related tasks. The predicted occurrence of Mississippian base camps along the immediate margin of the floodplain, by the main river channel, helps to explain why no extensive Mississippian components were located on any of the four Beltway sites, which are outside of this microenvironment.

In another study, Ferguson and Widmer (1976:109-111) documented Fall Line site distributions on the west bank of the upper Savannah River. Prehistoric sites within the Savannah River floodplain tended to be located adjacent to swamps, and evidence for utilization of the area tended to decrease in a linear fashion from the floodplain to the sandhills. The distributional patterning noted along the Savannah differs from that observed along the upper Congaree in that prehistoric use of the Sandhills was reported to be "almost non-existent" (Ferguson and Widmer 1976:111). The artifact assemblage from 38LX5, a rich upland site, suggested a markedly different pattern, although it should be emphasized that only minimal survey has been conducted in the Sandhills along either river drainage. It should be noted that a recent survey (Cable et al. 1978) on the east side of the Savannah documented a marked differential in the prehistoric use of the two banks. Prehistoric site incidence and intrasite artifact density were both found to be low on the east side of the river while the western margin was found to be rich in sites. The narrow floodplain and minor swamp formation along the eastern margin of the river were advanced as possible factors constraining site occurrence in this area (Cable et al. 1978:12-13). The upper Congaree River Valley, like the upper Savannah, is also characterized by considerable variation in floodplain width and associated swamp and tributary occurrence, and the apparent intensity of prehistoric settlement in the Congaree Creek area may be due to the highly variegated floodplain environment in the area.

In addition to examining prehistoric settlement distributions, the Southeastern Columbia Beltway Project also had as a research goal the testing of methods for resolving site function. Two principal, complementary models currently help to document prehistoric site function in the Fall Line and Piedmont areas of South Carolina, one developed by John House and others (House and Ballenger 1976, House and Wogaman 1978) and the other, an offshoot of House's model, by Leland Ferguson (1976). Both models detail test implications (archeological correlates) of specific site functional types. These correlates were used to help document the nature of site use over individual components within the four Beltway assemblages. Project research with regard to these models focused on two areas: (1) the usefulness of the proposed

test implications or correlates of site function and (2) the applicability or appropriateness of the proposed site functional types.

The test implications proposed by both House and Wogaman (1978:10-11) and Ferguson (1976:8-9) for the resolution of specific site functional types were generally found to be useful. Key variables used to separate intensive habitation loci from extraction stations included (1) the presence of fire-cracked rock, (2) a wide range of tools and debitage, (3) a high density of artifacts, (4) the presence of pottery and steatite, and, (5) a favorable location (i.e. level, sheltered, near water, etc.). Due to the low incidence of features on the Beltway sites, additional test implications of these models, documenting structures and associated features, could not be employed.

When taken together, the test implications advanced by House and Ferguson were found to be useful in helping infer site or component function. The use of individual test implications to resolve site function, however, was found to yield misleading results on occasion. In particular, fire-cracked rock was found to be associated with almost every recognizable component, including some that appeared, on other grounds, to be probable extraction loci. The production of fire-cracked rock is currently poorly understood, but it appears that at least in the Congaree Valley Fall Line area it is found on a wide range of site types. Another test implication producing difficulty was the presence of pottery, modest numbers of sherds were recovered over several components, with no other evidence for possible site use. The pottery assemblage in these cases appeared to point to (unresolved) extraction tasks. The role of pottery in prehistoric site use, it is suggested, is in need of considerable study. Finally, extraction loci were found in both favored and less favored locations, indicating that this particular attribute (favored location) may probably be of value only for the recognition of extraction stations in unfavorable loci. The presence of a prehistoric component in a favored location may reflect either intensive habitation or extractive activity. This particular test implication must, therefore, be used in conjunction with others to successfully resolve site functional postures.

It should be emphasized that the difficulties encountered in the use of the test implications were minor. Problems arose if only one or a few attributes were available to identify site function. What the application of these correlates to the Southeastern Columbia Beltway data set demonstrates is that the assumptions behind models of any

kind must be carefully examined prior to their use. Through application, however, refinement becomes possible; the Beltway data, in particular, suggest that the relationship of both fire-cracked rock and pottery to site function needs additional examination.

Site functional types proposed by Ferguson (1976) and House and Wogaman (1978) were also found to be of value in the examination of the four Beltway assemblages. Specific site types proposed in these models included intensive habitation sites, less intensive habitation sites, biotic resource extraction stations (with deer and nut subtypes) and lithic resource extraction stations. The range of site types and their associated test implications was found to adequately encompass most of the assemblage variability noted over the four project sites. Most of the project components appeared to reflect either intensive habitation loci where many activities were taking place, or biotic resource extraction stations characterized by limited activity directed toward one or a few tasks. Problems in the assignment of site type arose where the function of a component assemblage was obscure, as in the cases of the Woodland pottery scatters noted on the floodplain sites. In another example, the Early Archaic component at 38LX64 was characterized by a fairly wide range of tool forms (a correlate of an intensive habitation site), but the functions and implications of this assemblage remain obscure. The Ferguson and House models *per se*, therefore, were found to be highly useful, but weaknesses in their application exist, and derive from difficulties inherent in recognizing and interpreting specific correlates used to document site functional postures. Problems in the interpretation of specific correlates of site function, such as fire-cracked rock or pottery, were previously examined. The recognition and documentation of specific correlates, such as "stone plant processing tools" or "tools oriented around cutting functions" is another difficult problem area. The application of these models to the Beltway data set, therefore, serves to highlight the critical role functional artifact analysis plays in archeological inference.

LITHIC RESOURCE PROCUREMENT AND USE IN A FALL LINE LOCALITY

The Southeastern Columbia Beltway Project data assemblage provided a number of valuable inferences about lithic resource procurement and use in the upper Congaree River area. Following research initiated by Michie (1979) and others (Wogaman, House, and Goodyear 1976; Ferguson and Widmer 1976), the utilization of specific raw materials was examined over time employing stratigraphic information and

typologically diagnostic artifacts from each of the four sites. Examination of hafted biface forms from the project sites, for example, documented clear shifts in the selection and use of specific raw materials over time, at least for the manufacture of bifaces. Early Archaic bifaces, found only at 38LX64, were composed of either chert or rhyolite. Moderate use of chert in the Early Archaic was also suggested by the high incidence of well made unifacial tools of this material found at the same site. Middle Archaic Morrow Mountain forms, found on two project sites (38LX5 and 38LX64), in contrast, were composed almost exclusively of quartz, with only minor use of other raw materials indicated. Late Archaic Savannah River Stemmed bifaces, which were found on all four project sites, were for the most part composed of slate or rhyolite, with chert and quartz less frequently selected. Woodland period bifaces, found only at 38LX5, were found in about equal quantities on chert, rhyolite, and quartz. Over all periods, quartzite was only rarely selected, a pattern which agrees with its low overall incidence in all four tool and debitage assemblages.

Only limited stratigraphic and/or associational information useful for documenting raw material selection practices over time was available from the four project sites. At 38LX5, the vast majority of the quartz debitage assemblage was found in the subplowzone deposits (Table 2), supporting the evidence from the Morrow Mountain biface assemblage suggesting a peak popularity for the material during the Middle Archaic. None of the other raw materials recovered at 38LX5 exhibited a disproportionate occurrence in either the plowzone or subplowzone. At 38LX106, a single component Late Archaic site, chert was the predominant material recovered, with minor quantities of quartzite and quartz present. Site 38LX82, also a probable single component Late Archaic site, yielded a debitage assemblage composed almost exclusively of quartz, with minor quantities of chert and quartzite. Two rhyolite tools were also recovered from the site, indicating at least minor use of this material. The 38LX64 deposits were too shallow and mixed to permit confident temporal assignment over the debitage assemblage, although quartz and chert were the principal debitage categories present in the predominantly Archaic assemblage.

The data from the four project sites document general trends in the use of lithic raw materials over time, although it is evident from the Late Archaic components that some selection variation due to site location or function is also probable. Generally, the project data set indicates that chert was popular during the Early Archaic, quartz during the Middle Archaic, rhyolite and slate during the

Late Archaic, and a variety of materials, including chert, rhyolite, and quartz, during the Woodland/Mississippian era. At any given time it is probable that most, if not all, of the five raw material categories recognized on the Beltway sites (quartz, chert, slate, rhyolite, and quartzite) were in use, although it is evident that changes in the popularity of each did occur.

Changes in raw material selection practices indicated by data from the four project sites were amenable to additional testing with other assemblages from the upper Congaree River Valley. At the Edenwood site, Michie (1979: 30) recovered 7 Early Archaic Palmer and Kirk-like bifaces, all chert. At Thom's Creek, Trinkley (1974b:15) documented raw materials over 45 typologically identifiable bifaces, and his data generally support the patterning noted at Edenwood and over the four project sites. Of particular interest however, the late prehistoric Caraway and Clements types at Thom's Creek were found to be predominantly of quartz (9 of 11, or 82 percent). This might suggest an increase in the use of quartz during the later Woodland and Mississippian periods; the Beltway project data, from 38LX5 (Table 4), provide some support for this, although the sample size is low.

An extensive collection of bifaces from the Manning site (38LX50), provides additional documentation of prehistoric raw material selection practices in the upper Congaree River/Fall Line area (Table 18). The Manning assemblage was collected from the surface of the site over a number of years by Mr. Tommy Charles of Columbia, South Carolina, a member of the Archeological Society of South Carolina. Under the direction of Leland Ferguson and David G. Anderson, Charles' collection was sorted by type and raw material as part of an anthropology class project (Bonturi n.d.). Of 1930 bifaces and fragments, 950 were identifiable to specific type or probable Woodland stage.

Throughout the Archaic, the majority of the Manning bifaces were made of quartz, with a peak in the popularity of the material during the Middle Archaic. During the Early Archaic, chert and slate (which includes both slate and rhyolite as used in this report) were distinct minority items, accounting for roughly 34 percent of the total Palmer and Kirk bifaces in the collection. During the Late Archaic, slate accounts for a moderate percentage of the assemblage, and an almost linear increase in the popularity of the material, over time, can be seen in its occurrence on Morrow Mountain, Guilford, and Savannah River Stemmed forms (Table 18). During the Woodland, quartz, slate, and chert were all used in roughly equal proportions, with some

See Taylor and Smith 1978:236

TABLE 18

TYPOLOGICALLY IDENTIFIABLE HAFTED BIFACES, BY RAW MATERIAL, THE MANNING SITE (38LX50): THE TOMMY CHARLES COLLECTION

Biface Types		Quartz	Chert	Slate	Quartzite	Total
Palmer and Kirk Forms		139 (64.1%)	39 (18.0%)	34 (15.7%)	5 (2.3%)	217 (100.0%
Morrow Mountain Type I		155 (88.6%)	4 (2.3%)	14 (8.0%)	2 (1.1%)	175 (100.0%
Morrow Mountain Type II		94 (75.2%)	11 (8.8%)	18 (14.4%)	2 (1.6%)	125 (100.0%
Guilford		7 (53.8%)	1 (7.7%)	5 (38.5%)	0 (0.0%)	13 (100.0%
Savannah River Stemmed		154 (60.9%)	12 (4.7%)	87 (34.4%)	0 (0.0%)	253 (100.0%
Woodland (Total)		56 (33.6%)	44 (26.3%)	65 (38.9%)	2 (1.2%)	167 (100.0%
Woodland (subtotals)	Wade-Hernando	0 (0.0%)	4 (66.6%)	2 (33.4%)	0 (0.0%)	6 (100.0%
	Eared Yadkin	3 (21.4%)	3 (21.4%)	8 (57.2%)	0 (0.0%)	14 (100.0%
	Triangular	26 (76.5%)	6 (17.6%)	2 (5.9%)	0 (0.0%)	34 (100.0%
	Stemmed Triangular	22 (20.7%)	30 (28.3%)	52 (49.1%)	2 (1.9%)	106 (100.0%
	Small Lanceolates	5 (71.4%)	1 (14.3%)	1 (14.3%)	0 (0.0%)	7 (100.0%
TOTALS		605 (63.7%)	111 (11.7%)	223 (23.5%)	11 (1.1%)	950 (100.0%

evidence for an increase in the use of quartz in the Mississippian as indicated by the triangular forms.

The pattern of raw material selection during the Middle Archaic and Woodland documented in the Manning site assemblage is in close agreement with the data from the Beltway sites. The occurrence of quartz on a majority of the Early and Late Archaic bifaces at Manning was different from the pattern noted on the Beltway sites, where chert was the principal material used during the Early Archaic, and rhyolite and slate during the Late Archaic. Within the Manning assemblage, however, the principal minority raw materials during each period, chert and rhyolite in the Early Archaic and slate in the Late Archaic, conform to the trend noted within the Beltway assemblages.

The analysis indicates an increased use of extralocal lithic raw materials in the Fall Line area during the Early and Late Archaic, and during the Woodland (assuming quartz is the only raw material readily available in the immediate Fall Line area, an assumption that remains to be tested). Examining the location of the sources of raw materials in use during each period suggests the directionality, or basic geographic orientation, of the procurement networks, a suggested topic for local research (Wogaman, House and Goodyear 1976:38). Following this approach, Early Archaic lithic resource use in the upper Congaree River Valley employed Piedmont, local (Fall Line area), and coastal plain resources; Middle Archaic populations favored local resources almost exclusively, the Late Archaic used local and Piedmont resources, and the Woodland exploited Piedmont, local, and coastal plain materials. The increased occurrence of extralocal raw materials during the Early and Late Archaic, and the use of local materials during the Middle Archaic, was a pattern also noted at Cal Smoak, a site along the central Edisto River (Anderson, Lee, and Parler 1979:62-63, 91-93). At that site, the observed raw material patterning was inferred to be related to a combination of factors, including group territoriality, mobility, and procurement network efficiency and indirectly, possibly to spouse exchange.

A number of possible explanations may be raised to help understand the observed raw material utilization patterns, and these should be the subject of further analysis and testing. The occurrence of both local and nonlocal lithic raw materials on Fall Line sites during the Early Archaic, for example, may reflect the procurement and use patterns of relatively small groups involved in regular or at least occasional movement between the coastal plain and the Piedmont. Alternatively, the occurrence of extralocal raw materials might reflect indirect procurement (exchange), possibly tied

in with mating regulations (i.e. band exogamy). The switch to local raw materials during the Middle Archaic, in contrast, may reflect a decrease in group mobility, possibly as local populations increased and group territories became increasingly constrained (cf. Ford 1974, Cohen 1977).

Late Archaic Fall Line lithic raw material utilization emphasizing both local and Piedmont resources, may reflect a reexpansion in the size of group territories (and movement within them), possibly due to the introduction of more complex (tribal?) forms of social organization. The Late Archaic across the eastern United States is also a time of extensive long distance trade (Morse 1967, Winters 1968), which might have been manifested locally through lithic resource exchange. The directionality evident in local Late Archaic resource use - the predominance of local and Piedmont raw materials - suggests that contact with the lower coastal plain (where the better chert sources are found) may have been minor. This possibility deserves additional investigation, since it may help document Late Archaic settlement throughout the region. Characteristic Late Archaic Thom's Creek and Stallings ceramics, for example, were found to be infrequent on the four Beltway sites, and generally appear to be rare in the Fall Line area (cf. Trinkley 1974b:22). These same wares are much more common throughout the lower and central coastal plain (Anderson 1975b, Trinkley 1976a), and the regional ceramic distribution, when coupled with the Fall Line lithic data may (possibly) point to the existence of independent sociopolitical entities in the two areas.

Woodland period lithic raw material utilization in the project area appeared directed toward both local and extralocal resources, with Piedmont, Fall Line, and coastal plain materials represented in roughly equal proportions in local biface assemblages. This may reflect high group mobility, or trade linked with exogamous spouse procurements. The Woodland pattern may reflect a continuation of trade networks begun during the Late Archaic or earlier. Given ever increasing population, contact with groups in both the Piedmont and the coastal plain, as evidenced by the occurrence of raw materials from these zones, may have been necessary to avoid warfare or to maintain allies. Trade would be one method of reinforcing positive intergroup relationships (cf. Sahlins 1958). Alternatively, given the probable food procurement efficiency of the relatively complex Woodland and Mississippian groups, it is likely that sufficient surpluses would occur to permit small groups to engage in the direct procurement of lithic resources, assuming this was politically feasible.

Lithic raw material utilization over time in the upper Congaree Fall Line area was undoubtedly related in part to the development and maintenance of procurement systems like those and for the reasons outlined above. The artifact analysis during the Beltway project also documented functionally related raw material usage, however, that appears to have played at least a minor role in explaining local procurement patterns. At both 38LX5 and 38LX64, the analyses of the retouched flake assemblage indicated that chert was selected when acute functional edges were desired, while quartz was selected for steeper angled tools (Tables 6, 13). This patterning was assumed to be related to the minerological qualities of each raw material: chert is more isotropic and (generally) flakes more easily than quartz, permitting the formation of sharper cutting edges which are also easier to maintain.

A final research question examined employing the project lithic data set concerned the possibility of differentiating habitation sites from extraction stations by the relative occurrence of extralocal (exotic) as opposed to local lithic raw materials (Wogaman, House and Goodyear 1976: 39). Following observations by Gould (1974) of Western Desert Australian aborigines, it was hypothesized that the manufacture of tools of extralocal raw materials would commonly occur only at base camps. Tools of locally available raw materials, in contrast, would be made on all site types on an ad hoc basis. The data from the four Beltway sites, however, indicate that the hypothesis has only limited use in the general Fall Line area. Examining the debitage assemblages from the four sites (Table 19), it is evident that a local raw material, quartz, is the predominant raw material on the two sites assumed to reflect habitation loci, 38LX64 and 38LX82.

Middle Archaic tool manufacture in the upper Congaree area appears almost invariably to have employed local materials regardless of site type. The Gould model would therefore appear to be generally inapplicable for components of this time period. Early Archaic tool manufacture, suggested only at 38LX64, appears to favor chert, conforming to the model. This, of course, assumes that Early Archaic use of the site reflects base camp activity, something currently not clearly demonstrated. The evidence for Late Archaic stone tool manufacture was equivocal with regard to the model. Savannah River Stemmed points of extralocal chert, slate or rhyolite were found on all four of the project sites, but manufacturing debitage of these materials was generally rare at the two probable Late Archaic base camps (38LX64 and 38LX82).

TABLE 19

PROPORTIONAL OCCURRENCE OF RAW MATERIAL CATEGORIES,
BY COUNT, OVER THE UNMODIFIED DEBITAGE FROM THE FOUR PROJECT SITES

	Site			
Raw Material	38LX5	38LX106	38LX82	38LX64
Quartz	44.2%	0.0%	97.5%	66.7%
Chert	22.8%	90.7%	1.7%	17.0%
Rhyolite	27.0%	0.0%	0.0%	2.7%
Quartzite	3.4%	9.3%	0.8%	6.0%
Slate	2.6%	0.0%	0.0%	7.6%
TOTALS	100.0%	100.0%	100.0%	100.0%
(N)	(2956)	(43)	(120)	(2537)

Woodland period lithic artifacts were identified only at 38LX5, where both local and extralocal raw material use was evident. There was some evidence that Woodland site use at 38LX5 may reflect extended (base camp) activity. This inference, if correct, would suggest that the Gould model is applicable in this case, since some evidence for extralocal lithic resource reduction activity was present in the Woodland (plowzone) debitage assemblage. Over the four project sites, however, only the Early Archaic components at 38LX64, and the Woodland components at 38LX5, appear to conform to the model. The data from the project sites indicate that the occurrence of local or extralocal raw material manufacturing debitage on a Fall Line site, at least along the upper Congaree River, cannot, by itself, permit accurate determination of site function.

CONCLUSIONS

The Southeastern Columbia Beltway Project marked the first intensive multisite excavations at a Fall Line locality in the general South Carolina area. Four sites were examined and an extensive data assemblage was collected, encompassing almost 15,000 artifacts and a total of 16 features. Project research was directed toward a series of research topics, focusing on the documentation of the four major site assemblages and, following this, the resolution of prehistoric settlement variability within the Fall Line environment. Considerable variation in the use of the Fall Line area was encountered, both over time and within specific microenvironments. Methods for the collection and use of local ethnobotanical remains were examined, and the resulting data were found to be of value in both subsistence and radiocarbon analyses. The project additionally documented changes in the use of lithic raw materials over time in the Fall Line area, and offered a number of explanations to account for the observed patterning. The present volume represents one of the first extensive reports on Fall Line prehistoric archeological assemblages from the upper Congaree River Valley. Hopefully it can serve to guide future research in the area.

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