8. SPATIAL DISPOSITION OF CULTURAL MATERIAL

BLUEBERRY HILL WAS A CONCENTRATION of distinct activity areas of different ages that happen to be situated in one place. Over the millenia, people have been attracted to this spot for various reasons, some of which may be obvious to a modern observer. The investigator was tasked with attempting to distinguish between the occupation episodes, and to suggest the site's functions (and changes in function) during these episodes.

This site's archæological value is a product of its geological history. Over the centuries, wind-blown sand has accumulated on the bluff, burying successive human activity areas. This æolian deposition process has created vertical separation that can be loosely assigned to at least nine layers. Within each layer, one should be able to discern activity areas by isolating horizontally and vertically clustered artifacts. Fortunately for this purpose, Blueberry Hill was infrequently occupied during prehistory, so that individual occupation events were segregated between deposits of sterile sand.

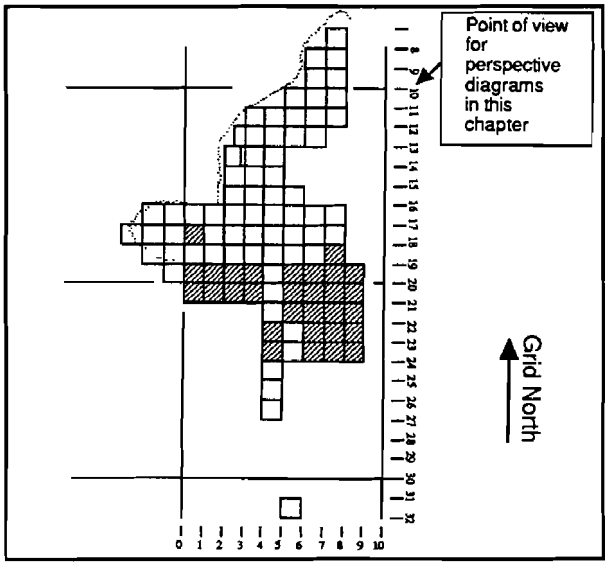

Figure 47
Site plan
showing orientation of bar graph maps and units from which zone 1 was removed

Artifact distributions were first tabulated on spreadsheets that reflected the site layout grid (below). These spreadsheets were then converted by the DeltaGraph® Professional program into three-dimensional bar graphs that were intepretable as distribution maps.

The shape of the site dictated that the perspective maps be reoriented, so that the viewer is looking at the site from the grid-northeast corner (FIGURE 47).

Artifact distribution patterns depend in no small part upon a site's topography, past and present. Recent topography, shown in Figure 16, influenced the investigators to locate the first test units at the modern summit. After excavations were complete, it was possible to draft a similar topographic map of the surviving Pleistocene land surface (FIGURE 48). This is not the actual Ice Age configuration, but the old surface as modified by erosion and by later disturbances. However, it is close enough to allow some conclusions about changes in landscape through time. The two maps make it clear that while the highest point in modern times was at the grid north end of the site, in Paleo-Indian times the highest part of the site was a ridge running along the northwestern edge of the site as it appeared when excavations began.

A first step in spatial analysis was to test the applicability of the method, using site-specific data. Fire-cracked rocks were chosen to test the site's vertical and horizontal integrity, as well as the validity of the methodology (FIGURE 49).

Distribution patterns of fire-cracked rocks are a handy tool for visualizing activity areas. These otherwise uninformative objects delineate human activity. They are so intimately linked with settlements, that their presence can be accepted as proof for the existence of a site.

Lacking any intrinsic value that might cause them to be removed, clusters of fire-

cracked rocks mark the location and boundaries of activity areas that are defined by hearth sites. Thus they were the first artifacts to be interpreted spatially at Blueberry Hill.

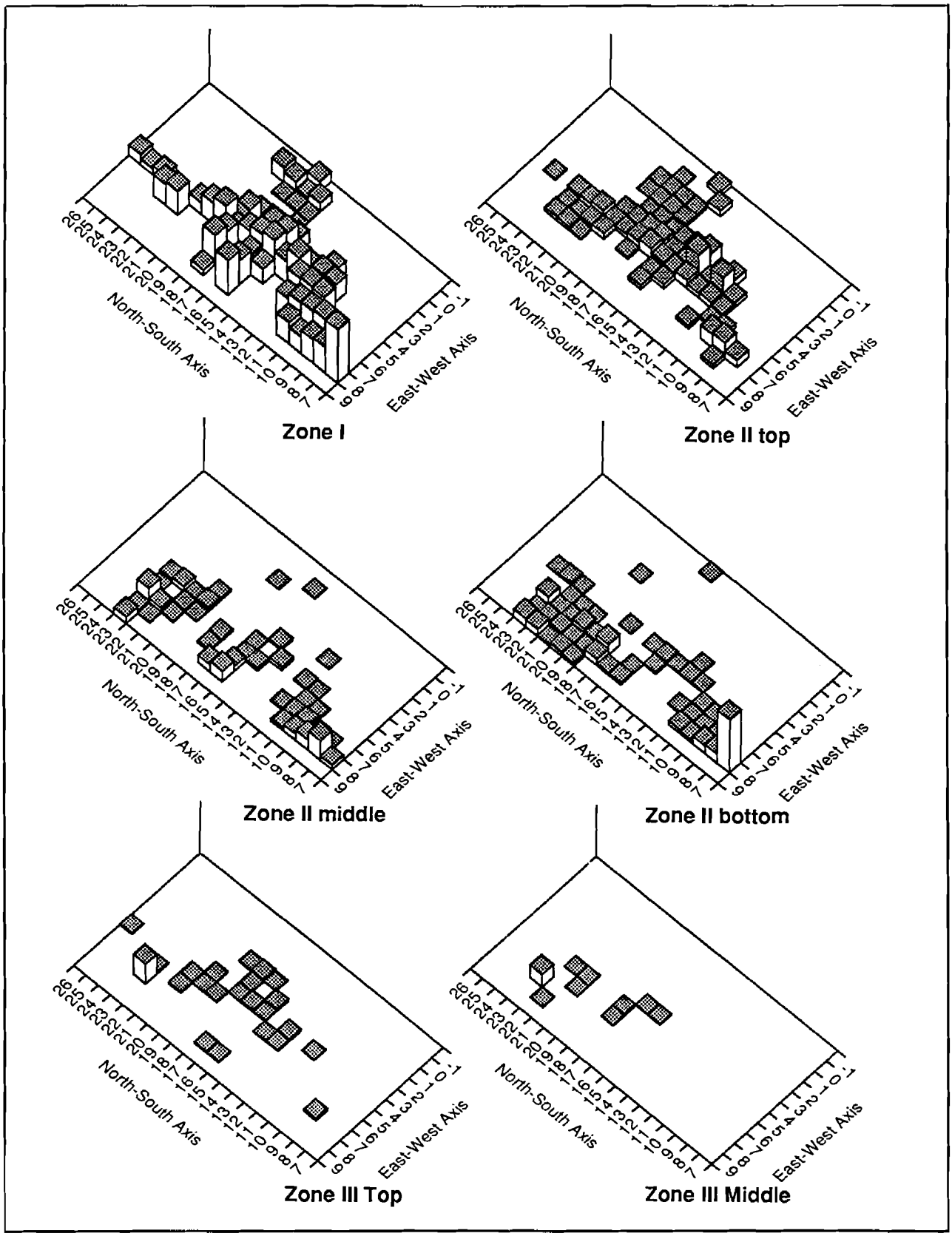

Figure 49

Distribution of fire-cracked rock, by archæological zone

FIRE-CRACKED ROCK DISTRIBUTIONS

The zone 1 map indicates two major concentrations of fire-cracked rocks within the broad distribution. The larger of these was found at the north end of the site, where the plowsoil was thick and disturbed by modern earthmoving and trash disposal.

The second concentration, near the middle of the site, coincided with the heaviest concentration of pottery, in the vicinity of Woodland-period features.

Removal of topsoil from most units at the south end has rendered the Zone I maps incomplete. However, there is an indication that the frequency of fire-cracked rock is reduced to the west and south of the two major concentrations.

Just under the plowzone, the top of Zone II contained a broad distribution of fire-cracked rock, with two distinct peaks. One is located at the northern tip of the site, and corresponds with the location of a concentration of Marcey Creek pottery, later defined as a pit feature extending into Zone II (see Chapter 9).

TABULATION OF FIRE-CRACKED ROCKS, ZONES I AND II

Numbers across the head are grid locations along the east-west axis
and numbers in the left margin are locations along the north-south axis.
Boldface indicates the locations of apparent clusters, relative to the rest of this level.

Zone I Fire-Cracked Rocks

	-1	0	1	2	3	4	5	6	7	8	9
7										**183**	
8									33	36	
9									**48**	33	
10								**50**	**45**	23	
11						24	27	**51**	**43**	30	
12					16	25	25	**49**	35		
13						20	**49**				
14							30				
15					17	**41**	**46**	21			
16		12	1	1	13	**38**	**40**	26	33	**48**	
17	14	5	2		13		31				
18		14	2		11	33	18	31	**41**	7	
19		20					**39**				
20							**29**				
21							16				
22								**33**			
23								**29**			
24							13				
25							8				
26							14				

n=1635

Zone II, Middle, Fire Cracked Rocks

	-1	0	1	2	3	4	5	6	7	8	9
7										6	
8									1	**27**	
9									2	**14**	
10								1	6	9	
11							1	2	4	4	
12					1		2		2		
13											
14							5				
15						3		3			
16		1					1	1	7	**15**	
17										**10**	
18			1					3	2		
19											
20						2	5	1			
21							1	3	2		
22							7		**6**	1	
23							4	1	**20**	3	9
24											
25											
26											

n=199

Zone II, Top, Fire-Cracked Rocks

	-1	0	1	2	3	4	5	6	7	8	9
7											
8									**10**		
9									**21**	5	
10								6	**19**		
11						6	4	3			
12					9	**27**	8		4		
13						4	6				
14					**18**	**32**	**11**				
15					8	3	7	6			
16		8			3	3	**8**	4	5		
17	6		3	4	1	8	**14**				
18			3	5	4	8	9	2			
19		1	3	2	1	5	5				
20			2	1		4	5	8			
21							**12**	6	2		
22							7	1	5		
23							7	3	5		
24											
25							1				
26											

n=401

Zone II, Bottom, Fire-Cracked Rocks

	-1	0	1	2	3	4	5	6	7	8	9
7										**76**	
8									1	**13**	
9									2	11	
10								1	1	4	
11								2	1	5	
12							1		2		
13						1	2				
14							1				
15							3	2			
16							1		1	3	
17	1									2	
18							1		**15**	9	
19									5	3	4
20				1				1	9	4	5
21								1	3	5	2
22							1	1	2	4	10
23							3		**12**	2	**11**
24							1				
25											
26											

n=252

TABULATION OF FIRE-CRACKED ROCKS, ZONES III AND IV

Numbers across the head are grid locations along the east-west axis
and numbers in the left margin are locations along the north-south axis.
Boldface indicates the locations of apparent clusters, relative to the rest of this level.

Zone III, Top, Fire-Cracked Rocks

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9									3		
10											
11											
12						1					
13											
14						2	1				
15							1				
16					3	1				1	
17				1		3				2	
18				3	1	1					
19				2			1				
20						1	1				
21							2	2			
22											
23								1	**28**		
24											
25											
26							1				

n=63

Zone III, Bottom, Fire-Cracked Rocks

	-1	0	1	2	3	4	5	6	7	8	9
7											
8										1	
9											
10											
11											
12											
13											
14											
15											
16											
17							1				
18								1			
19								1		1	
20									2		1
21										1	
22							1			1	1
23									**29**		
24											
25											
26											

n=41

Zone III, Middle, Fire-Cracked Rocks

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11											
12											
13											
14											
15											
16						1					
17						1					
18							1	1			
19											
20											
21							1	1			
22							1			1	
23									**18**		
24											
25											
26											

n=26

Zones IV and V, Fire-Cracked Rocks

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11								1			
12											
13											
14						1					
15											
16											
17	2										
18					1			1			
19							1				
20				2					3		
21											
22											
23											
24											
25											
26											

n=12

The second was located just a few meters to the southwest, near a small fire-hearth found at the top of Zone II and designated in the field as Feature 1. Because there is no corresponding peak in Zone I (instead, there is a reduction in the frequency of fire-cracked rock), we can conclude that the activity that produced Feature 1 is associated temporally with Zone II, and does not represent a pit feature which originated in Zone I.

In the middle of Zone II, the picture changes. There are now three distinct concentrations. In the center is a concentration with a curious gap of two empty units in the middle. This gap is associated with Features 2 and 3, dated about 3,000 years BP, and thus temporally associated with occupations in Zone I. It should be noted that the tabulation presented here was made before the results of radiocarbon dating made it clear that these features, which were recognized in the field only in Zone III, must have originated in Zone I.

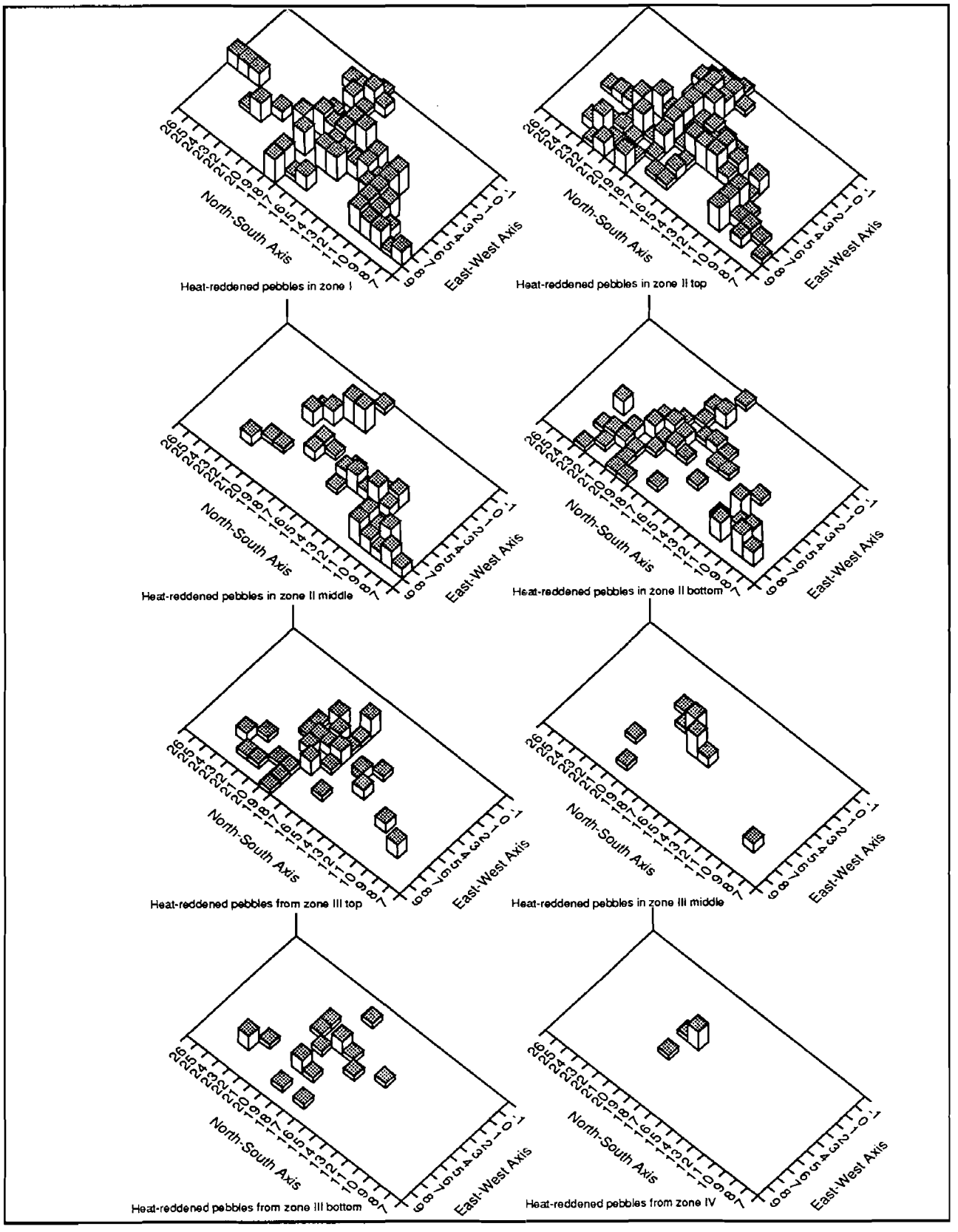

Figure 50

Distribution of heat-reddened pebbles, by archæological zone

TABULATION OF HEAT-REDDENED PEBBLES

HEAT-REDDENED PEBBLES, ZONE I

	-1	0	1	2	3	4	5	6	7	8	9
7										3	
8										1	
9									2	4	
10								4	4	4	
11						**12**	5	21	9	**10**	
12						2	3	4	1		
13						9	7				
14							3				
15					**18**		4	5			
16		2		1	5	7	4	**11**		3	
17	1	4	1		2	4	1			1	
18		2	3		3	**9**		**9**		**9**	6
19		2				1	5				
20											
21							2				
22								4			
23								1			
24						3					
25						3					
26						3					

HEAT-REDDENED PEBBLES, ZONE II, BOTTOM

	-1	0	1	2	3	4	5	6	7	8	9
7											
8										3	
9									4	**9**	
10									3		
11						1		**6**		4	
12									1		
13											
14						1					
15					1	1		1			
16					2						
17	1		3		1		1			1	
18			2	1		2	2				
19					1	3	1	1			1
20						2	3		1	1	1
21								2	2		
22									2	1	
23							3		1		1
24											
25											
26											

HEAT-REDDENED PEBBLES, ZONE II TOP

	-1	0	1	2	3	4	5	6	7	8	9
7										1	
8									1		
9									2	2	
10								1	2		
11						3	1	5	6	7	
12									1		
13						3	2				
14					1	**6**	**6**				
15					2	3	**6**				
16		1			3	2	5	1	2	1	
17	1	3	3	8	2	2	1			1	
18		3	7	5	**7**	**15**	**6**	4	1		
19		2	4	2		3		1		1	4
20						**6**		5	1	1	
21							**6**	1	2	1	3
22							2		1	**5**	1
23							2			2	
24							1				
25											
26											

HEAT-REDDENED PEBBLES, ZONE III TOP

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9									3		
10											
11								2			
12											
13											
14					1		2				
15						2					
16									1		
17			4	1	1	3	1				
18					3	2		3			
19				3		2	2		1	1	1
20					1	1			1		
21										1	
22								1		1	
23									2		
24											
25											
26											

HEAT-REDDENED PEBBLES, ZONE II MIDDLE

	-1	0	1	2	3	4	5	6	7	8	9
7										2	
8										4	
9									**10**	2	
10									3	3	
11						3	2		**11**	**8**	
12						1	5				
13						1	2				
14							4				
15						1	3	1			
16											
17	1		**5**			1					
18			**5**			2	2				
19				3							
20				1	3			1			
21								1			
22									2		
23											
24											
25											
26											

HEAT-REDDENED PEBBLES, ZONE III MIDDLE

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9									2		
10											
11											
12											
13											
14											
15											
16						2					
17						5					
18					**5**						
19					1						
20				1						1	
21								1			
22											
23											
24											
25											
26											

HEAT-REDDENED PEBBLES, ZONE III BOTTOM

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11											
12											
13											
14					1						
15											
16						1					
17					1					1	
18		1			3			1			
19						1		3		1	
20				1	1						
21											
22								1			
23									3		
24											
25											
26											

HEAT-REDDENED PEBBLES, ZONE IV

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18					4						
19					1		1				
20											
21											
22											
23											
24											
25											
26											

This means that the gap in the central fire-cracked rock concentration in the middle of Zone II reflects disturbance during the prehistoric excavation of Features 2 and 3, and not the deliberate removal of feature-related material from the tabulation by the present-day archaeologists.

There is still a concentration of fire-cracked rock at the high north end , which appears to be the result of overbank disposal, but now there is also a large concentration at the south end, as well as scattered occurences elsewhere at the western edge of the site.

At the bottom of Zone II, the fire-cracked rocks are more evenly distributed, but there is still evidence of overbank deposition at the northern tip of the site. In this level, it is also apparent that the distribution of fire-cracked rock is tightly clustered at the edge of the bluff overlooking the stream, while in the upper part of Zone II, fire-cracked rock begins two meters or more from the edge.

Zone III shows a completely different pattern. As one goes down, the fire-cracked rocks become more concentrated at the south end, in and around a "gully" that is etched into the older surface. Zones IV and V, which probably contain evidence of the site's first settlers, reflect a totally different configuration of fire cracked rocks. The few fire-cracked rocks from this level are concentrated near a depression in the middle of the south half of the site, between 18 and 21 meters on the north-south axis

In summary, then, the distribution of fire-cracked rock in the stratified deposits of the Blueberry Hill site vary through time in significant ways. The general distribution indicates a shift in greatest concentration from south to north through time. There are also changes in the distribution of fire-cracked rock with respect to the steep drop to the floodplain on the east side of the site. The presence of a concentration of fire-cracked rock near Feature 1 in Zone II but not in Zone I makes it possible to identify this feature as originating in Zone II. Finally, the absence of fire-cracked rock in the center of a concentration in the middle level of Zone II is clearly associated with the excavation of Features 2 and 3 through the occupation surface several thousand years after that level had been covered by windblown sands.

Changes in lateral distribution of fire-cracked rocks at different levels, then, demonstrates that the site is in fact stratified and the deposits within are largely intact.

PEBBLE DISTRIBUTIONS

Heat-reddened pebbles also were mapped (FIGURE 50), with similar results. These objects are even less distinctive than fire-cracked rocks, since they appear to be an integral part of the soil matrix. Whereas one might pick up or re-use a fire-cracked rock, a heat-reddened pebble merely exists. Its color is altered by exposure to heat, but there is no incentive or probability for it to be isolated from the matrix until an archæologist comes along with a quarter-inch screen. Cells

containing heat-reddened pebbles, therefore, are very likely to be cells where these pebbles were deposited after [a yet undefined] use.

Distributions of heat-reddened pebbles were plotted across the site, and distributions did in fact appear to have changed through time. Of greater interest, however, is the fact that the distribution of heat-reddened pebbles does not parallel that of fire-cracked rock. This suggests that the pebbles were not part of the hearth itself, but were used in some other way, perhaps to transfer or retain heat in situations where flames or coals are not desirable.

Geologists consulted about archaeological deposits within aeolian soils in the Delmarva region have argued that pebbles do not occur naturally in these soils. If one accepts this line of reasoning, any pebble found in æolian soils was transported by some agency other than wind [i.e., human]. However, pebbles which were not heat altered were not collected as consistently as head-reddened and fractured pebbles, and their distributions were not plotted in this analysis.

CHARCOAL DISTRIBUTIONS

Charcoal distributions should provide a means of determining how the use of heat-reddened pebbles differed from the use of hearths (and fire-cracked rocks) because it is associated with fires. Charcoal would not be expected in association with heat-reddened pebbles if they were used to transfer or retain heat away from the fire itself. Since charcoal was collected from the waterscreened sample, it occurs in the collection only in the south half of the site (FIGURE 54).

In Zone II a large charcoal concentration appeared in the south, with less intense distributions over the rest of the area where flotation samples were taken. This overlaps the area where heat-reddened pebbles are most frequent in Zone II, and is different than the greatest density of fire-cracked rock. In Zone III, there is a similar lack of direct congruence between the three heat-related distributions, and again, there is a closer relationship between charcoal and heat-reddened pebbles than between charcoal and fire-cracked rock. There is also a lack of congruence in Zones IV and V, although the sample is quite small.

Clearly, then, the relationship between charcoal, fire-cracked rock, and heat-reddened pebbles within the site is not self-evident during any time period. Perhaps there is a distinction between heating and cooking functions, or perhaps fire-cracked rock was regularly cleaned out of the living area. Because of their small size and lack of sharp edges, pebbles may have been left behind with the charcoal from the fires that heated them both. However, this analysis of the distributions of these three heat-related elements indicates some of the potential for detailed analysis of distributions within stratified sites.

FLAKE DISTRIBUTIONS

Flake distributions reflect the locations where tool manufacture or repair took place. Conventional wisdom indicates that these activities should take place away from cooking and general living areas. This would suggest that, while there may be some overlap, flake concentrations should not be located in the same areas as fire-cracked rock concentrations.

Zone I is not included in the analysis which follows because the number of occupations may obscure distribution patterns. The distribution of chert flakes has been used to examine overall flake distributions because chert is the most abundant lithic type in Zone II. In Zone III, jasper is the most abundant lithic type, but will be discussed in connection with another analysis in Chapter 9. However, the distribution of chert in Zone III is similar to that of jasper.

In upper Zone II, chert flakes are broadly distributed over the site. However, two distinct clusters can be discerned. One was located in the westernmost corner of the site. The second was located at the center of the site, just south of Feature 1. The heaviest distribution of fire-cracked rock, on the other hand, was found at the northern end of the site.

In middle Zone II, differences in the distribution of chert flakes and fire-cracked rocks are less clear. In general, however, chert flakes were less likely to be found along

the bluff edge than fire-cracked rock. A similar pattern is repeated in the bottom of Zone II.

In the top level of Zone III, chert is non-existent in the northern part of the site. The greatest concentration was found at the center of the site, overlapping the fire-cracked rock distributions. In the middle of Zone III, the greatest number of chert flakes were found at the southern end of the site further away from the edge of the bluff than the fire-cracked rock. A similar pattern appears at the base of Zone III.

Overall, then, chert flake debris tends to be found further from the bluff edge of the site than fire-cracked rock, although there is considerable overlap in distributions. This indicates that tool repair and manufacture do, indeed, take place in different places than activities such as cooking, but the activity areas are not clearly isolated from each other.

CERAMIC DISTRIBUTIONS

Ceramics were limited to Zone I, and the distributions of the five most frequent ceramic types found at the site indicate that there were some differences in the structure of the occupations represented by these types at the site. The earliest ceramic type found at Blueberry Hill is Marcey Creek. Sherds of this type were found tightly clustered at the northern end of the site. This cluster was ultimately identified as Feature 4, discussed in Chapter 9. No sherds of this type were found outside this feature.

Other pottery types were not so tightly concentrated, but activity areas could be discerned. Coulbourn ceramics were concentrated along the northwestern edge of the site, with a second cluster to the south. Mockley ceramics are broadly distributed across the long axis of the site, but are not found at the "back" of the site away from the edge which drops to the floodplain. The southernmost cluster defines a pit feature which will be discussed in Chapter 9. The slightly later Hell Island ceramics are also found distributed along the long axis of the site, but some two meters further away from the edge. Finally, the late prehistoric ceramics of the Townsend series were found tightly clustered at the northern end of the site.

The tight clustering of the Marcey Creek and Townsend ceramics suggests that the site was occupied only once by a single household unit during the time periods represented by these ceramics. On the other hand, during the time periods represented by Coulbourn, Mockley and Hell Island ceramics, the site was visited more frequently or by a larger number of household groups.

PROJECTILE POINT DISTRIBUTIONS

Few of the projectile point types found at the site occurred in numbers large enough to define activity areas. In two cases, however, the distributions may be instructive. Two Palmer projectile points were found at the base of Zone II, both along the steep drop to the floodplain. While one or two flakes were found in adjacent units, they do not appear to be associated with tool manufacturing areas. Perhaps they were lost by hunters overlooking game trails in the floodplain below.

Contracting stemmed projectile points are the most abundant projectile point type found at the site They are clustered in two groups, north and west of each of two pit features interpreted as house pits dating to ca. 1000 BC. Some would argue that these points are too variable in shape to have been made during a single occupation. However, a wide range of point shapes were found on a single living surface at the Hawthorn site (Custer and Bachman 1986). The fact that these points were found in two clusters with similar relationships to two similar contemporaneous (or nearly so) features indicates that these points do, in fact, belong together. The two clusters, then, represent two similar activity areas where contracting stemmed points were manufactured or repaired.

DEFINING SITE STRUCTURE

Site structure refers to the location of the various site activities in relation to each other. Where multiple visits to a single occupation level can be demonstrated, as in the case of zone I, it is difficult to define with certainty the boundaries of each activity area, unless one assumes that the same activities were repeatedly conducted in the same place. In deeper levels, however, it is likely that we are dealing with single occupations. In such

a case, it is possible to look at activity areas as elements in site structure.

An examination of activity areas at the bottom of Zone III offers an opportunity to look at site structure in a context which is likely to represent a single occupation. Patterning is likely, therefore, to be more clearly defined than in contexts where overlapping occupations must be sorted out.

An examination of figure 49 on page 80 shows that fire-cracked rock is clustered at the southeastern corner of the site. The peak in Unit 141 occurs in a depression identified in the field as a gully because of evidence of water-laid deposits and micro-gullies leading into it from the west. Although the distribution of jasper flakes overlaps that of fire-cracked rock somewhat, the flakes are most frequent to the west, indicating a separate activity area. Heat-reddened pebbles overlap both distributions, but the greatest frequencies of both jasper flakes and heat-reddened pebbles occur in and around a shallow depression in the Zone V surface.

Only two tools were recovered from this level, but both were located in the same unit in association with a concentration of jasper flakes, and on the edge of the shallow depression.

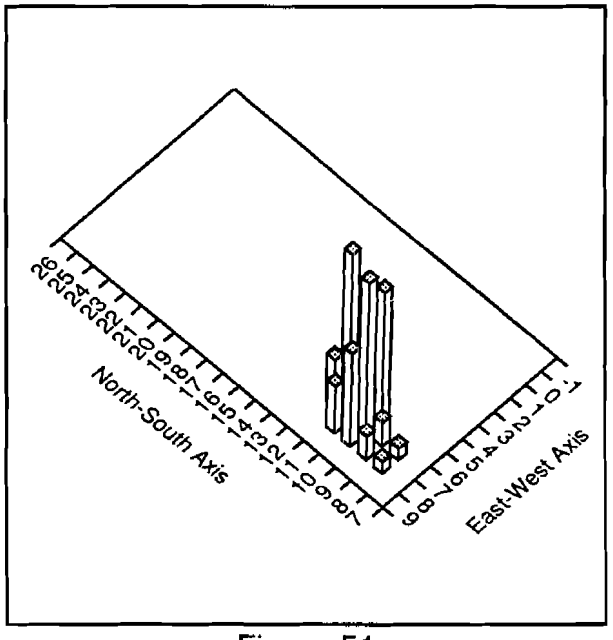

Figure 51
Marcey Creek Ceramics
This plot shows the concentration of steatite-tempered pottery that helped define Feature 4.

To summarize, the distributions of specific artifact groups in the lower part of zone III indicate an occupation where cooking and other heat-related activities are conducted along the eastern edge of the slope.

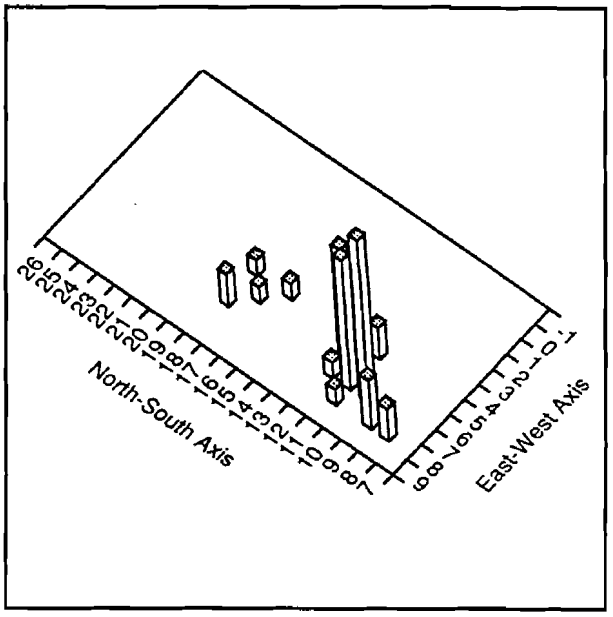

Figure 52
Late Woodland Ceramics
Distribution of Townsend and Rappahannock potsherds.

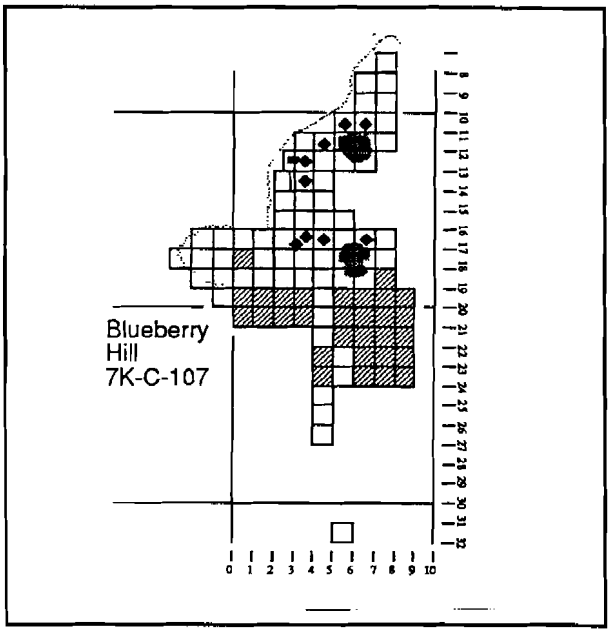

Figure 53
Contracting stems
Distribution of contracting-stem points in zones I and Ia; spots indicate features 2, 3, and 4.

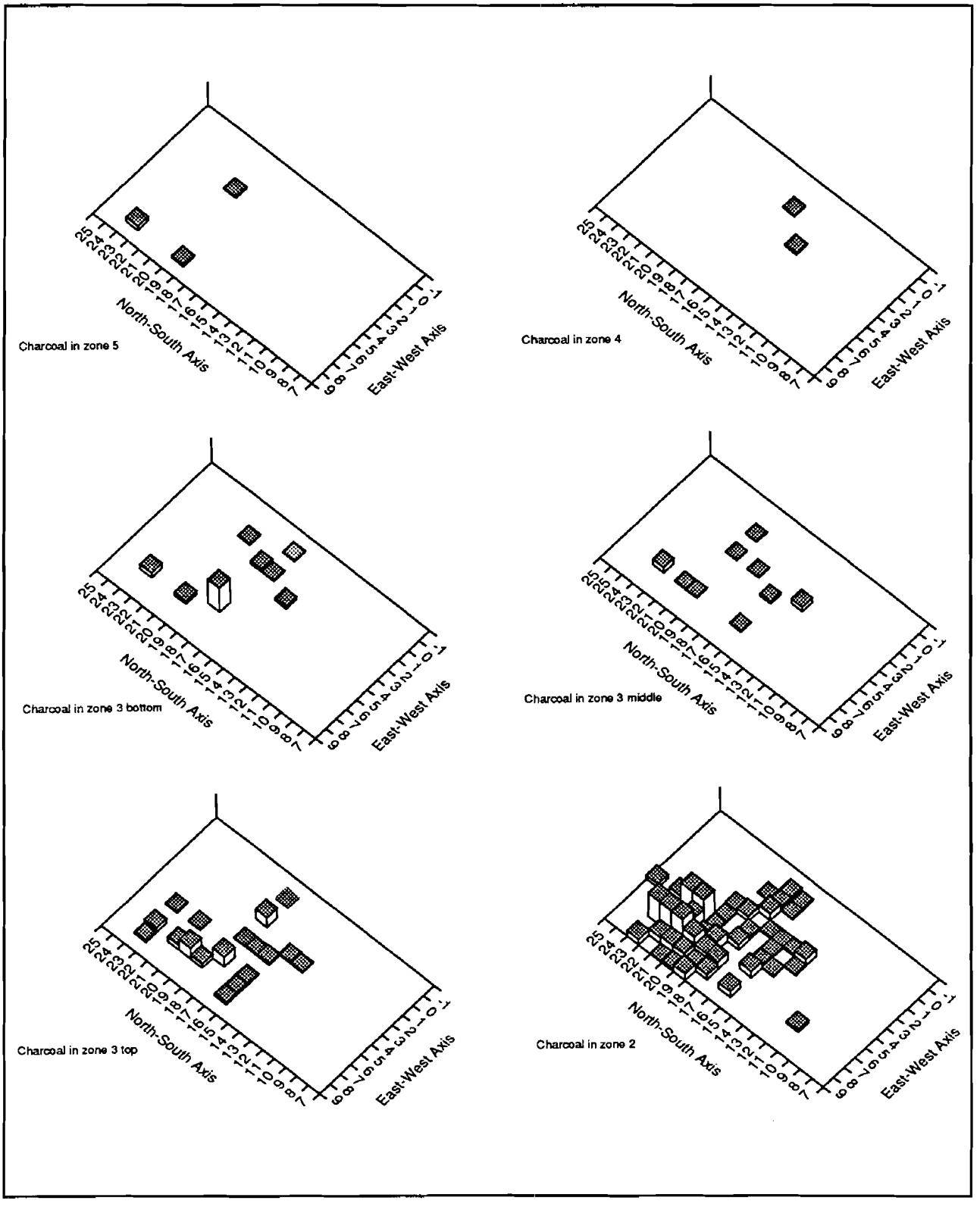

Figure 54

Distributions of charcoal concentrations in different levels

TABULATION OF CHARCOAL FROM WATERSCREENED UNITS, IN GRAMS

Zone II charcoal distribution

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11									0.5		
12											
13											
14					**1.3**	0.2					
15					0.3		0.2				
16					0.2	0.3	0.4	**1.3**		**1.2**	
17		0.2	0.2		0.2						
18		0.7	0.7	1.4		0.6	**1.1**		**1.6**	**1**	
19			0.2		1			1.8	**1.5**	0.7	**1.4**
20					0.5	0.3	0.3	0.8	3.1	1.6	0.5
21							**8.4**	**3.1**	**6.7**	**1.6**	0.2
22							**5**		**6.4**	**1.3**	
23							**2**		**6.8**		1.1
24											
25							0.8				

Lower Zone III Charcoal Distribution

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11											
12											
13											
14											
15					0.45						
16											
17		0.2		0.2							
18				0.7				**13**			
19											
20			0.2						0.7		
21											
22											
23									**1**		
24											
25											

Zone III, top, Charcoal Distribution

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11											
12											
13											
14					0.2						
15					0.4						
16						0.4		0.3	0.3	0.4	
17						0.2					
18		0.3		2.1		0.2		2.1			
19									0.8		
20									**2.3**		
21							0.2		**1**		
22											
23							0.3		0.9	0.3	
24											
25											

Zone IV Charcoal Distribution

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11											
12											
13											
14					0.3						
15											
16			0.3								
17											
18											
19											
20											
21											
22											
23											
24											
25											

Mid Zone III Charcoal Distribution

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11											
12											
13											
14					0.9						
15											
16						0.4			0.2		
17											
18					0.2						
19											
20			0.2		0.2				0.2		
21									0.2		
22											
23									**1.1**		
24											
25											

Zone V Charcoal Distribution

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19										0.4	
20				0.3							
21											
22											
23										0.9	
24											
25											

Other activities were located inland from the fires, perhaps in association with a shallow depression in Zone V, and filled with the Zone III matrix. This association suggests that the depression may be of cultural origin, possibly a pit house, but the available evidence is not conclusive.

Artifact distributions for other levels suggest that a pattern of fires clustered along the eastern (crest) edge of the site continued throughout the prehistoric period. However, multiple occupations in most levels make this particular type of evidence for site structure less clearly readable.

TABULATION OF CHERT FLAKES, ZONES II AND III

Zone II Top Chert Flake Distribution

	-1	0	1	2	3	4	5	6	7	8	9
7											
8									1	1	
9									2	3	
10								1	2	2	
11						3	4	3	3		
12					4	6	3	4	3		
13						8	5				
14					15	7	10				
15					27	3	8	7			
16		4			7	7	4	8	1	1	
17	10	7	9		3	4	1			2	
18		5	5	4	2	5	2	1		1	
19		9	6	3	2			2	1	2	
20			2	1	2	4	2	4	1		
21							3	5		1	
22										1	
23									1		1
24							1				
25											

n=273

Zone III Top Chert Flake Distribution

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11											
12											
13											
14					3		1				
15						1					
16					3	1	2	2		1	
17			3		4	3					
18		3	2		6	1	1		2	1	
19				1	1	1		1		1	
20			2		1			1	1		
21							1			1	
22									1		
23											
24											
25											

n=52

Zone II Middle Chert Flake Distribution

	-1	0	1	2	3	4	5	6	7	8	9
7										2	
8									1	2	
9									2		
10								3	2	3	
11						4	7		2	1	
12					2	1	6		1		
13							1				
14							1				
15						3		3			
16		6									
17	1	2					3				
18		2	3	3			6				
19		14			2		2				
20						3					
21											
22						1		1			
23								1		1	
24						1					
25											

n=96

Zone III Middle Chert Flake Distribution

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11								1			
12											
13											
14							2				
15											
16							1				
17			3		1	1					
18				1	7		1			1	
19										1	
20			1		4					1	
21											
22									1		
23											
24											
25											

n=27

Zone II Bottom Chert Flake Distribution

	-1	0	1	2	3	4	5	6	7	8	9
7											
8										2	
9									2		
10									2		
11								2			
12							1	2	1		
13						1					
14					1	2	5				
15					9		3	1			
16		1			3		2	2	1		
17	1	2	1		5		3				
18		2	5			2				2	
19		2			2		1			1	1
20			3				1	1	2		1
21								3	1	1	
22							1				
23											
24											
25											

n=88

Zone III Bottom Chert Flake Distribution

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18				2				2			
19				2				1	1		
20				2	1				1		
21								1			
22											
23											
24											
25											

n=14

TABULATION OF CHERT FLAKES, ZONES IV AND V

Zone IV Chert Flake Distribution

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9									1		
10											
11							1				
12											
13											
14						1					
15											
16						1					
17											
18					1						
19							1				
20											
21											
22											
23											
24											
25											
n=7											

ZONE V CHERT FLAKE DISTRIBUTION

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17				2							
18											
19											
20				1							
21											
22											
23											
24											
25											
n=3											

TABULATION OF QUARTZITE FLAKES

Quartzite Zone II Top

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9									1	1	
10								1	8	2	
11						2				3	
12						8	4				
13							1				
14					2	1	1				
15					2	3	1				
16		1					2				
17	2						2				
18								1			
19											
20							3	1			
21									3		
22							1				
23											
24											
25											
26											

Quartzite Zone II Bottom

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9											
10											
11										2	
12											
13											
14					1	1	2				
15					2			1			
16		1			1			2	1		
17											
18											
19						1	1				
20			1								
21											
22										1	
23											
24											
25											
26											

Quartzite Zone II Middle

	-1	0	1	2	3	4	5	6	7	8	9
7											
8											
9										3	
10									2	2	
11						2	2			2	
12					1	2	1				
13											
14											
15											
16									5		
17							1				
18				1			3	1			
19											
20											
21							1				
22											
23								2			
24											
25											
26											

Quartzite Zone III, Top

	-1	0	1	2	3	4	5	6	7	8	9
7											
8										1	
9											
10											
11											
12											
13											
14					1						
15						1					
16											
17							1				
18								1			
19											
20											
21											
22											
23											
24											
25											
26											

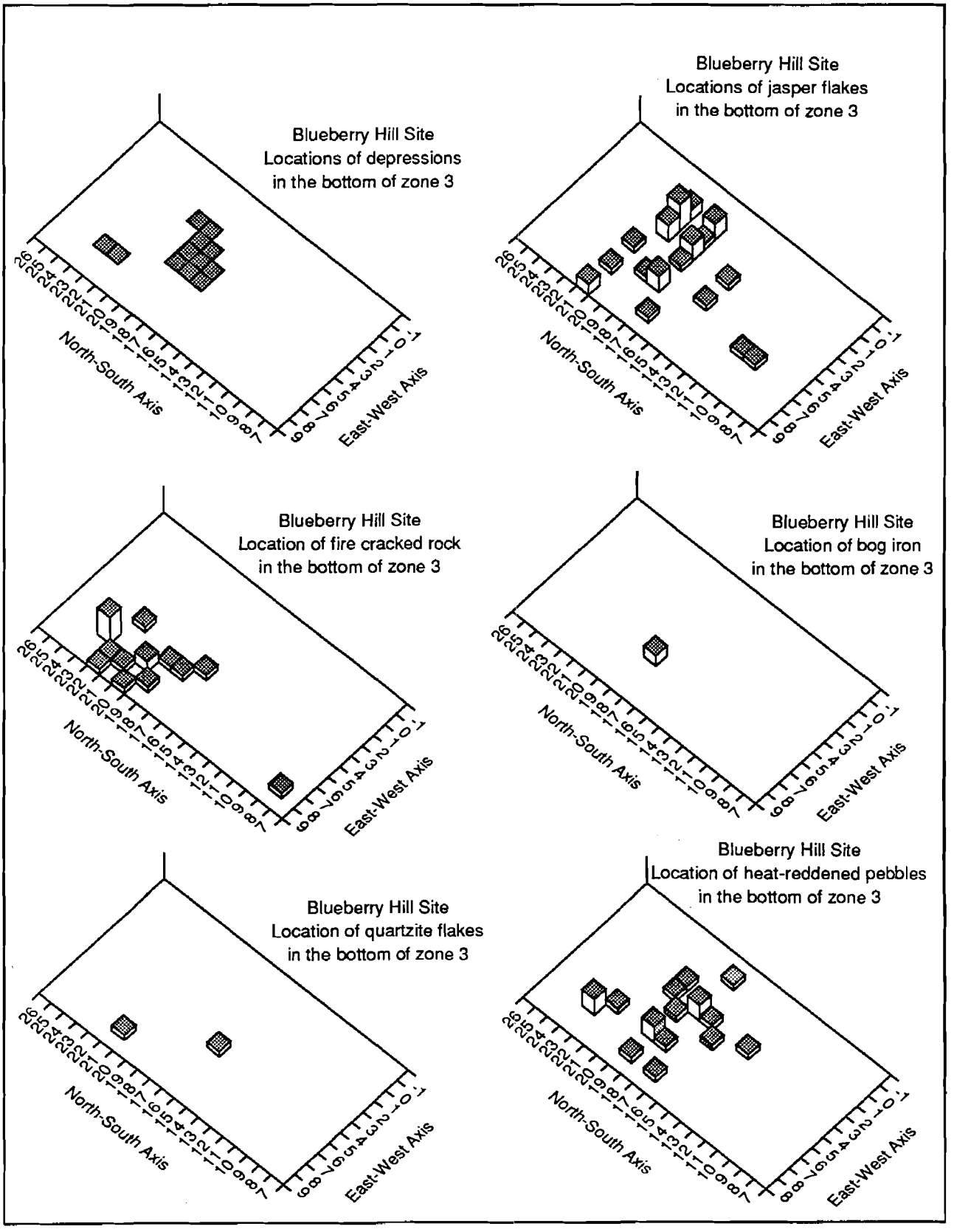

Figure 55

Activity areas in the bottom level of Zone III, as defined by artifacts

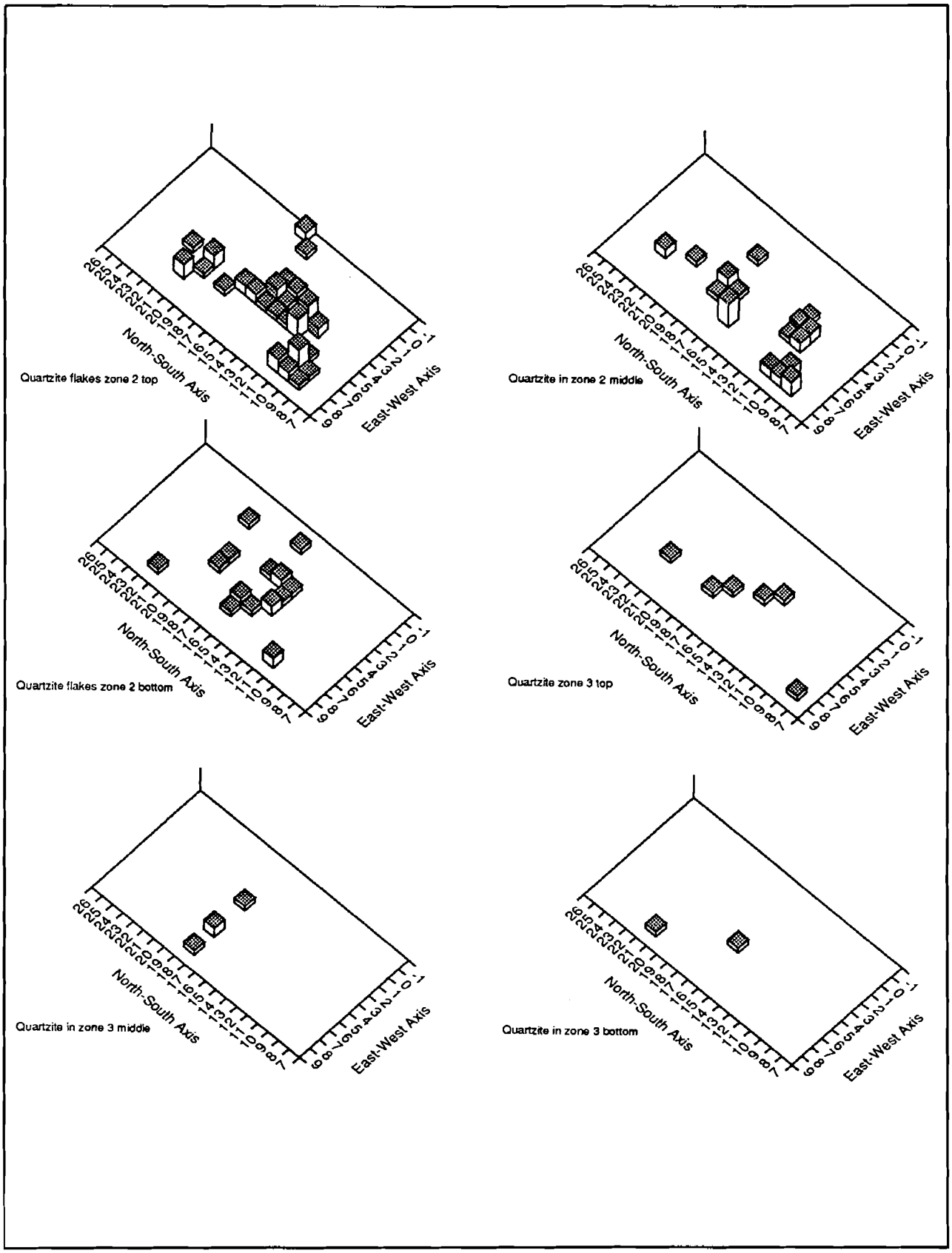

Figure 56

Distribution of quartzite in all levels