10.0 THE FOUR ACTIVITY AREAS COMPARED

This chapter compares and contrasts the results of the archaeological research completed for the four activity areas (Clusters 1, 4, 5, and 6). This exercise lends insights into the spatial, temporal, and functional relationships between individual activities that were accomplished by pre-contact peoples using archaeological site 7NC-B-54 (Ronald McDonald House).

There are differences in the nature of the four activity areas. Although visit functions can not definitively be assigned to each artifact cluster, the attribute differences between the clusters are sufficient to say that there was no pattern of repeated site use for one specific function. Although all four activity areas would be lumped as "extractive stations" according to the labels endorsed in the state context documents, there are clear differences in what occurred during each episode of site use.

10.1 Temporal Affiliation

Lithic analysis identified several projectile points associated with the four cluster assemblages. A growing body of literature suggests that some projectile point "types" may not be as temporally "diagnostic" as previously supposed, usually because they were made and used for longer periods of time than archaeologists originally believed. Therefore, the classification of projectile points into types for the present analysis was very conservative. Based solely on dates associated with diagnostic projectile points, the oldest cluster appears to be Cluster 5, with a Brewerton Ear-Notched projectile point. These projectile points are considered to date within the Late Archaic period (early Woodland I period), and potentially the earlier portion of the Late Archaic period (Justice 1987; see also discussion in Petraglia *et al.* 2002:9).

The second oldest cluster is Cluster 1, which contains two Lackawaxen or Lackawaxen/Bare Island projectile points. The Lackawaxen or Lackawaxen/Bare Island projectile point type is widely recognized in the Middle Atlantic region where these projectile points generally date to slightly later in the Late/Terminal Archaic period than the Brewerton types (Hranicky 1994; Kraft 1990:75-78; Petraglia *et al.* 2002:15-16; Ritchie 1961).

Finally, Cluster 4 contains one Jack's Reef projectile point. Depending on the source, these projectile points are classified as Middle to Late Woodland, or here simply as Woodland (Justice 1987; Petraglia *et al.* 2002:7-8). Thus, three of the four artifact clusters identified at Site

7NC-B-54 (Ronald McDonald House) can be sequentially ordered from the Late Archaic (Cluster 5), through the Late/Terminal Archaic (Cluster 1), to the Middle to Late Woodland (Cluster 4). Cluster 6, lacking diagnostic stone tools, can not be placed in chronological sequence relative to the other clusters present at the site.

Despite the small sample size of diagnostic projectile points recovered from Site 7NC-B-54 (Ronald McDonald House), and the fact that future archaeological studies will no doubt result in revisions to the chronology of the Middle Atlantic region, it remains important to express the apparent differences in the ages of the clusters in order to discuss changes in lithic technology through time.

10.2 Lithic Raw Material Use Through Time

An examination of Table 3 shows the proportion of lithic raw material use at Site 7NC-B-54 (Ronald McDonald House) through time. As is clearly seen, quartz is the preferred raw material in three of the four clusters. With the exception of the Late/Terminal Archaic period represented by Cluster 1, quartz is the preferred raw material used at the site throughout its occupation/use. All of the lithic raw materials listed in Table 3 are common in secondary deposits in the region; thus, their use during the occupations of the various clusters is not surprising. Perhaps more surprising is the data from the Cluster 1 Activity Area, the only cluster where another raw material, in this case jasper, usurps the dominance of quartz. Cluster 1 also exhibits a larger proportion of chert use than any of the other clusters. Perhaps jasper and chert were deliberately selected by Late/Terminal Archaic knappers above other raw materials from the deposits that they encountered. The presence of a number of formal unifaces associated with Cluster 1, made exclusively of jasper and chert, may suggest a functional interpretation for the preference of these raw materials.

Table 3.
Percentages of Lithic Raw Materials Through Time

Cluster	Associated Temporal Affiliation	Percent Quartz	Percent Quartzite	Percent Chert	Percent Jasper	Total
5	Late Archaic	67.3	29.8	1.9	1.0	100
1	Late/Terminal Archaic	28.7	13.9	16.5	35.7	94.8*
4	Woodland	96.0	2.0	2.0	0.0	100
6	Unknown	95.9	3.3	0.6	0.1	99.9**

* lakes of indeterminate material not included in calculations.
**rounding error.

A second observation involves the use of stone in Archaic Clusters 5 and 1. In general, both clusters exhibit a slightly broader use of raw materials other than quartz. Perhaps the greater overall emphasis on lithic technology during the Archaic, as seen in other parts of the Middle Atlantic region, resulted in the need for higher quality stone. In contrast, Cluster 4 (Woodland) shows a nearly exclusive reliance on quartz. Cluster 6, while undated, also exhibits a heavy reliance on quartz, perhaps tenuously suggesting a Woodland affiliation.

10.3 Knapping Technology Through Time

This section summarizes the results of the discussion of the tools and debitage associated with the four activity areas in two parts. The first part considers reduction strategies evident at the site through time. The second part examines artifact classes within the assemblages using Brainerd-Robinson Coefficients. This is a statistical approach to examining how alike the clusters are in terms of the tool classes identified. In general, such an approach can suggest broad changes in site function through time.

10.3.1 Reduction Strategies

Evidence of core and biface reduction are associated with all four activity areas. As a way to compare the amounts of lithic reduction associated with each cluster, Table 4 presents a comparison of the proportion representation (of the entire cluster assemblage) of each of several major artifact classes. Please note that the artifact classes listed are the only artifact classes considered as technologically diagnostic of reduction type, and therefore, germane to this discussion.

Table 4.
Percentages of Major Artifact Classes Through Time

Cluster	Associated Temporal Affiliation	Total Number of Artifacts	Percent Projectile Points	Percent Bifaces	Percent Biface Thinning Debitage	Percent Core Reduction Debitage	Percent Formal Unifaces
5	Late Archaic	104	0.9	1.9	23.1	13.5	0.0
1	Late/Terminal Archaic	115	5.2	4.3	20.0	20.9	8.6
4	Woodland	99	3.0	3.0	37.4	7.0	0.0
6	Unknown	860	0.1	0.6	28.5	6.1	0.0

An examination of Table 4 suggests several ideas. First, with the exception of undated Cluster 6 (860 artifacts), all clusters contain approximately the same number of artifacts, suggesting relatively brief occupations/uses of these locales. Second, biface thinning debitage is generally present in far greater numbers than core reduction debitage, with the exception of Cluster 1, where core trimming debitage is present in a slightly greater proportion. Perhaps the presence of a large number of formal unifaces may account for this. If most uniface blanks were struck from cores, and if unifaces were important to this occupation (as they apparently were), then it makes sense that there is a greater percentage of core reduction associated with the Cluster 1 assemblage. Third, while core reduction debitage and bifaces are found in modest numbers in Clusters 1, 4, and 5, they are found in low frequency in Cluster 6. Perhaps the pre-contact period knappers occupying/using the Cluster 6 locale were more successful in their knapping endeavors and were able to complete and transport off-site a higher proportion of bifacial tools.

10.3.2 Brainerd-Robinson Coefficients

As a way to quantify the nature of similarity, and by extension difference, between each activity area, Brainerd-Robinson Coefficients (BRC) were calculated for each cluster's lithic artifact assemblage. BRC were initially employed in archaeological research during the 1950s in ceramic studies. Since then, use of BRC has all but vanished and new statistical procedures have taken their place (Odell 2004:116). Nevertheless, as a means of comparing assemblages, BRC still has utility, as it allows a researcher to quickly compare two assemblages based on the proportions of artifacts within defined classes (Odell 2004:117; Shennan 1997:233-234). One drawback is that only two assemblages may be compared at one time.

To calculate BRC, the percentages of implements in the defined artifact classes are calculated for each assemblage, then differences between the assemblages are calculated. These differences are then added together and the resulting number subtracted from 200 to provide a similarity score (Odell 2004:117; Shennan 1997:233-234). For each cluster assemblage, BRC was calculated based on the percentages of three major tool classes: projectile points, bifaces (bifacial tools other than projectile points), and formal unifaces. The results of the BRC for each of the two cluster

comparisons are presented in Table 5. The higher the BRC score, the more similar the two clusters are in terms of the characteristics represented by the three variables (projectile points, bifaces, formal unifaces) employed.

Table 5.
Brainerd-Robinson Coefficients for Activity Areas

Clusters Compared	Brainerd-Robinson Coefficients
1 and 4	104.8
1 and 5	104.9
1 and 6	80.9
4 and 5	180.9
4 and 6	147.5
5 and 6	166.6

A brief glance at Table 5 demonstrates that Clusters 4 and 5 are very similar while Clusters 1 and 6 are very different. Table 6 summarizes the results of the BRC findings in another way. Using 50 point increments to describe similarity scores (0-50 very dissimilar, 51-100 somewhat dissimilar, 101-150 somewhat similar, 151-200 very similar), it is easy to examine which clusters are more alike based on the proportions of the three tool classes.

Table 6.
Cluster Similarity Matrix

Cluster	Associated Temporal Affiliation	Cluster 5	Cluster 1	Cluster 4	Cluster 6
5	Late Archaic	----	somewhat similar	very similar	very similar
1	Late/Terminal Archaic	somewhat similar	----	somewhat similar	somewhat dissimilar
4	Woodland	very similar	somewhat similar	----	somewhat similar
6	Unknown	very similar	somewhat dissimilar	somewhat similar	----

First, the Late Archaic Cluster 5 contains a very similar mix of tool classes to the Woodland Cluster 4 and the unknown period Cluster 6, and a somewhat similar mix to the Terminal Archaic Cluster 1. Based on this comparison, the Late Archaic Cluster 5 appears to be more similar to the Woodland Cluster 4 than to the Late/Terminal Archaic Cluster 1. If the proportional mix of tool classes represents something akin to site

function, this suggests that site function was similar during the Late Archaic period and Woodland period uses of the site, but different in the Late/Terminal Archaic period.

The Late/Terminal Archaic Cluster 1 is only somewhat similar to the Late Archaic Cluster 5 and Woodland Cluster 4 and very dissimilar to the unknown date Cluster 6. The presence of numerous unifacial tools is the primary reason for the BRC scores of Cluster 1. Site function during the occupation/use of Cluster 1 at the site then, appears to be of a different nature than the site functions represented by the other clusters.

10.3.3 Utilization Through Time

Evidence of use on lithic tools and debitage recovered from Site 7NC-B-54 (Ronald McDonald House) suggests that the site occupants were performing tasks other than knapping at some of the activity areas. Table 7 presents the percentage of artifacts at the site, through time, which evidence utilization.

Table 7.
Utilization Through Time

Cluster	Associated Temporal Affiliation	Percent Artifacts with Evidence of Utilization
5	Late Archaic	0.0
1	Late/Terminal Archaic	13.9
4	Woodland	0.0
6	Unknown	0.9

Based on percentages of utilization, the Late/Terminal Archaic Cluster 1 has the only significant evidence of utilization on lithic artifacts, and by inference, the most varied and numerous associated activities. Though there were relatively few artifacts associated with this cluster, perhaps the abundant evidence of utilization suggests a different purpose of the occupation/use, possilby one focused more on the processing of game or other natural resources. The Cluster 6 artifacts also evidence small amounts of utilization, indicating that some non-knapping activities may have taken place at this location; however, these can not be placed within a temporal framework due to the lack of chronologically diagnostic artifacts from Cluster 6. The total lack of evidence for utilization in the Late Archaic Cluster 5 and Woodland Cluster 4 artifact assemblages infers that the primarily focus of activities during these periods of occupation/use at the site was on knapping.

10.3.4 Thermal Alteration Through Time

While both intentional and unintentional thermal alteration was recorded for the lithic artifact assemblage, the intentional heating of raw materials is more germane to behavioral interpretations at the site. The intentional thermal alteration recorded for the Site 7NC-B-54 (Ronald McDonald House) artifacts is usually visible as color changes on the surface of the stone without other visible damage to the stone. Table 8 presents the percentages of both unintentional (total) and intentional thermal alteration to artifacts at the site through time.

Table 8.
Percentages of Total and Intentional Thermal Alteration Through Time

Cluster	Associated Temporal Affiliation	Percent Total Thermal Alteration	Percent Intentional Thermal Alteration
5	Late Archaic	1.9	1.9
1	Late/Terminal Archaic	42.6	13.9
4	Woodland	0.0	0
6	Unknown	0.1	0.0

Based on the analysis data, the Late Archaic Cluster 5 and Late/Terminal Archaic Cluster 1, both dating to the Archaic, exhibit evidence for intentional heat treatment. In both cases, the material that is potentially heat treated is either jasper (Cluster 5) or jasper and chert (Cluster 1). Heating is an effective way to increase the workability of jasper and chert. In contrast, the Woodland (Cluster 4) as well as the undated Cluster 6 assemblages contain primarily quartz, a material that does not gain workability by heat treating.

10.3.5 Conclusions

In examining the Site 7NC-B-54 (Ronald McDonald House) lithic artifacts assemblage as a whole, as most sites of this type are studied, the analysis suggests that the site was occupied intermittently, from the Late Archaic to the Late Woodland periods. Further, it also suggests that the pre-contact period people who visited the site knapped bifaces and cores and occasionally employed unifaces. These knappers relied to a great degree on locally derived, secondarily deposited lithic raw materials.

Thankfully, due to the unplowed/minimally plowed nature of the site, several discreet activity areas represented by artifact clusters were present and could be discerned during the excavations. Four of the activity areas were totally explored, and of these four, three of them contained chronologically diagnostic artifacts that could be used to place them within a temporal framework. Based on the examination of the Site 7NC-B-54 (Ronald McDonald House) artifacts by activity areas (i.e., artifact clusters) rather than as a unified assemblage, more specific details of activities at the site through time were obtained.

Site 7NC-B-54 was occupied/used from the Late Archaic through the Late Woodland periods. During this entire time frame, locally available, secondarily deposited lithic raw materials were utilized by the knappers at the site. The numbers and variety of artifacts in the three datable clusters infer that each of these site occupations/uses were of limited duration. Two of the dated clusters, the Late Archaic Cluster 5 and the Woodland Cluster 4, appear to have had similar knapping activities taking place at their locations. These activities could have included the maintenance of existing tools and the manufacture of new ones. Obviously, the presence of projectile points at these locations indicates that spent or worn tools were being discarded. There are no indications in the form of artifact utilization or cultural features, that activities other than knapping were taking place during the times that these two portions of the site were occupied/used. The most distinctive portion of the site is the Cluster 1 locale, which was occupied/used during the Late/Terminal Archaic period. The artifacts associated with Cluster 1 indicate that the Late Terminal Archaic visitors to this specific locale were doing things differently from the earlier and later peoples who visited the site. The artifacts indicate that a broader range of lithic raw materials, as well as lithic tools, were being used during this occupation/use of the site. There is evidence of abundant core reduction, a high percentage of formal unifaces, a high percentage of evidence for utilization, and a high percentage of thermal alteration during this Late Terminal Archaic occupation/use, which is unlike the earlier or later periods of use. All of these differences support the idea that the Late Terminal Archaic occupants of the site were using different knapping techniques, making different tool types, and accomplishing more varied activities than the earlier or later occupants of the site.

10.4 Presumptive Blood Residue Results

Despite the completion of presumptive blood residue testing on numerous artifacts recovered from both cluster and non-cluster proveniences at Site 7NC-B-54 (Ronald McDonald House), no blood residue was identified. The artifacts chosen for testing included those technotypes with the perceived highest probability to contain blood residue, based on their known typical functions. The results of the presumptive blood residue testing support the functional interpretations of the four clusters, as presented in the lithic analyses. All four clusters appear to have been the locations of short-term activities which did not expose the preserved artifacts to blood. Newly made or refurbished lithic artifacts and the debitage resulting from lithic reduction and maintenance activities evidenced at each of the four clusters would not be expected to produce blood residue, unless a knapper cut him/herself. Despite evidence from Clusters 1 and 6 to indicate that activities other than lithic manufacture and maintenance, such as vegetal processing or trapping, may also have occurred at these locations, the absence of blood supports the idea that no hunting or butchering took place. Based on the results of the presumptive blood residue testing, the four clusters are similar in that there is no evidence for hunting or butchering activities at these locations.

10.5 Use of Space Through Time

Based on the lithic analysis and artifact distributions for the two excavated blocks and four excavated artifact clusters from Site 7NC-B-54 (Ronald McDonald House), there are clear patterns that reflect the use of the site by various persons over time. Based on total numbers of artifacts and their distributions, it is clear that two portions of the site (Blocks 1 and 3) were more heavily used than others and were the areas where excavation efforts were concentrated. Based on total numbers of recovered artifacts (148 from Block 1 and 1,162 from Block 3) and total numbers of complete identified clusters within each of the two blocks (one at Block 1 and three at Block 3), the Block 3 location appears to have been used more often during the pre-contact period than the Block 1 location.

With the exception of Cluster 6, the clusters can be relatively dated. When comparing the temporal affiliations of the artifact clusters, it becomes apparent that, while the Block 3 location was used more often, the site did not spatially expand in a systematic fashion from the earliest occupation/use location to the latest. Cluster 5, which is located in Block 3, is the earliest use of the site location; however, the next use of the site appears at the Cluster 1

location in Block 1, approximately 42.0 m (137.8 ft) east (see Figure 30). The third occupation/use of the site is at the Cluster 4 location, which is in Block 3 adjacent to the earliest dated Cluster 5. The non-contiguous nature of the occupations/uses of the site support the findings that the site is comprised of archaeological remains representing multiple short-term, non-related, ephemeral activities as conducted by a single or a few individuals over time, rather than representing various activities conducted by numerous individuals occupying/using the site at the same time.

The pattern and dating of site usage represented at Site 7NC-B-54 (Ronald McDonald House) indicates that traditional site types are lacking in well-defined signatures. Although sounding highly technical and specific, Woodland I period site types, such as macro-band base camps and micro-band base camps, appear to be based mainly on the overall size of the site and total numbers of recovered artifacts. Given that the majority of the sites placed into these categories do not have spatially separable components and activity loci, it is uncertain if these larger sites are really representative of intensive occupation/use of a large area at one point in time, or if they are locations that have been frequently re-used for short-term ephemeral activities by one or a few individuals. Certainly had a more traditional research design advocating sampling instead of 100 percent excavation of clusters been used at Site 7NC-B-54 (Ronald McDonald House), the subtle differences between the artifact clusters would surely have been averaged to result in generic conclusions about activities at this site.