

Oliver and Orchard Thumbnail Scrapers

A Technological and Source-Area Analysis

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This chapter will focus on a technological analysis of two assemblages of thumbnail scrapers; one from the Oliver site, located on a bend of the Sunflower River, about 12 km south of Clarksdale, Mississippi, and the second from the Orchard site, located on the ridge between King and Town Creeks just to the northwest of Tupelo, Mississippi (Figure 4.1). Although these sites are separated by more than 200 km, with occupations that are separated by as much as 200 years, we will demonstrate a remarkable similarity in terms of size, technology of production, and, surprisingly, raw material source areas. We will consider aspects of culture history, function, technology, and agency in exploring these similarities.

The Oliver site was one of the first sites to be professionally excavated in Mississippi, when Peabody (1904) focused his attentions on the Edwards Mound at that site in 1901. Phillips, Ford, and Griffin (1951) returned to the site in 1941 to excavate three strata cuts. The ceramics they recovered indicated Baytown and Mississippian occupations. Brain (1988) considers the site assemblage in his *Tunica Archaeology* volume, basing his assessment on the reanalysis of the Peabody material in Belmont's (1961) undergraduate thesis. He concludes that the ceramics suggest a possible Quapaw affiliation, a position he buttresses by pointing out that the lithic assemblage, primarily the thumbnail scrapers, resembles similar material from Quapaw phase sites in Arkansas and Oneota phase sites farther north. He proposes that what he calls the Oliver lithic complex is a Late Protohistoric-Early Historic Horizon that could relate to the deerskin trade, although he does not believe the site was occupied into the eighteenth century. In fact, a salvage excavation during the early 1990s led by John Connaway recovered a

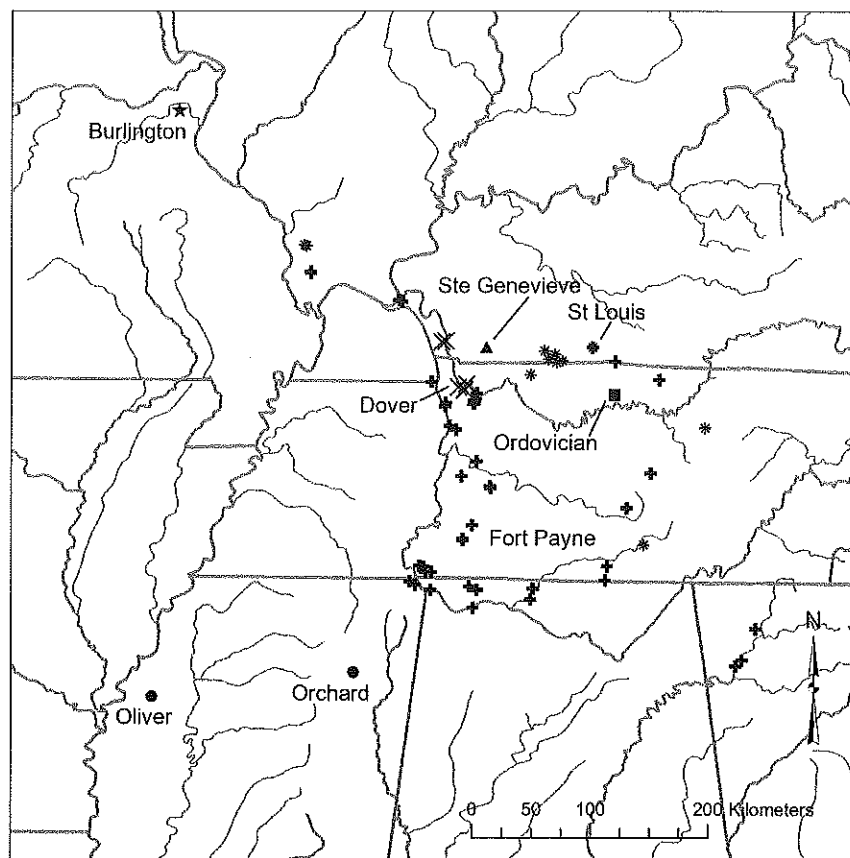


Figure 4.1. Map of the mid-South showing locations for the Oliver and Orchard sites and chert source area samples.

good sample of ceramics from the site, which were reported by Duff (1994) in a master's thesis. These ceramics, along with those recovered by Peabody, suggest a mid-sixteenth-century date for a late occupation at the Oliver site. This date is buttressed by several Clarksdale bells recovered by Peabody. However, the glass trade beads suggest another, later, early seventeenth-century occupation at the site. The 217 scrapers reported on here are all of those collected by Peabody in his 1901 expedition. There are no provenience data recorded, and it must be assumed that they came from general excavation or surface collections. Johnson has visited the site several times, including a couple of weeks at a time during the 1990s excavation, and never found a thumbnail scraper on the surface or in the salvage excavations.

The Orchard site was excavated by David Dye in 1990, and the lithics were the focus of a 1997 article on the Chickasaw (Johnson 1997b). Although the

ceramics have not yet produced the thumbnail scraper. The Incised ceramics. The Chickasaw chronology of the Jennings and Spaulding assemblage to be confirmed and geographic distribution and northern Alabama the deerskin trade. The comparison, although attributes were added.

These two assemblages whether you measure material resources in different. The Oliver site is a sixteenth-century deerskin trade. The before stone tool technology is remarkable about the

THUMBNAILED SCRAPERS

There are several criteria that can be related to production of the most common are (Figure 4.1). This table cross-tabulates the most common attributes of the scrapers are matched with the coinciding with the blade and distal ventral recurve. The core. This recurve allows the blade at an angle that is near vertical, establishing a cutting edge. These two attributes coincide. The recurve is at the flake tip and the dorsal side of the blade. A very few (fewer than 10%) of the side of the tool that the

The third-most common attribute is at plan view with the blade dorsal side up, the tool

ceramics have not yet been analyzed, the same midden pit features that produced the thumbnail scrapers are known to have contained Fatherland Incised ceramics. Those ceramics and the much better understanding of Chickasaw chronology and settlement resulting from a recent restudy of the Jennings and Spaulding collection (Johnson et al. 2008) allow this assemblage to be confidently dated to between 1730 and 1740. The timing and geographic distribution of thumbnail scrapers in eastern Mississippi and northern Alabama make it clear that these artifacts are a response to the deerskin trade. The metric data from the earlier study were used in this comparison, although all of the artifacts were reevaluated when a few new attributes were added to the analysis.

These two assemblages are located in entirely different parts of the state, whether you measure it in terms of physiography or culture history. Raw material resources in western and eastern Mississippi are substantially different. The Oliver site assemblage likely predates the early eighteenth-century deerskin trade. The Orchard site assemblage dates to less than 20 years before stone tool technology is completely replaced by metal tools. What is remarkable about these tools is how similar they are.

THUMBNAIL SCRAPER ATTRIBUTES

There are several critical attributes that correlate with one another and can be related to production technology and intended use (Figure 4.2). Two of the most common are blank orientation and distal ventral recurve (Table 4.1). This table cross-tabulates two of the most characteristic attributes; 88% of the scrapers are made on flake blanks with the proximal end of the flake coinciding with the butt end of the scraper, and 83% of the flakes show a distal ventral recurve. That is, the flake terminates by curving back into the core. This recurve allows the working end of the scraper to be retouched at an angle that is nearly perpendicular to the long axis of the flake, while establishing a cutting edge that is much more acute. It is no wonder that these two attributes co-occur so regularly, the only sure way to establish the recurve is at the flake termination. It follows that the dorsal side of the flake and the dorsal side of the tool coincide. This appears to be true for all but a very few (fewer than five) where there is sufficient retouch on the ventral side of the tool that the flake blank is completely obscured.

The third-most common attribute is a dorsal ridge. That is, when looked at in plan view with the butt at the top and the bitt at the bottom and the dorsal side up, the tools are triangular in shape, and 72% of the scrapers

Table 4.1. Blank or

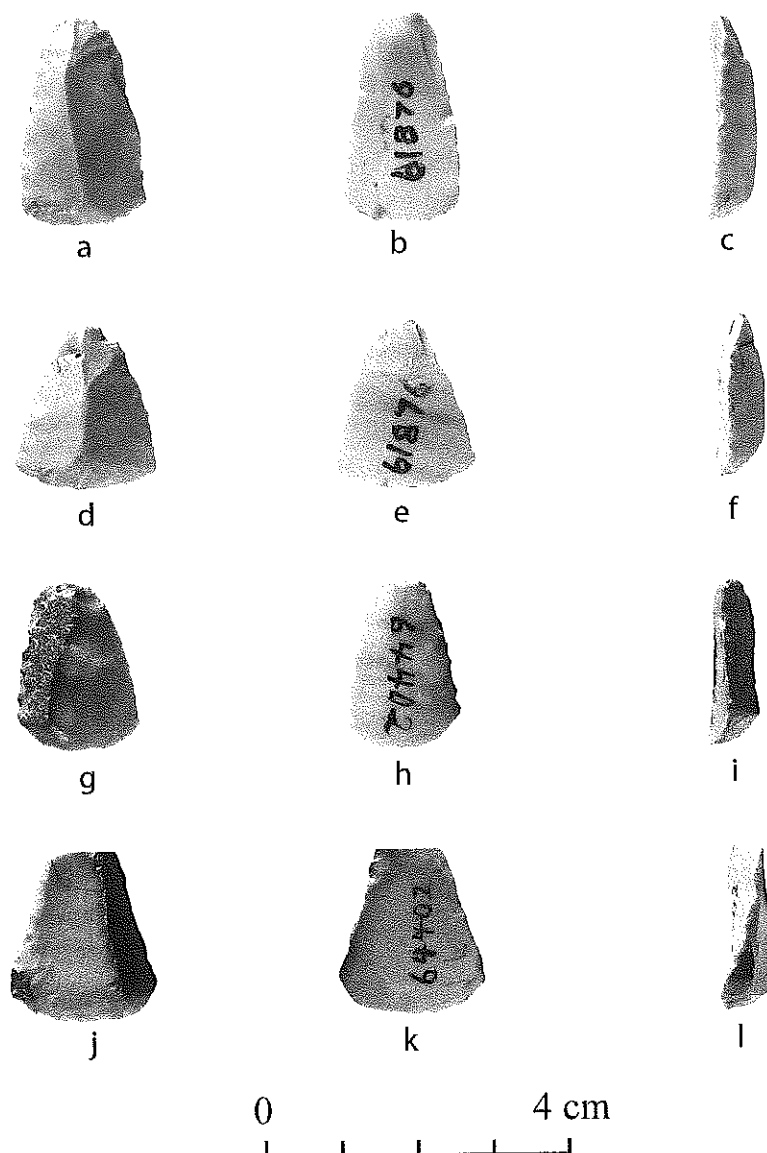


Figure 4.2. Thumbnail scrapers from Oliver: (a-f) tabular grey chert; (g-l) Citronelle gravel; (a, d) dorsal view showing dorsal ridge formed by the intersection of two flake scars; (g, j) dorsal view showing dorsal ridge formed by the intersection of a flake scar and cortex; (b, c, h, k) ventral view showing striking platforms, bulbs of force, and compression rings; (e, f, i, l) lateral view showing distal ventral recurve.

BLANK ORIENTATION
PROXIMAL BLANK
Count
Expected count
Residual
OTHER BLANK TYPE
Count
Expected count
Residual
TOTAL
Count
Expected count
Chi-square = 30.985,
positive loading are u

have a pronounced the tool. This rid the junction of tw ated by retouchin and establish the correspondence since creating a t to control the sh recurve and dors on the appropriat

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Finally, even was created dur

Table 4.1. Blank orientation cross-tabulated by distal ventral recurve

	Distal Ventral Recurve		
	yes	none	Total
BLANK ORIENTATION			
PROXIMAL BLANK			
Count	<u>210</u>	30	240
Expected count	198.7	41.3	
Residual	11.3	-11.3	
OTHER BLANK TYPE			
Count	16	<u>17</u>	33
Expected count	27.3	5.7	
Residual	-11.3	11.3	
TOTAL			
Count	226	47	273
Expected count	226.0	47.0	

Chi-square = 30.985, two-tailed significance = 0.000 (observed values in cells with strong positive loading are underlined).

have a pronounced dorsal ridge that more or less follows the centerline of the tool. This ridge is created in two ways. It either is the arris formed by the junction of two major flake scars on the dorsal side of the flake or is created by retouching the lateral margins to both create the triangular shape and establish the ridge. It seemed like that there would be a fairly strong correspondence between the arris-type ridge and distal ventral recurve, since creating a flake core with this sort of ridge would allow the knapper to control the shape of the flake and its termination. When distal ventral recurve and dorsal ridge type are cross-tabulated, there is a positive loading on the appropriate cells, but the relationship is not significant.

The value of the dorsal arris ridge blank is that it appears to have reduced the amount of lateral retouch needed to produce a scraper. Almost all of the scrapers show some degree of lateral retouch, and most show grinding, presumably to aid in hafting. Lateral retouch was coded only if it clearly altered the shape of flake blank. That is, the retouch was not to blunt the edge but to create the characteristic triangular shape to the scraper. As it turns out, flakes created following the junction of two previous flake removals tend to be small enough at the platform end that they appear not to have required lateral shaping (Table 4.2). At least those chosen for scrapers were.

Finally, even when the flake blank did not have a dorsal arris ridge, one was created during the shaping of the flake blank. In fact, almost exactly

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Table 4.2. Dorsal ridge cross-tabulated by lateral retouch

	Lateral Retouch		Total
	yes	no	
DORSAL RIDGE			
NO RIDGE			
Count	61	18	79
Expected count	60.7	18.3	
Residual	.3	-.3	
ARRIS			
Count	24	<u>44</u>	68
Expected count	52.3	15.7	
Residual	-28.3	28.3	
RETOUCHED			
Count	<u>131</u>	3	134
Expected count	103.0	31.0	
Residual	28.0	-28.0	
TOTAL			
Count	216	65	281
Expected count	216.0	65.0	281.0

Chi-square = 99.002, two-tailed significance = 0.000 (observed values in cells with strong positive loading are underlined).

two-thirds (133/201) of the scrapers with dorsal ridges have ridges that were created by retouch. This might be a consequence of the geometry of the plan view shape and the nature of unifacial retouch when dealing with a relatively thick flake blank. It also might be that thick flakes were selected in order to create a ridge. Although there are relatively few broken tools, all that are were snapped, creating a break that is perpendicular to the long axis of the tool, exactly what would be expected as a result of the kind of force that would be applied to the tool in hide scraping. Ridged scrapers are much less apt to snap than the scrapers without dorsal ridges (Table 4.3).

It appears that the ideal scraper is one with a dorsal ventral recurve and a dorsal ridge. This combination makes up 60% of the assemblage, although the co-occurrence of these attributes is not more common than would be expected by chance alone.

Table 4.3. Do

DORSAL RIDGE
RIDGE MISSING
Count
Expected count
Residual
RIDGE PRESENT
Count
Expected count
Residual
TOTAL
Count
Expected count
Chi-square = 7.1
positive loading

SITE ASSEMBLY

Given the differences in size, shape, and differences between

Although the (6.5%) than Oliver found at both sites tools were both which would have same context as where the tool scraper fragment site was excavated have been recognized

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Table 4.3. Dorsal ridge cross-tabulated by snap fracture

Total	Snap			Total
	Whole	Fragment		
	DORSAL RIDGE			
	RIDGE MISSING			
79	Count	65	<u>14</u>	79
	Expected count	71.1	7.9	
	Residual	-6.1	6.1	
	RIDGE PRESENT			
68	Count	<u>188</u>	14	202
	Expected count	181.9	20.1	
	Residual	6.1	-6.1	
	TOTAL			
134	Count	253	28	281
	Expected count	253.0	28.0	

Chi-square = 7.371, two-tailed significance = 0.007 (observed values in cells with strong positive loading are underlined).

SITE ASSEMBLAGE COMPARISONS

Given the differences in time, space, and available raw material that separate these two assemblages, what is interesting is how similar they are in size, shape, and production technology. The following tables explore what differences there are.

Although there are significantly fewer scraper fragments from Oliver (6.5%) than Orchard (21.8%), both proximal and distal fragments were found at both sites. This is exactly what you would expect from a site where tools were both used and maintained. The distal fragments of the scrapers, which would have been discarded where they were used, are found in the same context as the proximal portions, which would have been discarded where the tool was rehafted. The fact that there are proportionally fewer scraper fragments at Oliver might be the result of the time at which the site was excavated. Flakes were not saved. Some broken scrapers might not have been recognized as tools.

The metric expectations of raw material type are met. That is, the Orchard scrapers are made exclusively from a tabular chert, and the exhausted cores from that assemblage are generally larger than the Citronelle gravels from which more than half of the Oliver scrapers were made. Mean length, width, and thickness are smaller for the Oliver scrapers (Oliver, length 22.8

cm, width 17.9 cm, thickness 5.3 cm; Orchard, length 24.8 cm, width 18.0 cm, thickness 5.4 cm).

The picture is even more interesting when the scrapers are broken down by chert type (Table 4.4). As indicated, all of the Orchard scrapers are made on a tabular chert that is known in the literature as Chickasaw grey. The primary chert used by the ancestors of the Chickasaw in the Tupelo region is Tuscaloosa gravel, a yellow chert with brown cortex that is found on the terraces of the Tombigbee River and is virtually indistinguishable from the Citronelle gravel that is found on the gravel bars of the Sunflower River. Starting at about 1700, the Chickasaw began to shift to the grey tabular chert that makes up most of the Chickasaw lithic assemblages after about 1730 (Johnson et al. 2008). Since the nearest source of tabular chert to the early eighteenth-century Chickasaw heartland is the Ft. Payne formation of extreme northeastern Mississippi, northern Alabama, and most of south-central Tennessee, it has always been assumed that the Chickasaw grey chert is a variety from the Ft. Payne formation. It has also been proposed that the need to produce large numbers of thumbnail scrapers was the impetus for this shift in raw material, since the appropriate flake blanks would be easier to derive from the larger cores available in a tabular chert (Johnson 1997b).

It was therefore surprising to see the Oliver collection firsthand and find out that thumbnail scrapers could be made from small gravels—but not without some accommodation, as will be demonstrated. About a third of the gravel-based scrapers from the Oliver site were made from heat-treated chert. Citronelle characteristically turns dark red when heated.

Another surprise in the Oliver collection was a group of scrapers made from a chert that is macroscopically identical to the Chickasaw grey chert. It shows the same range of light grey coloration with a similar glossy fracture. Moreover, there is no evidence for a gravel cortex on these tools. Finally, and most persuasive, is the fact that several of the scrapers show fracture planes with a rustlike oxidation identical to those found on the cores and scrapers from the Orchard site and other Chickasaw site assemblages.

The final chert type from the Oliver collection is likewise a surprise. Recent excavations at the South Thomas Street site, a small site located just to the south of Tupelo, recovered a Chickasaw assemblage dating to around 1700 on the basis of the ceramics and trade beads, as well as a Woodland component (Johnson and Henry 2015). Since the Chickasaw at this period of time were using both Tuscaloosa and Chickasaw grey chert, it was impossible to distinguish Chickasaw from Woodland debitage. However,

Table 4.4. Scrap

Chert Type
CHICKASAW GRAY
N
Mean
Std. deviation
CV
Minimum
Maximum
GRAVEL
N
Mean
Std. deviation
CV
Minimum
Maximum
ALTERED GRAVEL
N
Mean
Std. deviation
CV
Minimum
Maximum
DARK GREY
N
Mean
Std. deviation
CV
Minimum
Maximum
OLIVER GREY
N
Mean
Std. deviation
CV
Minimum
Maximum
TOTAL
N
Mean
CV
Std. deviation
Minimum
Maximum

Table 4.4. Scraper measurements broken down by chert type

Chert Type	Length	Width	Thickness
CHICKASAW GREY			
<i>N</i>	48	63	62
Mean	24.77	18.11	5.40
Std. deviation	8.813	2.294	1.465
CV	35.578	12.665	27.113
Minimum	15	13	3
Maximum	73	23	9
GRAVEL			
<i>N</i>	109	114	114
Mean	23.48	18.22	5.34
Std. deviation	5.736	2.499	1.718
CV	24.432	13.715	32.166
Minimum	13	13	3
Maximum	40	25	16
ALTERED GRAVEL			
<i>N</i>	45	51	52
Mean	22.47	17.59	5.27
Std. deviation	4.310	2.264	.952
CV	19.182	12.874	18.069
Minimum	17	14	3
Maximum	39	28	8
DARK GREY			
<i>N</i>	18	18	18
Mean	21.50	18.06	5.56
Std. deviation	4.579	2.485	1.423
CV	21.299	13.761	25.622
Minimum	16	12	3
Maximum	35	22	8
OLIVER GREY			
<i>N</i>	31	33	33
Mean	21.32	17.33	5.03
Std. deviation	4.118	2.618	1.237
CV	19.314	15.104	24.592
Minimum	15	13	3
Maximum	29	26	7
TOTAL			
<i>N</i>	252	280	280
Mean	23.15	17.95	5.33
CV	9.185	6.409	1.902
Std. deviation	6.056	2.444	1.468
Minimum	13	12	3
Maximum	73	28	16

Table 4.5. Comparison of measurement for grey chert scrapers from Oliver and Orchard

Chert Type	N	Mean	Std. Deviation	Std. Error Mean
LENGTH				
Chickasaw grey	48	24.77	8.813	1.272
Oliver grey	31	21.32	4.118	.740
WIDTH				
Chickasaw grey	63	18.11	2.294	.289
Oliver grey	33	17.33	2.618	.456
THICKNESS				
Chickasaw grey	62	5.40	1.465	.186
Oliver grey	33	5.03	1.237	.215

there were a few thumbnail scrapers made from Chickasaw grey chert as well as one thumbnail scraper made from an unidentified dark grey chert. The spatial distribution of the dark grey chert debitage coincided with that of the Chickasaw grey chert. Moreover, there was also a Native-made gun-flint made from the dark grey chert, making it clear that the Chickasaw were using another chert source at the turn of the century. Once again, a macroscopically identical chert was found in the Oliver assemblage. The only thing more we can say about it is that a few pieces show what appears to be gravel cortex. It does not show up on any of the Woodland or Mississippian assemblage from the area around Oliver. It appears not to have been derived from the Citronelle formation.

Regardless of where the "Oliver grey" and dark grey cherts were derived, the scrapers made from them, like those from the gravel, are smaller in all dimensions than those from the Orchard site, with correspondingly smaller coefficients of variation (Table 4.5). In fact, the Oliver grey scrapers are the smallest of the lot and a t-test (Table 4.6) shows this difference to be significant, at least in terms of length.

If the Oliver grey chert is coming from a source that is more remote than the Chickasaw source, the shorter length might be the result of smaller, more thoroughly used cores. It might also be the result of the resharpening of a tool made from a scarce resource. One measure of that might be distal ventral recurve. If a scraper were rejuvenated repeatedly, the cutting edge might advance beyond the recurve, removing it. There should, therefore, be positive loadings on the cell where the absence of a distal ventral recurve and Oliver grey coincide when Chickasaw grey and Oliver grey are

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Table 4.6. T-test comparing measurements for grey chert scrapers from Oliver and Orchard

	T-test for Equality of Means			
	<i>df</i>	Sig. (2-tailed)	Mean difference	Std. error difference
LENGTH				
2.036	77	.045	3.448	1.693
WIDTH				
1.502	94	.136	.778	.518
THICKNESS				
1.244	93	.216	.373	.300

cross-tabulated by the presence and absence of recurve. The loading is, in fact, slightly negative.

Twenty of the Oliver scrapers made from Citronelle gravel show a technological adaptation that might have been a response to the relatively small size of these gravels. That is, one large flake was removed from the gravel, and the striking platform for the next flake removal was situated so that the flake would follow the arris created by the previous flake removal and the cortex. The dorsal side of the resulting flake would be half flake scar and half cortex. This dorsal ridge type shows up both in unaltered and thermally altered gravels but is much more common in the altered gravel. That is, while 52 of 166 Citronelle scrapers show thermal alteration, 14 of the 20 scrapers with the flake scar/cortex arris were altered. Alteration might, therefore, be another accommodation to the needs to precisely control the fracture trajectory for the flake blanks. Although thermal alteration gives up something in terms of the durability of the tools, it does make the chert easier to knap.

REFLECTANCE SPECTROSCOPY

Two spectrometers are used in the current study, Visible Near-Infrared (VNIR) and Fourier Transform Infrared (FTIR), measuring radiation in the visible, near, and middle infrared regions respectively. Reflectance spectroscopy encompasses a wide range of techniques that gather electromagnetic data that is reflected or emitted from matter. The reflected electromagnetic radiation contains information related to atomic and chemical functional groups within a compound.

The spectrum of chert in the visible, near-infrared and middle-infrared regions is largely redundant from sample to sample, as subtle spectral features are overshadowed by larger stretch and bend fundamental vibration features related to quartz and intergranular water. This is not surprising, as chert is composed of between 90 and 99 wt % quartz. However, particular impurities within chert, possibly a characteristic of unique deposits, alter both the intensity and wavelength location of the spectral interactions (spectral features). Additionally, slight slope changes within larger spectral features, such as in quartz reststrahlen bands, are indicative of subtle micro-mineralogical characteristics. The diagnostic micro-mineral groups causing particular spectral features may be directly related to the paleodepositional environment of the parent geologic formation and the diagenetic processes influencing chert formation. Other researchers, using geochemical data, have speculated that chert diagnosis imparts a variable range of diagnostic characteristics (Foradas 1994, 2003; Malyk-Selivanova 1998) but the lengthy and costly analysis of large sample sizes has previously restricted efforts to tease out the geologic and geographic relationships on a large scale. The sum differences in spectral variation potentially then can be used to differentiate one chert type from another and one deposit from another. Spectra recorded on chert artifacts of unknown provenance can be compared within a spectral database of known samples to provide source determinations.

Reflectance spectroscopy has a relatively long history of use in archaeological material-analysis studies. Research by Beck et al. in the 1960s used reflectance spectra on amber artifacts found throughout Europe to compositionally link them to Baltic sources (Beck 1986; Beck et al. 1964; Beck et al. 1965). Currently, reflectance spectroscopy is used upon various archaeological materials, including, ceramics, nephrite, soil, soapstone, paint, flint clay, masonry, residues, and chert. Recent research has demonstrated the potential of reflectance spectroscopy in chert-source studies (Parish 2011, 2013; Parish et al. 2013).

Although the geological base sample is continually growing, it currently consists of 5,415 samples from 23 geological formations. When the reflectance spectroscopy data from these source samples are classified using discriminant function analysis, there is conspicuous separation of the source clusters in three-dimensional function space. More to the point, there is a near 100% correct classification of the samples to the geological formation from which they came. This lends confidence to the classification of artifact samples using this approach.

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Table 4.7. Source area allocation of a sample of tabular chert scrapers from Oliver and Orchard

Source Area	Oliver		Orchard	
	<i>n</i>	prop.	<i>n</i>	prop.
Burlington	43	0.48	24	0.71
St. Louis	41	0.46	1	0.03
Ft. Payne	5	0.06	0	0.00
Ste. Genevieve	0	0.00	1	0.03
Dover	0	0.00	4	0.12
Ordovician	0	0.00	4	0.12
Total	89		34	

A sample of 89 grey and dark grey chert scrapers from Oliver and one of 34 grey chert scrapers from Orchard were analyzed. Although there is considerable variation in the distribution of these chert samples in discriminant space, by its nature, discriminant function analysis will assign each artifact to its most similar source group. The results are remarkable (Table 4.7, Figure 4.1). While it is no surprise that the artifact samples were assigned to midsouthern and midwestern geological formations located to the north of these sites, they are obviously tabular cherts, and the nearest tabular cherts are all located in these regions, the specific allocations are interesting. In particular, although the source area sample for Ft. Payne is substantial, and the Ft. Payne formation is extensive, was heavily used prehistorically, and is found in southern Tennessee, northern Alabama, and northeastern Mississippi not far from the Chickasaw sites, almost all of the Orchard site artifacts were allocated to Burlington sources. The Chickasaw would have had to cross the Ft. Payne and St. Louis formations to get to the Burlington outcrops (Figure 4.1).

Burlington is also the majority source assignment for the Oliver site artifacts. This is a bit more reasonable, since the Oliver site is located only a few miles from the Mississippi River, and some of the major prehistoric quarries of Burlington chert are located near the river southwest of St. Louis. There is more apparent variation in the Oliver source area assignment, including five artifacts that were assigned to the Ft. Payne formation.

DISCUSSION

In the first place, the remarkable similarity between scrapers from Oliver and Orchard in terms of size, shape, and technology of production needs to be considered. Actually, this similarity extends beyond these sites to include a large number of colonial sites along the western edge of the Southeast. Nearly identical scrapers are found in the Midwest on Late Prehistoric Oneota sites (Boszhardt and McCarthy 1999), which are also often made from Burlington chert. Although Oneota sites extend, just barely, into northern Arkansas (Schroeder 2004), there are none located as far south as the Oliver Site. However, the same type of uniface scrapers is found in northeastern Arkansas at what Morse (1986) interpreted as Early Contact Period hunting camps and extend farther south at Kent phase sites in the Middle Mississippi Valley portion of Arkansas (House 1993). They have also been recovered at the Wallace Bottoms site near the mouth of the Red River in Arkansas, which is the probable location of the Quapaw village of Osotouy (House 2002). This ties in nicely with Brain's (1988) interpretation of the scrapers from Oliver as evidence of Quapaw intrusion into the Yazoo Basin. And it follows the same sort of argument Brain uses in tracing the migration of the Tunica in terms of ceramic traits.

However, the factors underlying the technological similarities of thumbnail scrapers and the similarities in ceramic decoration and form that Brain documented are fundamentally different. This point is emphasized by Morse's (1986:91) observation that the distinction between Early Contact Period scrapers and Early Archaic Dalton scrapers in northeastern Arkansas is dependent on whether or not they are associated with Nodena points. Similarly, the Oliver and Orchard sites' thumbnail scrapers are nearly identical in size and technological attributes to those from extreme eastern Tennessee as reported by Shreve and his coauthors (this volume). It is the constellation of technological traits documented above that makes these tools so distinctive, and these traits can be explained in terms of tool production, function, and use. That is, the dorsal ridge both allows the production of a specialized flake blank and strengthens the tool. It appears that the desirable attributes of this flake blank are a teardrop shape in plan view, which makes it easy to haft these tools, and a distal recurve on the ventral sides, which allows a sharp but robust working edge to be created and maintained by unifacial retouch. There are certainly other ways to make a scraper, but the occurrence of this specific means of production in areas separated by

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thousands of years and hundreds of kilometers suggests that this was an attractive solution to the functional and technological demands of scraper production, a solution that was reached independently many times in the past, whenever the need for scrapers could not be easily filled by ad hoc or repurposed tools.

So, why are there so many scrapers in the assemblages from the Oliver and Orchard sites? The colonial southeastern scrapers have been related to the large number of skins to be processed to meet the demands of the deerskin trade (Johnson 1997b). The Oneota scrapers are sometimes related to the spread of bison into the Midwest on a Late Prehistoric time line (Harvey 1979). It is possible that bison hides were being processed at Oliver in the early seventeenth century. Although there is no archaeological evidence for bison in western Mississippi, they have been documented in the Black Prairie of eastern Mississippi at about this time (Johnson et al. 1994), and bison hides were a regular component of French trade from the Lower Valley up until about 1700 (House 2002). Brain (1988:279) may have been correct when he proposed that the thumbnail scrapers from Oliver were the result of Quapaw crossing the river into the Yazoo Basin. But he is also correct in his hesitation in correlating Deheilha Siouan speakers with a specific toolkit. If the Quapaw brought scrapers into the Yazoo Basin, it was not an expression of ethnic affiliation; it was because they had large numbers of hides to process.

Although bison are also present in colonial period Chickasaw sites dating to the early eighteenth century, they are relatively rare compared to the evidence for extensive exploitation of deer related to the deerskin trade. These scrapers, made on tabular grey chert, are one of the diagnostic artifacts of Chickasaw sites dating from about 1700 to 1740 (Johnson et al. 2008). Given the discussion of the demands of the technology of production presented above, importing blocks of tabular chert is reasonable. Bypassing the extensive outcrops of high-quality Ft. Payne formation chert on the way to distant Burlington outcrops is not reasonable from a strictly economic or technological perspective. However, as Charlie Cobb suggested in the discussion following the presentation of this paper in Oxford, raw material choices are not always based on economics. The distribution of blue grey Ft. Payne Benton bifaces well beyond the source area during the Middle Archaic is one example (Johnson and Brookes 1989). Richard Gould (Gould and Sagers 1985) and Cobb (2000) himself have documented other examples when raw material selection goes beyond strictly

economic considerations. During the early eighteenth century, the Chickasaw raided deep into Shawnee territory in the Midwest. They may have used Burlington chert just because they could.

One final thought, Chickasaw slave raiding during the late seventeenth century effectively emptied the Yazoo Basin, forcing Indians living there to abandon their villages and flee. La Salle (Stubbs 1982) encountered a party of Chickasaw at the Memphis bluffs in 1682. Beginning with Belmont (1961), several people have suggested two and likely three components at Oliver. The Peabody catalogue records only a general provenience for the scrapers from Oliver, suggesting that they were surface finds. It may be that the scrapers from Oliver are the residue of an early eighteenth-century Chickasaw hunting camp where the Chickasaw were exploiting the expanding deer population in the largely abandoned Yazoo Basin. There is clear evidence that they had depleted the deer herds of northeast Mississippi (Johnson et al. 2008). Four of the projectile points from Oliver that Brain illustrated (1988: Figure 199g-j) are quite similar to the Dallas points that mark the beginning of the eighteenth century on Chickasaw sites (Johnson et al. 2008). Granted, there are no Chickasaw ceramics from Oliver, but if it was a hunting camp, would there be?

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Tracking of Soto Ass

If such a thing existed, Hernando de Soto and it was raised and suggestive of an expedition Soto in 1540. Puttually involving a that account for evaluating archaeological Native world of the

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