THE CAPPS AND SHELLEY SITES: CAPPS TECHNOLOGY AND IMPLICATIONS FOR NEW WORLD PREHISTORY

by
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INTRODUCTION

Location of Sites and Brief History of Work

The Capps Site (1He178) and the Shelley Site (1He105) (Shelley also known as the Tumbleton flint quarry and Shelley Fields) are located in southeastern Alabama in Henry County about 30 miles north of Dothan (Figures 1 and 2). The Capps site covers approximately 200 m by 300 m of cultivated peanut fields just north of the farm community of Capps, while the Shelley site (Tumbleton) occupies about half of a square mile section near the town of Abbeville and juts north of Tumbleton (Figures 3, 4, and 5). A large, shallow upland wetland area (ponded) is present at the Shelley site surrounded by peanut fields and a wooded area (Figure 4). These sites are located in flat upland terrain where marine Tertiary age (Eocene residuum) sediments are present at the surface (Figure 6). Moderate to heavy prehistoric lithic debris is scattered over almost the entire surface of both sites.

The Shelley site (Tumbleton flint quarry) was first reported in the 1940's by Wesley Hurt as part of David DeJarnette=s Lake Walter F. George impoundment survey along the Chattahoochie River (DeJarnette 1975). The site was later collected and investigated by Steve Wimberly, Dan Josselyn, Milt Harris, Bart Henson, Margaret Clayton, and other members of the Alabama Archaeological Society in the mid-late 1960's and continues to be collected by locals today. The site was divided into many collection areas during the 1960's and a site sketch map, as well as a location map, were provided by Wimberly and Josselyn. The only record of the Capps site prior to the present investigation came from articles published by William Emanuel and Dan Josselyn (see Emanuel 1968), a sketch map on file at the University of Alabama-Birmingham (UAB), and the artifacts from the site, also housed at UAB. The collection from the Capps site was also made in the mid-late 1960's. Both sites now have been officially recorded with the state and the map locations have been field verified.

Margaret C. Russell of Eufaula, Alabama has begun an effort to map and explore the Shelley site in detail. She has worked with the author to provide information and to help relocate the Capps site. The Capps site was relocated in July of 2002 with the aid of the sketch map. At that time, a small uncontrolled surface collection was made followed by a more substantial controlled surface collection in early November of 2002. These surface collections were geared toward obtaining a representative sample of all materials at the Capps site. No attempt to date has been made by this author to obtain a representative collection of materials from the Shelley Site. However, subjectively, based on several trips to Shelley and in going through the many boxes of artifacts from Shelley housed at UAB, my impression is that the Shelley site occupations were much more varied than at Capps. Analysis of these surface collections is on-going. The author began describing, photographing, and analyzing the Capps and Shelley site collections at UAB during February of 2002. The number of specimens (cores, tools, implements) being analyzed from UAB >s collection from Capps and Shelley totals in the 100's. In addition, hundreds of pieces of flake debris and spall material, cores, bifaces, and tools have also been recently surface collected from the Capps site in an effort to eliminate collector bias during the 1960's.

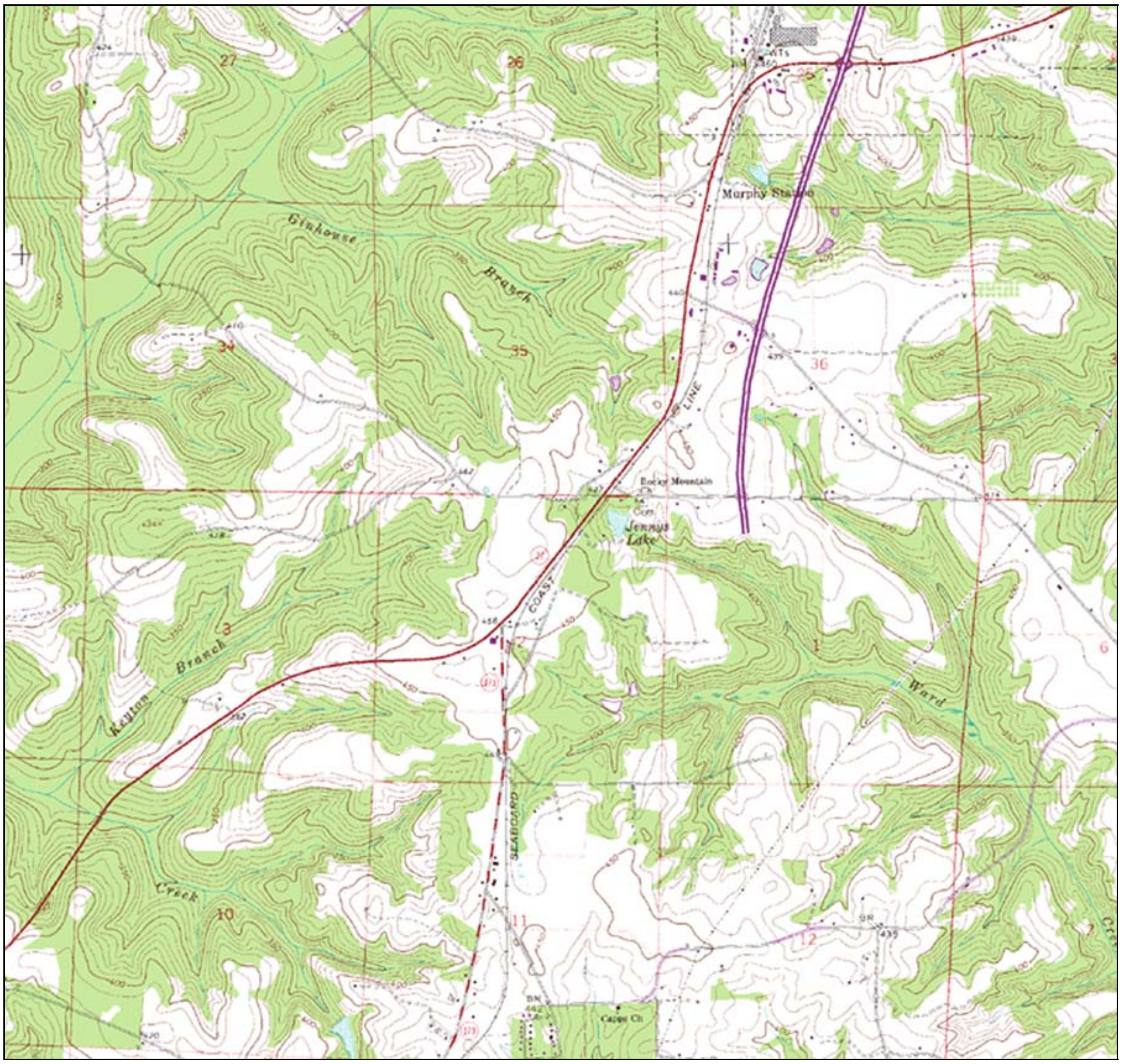

Figure 1. General Location of the Capps Site (1He178), Henry County, Alabama. Note High Ridge in Center and Small Drainages That Erode the Eocene Landform from the East and West. Exposing the Coastal Plain Chert Outcrops.

Overview of Capps Site (1HE178), Henry County, Alabama

Exposed Coastal Plain Chert Nodules at Capps Site

Coastal Plain Chert Nodule Collected from Capps Site Road Exposure (see adjacent photograph)

Figure 2. Photographs of Capps Site (1He178) and Coastal Plain Chert.

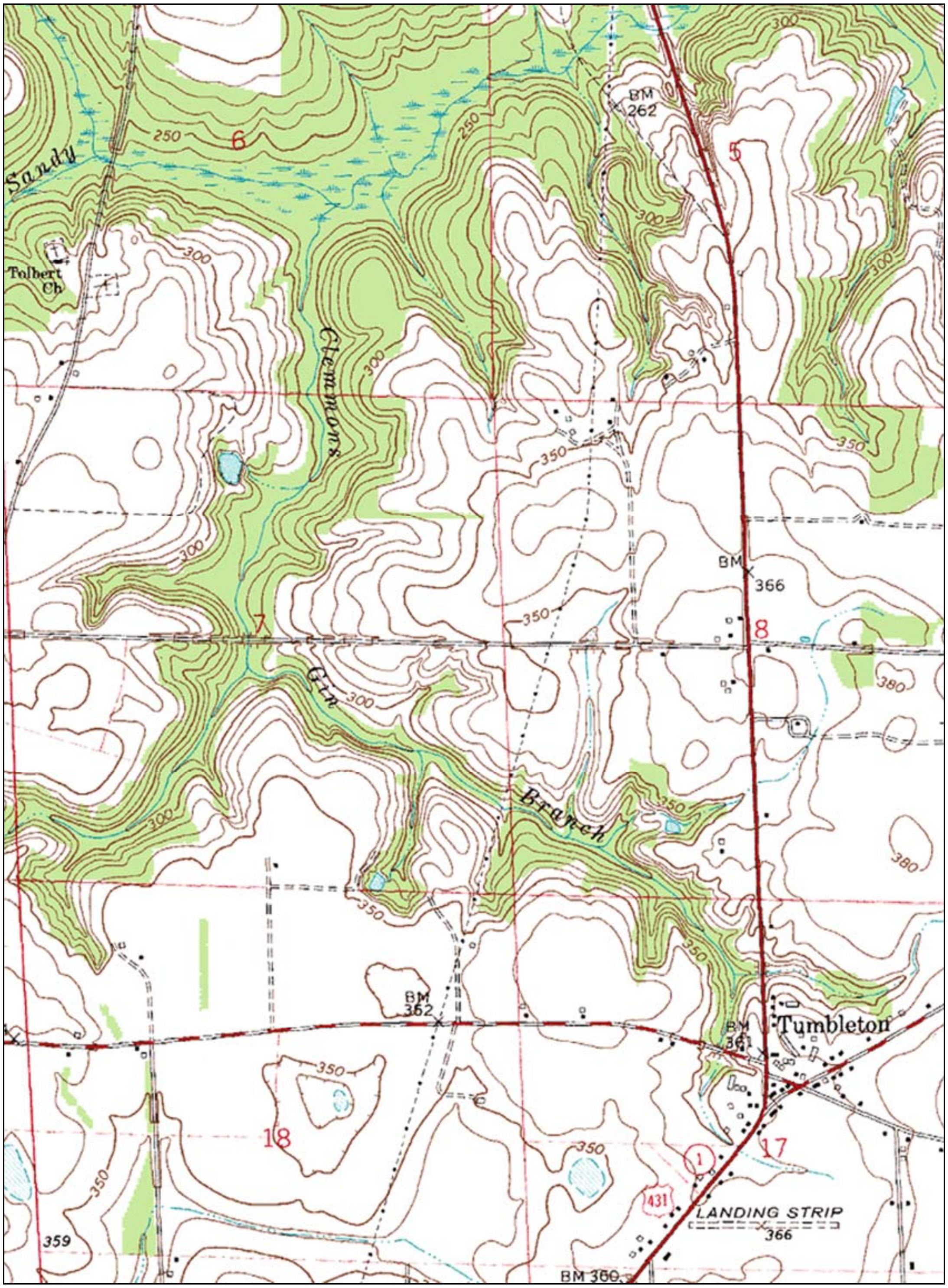

Figure 3. General Location of the Shelley Site (1He105-Tumbleton Flint Quarry), Henry County, Alabama. Note High Terrain in Area and Drainages Eroding the Uplands.

Figure 4. Overview of Lake or Pond at Shelley Site (1HE105), Henry County, Alabama.

Figure 5. Quarry Pit at 1HE105, Shelley Site.

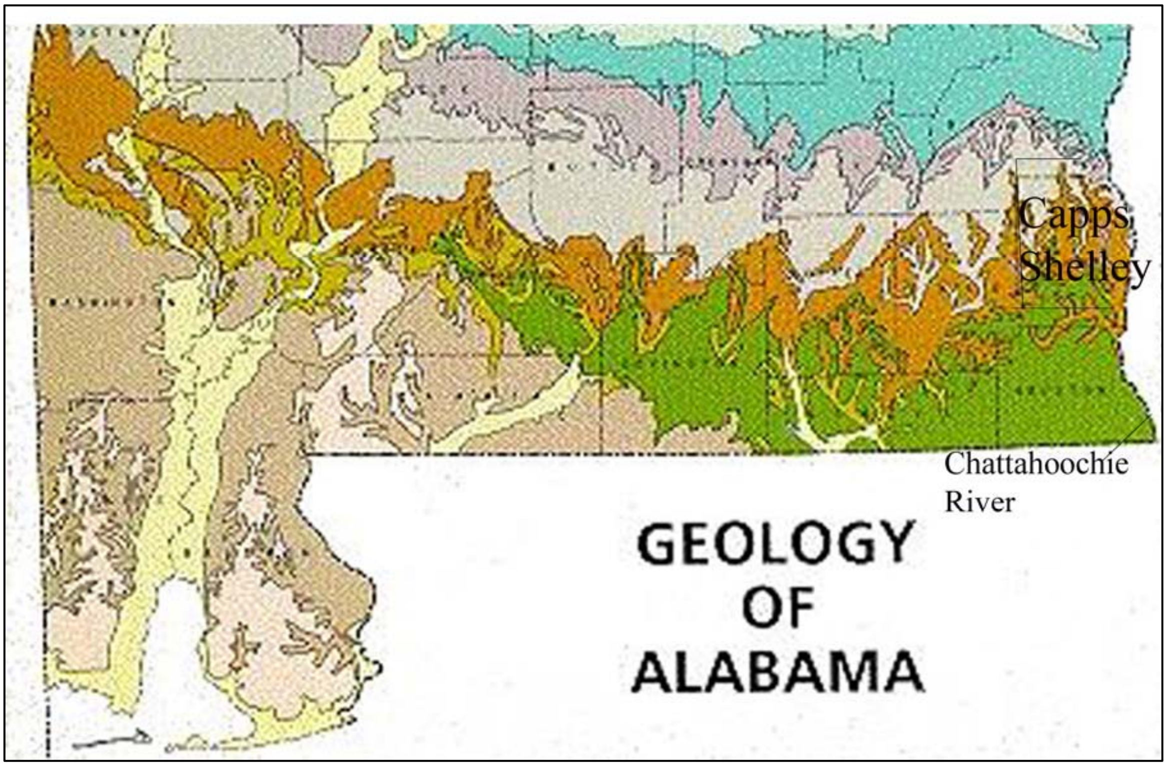

Figure 6. Geologic Formations of Southern Alabama and Capps-Shelley Site Locations.

<u>Perspective</u>

So-called coastal plain stone quarry or upland procurement sites have seen precious little study in Southeastern archeology even though it is widely known that Clovis technology depended to a high degree on large pieces of high quality crypto-crystalline material (Goodyear 1979). The source areas in question are those that consistently produce natural chert nodules of sufficient size to produce the Clovis tool kit. Clark and Purdy (1988) and personal communication (2003) have studied chert at sites in Florida where Ocala or coastal plain chert outcrops in Marion County. One such site is the CCA site (8-Mr-154). There she has found evidence of a long history of chert procurement and site utilization. In addition, Carr (personal communication 2003) has initiated a chert sourcing study of coastal plain chert and agate in southern Alabama. Goodyear (2000) has undertaken studies of Allendale (coastal plain) chert outcrops along the Savannah River in South Carolina where he has encountered evidence of Clovis and (pre-Clovis?) utilization of this resource. Other studies of coastal plain siliceous materials that may qualify as potential upland chert procurement studies include work by Lloyd et al. (1983) on Tallahatta quartzite outcrops along Escambia River drainage of southern Alabama and a brief study of Tallahatta quartzite sites in southwestern Alabama by C. B. Curren in the mid-1970's. Further up the eastern seaboard, the Flint Run Quarries are associated with Clovis occupation on the Virginia coastal plain (Gardner 1974). To the east in Mississippi, Lousiana and east Texas, the predominate siliceous materials available were generally small chert, quartzite, and silicified wood gravels associated with the Citronelle and Willis formations. These materials were generally of insufficient size to support the Clovis tool kit. However further west in the central upland plateau area, Texas Clovis tool kits were routinely produced by using Edwards chert nodules (Collins 1999). Evidence of Clovis blade technology has been found at the Wilson-Leonard and Gault sites in Texas as well as the Aubrey Site. Of course upland areas such as the Tennessee Valley of northern Alabama and western Tennessee as well as areas of southern Kentucky contain extensive karst regions where large nodules of Ft. Payne, St. Genevieve, Dover, and other cherts outcrop. These were extensively used prehistorically to produce the Clovis tool kit (Ensor 1992; Broster and Norton (1993), Sanders (1994), and Gramly and Yahnig (1991), and Dragoo (1973).

The importance of understanding the relationships between the use of these extensive upland chert sources and activities that occurred at sites distant from the sources has long been acknowledged. However for various reasons, in-depth, detailed studies of these sites have languished. One reason may be the sheer volume of material at these sites that must be systematically studied. As I quickly found out, it can be a very daunting task. It is one worth pursuing though, and appears to represent a window into the ancient past rarely exploited or appreciated in North American archeology. The importance of these site types is two-fold. They potentially provide the data to yield a much greater understanding of entire lithic systems over a wide range of cultures, space, and time. Sites dating from the Pleistocene to modern historic may be present. Equally important, they may be situated on upland landforms that are conducive to long-term site preservation. Simply put, while the stone artifacts from upland occupations may move around somewhat due to natural processes, however, they generally do not end up deeply buried in modern Holocene floodplains; washed away and scattered completely out of context, largely inaccessible for study. They also offer larger sample sizes for study with the major drawback being an inability to correctly analyze and diagnose the various technologies present in mixed contexts on upland surfaces. However this is not an insurmountable task.

The extensive coastal plain chert outcrops in the vicinity of Dothan in southeastern Alabama have been known since at least the 1940's when David L. DeJarnette and Wesley Hurt undertook the Walter F. George survey along the Chattahoochie River. The "Tumbleton flint quarries" were briefly described but no in-depth analysis was undertaken. Later, work by Dan Josselyn and Steve Wimberly and other members of the Alabama Archeological Society during the mid-late 1960's made extensive collections there and also at the Capps site (Emanuel 1968). At that time similarities between some of the Tumbleton-Capps artifacts and certain Old World technologies was noted. The existence of the large collections from Tumbleton have been known to the author since he was a graduate student at the University of Alabama in the mid-1970's.

In 1993 this author conducted an extensive survey of helicopter lease tract for the U.S. Army at Ft. Rucker, Alabama (Ensor and Largent 1997). A wide geographic area was covered and a variety of sites in various topographic settings were examined. The lithic artifacts recovered from surface and subsurface contexts were generally in line with expectations and appeared to reflect primarily Archaic and Woodland technologies along minor Mississippian remains (Ensor and Largent 1997). Most chert appeared to be unpatinated and also subjected to thermal alteration. In February of 2002, an opportunity presented itself to study these artifacts at the University of Alabama-Birmingham (UAB) where they have been housed for over 30 years. After locating literally hundreds of small boxes filled with artifacts from the 1He105 (Shelley Site or Tumbleton flint quarry) and 1He178 (Capps Site) in the drawers at the laboratory, I opened them. There I found an alien stone technology, it was unlike anything I had ever observed on the countless sites I had worked at over the past 30 years. I was truly baffled and humbled because I knew what I observed had never been adequately (if ever) described, to my knowledge, in the literature of the Southeast.

After several more days and countless hours of marveling at the technology, I began to feel like I was missing something. Maybe the novelty of all this was simply due to the nature of the sites, large sources of upland chert nodules, traditionally called "quarry" sites since Holmes' (1919) work of the late nineteenth century and as commented on and critiqued by Bryan (1950) and Johnson (1981). I surmised, so very little is known about these site types, maybe I was simply observing the "early" part of the lithic system whereas in the past, working at "habitation sites" and small upland campsites, I was much more familiar with the "end-products" or actual finished tools that all the quarrying eventually led to. In other words, the missing link had been found!

After deep reflection on the possibilities and alternatives that may account for this seemingly alien technology, and after having worked with these artifacts from Capps-Shelley for almost two years, I can safely say that it will be many more years, if ever, before we truly comprehend their meaning. As noted by Josselyn and Wimberly, the traditional hafted biface or projectile point are seemingly hard to come by at these sites. Yet other tools appear to be present in copious numbers. The plethora of biface knapping failures, broken biface rejects, and countless biface thinning flakes associated with projectile manufacture are surprisingly few at Capps. The thin bifaces and manufacture errors that are present at Capps resemble Paleo-Indian (Clovis) in some respects but not all. Shelley is a much larger and more complex site and thus has much more evidence of thin biface manufacture and heat treatment with multiple occupations.

But this is the nature of science and discovery. It is a painstakingly slow process if approached in the correct manner, an approach that truly leaves "no stone unturned"! A final note: had it not been for the diligence and dedication of AAS member and avocational archeologist Dan Josselyn and archeologist Steve Wimberly, these artifacts would most likely not be available for study today. I think what their devotion teaches, or should teach us, is to not assume everything is known or found, nor will it be possible to know about everything in a lifetime. No matter how long we have studied rocks and listened to papers, and read books, and dreamed about rocks, as John Witthoft put it (see below) we should always approach them with the attitude "I don't know, not with the assurance of ignorance".

Summary

This paper represents a revised version of one given at the annual winter meeting of the Alabama Archeological Society in December of 2002. It has been updated with new observations and technical details and illustrations have been added at the end (see Addendum A). Importantly, in order not to present the Capps technology materials from Capps-Shelley in isolation, a second set of artifact illustrations has been prepared pertaining to the Belle Mina Clovis site (1Li92), Limestone County, Alabama. The artifacts from this virtually single component Clovis site are included as Addendum B to illustrate that technology. The resemblance to Old World Upper Paleolithic prismatic, or thin blade technology, as well as to the thin biface technology associated with the Upper Paleolithic should be apparent. Careful comparison of artifacts based on Capps prepared core technology with those based on Clovis blade and thin biface technology should reveal important differences and with some minor similarities. Some Old World Levallois core/flake comparative material as well as Mousterian triangular tools and Achuelean "hand-axes" are illustrated alongside similar Capps-Shelley artifacts for additional perspective. An attempt has been made to include a wide range of morphological and technological variation within the artifact plates. Artifacts such as mid-late Holocene hafted bifaces and bifaces and flakes/blades of unpatinated and, in some cases, apparently heated Coastal Plain chert are also included for comparison. A conscience effort was made to pull samples of all recognized flake stone technologies from the two site collections at UAB, regardless of potential age or cultural affiliation.

Note that the term epi-Levallois is used in referring to Capps prepared core technology and that no historical connection between the Capps-Shelley epi-Levallois artifacts and those from the Old World is implied. Rather the age of the artifacts and technology is unknown. The data is presented in the spirit of scientific inquiry and for people to draw their own conclusions or inferences, within the current state of knowledge. The work is on-going and this paper is essentially qualitative[1]. Precious few references are available, or at least known, to this author from the Southeast that maybe used to evaluate these technologies. Barbara Purdy has excavated Ocala chert "quarry" sites in Florida and Al Goodyear (is presently investigating Coastal Plain Allendale chert "quarries" along the Savannah River in South Carolina. Both have reported some "Levalllois-like" materials as has Prof. Gerd Elvers from his recent trips to Cuba. Some artifacts resembling the bend-break burins such as reported by Goodyear from the Topper Site have been found at Capps. However very little detailed technological data are currently available for comparative purposes.

The main references used in studying these artifacts pertain to Old World prehistory, specifically the works of Debenath and Dibble (1994), Bordes (1961, 1968), Crabtree (1972), Oakley (1957) Tixier (1974), Pitzer (1977), van Peer (1992), Derevenko (1998), Chard (1974), Soffer (1993) and others. In North America, typological similarities to some of the Capps-Shelley materials may be found in various publications such as Dragoo (1973), Lee (1957, 1964), Simpson (1989, 1998),Schuiling (1979), Haury (1950), Bryan (1950), Wormington (1964), Sanders (1994), Gramly (1992), and Witthoft (1967). Of course many publications that deal with Clovis and Folsom-age (including Suwannee-Simpson) materials contain references to artifacts that bear a certain resemblance to some of the Capps-Shelley materials (Collins 1999, Collins and Hester 2003; Bradley (1993), Callahan (1979), and Daniel and Wisenbaker (1987). This is especially true of the large bifacial cores, end-thinned bifaces, bifaces that demonstrate outrepasse' flaking, and prismatic blade cores etc. The publications involving the Clovis-Folsom sites' research appear to have a more direct relevance to the Belle Mina artifacts.[2]

RAW MATERIAL

Large (30 cm to 100 cm in diameter), multi-colored light gray, bluish-gray, light grayish brown, and dark grayish brown chert nodules/lenses of fossiliferous Coastal Plain (Ocala) chert outcrop near the surface at the two sites (Figures 2 and 5). A light brown, pale brown, and moderate yellowish brown calcareous cortex is common on weathered Capps-related artifacts. The weathered-patinated flaked surfaces of Capps-related artifacts are generally very pale orange, pale yellowish orange, grayish orange, to dark yellowish orange in color. Occasionally a type of reddish brown Awind varnish≅ is present and an orange-brown staining is prevalent on many of the Capps-related artifacts. It has been reported that local coastal Plain chert patinates quickly when exposed on the surface (Moon 1999:54) and that chert from the Chattahoochie River Valley to the east of the sites patinates faster than chert further west. However no basis for either observation is given other than conversations with local collectors. Chert quality is generally good to excellent based on observations of fresh material eroding from a grayish compact clay at the Capps site (see Figure 2). The outcrops have served as a major lithic resource for unknown generations of prehistoric peoples. Large chert nodules are exposed in a road cut about 2 m below the ground surface at the Capps site while at least 18 large oval to rounded pits, presumed to be of aboriginal origin, are present at the Shelley site (see Figure 4). These pits, which have not been scientifically excavated, measure up to 2 m deep and 15 m across with low mounded areas adjacent to the pit margins. Recent investigations within some of the pits by Margaret Russell (Russell, personal communication, 2003) have yielded some cortical flake debris that appears technologically different from Capps technology artifacts.

1 Quantification of technological attributes and metric observations for statistical analysis is underway.

FLAKED STONE TECHNOLOGIES

(The reader is referred to Addendum A for Capps-Shelley artifact photographs)

Technology 1-A Capps Prepared Core (Epi-Levallois) (Unknown Cultural Affiliation)

Heavily weathered and patinated cores (coastal plain chert), bifacial and unifacial with extensive platform faceting and preparation as well as extensive lateral and peripheral shaping of core surfaces. Prepared bifacial disc/circular/bun-shaped cores/core tools. Extensive lateral, proximal, and distal margin flaking is present that facilitates removal of flakes and spalls resulting in pre-determined forms. Many short, thick, uniface spalls exhibit faceted dorsal surfaces. Rectangular flakes appear to have resulted from some type of prepared core (most likely globular core made on spherical nodule). Numerous linear, core trim "starter blades≅ with triangular cross-sections, some reminiscent of Clovis prepared core blade technology are also present. Core types include block/blade cores, bifacial and unifacial epi-Levallois cores, discoidal (bifacial) cores, and faceted, exhausted. globular cores. Block or blade cores exhibited parallel blade scars covering principally one core face. Minor to extensive platform preparation was noted on the blade cores. Some bifacial and unifacial cores are epi-Levallois or Levallois-like in their morphology and preparation. Some of the large unifacial plano-convex core scraper-like implements (large unifacial scraper-planes) also resemble Old World Levallois "tortoise" cores and were used as flake sources.

On unifacial cores, striking platforms are prepared by nearly vertical flake removals that originate on the ventral surface. Subsequent end-products or spalls are removed by striking the faceted platform at angles approaching 90 degrees with great force. This removes a flat flake/spall roughly parallel to the ventral core surface with the flake/spall form largely pre-determined by core preparation. Contact with the platform is generally with an area as opposed to a specific point, although careful platform preparation is evident. This general type of platform preparation and mode of flake detachment is common to Old World Mousterian core industries (cf. Whittaker 1994; Witthoff 1952; Debenath and Dibble 1994). Bifacial surface preparation was also noted on some large cores that are Levallois-like or epi-Levallois in nature and large blade-like flakes are removed from some of these in a Clovis-like manner. Platform preparation may be present on small bifacial disc cores that are epi-Levallois, however most platforms are simple and unprepared. Some flakes that have been removed from these disc cores have been found at Capps. In one instance, an epi-Levallois disc core had blade or blade-flake removals that originated from opposing platforms on the same surface or core face, creating a ridge in the middle of the core where these parallel removals terminate.

bifacial and unifacial cores (ovoid, disc, globular, blade, epi-Levallois, uni-directional, bi-directional, multi-directional).

!

blade-like flakes (core trim/crest) and various faceted flakes/spalls/debris of different length and thickness.

core forms(triangular, rectangular, expanding, asymmetrical, irregular shatter) with faceted, multi-faceted, dihedral and plain flaked surfaces, and natural surfaces.

Technology 1-B Capps Uniface/Biface Percussion Retouched End-Products
Epi-Levallois
(Cultural Affiliation Unknown)

Unifacial retouch of thick, heavily weathered/patinated flakes/spalls, including thinner flakes/spalls and blade-like flakes. As noted above, the thick flakes/spalls appear to have been removed from a prepared globular/faceted core of some type by hard hammer percussion with a possibility of anvil assistance. It is possible that other large blanks may have been produced by splitting nodules on anvils. This technology appears to be hard hammer percussion but some soft hammer percussion can not be ruled out. The retouch flaking is probably related to creating a steep working edge in most instances, however some specimens may have served as large or small secondary cores or flake sources with flakes removed from the dorsal surface and originating on the flat ventral surface.

In many instances both prior core preparation flake scars and intentional uniface flake scars overlap on the dorsal surface. The striking platforms for the flake blanks/spalls are generally broad, wide and faceted with extensive preparation although many platforms utilize the natural cortex or split plane of the chert nodule. The prepared platform has also been removed by retouch in many cases leaving little trace of its former existence. Step flaking along lateral margins may be related to use and/or percussion flaking attempts. In most instances it seems to be use-related. The classification of the large, plano-convex spalls that exhibit unifacial flaking into a scraper or scraper plane or core/core tool category is problematical at the present stage of analysis. It may be that these implements served a dual purpose as both a flake source and a scraping/cutting/planing tool.

! **thick Acore scrapers/planes≅**.
! **thick uniface Ascrapers/faceted core trim products≅.**

Thinner flakes of various sizes and shapes were subjected to a combination of unifacial and/or bifacial flaking via primary percussion. These flakes appear to have been end-products from Capps prepared core technology. Shapes include blade and blade-like, rectangular, triangular, asymmetrical Adog-leg”, skewed, or atypical flakes with slightly twisted cross-sections**.** Some of the pointed flakes resemble Old World *Levallois* and *Mousterian* points. Platforms retain both broad and narrow facets and some platforms retain natural cortex. No secondary thinning or pressure retouch is evident and many tools have pointed ends. The intent of the retouch in most instances was apparently to create various working edges (cutting-scraping) and not to create striking platforms for thin biface manufacture. The result was Capps technology end-products.

! **thin pointed retouched uniface/biface.**
! **other thin retouched uniface/biface**.

Technology 2-Large-Small Thick Bifaces Percussion Flaked (Cultural Affiliation Unknown-Capps-related-?; Possibly Some Archaic Bifacial Blanks?)

Thick spalls that have been percussion flaked, primarily by hard hammer, however use of soft hammer flaking can not be ruled out. Flake removals may be massive and invasive. No secondary retouch and no pressure retouch evident. Some of these could be rejected initial bifaces, others appear to have been shaped into functional implements. All exhibit hard hammer percussion flaking. In some instances it appears that the intent was not to thin the biface. In other cases it appears that a novice or inexperienced flint knapper was at work-contributing to the overall Acrude≅ appearance of the biface. The thick plano-convex nature of many of the flakes/spalls found at the site (discussed below) does not seem ideally suited for biface manufacture. In many cases it is difficult to understand the intent of the knapper due to the weathered/patinated nature of the chert, the lack of clear biface reduction intent, and the often contradictory lines of evidence presented by the flake scars (including difficulty in deciphering flake scar morphology and striking platform angles on eroded and weathered chert surfaces).

An occasional large thick macro-flake was present, bifacially retouched. Thick, irregularly flaked, linear Apicks or gouge/chisel-like implements≅ are quite abundant, some have a triangular cross-section. In several cases artifacts resemble large hand-axe/cleavers. Other bifaces may be either hand-axe-like tools (choppers/cutting tools/scrapers) or biface rejects-it is difficult to assess.

! **large thick bifaces (cleavers, hand-axes, choppers, picks, gouges, etc.)**
! **small thick bifaces (cutting/scraping tools-bifacial thinning rejects-?)**

<u>Technology 3-Thin Biface-Primary-Secondary Thinning (Clovis-Archaic-Woodland-Unknown-?)</u>

This technology appears to be primarily related to Clovis and later occupations during the Archaic and Woodland periods. However some of the large thin bifaces may be related to a component(s) of unknown cultural affiliation. A number of the patinated, thin bifaces apparently have tapered ends that may have been hafted. They are all fractured in a similar manner and location yet the overall form is unknown. Numerous thin bifaces, some very large, exhibit both Aresolved≅ or ‘outrepasee= (over and beyond)] flaking that extends from margin to margin transversely across the biface and Clovis-like basal thinning or planing parallel to the long axis of biface. Virtually all bifaces of this technology appear to be made on flake-blanks, spalls specifically designed for biface production. The thick plano-convex spalls seen in Capps core technology are not evident in the blanks used in thin biface manufacture. Indicators of Clovis-related technology are square to rounded proximal margins, overall blank size, the length of flake scars and the presence of Aresolved≅ or outrepasse= flaking as well as basal thinning and creation of a convex surface referred to by some as “domed”. Some of the small to medium sized thin bifaces present are more typical of Archaic and Woodland biface production geared toward hafted biface manufacture. However an occasional small relatively thin Abacked≅ biface (moderate patination, no heat) is present that most likely represents a cutting/scraping tool of some type.

! **Medium-large thin bifaces-Clovis-like, Clovis, Archaic? (unpatinated to moderately patinated).**

! **Archaic-Woodland, includes hafted projectile point/knives; biface rejects; amorphous cores; tested pebbles, flake/blade debris (heated and unheated biface thinning flakes)**

SUMMARY AND CONCLUSIONS

Summary

The study to date has allowed the recognition of three generalized flaked stone technologies at least two of which are inter-related and may be considered different practices contributing to the same technology. Each of these may have more than a single step, technique, or operation performed during raw material procurement, initial nodule reduction, core preparation, flake/spall production, uniface/biface tool shaping, biface reduction/shaping, etc. present. Historical relationships that may or may not exist between the various core forms, tool forms, flake-blade debris and range of technologies at these two sites are largely unknown. Capps technology is a prepared core technology that is epi-Levallois in nature. Prepared core forms produce flakes, blades, blade-like flakes, and spalls of pre-determined form for use either retouched or unretouched. It is essentially a flake/spall tool tradition. It appears to share certain technological and morphological similarities with Old World Levallois technology and Mousterian industries. However the nature of any historical connection, should one exist, is unclear. Other technologies represented at the sites, other than the thin flake-biface unpatinated and sometimes heated materials, appear more related to the Upper Paleolithic or Clovis technologies as seen in the outrepasee' flaking and end thinning as well as the blades and blade cores. The various thick, weathered, and patinated bifaces are an enigma since most do not appear to be "quarry blanks".

The flaked stone artifacts have been separated as gross technological units during the initial exploratory analysis. These artifacts are illustrated in Addendum A and comparative Clovis illustrations may be found in Addendum B. Many uncertainties and questions remain regarding the nature of the Capps and Shelley site materials. Among these are:

1) What is the cultural and historical origin of Capps core technology and other flaked stone technologies at the sites?

2) How were the cores prepared and reduced and how were the end-products obtained?

3) What activities or behaviors may be inferred or are represented by the stone artifacts at the Capps and Shelley sites?

4) Why does the artifact inventory appear to differ significantly from our traditional view of Archaic Aquarry site≅ material, i.e., why are there so few biface manufacture failures, why are there apparently so many Afinished flake tools≅, and why is so little flake debris related to biface thinning?

5) Is the degree of patination and weathering related in any way to the age of an artifact?

6) Are their historical connections with similar Old World technologies?

Hopefully the answer to many of these questions and others will be possible with additional study, experimentation, survey, testing, excavation, and comparison with artifacts from other sites.

Observations

1. Capps is interpreted as a prepared core manufacturing technology with no heat treatment. This technology appears to differ from other known or described Holocene prepared core technologies in North America in that thick, regular Aprisms≅ or flake-spalls as well as thin triangular, oval, and squamous flakes were the end-products as opposed to Clovis and later Athin blade technology≅ (American Paleo-Arctic wedge-shaped micro-blade cores, Hopewell blade cores, Poverty Point blade cores, Mississippian blade cores, Mesoamerican blade cores, etc. (cf. Johnson and Morrow 1981). It differs also from amorphous core technologies which, by definition, are expedient and opportunistic with regard to flake blank production. Of course the term prepared core technology is somewhat of an ambiguous term since in some respects most flakes removed during biface manufacture may be "pre-determined" to a certain extent by the pattern of previous flake scar removals and overall shape of the biface (cf. Debenath Dibble 1994). Meaningful (cultural) distinctions between a "prepared core" technology and an "expedient core" technology appear to relate more to rigorous planning and intent (a tradition of learned motor habits and skills) (Witthoft 1967) than to spurious production of a blade or outrepasse' flake. A Levallois-like prepared core technology is present at Capps and Shelley in the form of bifacial and unifacial Atortoise-shaped≅, cores, and unifacial (plano-convex) cores, bifacial bun and disc-shaped cores. Unifacial core tools also appear to be important in the tool kit.. The interpretation of this technology (s) is hampered by a lack of comparative studies regarding lithic procurement at so-called Aquarry≅ sites in the Southeast (Barbara Purdy, personal communication 2003).

2. The method of retouch is by primary percussion flaking only, with high incidence of Acontrolled flat flaking≅ as opposed to Afree flaking≅ (Witthoff 1952) with exceedingly thick and wide striking platforms that retain large facets (including dihedral) in many instances. There is a predominance of unifacial retouch but bifacial retouch is present, either alone, or in combination with unifacial retouch**.**

3. Moderate to heavy weathering and patination of surfaces is present with some orangish-brown chemical staining on many of Capps-related artifacts. No thermal alteration has been detected on any Capps technology artifacts.

4. The end-products of Capps core technology consist of a wide range of large to small, very thick to moderately thick, and thin flakes/spalls. Shapes include blade and blade-like, rectangular or squamous, triangular, oval, amorphous, and asymmetrical Adog-leg≅ or Askewed≅ flakes with slightly twisted cross-sections (axis of percussion varies by up to 45 degrees or more with long axis of flake)**.** Unifacial, bifacial, and a combination of unifacial and bifacial percussion- shaping retouch is common. Tools range in size and form from large thick cleavers, Ahand axes≅, choppers, and picks/gouges/chisels, to small thin pointed scrapers and cutting tools. *Burins* are present on some tool margins as are *tranchet* removals. Probable *bend-break* burins are also present.

5. Capps technology produces a wide range of tool forms and working edges that were most likely capable of carrying out a multitude of tasks from scraping and planing to cutting, chopping, chiseling, and boring. Activities that may be inferred from the wide range of tools is apparently not consistent with the view that these sites were primarily locations where chert was procured and then abandoned after a brief stay, having obtained the “quarry blanks” ready for completion at some other locale.

6. Bifacial thinning flakes and biface rejects are infrequent in Capps-related material. Broken thin bifaces are generally less weathered/patinated than the thick bifaces including the “hand-axes”. The few biface thinning flakes at Capps are generally heated (dark gray to gray, pink and red) and possess little if any patination/or weathering.

7. Recurrent patterning, same range of technological “types” duplicated at Capps-Shelley with regard to the heavily patinated artifacts.

8. Unknown cultural components of unknown age are responsible for Capps technology while the thin biface technology at the Capps and Shelley sites may be the result of Holocene or Terminal Pleistocene cultures including Clovis. However, some of the more heavily weathered Athin≅ biface material may be the result of unknown cultural components.

9. Inferred activities for Capps-related technology include raw material procurement (local nodules), initial core preparation and production of flakes/spall end-products, modification of spalls/flakes/blade-flakes via primary unifacial, bifacial, or unifacial-bifacial combination percussion retouch/shaping into a variety of cutting and scraping implements. Most of the Capps-related tools appear to have been designed for hand-held use although some may have been hafted.

10. To date the Shelley site has produced several Late Archaic hafted bifaces and a possible Middle Archaic hafted biface while Capps has not produced a datable hafted biface.

Conclusions

In conclusion, artifacts technologically and morphologically similar to those found at Capps and Shelley have been located across North America. Some of these sites and areas include the Sheguiandah site in Lake Huron (Lee 1957, 1964), Ventana Cave in Arizona (Haury 1950), Wells Creek Crater in Tennessee (Dragoo 1973), the San Diequito site in southern California (Warren 1966), the Calico Hills region of southern California (Schuiling 1979; Simpson 1989, 1998), the lowest levels of Sandia Cave in New Mexico, (Hibben 1941), the Spanish Diggings Aquarry≅ site in Oklahoma (Bryan 1950) and elsewhere (cf. Mueller-Beck 1966; Wormingtin 1971). Artifacts similar to some of the Capps material, but made of patinated Fort Payne chert from north Alabama and Tennesee have different patination depths that may relate to antiquity (Emanuel 1968). A.R. Kelly noted similar specimens near Albany, Georgia. No discussion is presented at this time regarding the evidence for technological “diffusion” versus “invention” to account for these artifacts (cf. Andrefsky 1987; Krieger 1964).

Few American stone typologies are designed to differentiate subtle and not so subtle differences in stone working technology, although such typologies are the basis for our understanding of Old World prehistory where thin hafted bifaces were largely lacking until relatively late in the sequence. I am in agreement with Alex Krieger who wrote in 1964 that surface collections may often allow the researcher to Aplot the distribution of various levels of technological development even if their dates are unknown≅. It is, I believe, simpler to find something if we have some idea of what we are looking for, although context and dating are ultimately required to quote Aprove≅ our position. For example, John Witthoft has noted that specific methods of flint knapping may be diagnostic such as free flaking, controlled flat flaking, and resolved flaking among others. He states in 1952:

> *AI have actually come to feel that many American archaeologists see all flint as a mere matter of skilled random-spalling and its products as a result of conscience design. Flint tools were the manifestation of certain motor-habits, traditional procedures and stereotypes, and unbelievably precise Amuscular knowledge≅ of materials and forms; all of these were in no sense controlled by conscience planning or by conceptions of processes and finished forms. Neither was innovation and invention the result of conscience designing for improvement, but were due to a factor of Adrift≅ in the gradual modification of motor habit and stereotyped patterns, scarcely perceptible in the work of any one generation...I must remind... that flint knapping is a long extinct art... and one must study the actual objects to see what unimaginable and strange things ...have been done with silicas in the past...flint typology should be approached with the attitude AI don=t know≅ not with the assurance of ignorance.*

The apparent lack of stratigraphic data often cited in the Clovis-first defense may have more to do with artifact (technological) recognition (including mixing or obfuscation by later, more abundant remains), small local population sizes, and the identification of appropriate landforms/contexts of proper age that are conducive to site preservation than an actual dearth of older sites. If one reads through the somewhat obscure literature of the 1950's and 1960's, the work of Dan Josselyn may be found. His work has led me to believe that he was not Ajust slightly ahead of his time≅ but rather a great deal ahead of it. Two statements from Josselyn, master archaeologist, are as relevant today to archaeology as they were almost 40 years ago:

> *A A scientist never tries to prove anything. One attempts only to find the facts.≅ (Vilhjalmur Stefansson).*

> *AArchaeology of Eastern United States, authoritative in 1952, classifies Michigan fluted points as ALate Archaic≅ (Fig. 37). If we could remember how inevitably we shall be wrong tomorrow, we could be a little less wrong today≅ (Daniel Josselyn).*

Unfortunately, I never met Dan or Steve, but I=m grateful for the groundwork they laid and their ideas. Knowledge doesn't come easy, let us keep up the work and build on their legacy.

Notes

There is no evidence of heat treating/color change in Capps technology other than that related to natural weathering and staining. All technologies use the locally available coastal plain chert (on-site) of varying quality. This material occurs in nodules and lenses with heavy white (calcareous) to yellowish-brown cortex or rind. Smaller pebbles and cobbles with alluvial cortex were evidently used on occasion during the Archaic and Woodland periods. Flaking is virtually all hard-hammer percussion, either free-hand or anvil-assisted with some evidence of bipolar (not common). Some of the primary percussion retouch could have been done with a soft hammer but this is unclear. Numerous limestone and chert hammerstones of different sizes are present in the collection. Secondary soft hammer percussion is restricted to the thin Clovis-like and later bifacial material. Pressure retouch is restricted principally to heated thin bifaces such as projectile point/knives. No pressure retouch was noted on any specimens that are heavily weathered or patinated which is virtually the entire Capps and Shelley site collections. Amorphous cores are present but are primarily unpatinated or only moderately patinated and some are heated.

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ARTIFACT ILLUSTRATIONS
ADDENDUM A
CAPPS-SHELLEY ARTIFACTS AND COMPARISONS WITH OLD WORLD ARTIFACTS
FILES A1-A39

ARTIFACT ILLUSTRATIONS
ADDENDUM B
BELLE MINA CLOVIS SITE (1LI92)
LIMESTONE COUNTY, ALABAMA
FILES B-1-B22