff and administrators at Coastal Carolina University who made it possible to offer this nontraditional course.

Memories of Home: Tours for Former Residents on the Savannah River Site

George Wingard, Savannah River Archaeological Research Program

In November of 1950, the Atomic Energy Commission (AEC) announced that it would be building a nuclear weapon facility, which is now known as the Savannah River Site (SRS). Comprising part of Aiken, Barnwell and Allendale counties, nearly 6,000 people were displaced by the construction. The small towns and hamlets of Ellenton, Dunbarton, Meyers Mill, Hawthorne and several others were razed to make room for the industry to come and 135 of the 170 cemeteries located in the area had to be relocated.

Since the mid 1970s, the Savannah River Archaeological Research Program (SRARP) has helped manage the cultural resources for the Department of Energy (DOE) on the SRS. As part of the SRARP's three-fold mission of compliance, research, and outreach, staff members have, over the years, developed an outreach program where previous residents of the SRS can visit former home-sites, towns, and cemeteries.

The AEC purchased over two thousand plats of land – nearly 13,000 standing structures – from the residents located in the footprint of what would become the SRS. Today, all that is left of these communities is a few brick piers, empty paved driveways, and over grown cemeteries, but the memories attached to these places are still strong. Over the years, many former residents have requested permission to visit the SRS and their home-sites, cemeteries, and former towns.

Since the early 1980s, SRARP staff has granted hundreds of requests for visits and soon realized the reasons for those wanting to visit are many and varied. Some residents want to see how the area has changed in the past 60 years. Some want to reconnect with their home and others to heal from the traumatic experience of moving. Many come to the SRS to visit the remaining 35 cemeteries for genealogical research or to just place a flower on the grave of an ancestor (Figure 1).

During the 1990s the SRARP produced two volumes on several of the towns and residents displaced by the construction of the SRS. Memories of Home: *Dunbarton and Meyers Mill Remembered* and *Memories of Home: Reminiscences of Ellenton* both were filled with oral histories and photos donated by those displaced. Dispersed freely to the public, these manuscripts were well received and can now be downloaded free of charge from the SRARP.org website.

In June 2005, SRARP staff member George Wingard met filmmaker Mark Albertin who was interested in telling the story of the communities formerly located on the SRS. He had read the SRARP publications *Memories of Home: Dunbarton* and *Memories of Home: Ellenton* and decided the story of the town's removal during the acquisition of property for the SRS would be an interesting story.

Figure 1. Members of the Grubbs Family visit their family cemetery located on the Savannah River Site in March, 2010.

Figure 2. Frances Harley, Mark Albertin, Steven Harley and George Wingard at the premier of ***Displaced: The Unexpected Fallout from the Cold War*** **held on the USC-A campus.**

During the following years, the SRARP gave Albertin tours of the former towns, and allowed him access to records collected during the writing of the publications. The footage from the tours, the photos, and documents borrowed from the SRARP, and his interviews with the former residents, developed into the movie, *Displaced: The Unexpected Fallout from the Cold War.*

On March 20th, 2009 the movie premiered at the Etherredge Center on the University of South Carolina-Aiken Campus (Figure 2). Both showings of the film were to capacity and it was declared successful by all those who lived what they had seen portrayed on the movie screen. Patrons of the movie also had a chance to purchase a DVD copy of the film, which includes a four-minute "extra" about the SRARP. More information about *Displaced* can be found at the website, displaced.us.

The SRARP is dedicated to the protection of the cultural resources on the SRS and ensuring that the story of the former residents and the sacrifices they made are remembered. Being displaced from family, friends, businesses, and churches was a high price to pay to enable the United States government to build a weapon facility during the Cold War and these individuals should be remembered as the patriots that they are. Allowing these individuals to visit the former locations of these places and rekindle cherished memories is an honor and privilege that the SRARP takes very seriously.

Archaeological Investigations at Hampton Plantation State Historic Site (38CH241) Charleston County, South Carolina

Stacey L. Young, New South Associates, Inc., Columbia, SC

New South Associates, Inc. recently completed archaeological testing investigations at Hampton Plantation State Historic Site (38CH241) located along the South Santee River in Charleston County, South Carolina. Hampton Plantation functioned as a rice plantation during the 18th and 19th centuries and was home to several generations of the Horry and Rutledge families and their enslaved workers. The planter's mansion and detached kitchen, the Rutledge family cemetery, overgrown rice fields, the chimney of a tenant farmer's house, and an African-American cemetery currently serve as interpretive stops for tourists visiting the site. Results of the recent work provide an opportunity to present another facet of Hampton Plantation's history to the public and presents new research questions that additional excavations may address. The work was conducted on behalf of South Carolina Parks, Recreation, and Tourism (SCPRT) in conjunction with U.S. Fish and Wildlife Services, as part of the American Reinvestment and Recovery Act.

Testing investigations focused on a five-acre area where several buildings were shown on an 1809 plat map and several brick scatters were observed on the surface in the area by SCPRT staff. Based on the sizes of the buildings, proximity to the planter's house, and oral accounts of descendants, it was suspected that the buildings served as houses for skilled slaves such as blacksmiths, carpenters, masons, shoemakers, or other specialized workers or that they served as outbuildings such as stables, sheds, or a rice barn used to support the daily tasks of the plantation. The goals of the project were to identify and interpret the function of these buildings and explore the historic period occupation within the five-acre area to provide information that may be useful in interpreting the site to the public.

As a result of the investigations by New South Associates, a brick foundation and chimney base, a subsurface pit feature, and several fence posts were identified. David Jones, archaeologists with SCPRT, and staff returned to the site and continued excavations of the brick foundation exposing more of the chimney base, and there are plans to continue excavations in the areas where features were identified. From the excavations conducted, it is unclear if the pit feature is inside of the building or in the yard area. The original use of the pit feature was undetermined from the portion of the feature excavated; it contained few artifacts within a single fill episode. A nearly complete hand-painted teapot was recovered from the top of the fill.

Preliminary artifact analysis and mean ceramic dates indicate late 18th to mid-19th century use of the area for domestic purposes. Historic period ceramic artifacts recovered included a large number of Colonowares and European wares such as pearlware and creamware. Most of the decorated European ceramic types were identified as annular and hand-painted wares. Annular patterns are typically found on bowls, cups, and pitchers and suggest one-pot type meals common to lower status diets. Nails, window glass, brick and other notable artifacts recovered included a blue glass bead, a hand-painted clay bead, metal buttons, sewing scissors, and several tobacco pipe fragments. The artifact pattern for the site corresponds with the Carolina Slave Pattern. Artifacts recovered from these investigations will be turned over to SCPRT for curation and/or interpretive use at the completion of the project.

BOOK REVIEWS

David S. Shields, Editor. ***Material Culture in Anglo-America: Regional Identity and Urbanity in the Tidewater, Lowcountry, and Caribbean*. 2009. University of South Carolina Press, Columbia. ISBN: 978-1-57003-852-5**

By examining cultural landscapes, architecture, and manufactured objects found in the Tidewater, Lowcountry, and Caribbean, the authors in this edited volume ask the question "Can region be found in material culture?" This book grew out of an interdisciplinary symposium of scholars from a wide range of fields, including history, historical archaeology, anthropology, art history, philology, geography, literary studies, material culture studies, economic history, and social history. The symposium explored the intersections of material culture, cultural identity, and geography in these three distinct regions.

In looking at regional identity, the editor notes that one region can have a multiplicity of identities that can be seen as almost kaleidoscopic. For instance, Shields states as example: "Maryland might be part of a historical South, but it is not part of the Bible Belt; it might be an important component of the Tidewater, but it also is an important component of geographer Jean Gottman's Boswash 'Megalopolis,' that vast metropolitan area the extends from Boston to the District of Columbia." As such, there are a multitude of variables that influence local expressions of material culture, such as demographics, ethnicity, climate, politics, and social organization. Like his observation on identity, these essays cannot be classified into distinct groups, as they often cross thematic lines. However, for the sake of structure, I organized these essays into some larger themes that I identified including: architecture as reflective of religious, social and political relationships and power; material expressions of conflict, dichotomy, and/or contradiction; evolution from European to New World style; considerations of archaeological material culture; expressions ethnic or religious separateness; and consumer behavior.

One essay in particular, was difficult to categorize and conveniently for the reader, it is the first in the book. In his essay on St. Augustine, Florida during its first century of occupation, Paul Hoffman attempts to address three questions: 1) Did creole hybridity exist in Spanish La Florida; 2) Did urbanism operate as a cosmopolitan cultural force that retarded the development of a creolized built environment; and 3) What legal, economic, religious, or social forces constrained the material expression of purely local material culture? As the editor notes, Hoffman's essay provides a view of how and to what degree settlers accommodated to local materials, environment, and indigenous practices.

Several articles address architecture as it reflects religious, social and political relationships and power. Eric Klingelhofer discusses colonial castles (or fortified plantation homes) as being built "under special conditions and unusual local circumstances, where political and military power was in the hands of a few wealthy landowners – or where those who held such power could soon join the ranks of the magnates." He argues that these castles became obsolete in the 18th century since public and private spheres became more firmly drawn. The new country house architecture illustrated a learned balance between private commercial fortunes and public power.

Using the example of Anglican churches in Virginia, South Carolina, and Jamaica, Louis Nelson argues that the variation found in each area was driven primarily by local sociopolitical conditions. In Jamaica, the churches "imposed English order and authority over a non-English landscape." As for South Carolina, he argues that the churches "recalled and rivaled cosmopolitan models as a way of cementing their place in a landscape of contested local politics and in a transatlantic economic market." The neat and plain churches of Virginia illustrated the church "as an agent of a stable elite culture."

Roger Leech discusses the argument regarding the value (social and economic) of earthfast versus continuous sill or brick houses in 17th century Virginia and the Tidewater. While many have argued that brick architecture is simply linked to the colonial elite, Leech argues that the contexts of masonry houses was more complex than that and looks to contemporary urban architecture in 17th century England to explain his point. Many masonry houses in England were built in the "artisan mannerist" style, which was urban-based. In many instances, amongst the mercantile elite, such houses were constructed in the city, but also in the country outskirts. For Jamestown, Virginia, Leech sees a paradox that will take time to resolve. While there is scant urbanity in Jamestown, St. Mary's City, and other towns, there is "much more evident urbanity of a merchant-planter elite constructing within the hinterlands of these places" using masonry architecture in a style and with plans "grounded within the English city and its suburban surroundings." He suggests that further research is needed to better understand urban and plantation connections.

Four chapters deal with expressions of conflict, dichotomy, and/or contradiction through an examination of landscape, architecture, the organization of space, and art. Benjamin Carp discusses how political and social changes in Charleston as related to the American Revolution affected domestic spaces. Using Henry Laurens Ansonborough home, he demonstrates that the four-acre "country estate" and its beautiful gardens underwent a number of "challenges" that illustrate the changes brought on through the turbulence of the Revolutionary era.

Laura Kamoie examines the architecture and the development of Washington, DC during its earlier history. She argues that the city has always been an example of conflict and contradiction, not only because of its location (Is it northern or southern?) but also because of its role as an administration center (Is it local or national?). However, the town did have identity in the architectural tradition of the Georgian plantation home. Urban plantations were created emphasizing southern values and ideas. On the other hand, the classical style of public buildings contradicted this notion and emphasized order, justice, equality, and virtue. High brick walls separated the private sphere of the urban plantation from access to the public, which also "revealed a world built on appearances and enforced social order."

The material culture of West Indian politics during the colonial period is the focus of Natalie Zacek's essay. Many eyewitness accounts of visitors to the English islands described the cities and towns as run down and unattractive. These accounts could leave one to believe that the planter class did not want or were unable to live luxuriously. However, many of these same eyewitnesses remark on the lavishness of houses, furnishings, and clothing of these planters. Zacek discusses this dichotomy of personal lavishness and apparent lack of interest in making the towns more attractive. Many scholars have indicated that white West Indians considered themselves "short termers" who looked to Britain as there home and were unwilling to make a significant investment in local infrastructure. Given this situation, she poses the question "how might a governor express or exercise his authority"? Through the use of objects and rituals, administrators were able to obtain and maintain power.

Maurie McInnis article examines paintings by Raphaelle Peale, which were created for John A. Alston, a wealthy rice planter in the South Carolina lowcountry. In particular, the painting *Still Life with Oranges* is discussed as it relates to both painter and patron. The painting displays the dessert course of a large sumptuous meal and implies indulgence and excess. The article then goes on to discuss the social contexts of dinner parties in relation not only to the Charleston elite, but also the house slaves involved in the preparation and serving of these meals. McInnis argues that examining the context of the painting allows for "an exploration of cultural context and issues of status, social ritual, performance, and temperance, and it also provides a metaphorical examination of tension and contradiction."

Under the theme of transference of European design and evolution into what became the New World, Michael Mulcahy discusses the effects of hurricanes on the built environments of South Carolina and the British West Indies. He argues that a distinct Creole architecture developed, which represented a compromise between traditional English forms and the reality of living in a tropical or subtropical environment. However, the process of adapting to the environment took time and included accumulated experience with hurricanes, perceived storm threats, and other environmental forces (such as earthquakes).

Carl Lounsbury takes on the notion that colonial architectural design is a transference of European design ideas to the American colonies. Using the Anglican Christ Church in Savannah as an example, he illustrates that very few British academic design ideas transferred unaltered. He demonstrates that local economics and social conditions, as well as climate, topography, materials, technological capabilities, and craft skills influenced and changed European design ideas into a local execution.

The next essay by Emma Hart discusses the development of the city of Charleston. Similar to English towns, Old World type laws and customs dictated the manner in which land was purchased, buildings were constructed, and how they were occupied. However, unlike the Old World, a wider sector of free white male society could be a partner in this development. Although the city was unique in terms of its environmental setting and huge slave population, the town expressed its Old World roots.

Discussions related to archaeological material culture are presented by Bernard Hermann and Martha Zierden. Herman provides a novel approach to thinking about artifacts and archaeology and uses the idea of a "poetics of urban space," which he states is reactionary to "critical conventions and methodologies that dominate the study of material culture." This approach provides an emotional response to the material world rather than discussing sites through number crunching and categorization. Through the examination of colonoware from urban site contexts in downtown Charleston, Herman illustrates how this poetic approach is used in interpretation.

Martha Zierden uses the city of Charleston's archaeological record -- primarily ceramics -- as a baseline for measuring trends of "interaction, acquisition, use, and discard by a diverse colonial population." She concludes that mass production of ceramics in the industrial era at the end of the 18th century causes the archaeological record to get "noisy" as population pressure mounts. Mass produced British ceramics overwhelm products of individual countries and regions. Also, due to sanitation concerns, deposits (a.k.a. trash) start being moved off-site. In contrast, the earlier period is clearer, showing "a more fluid society where settlers from a number of cultures and countries interacted."

Two articles cover the theme of separateness: either ethnic or religious. A French-looking hipped roof barn is out of place on the Monocacy National Battlefield grounds in Frederick County, Maryland where farm architecture generally reflects the historic German and English settlement of the area. The barn, along with other buildings associated with a French family, fostered a sense of separateness from their neighbors. Built in 1794, the plantation remained owner occupied only until 1820. Since that time, it appears much the way it did when the family left. The main house went through a series of modifications during that time, expanding it and bringing the interior up to date. Paula Stoner Reed describes the plantation, with the hope that information will come to light about the family's previous ownership of homesteads in western Haiti and in Bressuire, France and how similar or dissimilar this plantation is to other French-West Indian buildings from the late 18th century, rural Maryland.

Jeffrey Richards discusses the location of White Meeting, a Congregational church founded in the late 17th century and located on the outskirts of what became the colonial town of Dorchester, South Carolina. This church served the community until about 1752, when the Congregationalists moved en masse to Liberty County, Georgia. It has been argued that, unlike the New England town model, the church was placed in the midst of the congregation in order to serve it better, rather than the center of town. It could also be argued that perhaps the Congregationalists kept the church out of the middle of town because they thought that trade within the town would serve as a diversion from faith and would compromise the spiritual lives of the group. Other reasons might be due to perceived environmental threats or for other practical reasons. Whatever the reason, it remains unknown as to why exactly the church was placed away from the town center.

Interestingly, only one article covers the theme of consumer behavior. R.C. Nash's essay examines 18th century consumerism in South Carolina by asking the question "did South Carolina's rapid economic growth and great wealth lead it to develop a distinctive consumer culture, one which diverged significantly from that found in less wealthy colonies such as the Chesapeake and New England?" This discussion compares South Carolina to these two colonies focusing primarily on probate data, but recognizing that other lines of evidence (trade and mercantile records) are needed for a full picture.

This collection of essays is a great resource for scholars of South Carolina history, cultural geography, archaeology, and material American folk culture. It provides some thoughts on how to get at the different identities a place or region can have and how that identity was obtained. As many scholars have figured out, local culture can be complicated and driven by a number of specific circumstances shared over a larger region. Although this book looks at the Tidewater, Lowcountry, and Caribbean for evidence of identity, it could be broken down into even smaller units. To put it in local perspective, Newberry is not Beaufort, although they are both in the state of South Carolina. As illustrated by the Maryland example provided in the first paragraph, identity lies in overlapping circles related to a multitude of variables.

Natalie Adams, New South Associates

Natalie Adams (M.A. University of South Carolina) is Vice President of New South Associates and the South Carolina branch manager. Her research interests lie primarily in plantation and backcountry historical archaeology.

Kathryn E. Holland Braund and Charlotte M. Porter, Editors. *Fields of Vision: Essays on the Travels of William Bartram*. 2010. University of Alabama Press, Tuscaloosa. ISBN-13: 978-0-8173-5571-5

A Kaleidoscopic Look at William Bartram

Holland Braund and Porter's *Fields of Vision* note in their 'Preface' that Bartram himself would be astounded at how his travels, writings, and observations have all stood the test of time. He left behind not just a chronicle of what seems to us now as a lost American landscape, but also a sense of discovery that continues to captivate academics and non-academics alike. This volume is an issue of this legacy and consists of several papers given at the Bartram Trail Conference with broad appeal across disciplinary lines in botany, history, southern studies, ethnography, and archaeological research. All of the papers are well written, informative, and come with excellent bibliographies that will be of use to scholars of the proto-Historic, Colonial and Early American Southeast.

Of particular interest to the readership of the *SCA* are papers that look specifically at how Bartram's *Travels* (1792) are employed in archaeological and historical research of the American Southeast. Stephanie Volmer's chapter, "William Bartram and the Forms of Natural History," is an excellent piece that demonstrates how Bartram's own work was self-edited from letters and journal writings, forcing us to consider other parts of the Bartram's corpus when interpreting his work. This approach has a direct bearing on other chapters in the book that demonstrate Volmer's perspective, namely those by Milanich, Sheldon, and Williams. Each author uses the *Travels* to interpret the archaeological and ethnohistoric record of proto-historic and 18th century indigenous lifeways in the American Southeast. For instance, Sheldon uses Bartram as a starting point for evaluating ceremonial center formation and archaeological evidence among the lowland Creek and their forebears. This historiographic perspective towards thinking about Bartram, e.g., using *Travels* as a starting point and sounding board for other kinds of evidence, is one of the pet projects of both of the volume editors.

Another section of this work that is of interest to the greater *SCA* readership is the topical chapters that track certain themes throughout Bartram's *Travels*. For instance, Holland Braund looks at Bartram's odyssey from a gustatory perspective. It is an excellent look, full of fruitful avenues of future inquiry, at what foods were available during different episodes of his journey, as well as their serving contexts and ingredient combinations. Overall, her perspective gives a unique insight into considering 18th economics, agriculture, and cultural practice, bringing to life much of the adventure that is reading Bartram. Likewise, Malone and Davis's individual chapters offer an almost "network" analysis approach to the social and political implications of Bartram's writing. Each look closely at different portions of the Travel's to interpret Bartram's social network, political allegiance, and intellectual communities as they effected how he informs his readership in the *Travels*.

Again, this theme of reevaluating Bartram's own work, rhetorical stance, and historical immediacy is central to all of the chapters in this volume. It is a theme that makes this collection unique, pertinent, and revelatory. The last section of this work focuses on Bartram's botanical work, which has certainly been highlighted amongst natural historians and ecologists for the past two centuries. Yet, the intensive look of his discovery of the Oenothera grandifolia by Fry and the Okeechobee gourd by Minno and Minno go beyond strict disciplinary interest. Both contributions highlight the multidisciplinary nature of Bartram's discoveries and his applied understanding of ecology and cultural difference. These perspectives are imbedded in the Bartram's natural history. The fact that food, botany, settlement, ecology, history and landscape, are alive and well deep within Bartram, who lived and explored in a pre-disciplinary world, leave the reader with a great hope for the future.

At least in my case, *Fields of Vision* forced me to return to Bartram's opus to think a bit more deeply about what he is telling us about a lost world. Bordering at times on a true hermeneutic perspective of an 18th century naturalist, these chapters offer a fresh perspective on a critically important source on the colonial history of the American Southeast. In fact, striking and impressive is that Bartram followers continue to bring and keep his work alive through trail markers, the Bartram Trail Conference, and collections by academics and non-academics like the one presented here. This collection of works gives us another example of how much more there is to learn about the cultural and ecological history of the American Southeast, even in its nascent period. Using Bartram as a touchstone for furthering that quest for all modern academic disciplines is patently clear from the perspective of *Fields of Vision.*

Bartram Jr., William
1792 *Travels Through North and South Carolina, Georgia, East and West Florida.* Philadelphia: Enoch Story. Facsimile Edition (1973). Savannah: The Beehive Press.

David J. Goldstein, South Carolina Institute of Archaeology and Anthropology

David Goldstein (Ph.D. Anthropology, SIU-Carbondale [2007]) is an anthropologist working in the Caribbean, Meso, and South America. His current research focuses on cross-cultural comparisons of sustainable agricultural practice.

Carl Naylor, *The Day the John Boat Went Up the Mountain*. 2010. University of South Carolina Press, Columbia. ISBN # 978-1-57003-868-6

Subtitled "Stories from my twenty years in South Carolina maritime archaeology", Carl Naylor's book presents a series of deceptively anecdotal vignettes from his work with the South Carolina Institute of Archaeology and Anthropology (SCIAA). There is not a year-by-year account of the two decades; rather, in a mostly chronological presentation, selected projects and adventures are reported with a blend of humor, historic context, and technical detail that ensures "something for everyone".

An introductory chapter sets the tone with a somewhat self-deprecating explanation of how the author came to maritime archaeology, mixed with a discussion of what the underwater programs at SCIAA do and why they do it. (The Maritime Research Division of SCIAA has gone by several names over the years and for the sake of simplicity the term "underwater" is used here). Throughout the book recollections of alligators, no-star motels, and equipment woes serve as backdrops for detailed reports of various projects, with site maps, artifact drawings and historic plats. The stories recount the humorous, odd, and sometimes scary events that enlivened the projects. Joe Beatty and his affinity for alligators (or is it the other way around?), swarms of jellyfish and the pantyhose masks that thwart them, as well as the enterprising late-night visitors are as much a part of the projects as the wrecks and artifacts. Such incidents can make an otherwise mundane project part of archaeological folklore, and reading this book one is sure that there are no mundane projects for the underwater staff at SCIAA.

Humor aside, the stories of wrecks and associated sites investigated by SCIAAs underwater teams include a wealth of information on methods of manufacture, materials used, associated artifacts, and when known, how the vessel got to the bottom. This is not an academic book and there are no citations in the text, but there is an excellent bibliography, arranged by chapter. The comprehensive sources include unpublished manuscripts, field notes, historic documents and standard archaeological references. This is no small thing because most of the project specific data covered is not available outside of SCIAA and by providing citable information the book can serve as a valuable resource for the professional community.

Reading of the "Upside-Down Wreck", we learn that in the 18th and 19th centuries there were boat wrights in the town of Cheraw, 165 miles by river (Pee Dee) from Georgetown. Cheraw was the end of the line for river traffic and was the center of trade for the area and boats were a commercial necessity. This story also discusses the crossing of the Pee Dee by Sherman's troops in 1865 and the role of river steamboats in the antebellum period. At the Little Landing wreck site on the Cooper River two vessels were found as well as three cannons of middle 18th century origin. Naylor describes the role of the site in the Revolutionary War, relating the burning of British boats by Colonel Wade Hampton, and goes on to discuss the discovery and excavation of the vessels, with line drawings of the cannons and a plan view of one of the wrecks included. A chapter on hobby divers chronicles the evolution of the program, focusing on a handful of dedicated divers and the sites they have located, including the Strawberry Wreck, the Pimlico Wreck, and the Mepkin Abbey Vessel, all part of the Cooper River Underwater Heritage Trail. Plan views of each wreck accompany the chapter. The Hobcaw Shipyard chapter covers the history of a shipbuilding business on the Cooper River. The Cooper River Anchor Farm, the Hunley, the Brown's Ferry Vessel are among other topics discussed, along with dugouts, magnetometers and side-scan sonar.

It would be a mistake to assume that The Day the Johnboat Went Down the Mountain is light reading for the interested amateur, or of interest only to maritime archaeologists. Accounts of the wreck excavations are detailed enough to qualify as technical reports, and the historic contexts that accompany several are broad enough in scope that they transcend the underwater focus of the reports. It would also be a mistake to think that the book is a dry recounting of field methods and results. Carl Naylor has produced a book that will engage anyone with an interest in or curiosity about South Carolina's maritime heritage.

Ramona Grunden, TRC-Columbia

Ramona Grunden has been a senior archaeologist at TRC-Columbia since 2001. Before that she worked at the Applied Research Division of SCIAA, where she heard some of the stories related in The Day the Johnboat Went up the Mountain from the characters involved.

Charles Hudson. *The Packhorseman*. 2009. University of Alabama Press, Tuscaloosa. ISBN: 978-0-8173-5540-1

For those who don't know him Dr. Charles Hudson was a professor of Anthropology at the University of Georgia from the 1960s until recently. He is now a professor emeritus. I kind of dreaded getting started on *The Packhorseman*, as I suspected it might read like a novel written by an academic anthropologist: something that might be turgid, and thickly descriptive, with no sense or understanding of telling a story, but instead a venue for passing along a bunch of information that might tend to be fascinating to a few, but, well, boring to everyone else. But I'm glad to be able to say that it's not so bad. I enjoyed reading it in fact. It wasn't a chore at all. I should have known better.

I started my academic career as an English major, and wanted to be a fiction writer until I discovered that I liked to write, but just wasn't really a good storyteller. Further along I got mixed up in postmodernism and deconstructionism and began to get the downright cynical view that everything was a form of fiction, from the most high minded academic treatises to the primary documents we rely on for our "facts" about history. Yes, I actually used quotes around "facts." I've always enjoyed historical fiction, and about ten years ago I discovered the novels of Kathleen and Michael Gear, who are archaeologists who have written a series of books about Native Americans. I began to think that actually trying to put yourself into the skin of the people who left behind that scatter of flakes and potsherds might really help us to understand the people and the artifacts. The hard facts of science can only tell us so much. I still can't write novels, but more than ever I appreciate the people who can.

The Packhorseman tells the story of a young Scot, William McGregor, who came to Charleston in 1735. Like many of the lower classes in post-Medieval Europe his family and their way of life was torn asunder by the dawning of the modern world. For Scots who had lived in the Highlands for countless generations the coming of the Industrial Age meant that the lands they settled -- which their families didn't legally "own"-- were suddenly taken away by the aristocrats of England, leaving them without a place and means of earning a living. Many moved to the cities to work in factories, others joined the army or navy, while others came to the colonies.

William went to live with his Aunt in Glascow. He had an uncle who owned a tavern in Charleston, so when she died, he made his way to the colony at age 20. On arriving he got a job with a fellow Scot who is a storekeeper, but soon finds that the people of Charleston were dedicated to replicating the rigid social hierarchy of England, and runs afoul of one of the local aristocrats. He is accused of being a Jacobite spy -- the 1735 English equivalent of being accused of being a member of Al Quaeda -- and is forced to leave his job to protect the storekeeper. Fortunately one of his uncle's patrons is Sam Long, a trader with the Cherokee. One might say "conveniently" one of Long's traders dies of a fever about that time, and William takes his place. Literally, right down to taking over his horse, clothes and everything. Convenient indeed, but not at all uncommon and not all that far-fetched. The South Carolina lowcountry in 1735 was not a healthy place, and fevers took their toll each year.

These traders packed a warehouse worth of supplies and trade goods onto the backs of a string of 12 horses -- which is far more complicated than you might think, if you have ever stopped to think of it at all. One loose knot can lead the pack to rub a horse's hide raw, leading to infection and death. Spare horses were apparently a luxury that could not be supported, so William's first task is to master the skills that made one a packhorseman. The many details are laid out in an engaging manner and soon I realized I knew a lot about the nuts and bolts of this occupation that I never even considered, even though I thought of myself as being pretty knowledgeable about this period and these people. In the history books we learn of the hundreds of thousands of deer and beaver skins that were exported each year, but the means by which they arrived at dockside are seldom discussed.

Soon they set out for Cherokee country, traveling along the trail that eventually became Highway 176. This route led through my childhood home of Goose Creek and past places I have been to and heard about all of my life, which made it all the more interesting. They stay the night with a cattle raiser, pick up a companion who is a half breed Indian from the Settlement Indian communities at Four Hole Swamp, meet some of the newly arrived Germans at Saxe Gotha, and then pass beyond the European settlements. The people and the environment are revealed in detail, and the significance of many of the placenames (like Twelve-Mile Creek) we are all familiar with is explained.

They arrive at the Lower Cherokee Town of Keowee, where Sam Long has a wife who is from the Bird Clan. Much of the story that ensues revolves around clan relations, which are complicated, and central to Cherokee society. William meets and later marries a woman from the Wolf Clan, who are in a dispute with the Bird Clan over suspected witchcraft. During the course of the story she is accused of being a witch after a girl from the Bird Clan dies mysteriously. To avoid conflict she, William and their friend from Four Holes decide to join the parties out hunting for the ever more elusive deer (and their skins). They have a successful hunt, but when they return her main accuser torments her until she commits suicide, demonstrating that she and her clan are not witches. The trading season soon ends, and William returns to Charleston for another load of trade goods.

I am rather succinctly summarizing a story where numerous details of life among the Cherokee of the 1730s are recounted in an interesting and engaging manner. This is a life that was changing rapidly and on the verge of changing even more dramatically, given that Cherokee removal is only about a hundred years down the road. This is a story many of us know from historians, who tend to tell it from a lofty perch that focuses on how many millions of deer skins were traded, and which chief signed which treaty with General so-and-so in a given year. Hudson tells it from the ground level, giving it flesh and meaning. The traders are not overly romanticized, and neither are the Cherokees. There are heroes and villains, and average folks among both groups, just as there are among the people alive today. The Packhorseman is an interesting read, and educational to boot.

Carl Steen, Diachronic Research Foundation

Carl Steen is President of the Diachronic Research Foundation, a non-profit corporation based in Columbia. He has a long-term interest in the history and archaeology of South Carolina's Backcountry.

Vincas P. Steponaitis. ***Ceramics, Chronology, and Community Patterns: An Archaeological Study at Moundville*****. 2009, reprint with new preface. University of Alabama Press, Tuscaloosa.** **ISBN: 978-0-8173-5576-0**

The 2009 reprint of Vincas Steponaitis's *Ceramics, Chronology, and Community Patterns: An Archaeological Study at Moundville* includes a new preface written by the author evaluating the results and hypotheses initially presented in the book published in 1983. The initial research was conducted as a multi-faceted approach between four researchers to better understand the development and decline of the sociopolitical complexity among the organized communities that occupied Moundville and the Black Warrior region, and to better understand the long span of the Moundville phase of the Mississippian period. Steponaitis uses previously excavated ceramic artifact assemblages located at Moundville and other museums to conduct his research and his main goal was to develop a ceramic chronology. This book is written for archaeologists conducting research in the Moundville region, although the methodology developed by Steponaitis likely can be applied to research elsewhere.

The book is organized into six chapters including the Introduction, which guides the reader through the organization of the book and the research conducted by Steponaitis at Moundville. This introduction also provides a brief overview of the history of the archaeological investigations conducted at Moundville beginning with the earliest known map of the site as recorded by C.B Moore in 1905. Although additional research has been conducted since the author's initial research in 1978 and the publication of this book in 1983, this body of work remains prominent in the archaeological literature of Moundville.

At first glance one may be intimidated by the thick size of the book and the 375 plus pages contained within, however 49 of those pages are dedicated to photographs and illustrations of many of the pottery vessels and sherds Steponaitis viewed for the study. The illustrations are small, but provide the reader with a visual reference for the assemblage discussed within the text. The only limitation of the illustrations is that some of the engraved or incised motifs on the vessels are not clear in some of the photographs, although in many cases it is the vessel form that may be of more importance to the viewer. Detailed drawings of many of the engravings are provided in Chapter 3. The pages of illustrations are followed by eight Appendices which contain individual vessel descriptions (Appendix A), an index of the vessels included with burials from Moundville (Appendix B), verbal descriptions of the stratagraphic depositions of units where pottery sherds were recovered (Appendix C), tables showing the number of pottery sherds by level (Appendix D), methods used to measure the physical properties of the pottery sherds (Appendix E), detailed descriptions of the type-variety classification of the ceramic artifacts discussed in the text (Appendix F), and Appendices G and H provide an index of the vessel type and variety. References and Index follow the Appendices. I mention these illustrations and Appendices first because I found myself flipping back and forth from the text to the photographs and descriptions.

In Chapters 2 through 4, Steponaitis addresses ceramic technology, classification, and chronology with a chapter devoted to each. The discussion relating to the technological aspects of the pottery addresses such things as paste, mineral composition, and thermal shock resistance, which may overwhelm the reader not versed in such technical aspects of pottery production. The following chapters build on this study and carefully describe and illustrate common pottery types and varieties of Moundville pottery. A flow chart is provided so the reader can follow the classification of types and verbal descriptions, and simple illustrations are also provided to show common shapes and detail of incised and engraved designs. Photographs in the appendices also provide the reader with a clear image of the ceramic vessels discussed. As Steponaitis intended, the research is presented in a clear and concise manner so that it can be replicated.

In Chapter 5, the author uses the ceramic chronology discussed in the preceding chapters along with spatial data of vessels and human burials recovered from mound locations to assign relative dates for particular areas within Moundville. This data is used to reconstruct the development within the Moundville community and understand spatial aspects of the site. Again, Steponaitis clearly defines and illustrates the methodology he uses to make these reconstructions so the study can be replicated. He also recognizes the limitations of his research due to the lack of horizontal and vertical control during the early excavations.

In the final chapter, Steponaitis concludes with a discussion of the results of his studies. He applies the ceramic chronology he developed for Moundville and discusses the site within the larger context of the region. He provides a brief review of his hypotheses and research questions that are left unanswered.

In all, *Ceramics, Chronology, and Community Patterns: An Archaeological Study at Moundville* provides a detailed study of the ceramic vessels recovered from Moundville. Verbal descriptions, illustrations and photographs, along with chart and tables are provided to allow the reader to follow the discussions and understand the research that Steponaitis conducted. This book should be an essential research tool for those working in the Moundville region if not for the chronological aspects of Moundville, for the verbal descriptions and illustrations of the pottery types. In addition, researchers trying to develop and understand ceramic chronologies at other sites in various regions may find Steponaitis's research methodology a useful model to follow.

Stacey L. Young, New South Associates, Inc.

Stacey Young (M.A., RPA) is as an archaeologist with New South Associates out of the Columbia, SC office. She has experience on prehistoric and historic site excavations in various regions of the Southeastern United States and Puerto Rico.

IN MEMORIAM

Remembering the Contributions of Kevin H. Eberhard to the Field of Archaeology

Tammy F. Herron

On 21 July 2010, the field of archaeology lost a good man when Mr. Kevin Harold Eberhard, 48, passed away at his home in Aiken, South Carolina. My colleagues at the Savannah River Archaeological Research Program (SRARP) and I came to know Kevin through his love of archaeology and history. He worked for the SRARP in 1984-1986 as a Draftsman/Field Technician until he accepted a position as Maintenance Mechanic at the Savannah River Plant (SRP), known today as the Savannah River Site (SRS). Although, archaeology was his passion, the new job afforded benefits and better pay. Since that time, he served as a faithful volunteer donating countless hours of his time to our program, as well as other archaeological projects in the Central Savannah River Area (CSRA). Kevin's colleagues recognized the importance of his contributions to the field of archaeology in South Carolina and bestowed the title of "Distinguished Archaeologist of the Year" upon him in 1994.

Although Kevin did not hold a degree in archaeology, he had a knack for the job and was as good as or better than most trained archaeologists. He had a keen eye -- some may say a sixth sense -- for discovering archaeological sites. He conducted reconnaissance on many of the sites here on the SRS and reported his findings to archaeologists at the SRARP. His volunteer efforts on numerous special projects will long be remembered by those in charge of the work at sites such as Big Pine Tree, Bush Hill Plantation, Crosby Bay, Frierson Bay, Johns Bay, Lawton Mounds, Marshall, Midden Point, Mims Point, Pen Point, Silver Bluff, Stallings Island, and Tinker Creek.

Kevin's knowledge of the prehistoric and historic sites located in Hitchcock Woods in Aiken, South Carolina was vast. Kevin was always willing to share that knowledge and tromp an archaeologist over the hills and through the woods to show what he had discovered. The thrill of discovery did not stop in the field for Kevin however. As with work on any site, the amount of time spent in the lab has been estimated to consume two-thirds more time than what was spent in the field. Aside from assisting with processing artifacts in the lab, Kevin spent an enormous amount of time in archives, libraries, and online "digging" for additional pieces of the puzzle to enable researchers to tell more about the history of a particular site and its inhabitants. He would always beam with pride when he brought in information that he had found and proceed to tell you all about his discovery and how it related to the site.

There are several things that one could usually expect of Kevin when you were working on a site with him: 1) he was usually the one who would end up finding the coolest artifact on the site; 2) if he ended up driving separately to a site, Kevin would arrive before everyone else, uncover the units, and begin working diligently on the task at hand; 3) he always disappeared for quite some time, especially during breaks and at lunch. Someone would always ask, "Where's Kevin?" Of course, he was usually on a walkabout getting a feel for the lay of the land and figuring out where we really should be digging; 4) he was almost always the hardest working member of the crew; 5) his field notes and maps were detailed and usually in good order; and 6) you could always turn to him for advice and insight when in doubt.

Aside from field technician and researcher, Kevin was also an excellent handyman. He could repair and/or build just about anything he set his mind to. If he could not figure out how to proceed with a given project, then he would seek the wisdom of his father, Bruce Eberhard. Kevin crafted lighter-weight screens for the crew, engineered a pulley system at the Lawton mounds to hoist buckets of fill from the depths of a unit, repaired wheel-barrows, welded shovels, maintained small engines for the shaker screens, fashioned a diaphragm for the flotation machine, and unclogged the drain in the lab on numerous occasions (just to name a few). One of the finest additions to our field equipment was his invention of the aluminum tripod. From design, to manufacture, to revisions, to use -- we will ever be indebted to him and think of him and smile as we sift away in the field. Kevin, you were too cool, and yes, you should have patented it!

The following section contains remembrances from a number of Kevin's friends and colleagues from the South Carolina Institute of Archaeology and Anthropology and the Savannah River Archaeological Research Program.

Figure 1. Kevin Eberhard shovel-schnitting at Frierson Bay.

Kevin was the draftsman for the SRARP when I joined the program in 1984. He helped with my dissertation fieldwork from 1984 to 1986, during which time we spent many weekends camping out on Rose Island in the Broad River estuary while coring in the marsh and testing shell middens. He was a great companion, always ready to help, and could be counted on for relevant observations and insights. Later, in the early 1990s, shortly after the light bulb went on in my mind that Carolina bays figured prominently in early hunter-gatherer adaptations on the Coastal Plain, Kevin brought Crosby Bay to the attention of Ken Sassaman and myself. Kevin had amassed a large surface collection of Paleoindian and Archaic artifacts from this bay located near New Ellenton, South Carolina. His efforts contributed to a growing body of evidence for the early, often intensive use of Carolina bays, led to an article in *South Carolina Antiquities* co-authored by Eberhard, Sassaman, and Brooks in 1994 (26[1-2]:33-46), and spurred continued research and publications. Kevin was a good colleague, and I will miss him greatly.

Mark J. Brooks, Director, SRARP

Kevin was an amazing volunteer -- generous with his time, as well as being an incredible archaeologist. I first met Kevin in the early 1990s when I became an employee of the SRARP. I really got to know Kevin; however, when I was excavating the Bush Hill Plantation (38AK660) located on the SRS in the mid- to late-1990s. Kevin never quit working when he was at the site. For example, while the field crew was enjoying lunch, Kevin would disappear into the woods and walk firebreaks. More often than not, he would return with something new to show me. This was how we (a.k.a. Kevin) located the probable slave cabins associated with Bush Hill Plantation. In actuality, Kevin probably personally excavated half of the site.

Figure 2. (L) Chimney fall excavated by Kevin Eberhard. (R) Kevin weighing brick at the Bush Hill Plantation.

Aside from being helpful with the excavation of the site, Kevin also assisted with other important jobs. The most memorable of these being his removal of the copperhead snakes that made their home in the brick mound at Bush Hill. Kevin did all sorts of other tasks that helped make the excavation of 38AK660 run smoothly, including sharpening tools, repairing screens, removing tarps from the excavation blocks, and ridding the site of obnoxious weeds. He often performed all these tasks before anyone else even showed up at the site in the morning, and he was not even on the payroll.

Off the site, Kevin was just as helpful. He studied historical records, maps, and genealogies related to Bush Hill Plantation in an effort to find any information that we might have missed. Regarding historical artifacts, Kevin knew them just as well as, if not better than, we did. All said -- I know the SRARP staff will greatly miss Kevin's generous spirit.

Melanie A. Cabak, Historical Archaeologist, former SRARP staff member

Figure 3. Kevin Eberhard holding stadia rod in Smith Lake Creek during fieldwork at the Big Pine Tree site.

Kevin came down to the Big Pine Tree site (38AL143) in 1995 when we were doing test excavations with the SRARP crew. He helped excavate a 1 x 2-m test trench to explore the northern extent of the site and of course he ended up finding probably the largest Clovis preform we have recovered from there. He was quiet but always had a twinkle in his eye indicating he loved being there and part of the excitement of digging a Clovis site. I wanted to photograph the eroding bank of the site when Smith Lake Creek was at full bank due to dam releases of the Savannah River. So, I asked Kevin to hold the stadia rod showing how high the water gets up on the profile. It was kind of cool that day, but he was a good sport about it. IN my view, Kevin is typical of how the Institute has welcomed collectors and other interested members of the public to come along with the professionals, thus making the whole enterprise more effective and enjoyable.

Albert C. Goodyear, III, Research Associate Professor, SCIAA-USC

Figure 4. Kevin Eberhard (foreground) excavating a unit at the Galphin site.

I will always remember Kevin's contributions to the work at the Galphin site located on the Silver Bluff Audubon Sanctuary in Aiken County. Just when the work would get monotonous or you might be a little discouraged, Kevin would jot down an entry in the notes or on a field card to lift your spirits. One day in the lab, another of my volunteers came across something unusual in one of the artifact bags and asked me to take a look at it. It was a small lump of self-hardening clay that Kevin had fashioned into a ball to which he engraved a smiley face on one side and "Hi Tammy!" on the other. He was just that kind of guy.

In 1998, Kevin had an opportunity to work with David G. Anderson on a number of sites on Water Island in the U.S. Virgin Islands. Kevin was so excited and beamed with such enthusiasm after his first stint down there, that he talked me into going to the islands to assist as well. During some of our spare time, Kevin insisted on taking me to several of the sites that he had worked on prior to my arrival. He was like a kid in a candy store pointing out features around the sites and speaking of the interesting artifacts they had recovered.

Tammy F. Herron, Curator of Artifact Collections, SRARP

Figure 5. Kevin Eberhard excavating Feature 1 at Johns Bay in May 2010.

I first got in touch with Kevin soon after I joined the SRARP staff in May of 2008. I needed to recruit several volunteers for a new volunteer research program on Carolina bays, and I was informed that Kevin would be a great asset to the volunteer program. My first experience with Kevin was going with him into Hitchcock Woods to examine archaeological sites he had identified many years ago. I remember it was a very warm day as we drove to an access point within a residential neighborhood in Aiken. I parked the car, and soon we were headed out on what would become a very long and quite strenuous (for me) hike through the forest. It was all I could do to keep up with Kevin as we wandered up and down steep hills and along densely overgrown creeks to various prehistoric and historic archaeological sites. Kevin's enthusiasm for archaeology was obvious and his energy seemingly inexhaustible as we ventured far and wide through the woods. I knew after that day that the stories I had heard about Kevin were all true. He had tremendous passion and knowledge of the archaeology of South Carolina and, as I would later come to appreciate, would always be more than ready to help on our volunteer digs in Allendale and Barnwell counties. Kevin was a hard worker, and although he rarely had much to say, when he did say something it was usually something very pertinent and helpful to our understanding of the archaeology of the site. In fact, during our volunteer excavations, Kevin never stopped working. You could always count on Kevin to wander off during lunch and come back with a handful of interesting artifacts from the surrounding fields. He was also the one you wanted to be doing the digging since he had such a knack for finding the most interesting artifacts in our excavation units. I am glad that I got to know Kevin, and I feel privileged that I had the chance to work with him and learn from him over the last couple of years.

Christopher R. Moore, Curator of Public Outreach, SRARP

With a quick look around the SRARP, it might be easy to miss the impact that Kevin had on this place. Look a little closer, however, and his importance to this program becomes clear. While he did not dig every unit the SRARP ever excavated, most were done with a shovel that he sharpened or repaired. Though he did not find every artifact, many were found with a screen and tripod that he built. Though he did not record a lot of the sites we have found, many were located because of his efforts. This is very reflective of my experience with Kevin -- I never worked directly with him, but often found myself working around him. What I recall most is not a specific event, but rather his good nature and the quiet presence he brought to a task. Kevin was always willing to do what needed to be done and would often be working on it before the rest of us realized what it was that needed to be done in the first place. While the program will continue without Kevin, his presence will be missed, and there will be many days ahead when we will stop and say, "Wow, I really could have use Kevin's help on this."

Robert Moon, Field Director of Cultural Resources Management Survey, SRARP

A short anecdote from the Tinker Creek site, ca. 1993:

Working at the Tinker Creek site one Saturday, Kevin excavated a diagnostic biface and an intriguing cluster of debitage in his 1 x 1-m unit. Excited by the find, I said: "Kevin, where would we be without you!" He looked up with a sly grin and replied: "Over there!" -- pointing to a nearby unit that would later prove to be nearly void of artifacts.

J. Christopher Gillam, GIS Specialist/Archaeologist, SRARP

I don't remember the precise moment I met Kevin, but it must have been around 1984, when I returned to South Carolina for a short while to conduct test excavations at the Pen Point site. That same year, Kevin was hired by Glen Hanson at the SRARP. By the time I took a permanent job at the SRARP in 1987, Kevin was working full-time for the operating contractor of the SRP, but he dropped by the lab regularly both during and after work to see what was going on and to make plans for the next weekend dig. For the longest time, the Saturday volunteer program at the Tinker Creek site was the place of social gathering for members of the Augusta Archaeological Society, headed up by the late, great George S. Lewis. Like George, Kevin was a mainstay of that project -- just as he was for any SRARP dig that enabled public participation, which was just about all of them. I'll never forget the first day we reopened Tinker Creek after a multiyear hiatus. As was usually the case, Kevin happened upon one of the more elaborate artifacts found that day. Announcing "number two" to the crew, Kevin proudly held up the second polished grooved axe from Tinker Creek. George would later recall how he thought Kevin was announcing his need for a trip to the woods

In endurance, energy, and resourcefulness, Kevin was unsurpassed. When we had the chance to work with the U.S. Forest Service at Mims Point, I was so glad to have Kevin along. As he did repeatedly, Kevin took vacation from his day job to join us for a couple of weeks in the field. On this particular expedition, we were stripping by hand about 100 square meters to get to the features below the plowzone. The thick root mat of the Piedmont clay soil was not easy to strip, so no one really looked forward to opening another 2 x 2-m unit. Once Kevin saw the need, as well as the anguish others had stripping the clay, he arrived every day an hour or so ahead of the rest of us and single-handedly removed the plowzone from at least one and sometimes two units. We would arrive just in time for Kevin's morning coffee break, well deserved after accomplishing alone what would have taken all day for the rest of us.

Figure 6. Kevin Eberhard surrounded by shell midden samples on Stallings Island during fieldwork in June 1999.

Kevin also had a knack for finding solutions to our most challenging tasks in the field. At Stallings Island, for example, we decided to remove a large column of shell midden from an exposure looters had made along a side slope of the site. After filling innumerable one-gallon bags with moist, heavy matrix, Kevin suggested we lay all the fill for a sample out on large sheets of plastic to air dry to reduce the weight, then bundle them up in the same sheets so they could be carried out on a litter. Even more gratifying were the collapsible, aluminum tripods Kevin designed. Not only did they reduce the load we had to carry in and out of sites, they also circumvented the need for cutting down healthy saplings.

I could add many more examples of Kevin's physical and technical contributions to our work, but instead want to underscore his intellectual contribution too. Kevin had a keen sense of pattern recognition and was also quite adept at synthesizing disparate observations into coherent and compelling models. It was Kevin who first recognized the "evolution" of soapstone cooking stone technology from variation in these objects across three millennia. He saw in the soapstone lumps at Mims Point the rudiments of a technology that would evolve into the perforated, thin slabs of Stallings culture. Kevin not only recognized the pattern, he rightfully surmised that the trend was toward greater thermal efficiency and suggested it was ultimately driven by reduced availability of fuel, which was likely the case. I was happy to give attribution for these ideas to Kevin in my book on Stallings culture.

It actually took me a while to warm up to Kevin, and for no good reason other than academic arrogance. Seems silly now, but I suppose that I had a hard time admitting that a fellow with no formal education in archaeology could have such good archaeological acumen. In hindsight, and with Kevin's early departure, I regret not having told him more directly how much I appreciate his generosity, dedication, and keen insight. South Carolina and Georgia archaeology and archaeologists benefited from Kevin's efforts, and in the many ways he contributed to the material and documentary record of the past, Kevin will live on in histories yet to be written.

Kenneth E. Sassaman, Jr., Hyatt and Cici Brown Professor of Florida Archaeology, University of Florida

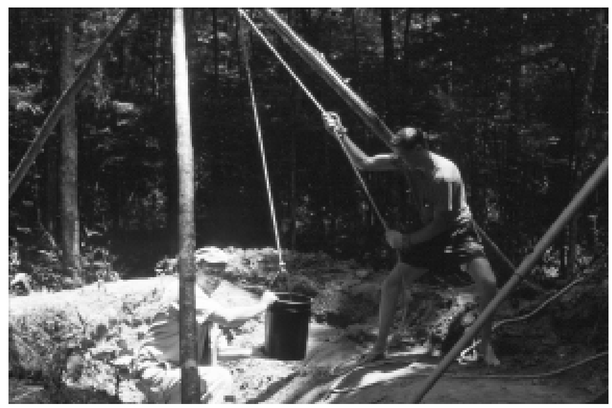

Figure 7. Keith Stephenson in test unit, and Kevin Eberhard hoisting out a bucket of fill during the excavation of the South Mound at the Lawton site.

Kevin and I first met exactly 20 years ago shortly after my employment with the SRARP began, and I was new to the Aiken locale. Ken Sassaman introduced us, and we immediately began to discuss prehistoric archaeology…a conversation that continued for the next two decades. Kevin and I developed a mutual friendship while he introduced me to the local history of Aiken, Hitchcock Woods, and the Horse Creek valley mill towns. But, archaeology was always Kevin's greatest passion and interest. Over the years, he and I worked together on various surveys and excavations at such remarkable prehistoric sites as Mims Point, Marshall, Tinker Creek, and Topper in South Carolina, and Mills in Georgia; however, the most memorable field-time spent with Kevin was at the Lawton site in Allendale County in the early summer of 2000. I had planned a test-unit excavation on the summit of the three meter high South Mound directly through to its base to document the history of the mound's construction some 700 years ago. Kevin stepped-up immediately and volunteered for the project. Standing atop the pothole-scarred mound summit I muttered, "How are we going to excavate three meters to sub-mound soil and remove the lowest layers of mound fill at this depth?" Kevin's reassuring reply, as always, restored my confidence. In short order, he engineered a tripod and pulley mechanism, which, with a rope and bucket allowed us to leverage all mound soil to the artifact screen, a height of some four meters above the mound base. We worked together in this manner for almost two weeks, and without Kevin's unwavering enthusiasm for this project, we would never have gained a complete understanding of the mound's construction. Whenever I have visited the South Mound since, I am reminded of the social labor we shared, the fun we had, and the knowledge we gained, all due to Kevin, who completely immersed himself both physically and intellectually into each archaeological project in which he participated. Kevin often appeared as a shy and retiring individual, but he actually had an appealingly wry sense of humor. This trait, along with his "sixth" sense regarding archaeological remains, made him a welcome member of any and all SRARP excavations. When conversations turned to the topic of prehistory and history of the CSRA, Kevin became completely engaged, and his self-taught knowledge and understanding of the regional archaeology was both fascinating and amazing. I will always remember Kevin as the most zealous and dedicated of our local archaeological community. I will never forget my comrade in archaeology, as well as my friend at all times. And my conversation with Kevin about archaeology initiated two decades ago will continue without end.

Keith Stephenson, Coordinator of Cultural Resources Management Survey, SRARP

I first met Kevin nearly 20 years ago when I began volunteering on the Tinker Creek site on the SRS. Ken Sassaman paired Kevin and me together in a unit, and someone snapped a photo of the two of us working. Later, the photo was digitized as a line drawing and used on a poster for outreach purposes. When Kevin first saw the drawing, he did not recognize the characters. He thought it quite comical when I told him that it was the two of us.

The last time I saw Kevin was about a week prior to his passing. I was visiting a site where Kevin happened to be volunteering. He was as excited about history and archaeology as ever and talked to me non-stop regarding his research into old newspaper accounts about the history of the local area. We had actually discussed getting together soon to look over his records. I am happy to have had a chance to know Kevin and will cherish that image of us together that is now sitting on my desk.

George Wingard, Administrative Manager, SRARP

Kevin touched many lives through his love of archaeology and history -- only a handful of which are represented above. Although his resourcefulness and keen insight will be missed, he will long be remembered in spirit. I am almost positive that out there somewhere he and the late George Lewis, another treasured SRARP staff member that we lost too soon, are having lengthy discussions about lithic technology, ceramic chronology, the formation of Carolina bays, settlement patterning, and how to build and repair just about anything (if only we could hear their conversations). Kevin's contributions to the field of archaeology will not be forgotten and neither will the man.

Kevin is survived by his parents, Bruce and Maxine Eberhard, his brother and sister-in-law, Brian and Elizabeth Eberhard, two nieces, Annalise and Christina Eberhard, and many friends and colleagues in the archaeological community.

We bid you an affectionate farewell.

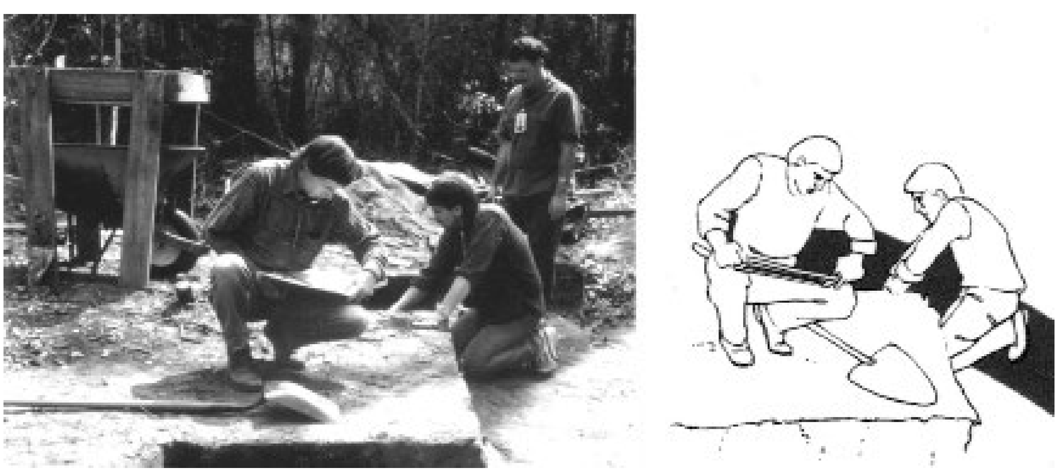

Figure 8. (L to R) Kevin Eberhard, George Wingard, and Ken Sassaman conducting excavations at the Tinker Creek site in 1991, with line drawing digitized from that photo.

ABOUT THE CONTRIBUTORS

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Christopher Young is an Anthropology major at the University of South Carolina and will graduate in December of 2010. His areas of interest are stone tool technology, the Early Archaic period and the geology of the Southeast. He is the Assistant Lab Director and Volunteer Lab Coordinator for the Kolb site.