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Chapter 12: Settlement Cluster Variation

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This chapter further addresses variation among Pueblo I settlement clusters in Ridges Basin by exploring spatial patterning in architectural and extramural features, pit structure closure attributes, artifact frequencies, and faunal and botanical remains. The goal is to add a spatial dimension to the patterns identified in Chapter 10, The House and Household; to add statistical heft to the patterns identified and described in Chapter 11, Settlement Clusters; and to address the questions posed in the research design regarding settlement clusters (see Chapter 7, Pueblo I Research Questions). The settlement cluster designations identified in Chapter 11 are used here with one exception: When appropriate for a particular analysis in this chapter, 5LP185 is treated separately, rather than as part of the North-central Cluster, due to its function as a special-use site (i.e., a cemetery) and its large and distinct artifact assemblage.

SPATIAL PATTERNING AMONG CLUSTERS, SITES, AND FEATURES

Pit Structure Features

Statistical analyses of pit structure features by settlement cluster (Table 12.1) corroborate the patterns identified in the last chapter (see Table 11.3). For the Eastern Cluster, the strongest positive correlation is the presence of coped hearths. This attribute is highly variable among all the clusters and has a significantly high or low correlation for three of five clusters. Coped hearths exhibit a significant negative correlation with the North-central Cluster and Sacred Ridge and a statistically significant positive correlation with Blue Mesa. Two-hole ventilators are significantly correlated with various clusters, as well. Blue Mesa has a high positive correlation with two-hole ventilators, whereas Sacred Ridge has a high negative correlation with this attribute. Sacred Ridge is positively associated with mealing bins and conical pits.

Figure 12.1 plots the factor scores derived from the correlation matrix and displays many of the observations presented above. (Note: This graph is the same as Figure 10.5 but with the addition of settlement clusters. See Chapter 10 for a discussion of principal components analysis [PCA] of the correlation matrix.) Most notable in this graph is the statistical separation of Blue Mesa, which is highly correlated with two-hole ventilators, coped hearths, and deflectors, and Sacred Ridge, which is correlated with conical pits and, to a lesser degree, mealing bins, one-hole ventilators, and large structures.

Pit Structure Closure Variables

The abandonments of pit structures at Sacred Ridge are positively correlated with four closure variables: post-abandonment (PA) burning, human floor burial, human fill burial, and capped floor features (Table 12.2). As suggested in Chapter 10, the association of post-abandonment burning with capped floor features and a lack of floor-associated artifact assemblages suggest the careful and planned vacancy of pit structures. This appears to have occurred most often at Sacred Ridge. Capped floor features were also common on Blue Mesa.
Animal burials, both in the fill and on the floor, are positively correlated for the pit structures in the Eastern Cluster, though not in a statistically significant manner. Floor assemblages are highly associated with the North-central Cluster. And Western Cluster pit structures were burned after they were salvaged (Table 12.2).

**Artifact Assemblages**

Patterning in artifact assemblages (documented in Chapter 10) suggests two distinct sets of activities associated with Pueblo I households—one dominated by the cooking, serving, and processing of maize and the production and use of pottery, and one dominated by the production and use of stone tools, the hunting and
processing of large game, and ritual (see Figures 10.11–10.13). When case labels are added to Figure 10.11—forming Figure 12.2 in this chapter—a spatial component to this pattern becomes clear. Note that the Sacred Ridge loci and most Western Cluster sites (5LP511, 5LP549, 5LP244, 5LP510, 5LP614, and 5LP246) are part of the cluster of points to the left of the 0.0 point along Dimension 1 of this particular analysis. This statistical cluster is associated with high frequencies of scrapers, pipes, artiodactyl bones, and projectile points (see Figure 10.12). The grouping to the right of the 0.0 point contains mostly Eastern Cluster sites (5LP239, 5LP241, 5LP243, 5LP174, 5LP179, 5LP177, and 5LP634), Site 5LP185, and Blue Mesa Cluster sites (5LP2026 and 5LP2091). These sites are strongly correlated with ceramic vessels, ground stone tools, polishing stones, and pecking stones (see Figure 10.11).

When a correspondence analysis on these data incorporates settlement cluster designations, it is clear that Sacred Ridge, in contradistinction to the Eastern Cluster, Blue Mesa, and 5LP185, is the settlement cluster most highly correlated with the set of activities involving stone tools, hunting, and ritual (Figure 12.3). The frequencies of turkey separate cases along Dimension 2 of the analysis. (See Chapter 10 for a discussion of the utility of correspondence analysis as an exploratory multivariate technique.)
When turkey remains are excluded from the analysis, both because they represent a statistical outlier and because of inherent problems with them as a count variable (see Chapter 10), Sacred Ridge still correlates highly with artiodactyls, scrapers, awls, projectile points, and pipes along Dimension 1 of the analysis (Figure 12.4). The Western and North-central clusters group around cores/hammerstones and axes, and the Eastern Cluster, Blue Mesa, and 5LP185 key on the ceramic categories—jars, bowls, and seed jars. Especially intriguing in this graph is the U shape the cases make, the general east–west trend of this U shape, and the strong pattern of the easternmost settlement clusters and site grouping (Eastern Cluster, Blue Mesa, and 5LP185) in opposition to Sacred Ridge, located at the western end of Ridges Basin.
Extramural Features

Site 5LP185 exhibits the strongest positive correlations with the most types of extramural features (Table 12.3). This multifunction site contained high numbers of non-thermal pits and pit rooms without hearths (both presumably as part of its habitation function before it was a cemetery), as well as inhumations. This site was one of the earliest habitation sites in the basin (see Chapter 8, Pueblo I Chronology and Population), and pit rooms without hearths and extramural pits may have been early types of storage facilities in the area. Pit structures associated with the early component of this site also contained a high frequency of in-floor storage pits (see Chapter 11).

Figure 12.3. Scatterplot of the first two dimensions of a correspondence analysis performed on artifact count data in Table 10.6 grouped by settlement cluster.
The North-central Cluster correlates with extramural hearths, and the Western Cluster correlates strongly with surface rooms without hearths. Blue Mesa, Sacred Ridge, and the Eastern Cluster exhibit no statistically significant associations with extramural feature types, but the Eastern Cluster does have a fairly strong positive correlation with enclosures, and Sacred Ridge has a strong negative correlation with extramural hearths. This negative correlation is consistent with the general lack of extramural features associated with Sacred Ridge and the interpretation that most activities at the site occurred within the context of pit structures.
Figure 12.5 shows these associations graphically, particularly the unique association of 5LP185 with inhumations, pit rooms without hearths, and non-thermal pits. It also show the strong association of several variables, including pit rooms without hearths and non-thermal pits (primarily because of their co-occurrence at 5LP185), and the three other surface-structure types, which are all positively correlated with the Western Cluster (Figure 12.5; Table 12.3).

In summary, settlement clusters demonstrate statistically significant variation in their associated features and artifact assemblages. Sacred Ridge was the most distinct among the various clusters and was strongly associated with mealing bins, conical pits, post-abandonment burning, human floor burials, capped floor features, and artifact categories related to hunting, large game processing, and ritual. Blue Mesa sites had a high occurrence of coped hearths, two-hole ventilators, and capped floor features. Finally, 5LP185 was distinct in its strong correlation with inhumations and extramural storage facilities, including pit rooms and non-thermal pits.

**SPATIAL PATTERNING AMONG ARTIFACT TYPES AND ENVIRONMENTAL DATA**

The following presents the results of more detailed analyses of artifacts (ceramics, lithics, and faunal and botanical remains) associated with the various settlement clusters and of environmental variation evidenced by catchment analyses and studies of the agricultural potential of soils associated with each of the clusters.

**Ceramics**

Because very few and very general categories of ceramics were used in the analyses above, this section reports the distribution of wares and types, clay sources, and design distinctions among the settlement clusters. A more detailed presentation of these data is presented the ALP project volume, *Ceramic Studies* (Allison 2010).

**Ware and Type Distributions**

Although redware items are relatively rare in the ALP project assemblage (making up less than 1%), some sites contained significantly more of these wares than did other sites in the project area (Potter 2010a). In particular, 5LP185, which contained not only several habitations but also a cemetery, exhibited comparatively high quantities of redware vessels. Most of the redware appears to have come from the relatively late use of the site as a cemetery after the habitation structures there were abandoned. This site also yielded a high proportion of whiteware vessels, and these also were primarily burial items associated with the cemetery (Figure 12.6). Most whiteware vessels were bowls ($r^2 = 0.96$), both decorated and undecorated.
Whiteware bowls were also relatively abundant at Sacred Ridge, particularly at loci with oversized pit structures, such as Feature 49 in Locus 6 (Figure 12.6). Allison (2008:59) suggests that the high bowl frequencies at Sacred Ridge loci with oversized pit structures are due to communal “pot-luck” style feasting occurring in association with these structures.

By contrast, Locus 1 on top of the knoll at Sacred Ridge did not contain a high percentage of bowls nor whiteware. As Allison (2008:60) notes, access to Locus 1 appears to have been restricted, and there are no obvious public facilities there in which to conduct large communal feasts. The low whiteware bowl percentages were therefore not unexpected in Locus 1 if these vessels were consistently used during communal feasts.

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1 To show significant variations among site ceramic assemblages, 90-percent confidence intervals are plotted as dashed lines on percent plots (Potter 2010a:48). The confidence bands are based on binomial estimates on expected values derived from total assemblage proportions (Allison 2008a; Kintigh 1994). Accordingly, the smaller the sample size, the wider the interval. Cases plotted outside this interval are statistically significant at the 0.10 significance level.
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Locus 1 did contain a relatively high proportion of redware, however, as did Locus 6. (Overall, Sacred Ridge did not contain a high proportion of redware). Locus 1 occupied the crest of Sacred Ridge and contained unique architectural elements, including a wood-and-adobe tower, an enclosed plaza, and a large communal storage feature (see Chapter 11). Yet it also contained several domestic structures and undoubtedly housed several households, some or all of which apparently were successful at acquiring non-local redware pottery. Locus 6 contained a large communal pit structure, the largest structure in the project area, in fact (Chuipka 2009). It is possible that the redware associated with this structure was related to communal feasting, as Blinman argues it was at McPhee Village (1989). Additionally, Potter (2010a) notes that Sacred Ridge exhibited a high frequency of narrow-neck jars for the storage and serving of liquids, perhaps also related to feasting.

Blue Mesa had more-than-expected bird-shaped vessels and a relatively high proportion of redware, but not as much 5LP185; whiteware vessels and bowls were rare at Blue Mesa compared to Ridges Basin sites, however. Finally, the Eastern Cluster contained large quantities of whiteware, and the Western Cluster contained higher-than-expected frequencies of both wide- and narrow-neck jars (Potter 2010a).

Figure 12.6. Plot of bowl percentages versus sample size for early Pueblo I habitation site clusters in the ALP project area. The dashed lines mark the upper and lower boundaries of a 90 percent confidence band for percentages based on the total ALP project Pueblo I assemblage. Labeled cases above the upper band are considered statistically significant. Site numbers preceded by 5LP. (Potter 2009b:Figure 3.18)
Neutron activation analysis on a number of redware sherds recovered from the project area indicates differences among the settlement clusters. Thus, not only were there differences in the amounts of redware among the clusters (and by extension how much residents participated in redware exchange) but also in the sources of the redware (Allison 2010). “Most notably, residents of the Eastern Cluster and Blue Mesa obtained relatively large amounts of redware produced in the Montezuma Canyon area, while redware obtained by Sacred Ridge residents more often belonged to the compositional group that possibly indicates production near Cortez” (Allison 2010:212).

Additionally, re-fired color data for both grayware and whiteware suggest that although households within the same settlement clusters generally did not tend to use ceramics made with the same clays, Sacred Ridge was an exception. Of the seven loci from Sacred Ridge included in the analysis, six have similar proportions of white ware sherds belonging to different oxidized color groups. This indicates that they either maintained similar exchange relationships or obtained clay from similar sources if they made their own pottery, or both. Sacred Ridge Locus 2, with its unusual architecture on the ridgetop, looks different, however. Its residents apparently did not participate in whatever process led to the ceramic similarity among the other Sacred Ridge loci. Instead, its ceramic assemblage, as measured by the re-fired colors of white and gray ware sherds, is distinct from the other Sacred Ridge loci, as well as from other proveniences in the project area. (Allison 2010:213)

**Design**

Allison (2010) notes a similar pattern in the design element analyses for the project. Whiteware design element distributions were similar among most of the Sacred Ridge proveniences with the exception of the ridgetop loci. Similarly, the design structure analysis hints that Eastern Cluster residents made or acquired vessels with certain specific designs (bisected layouts and center-rim design units) more often than did residents of the other settlement clusters (Allison 2010:213).

**Lithics**

This section briefly describes distributions of flaked stone tools and ground stone tools among Pueblo I settlement clusters in the ALP project area. A more detailed presentation of the data is presented in ALP project volume *Lithic Studies* (Railey and Wesson 2009).

**Flaked Stone Tools**

As suggested by Figures 12.3 and 12.4, flaked stone tool assemblages exhibited substantial variation among settlement clusters. One of the strongest patterns was in the frequencies of general tool types (Figure 12.72). Blue Mesa and the Eastern Cluster, for example, had high frequencies of angular debris/shatter, and relatively few tools, fewer projectile points, and—at Blue Mesa—fewer cores than expected, given the overall proportions of these items in the total assemblage (Railey 2009d). By contrast, Sacred Ridge and the Western Cluster exhibited high frequencies of projectile points, tools such as scrapers, and cores. Railey (2009d:95) notes that processing and production activities involving tools were much more common relative to other tasks at Sacred Ridge and the Western Cluster sites than at the other site groups. The high frequency of projectile points at Sacred Ridge further suggests that hunting was particularly important to Sacred Ridge occupants.

*Examination of the adjusted chi-square residuals is useful for understanding which specific variables are responsible for causing a chi-square to return a significant result. For each cell in a chi-square table, the adjusted chi-square residual provides a value ranging from $-\infty$ to $+\infty$. Values above $+2$ or below $-2$ indicate significant deviations from the expected value and can be read roughly as standard deviation units.*
The flaked stone tool assemblage from Sacred Ridge also differed from those of other settlement clusters in that it has far fewer cores/hammerstones and unhafted choppers/axes and more scrapers, drills, perforators/engravers, and used flakes. The Sacred Ridge assemblage also looks very different from the Eastern Cluster and Blue Mesa assemblages in terms of flaked stone raw material frequencies (Railey 2009d). Although this pattern may to a certain degree reflect spatial proximity to particular raw material sources, this variable certainly did not factor into access to non-local materials such as obsidian, which occurred in higher-than-expected frequencies at Sacred Ridge and the sites of the Western and North-central clusters, suggesting some measure of differential access to this non-local material.

Analyses of flaked stone patterns among loci at Sacred Ridge showed high frequencies of cores/hammerstones and flakes on the ridgetop, suggesting that flintknapping was, in comparison with other tasks, a focal activity there. Heavy-duty tasks involving unhafted choppers/axes and more detailed work involving drills and perforators/engravers were also important production and processing activities at the Locus 2 household. More mundane tasks involving expediently used flakes were much less common at the ridgetop households than at those downslope.

Ground Stone Tools

Blue Mesa sites had the highest mean percentage of ground stone in their total lithic assemblages (flaked stone + ground stone items) at 10.8 percent. The Eastern Cluster had the second-highest mean percentage at 8.0 percent, and Sacred Ridge exhibited the lowest mean percentage at a mere 5.8 percent (Wesson 2009) (Figure 12.8). The high mean percentage at Blue Mesa suggests that floral resources were more important in the subsistence strategy employed by the people occupying this area than at the other two clusters.
Although Sacred Ridge exhibited the lowest ratio of ground stone tools in its overall lithic assemblage, metates made up 30.5 percent of the Sacred Ridge ground stone tool assemblage. By contrast, the percentages at Blue Mesa and the Eastern Cluster were 13.6 percent and 18.3 percent, respectively. Wesson (2009:223) suggests that raw material availability may have been a factor, but it appears that the milling of corn in trough metates was more important at Sacred Ridge than at Blue Mesa or the Eastern Cluster. Another possibility is that Sacred Ridge may have served as a central milling location to which people from nearby sites would travel to process corn.

Wesson (2009:224) goes on the note that the higher percentages of ground stone tools at the Blue Mesa sites is largely due to a very high occurrence of both one-hand and two-hand manos, and he suggests that this may have been due to greater raw material availability at this location. Moreover, the milling of maize, as represented by two-hand manos and trough metates, was practiced at all clusters, but the high percentage of trough metates (and metates overall) at Sacred Ridge suggests that the relatively limited milling activity conducted there was focused on the processing of maize rather than gathered plants.

**Faunal Remains**

Faunal taxonomic frequencies varied significantly among the various settlement clusters (Potter and Edwards 2008) (Figure 12.9). The aggregate assemblage from the Eastern Cluster contained a high relative proportion of waterfowl, as might be expected given the cluster’s proximity to the marsh (see Chapter 9, The Natural Environment). This group of sites also stands out in its high relative frequency of non-domestic carnivore, domestic dog, and turkey remains. In addition, the Eastern Cluster yielded the only occurrences of fish and reptiles in the ALP project assemblage. Osteichthyes and Reptilia bones compose 0.14 percent and 2.50 percent of the assemblage, respectively. (These species are not included in the analysis depicted in Figure 12.9.)

The assemblages from the Western Cluster, North-central Cluster, and Blue Mesa contain high relative frequencies of lagomorphs (Figure 12.9). The North-central Cluster of sites yielded a high proportion of lagomorphs, particularly jackrabbits; the lagomorph index value for the North-central Cluster is the lowest of all the cluster assemblages, indicating a high proportion of jackrabbits to cottontails (Figure 12.8).
Blue Mesa sites also yielded a high proportion of lagomorphs, but this cluster, in contrast to the North-central Cluster, yielded the highest lagomorph index value, indicating a high relative proportion of cottontails to jackrabbits.

The faunal assemblage from Sacred Ridge, the largest site in the project area, contains a high proportion of ungulates, dogs, birds of prey, and game birds, primarily grouse and/or prairie chicken. The artiodactyl index value for Sacred Ridge is significantly higher than that of any other cluster of Pueblo I habitations. These distributions are interesting because they may not be related strictly to environmental factors. Greater relative frequencies of ungulates (i.e., artiodactyls) at the large site, for example, may relate to differential access to highly valued resources within the community or to the occurrence of ritual or feasting events that involved the consumption of large game at the large site. Likewise, higher proportions of birds of prey, such as hawks, falcons, and eagles, may relate to more frequent uses of these animals or their feathers for rituals and ceremonies at Sacred Ridge than would have been the case at other sites in the project area.

In sum, taxonomic variation in faunal assemblages among most Pueblo I habitation clusters appears to complement environmental variation across the project area. Sites closest to the marshy bottom of Ridges Basin contained waterfowl and fish remains. Sites in open grassy areas of the basin contained numerous jackrabbit remains, as would be expected, and sites in prime agricultural areas contained numerous cottontail remains, also as expected. Possible exceptions to this general trend are the high relative frequencies of ungulates at Sacred Ridge, and high relative frequencies of wild carnivores, domestic dogs, and turkeys at Eastern Basin sites found primarily in contexts related to pit structure closure and human burials.

Figure 12.9. Scatterplot of the first two dimensions of a correspondence analysis performed on counts of animal group by cluster (Potter and Edwards 2008:Figure 12.3).
Botanical Remains

Botanical remains from flotation and pollen samples are very similar among settlement clusters. Each cluster exhibited evidence of a heavy reliance on both wild plants and maize. Reliance on maize seems to have varied slightly, however. Ubiquity values for maize kernels (i.e., the percentage of flotation samples from which maize kernel remains were recovered) ranged from 30 percent to 39 percent (see Figure 12.8). From lowest to highest were Sacred Ridge (30%), the North-central Cluster (31%), the Western Cluster (33%), the Eastern Cluster (36%) and Blue Mesa (39%). Blue Mesa stood out also in its high ubiquity for cupule and cob fragments (85%) and maize pollen (87%) (Figure 12.11).

In addition, some settlement clusters exhibited evidence of unusual plant remains. The Eastern Cluster had abundant cattail remains, presumably harvested from the nearby marsh (see Chapter 9). Cattails produce high quantities of harvestable yellow pollen that could have been used in blessings, as a paint source, or as a source of protein (Adams and Murray 2008:202). The Eastern Cluster, the Western Cluster, and Sacred Ridge each had evidence of tobacco in the form of charred seeds. This plant was probably used in ceremonial contexts. Pipes were also relatively abundant at Sacred Ridge and in the Western Cluster (see Figures 12.3 and 12.4). The North-central Cluster and Sacred Ridge had evidence of domesticated beans. Evidence of squash or gourds was found at Blue Mesa, the North-central Cluster, the Eastern Cluster, and Sacred Ridge (Adams and Murray 2008).

Catchment Analysis

A catchment analysis provided a quantitative evaluation of wild plant food potential surrounding three Pueblo I settlement clusters—Sacred Ridge, the Eastern Cluster, and Blue Mesa (Adams and Reeder 2009). The results suggest that the Sacred Ridge site was better situated for wild plant resource procurement in Ridges Basin than was the Eastern Cluster. Sacred Ridge was likely surrounded by relatively larger proportions of plant communities.
with high subsistence values for both the 1-km-radius and 2-km-radius catchments. For the 7-km-radius catchment, both of these Pueblo I settlement clusters shared 74 percent of overlapping plant communities, resulting in no wild plant food potential advantage for one cluster over the other. Interestingly, both Sacred Ridge and the Eastern Cluster were better situated than the Blue Mesa sites with respect to wild plant productivity.

**Agricultural Potential**

Soil fertility studies conducted in the ALP project area indicate variable soil quality for crop production throughout Ridges Basin (Anderson 2008b). Soils at the base of Basin Mountain, in the southern part of the basin, contained had relatively high values for nitrogen and phosphorous. This area had a slight northern exposure, however, and no habitation sites were located in this area.

The worst area in the basin to grow crops was the eastern part of the basin, particularly in the Eastern Cluster. Despite good nitrogen levels, soils in this area had high clay content and very low levels of phosphorous and were limited as well by high salinity (Anderson 2008b:80).

During drought years, the effects of desiccation would have increased salinity in these soils, making the drought years worse for crop production. Pueblo I inhabitants growing crops on the Carbon Mountain fans (the Eastern Cluster) would have experienced particularly harsh conditions and crop failures during drought years, due to the high clay contents holding water and breaking plant roots, and due to the increasing salinities during drought episodes.

Anderson (2008b) notes that experimental farm plots established as part of the ALP project demonstrate that soils in the various settings of Ridges Basin were of sufficient quality to grow maize, beans, and squash for at least two years (see Chapter 9). However, with the relatively low values of phosphorous and nitrogen in some of the settings, these soils would have become rapidly depleted. Fallowing of certain fields probably would have been necessary.

**SUMMARY: ADDRESSING THE RESEARCH DESIGN**

One of the goals of this chapter is to further characterize the Pueblo I residential site clusters in the project area and address the questions posed in the research design regarding these settlements (see Chapter 7). This final section restates those questions and offers brief responses, summarizing the patterns described above.

![Figure 12.11. Bar chart of percentage of samples from which maize kernel remains, cupule and cob fragments, and maize pollen were recovered, by settlement cluster.](image)
Do these clusters represent villages?

In much of the archaeological world, the term village refers to relatively permanent, multifamily residential clusters of variable size and density (Bandy and Fox 2010). In this sense, each of the settlement clusters in the ALP project area might represent one or more villages. However in the American Southwest, village formation has generally meant more specifically the appearance of settlements of a size greater than a specific threshold. Wilshusen (1991:204), for instance, has defined a village as having a minimum of 15 households, or 75 inhabitants. Smaller settlements are referred to as hamlets. Bandy and Fox (2010) note that this usage is broadly consistent with the terminology used among New World archaeologists (e.g., Sanders et al. 1979). By these definitions, each of the large clusters recorded by SWCA—Sacred Ridge, the Eastern Cluster, the North-central Cluster, the Western Cluster, and Blue Mesa—might qualify as a village.

Degree of aggregation in conjunction with size is another trait often applied to the definition of village (Kohler 1992; Lightfoot 1994:128–129; Wilshusen 1991; Wilshusen and Potter 2010). If tight aggregation, or nucleation, is considered a criterion, as well as population size, then the North-central Cluster, the Western Cluster, and Blue Mesa probably would not qualify as villages. Sacred Ridge and perhaps the Eastern Cluster may be aggregated enough to be considered villages, however.

Recently, Potter and Yoder have argued that villages are “dominant locales” (Gregory 1989); that is, they are not only concentrations of population “but also the loci of the communal storage of surpluses, communal rituals, and special architectural features not found among more dispersed settlements” (Potter and Yoder 2008:22). In other words, villages are set apart from the settlement cluster both quantitatively (in terms of sheer size and numbers of households) and qualitatively (in terms of the kinds of facilities present). Given these criteria, the Sacred Ridge site would be the only settlement cluster in the project area that qualifies as a village, albeit a small one by most standards. If further excavations on Blue Mesa were to uncover substantial communal architecture, this cluster might qualify as a village. As it stands, it remains a large community of dispersed houses.

Is the placement of clusters on the landscape structured by environmental or catchment variables (e.g., arable land and water) or by social variables (such as proximity to other clusters or defensibility concerns)?

Studies indicate that there were advantages in the location of some but not all settlement clusters with respect to environmental variables. All of the clusters in Ridges Basin, with the exception of 5LP185, were situated above the cold-air pool (Bellorado 2007; see Chapter 4, Basketmaker II Sites). In addition, none were located on the south side of Ridges Basin at the base of Basin Mountain; that is, no habitations were on north-facing slopes.

The North-central Cluster extended along the base of Wildcat Ridge, paralleling the distribution of Basketmaker II sites (see Figure 4.7). As did the Basketmaker II people, occupants of these Pueblo I sites undoubtedly reaped the benefits of their position along these south-facing slopes close to the most productive agricultural soils in the basin (see Figure 4.13). As Figure 12.11 suggests, maize agriculture appears to have played a relatively substantial role in the diet of these people.

By contrast, the Eastern Cluster was situated in some of the poorest soils for growing crops. This fact does not appear to have precluded this group from growing and consuming amounts of maize comparable to other settlement clusters and more than the Western Cluster occupants, however (see Figure 12.11). The Eastern Cluster was positioned relatively close to the prehistoric marsh, and its occupants appear to have taken advantage of that location by collecting cattail pollen, fish, and water fowl.

According to the catchment analysis conducted for three clusters, Sacred Ridge stood out as one of the best places
in the project area from which to collect wild plants. Frequencies of ungulate remains and projectile points also indicate that the occupants of this locale were more intensively involved in large game hunting. The location of this settlement in the west end of the basin—with good access to upland areas such as Basin Mountain and Wildcat Ridge—may have been a factor. The primary variable influencing the location of this settlement, however, may have had nothing to do with environment and was more likely the site’s visible position on top of a large knoll overlooking the valley.

Botanical evidence and ground stone tool data indicate the occupants of Blue Mesa were the most intensive agriculturalists in the project area. Better soils than in Ridges Basin (Anderson 2008b; Potter and Chuipka 2007b) and the absence of a cold air drainage undoubtedly made Blue Mesa an attractive place for dry farmers. The high cottontail frequency among Blue Mesa sites suggests that garden hunting was the most frequent form of hunting undertaken by Blue Mesa households.

The Western Cluster actually consisted of two clusters of houses, one on the north side of Basin Creek and one on the south side next to Sacred Ridge (see Figures 11.3 and 11.4). (Additionally, one site [5LP536] was on Wildcat Ridge, well outside both of these clusters.) It is unclear what attracted the occupants of these sites to this part of the basin. Western Cluster occupants appear to have relied on (or had access to) cultivated maize to a lesser extent than occupants of other settlement clusters (see Figure 12.11), and faunal data do not indicate an inordinate amount of large game hunting having occurred in this cluster. Furthermore, this cluster was not part of the catchment analysis, so it is unclear what value wild plants had in this cluster as compared to Sacred Ridge, the Eastern Cluster, and Blue Mesa (Adams and Reeder 2009). Households to the south of Basin Creek may have been attracted to that area because of its proximity to Sacred Ridge. Chronological data indicate that these sites, especially 5LP244, and Sacred Ridge were some of the latest in the basin to have been occupied (see Chapter 8).

As stated in Chapter 7, Winter et al. (1986) identify a pattern in Ridges Basin in which upland Pueblo I habitation sites generally appeared to be smaller and less clustered than lowland sites. Ware (1986a) proposed that these patterns are the result of seasonality—lowland sites were used in the winter and upland sites were occupied during the spring, summer, and fall. However, data from two habitations located well above Ridges Basin along Wildcat Ridge—5LP536 in the Western Cluster and 5LP236 (the Hoodoo Ruin) in the North-central Cluster—do not support the contention of seasonal habitation. Pit structures at these sites were as large and substantial as any in the basin (see Figures 11.7 and 11.8), and both sites contained substantial middens and surface rooms. Artifact assemblages were also comparable with those associated with habitation sites in the basin, and botanical remains suggest these sites were occupied at a minimum from the spring to the fall (Adams and Murray 2008:202–207). Upland sites do, however, appear less clustered than some lowland sites (e.g., there is nothing on Wildcat Ridge approximating the clustering evident at the Sacred Ridge site or in the Eastern Cluster). This topic is addressed in the following section.

Are all clusters similarly organized, or is there an organizational hierarchy?

Obviously Sacred Ridge was unique among the settlement clusters in its organization. If there was an organizational hierarchy among the settlement clusters, Sacred Ridge would have been at the apex of that hierarchy. The organizational structure of the community and the role of Sacred Ridge in this structure are addressed in Chapter 13, The Community.

Organizational differences among the non–Sacred Ridge clusters are apparent. Lithic and ceramic data suggest, for instance, that the Eastern Cluster and Blue Mesa were more closely related to each other than to the other site groups and were most unlike Sacred Ridge. These are also the most highly aggregated clusters of households. These patterns suggest that people living at
the Sacred Ridge site and possibly the Eastern Cluster and Blue Mesa sites shared relatively homogeneous social identities and were closer socially to other households in their own settlement clusters than to households across the rest of the project area.

By contrast, the dispersed nature of the Western and North-central clusters suggests that “the occupants of these sites may have included a social mélange of settlers within Ridges Basin who were not clearly related to either Sacred Ridge or the Eastern/Blue Mesa sites” (Railey 2009d:95). The relationship among clusters is further explored in Chapter 13 and in Chapter 14, The Economy.

Is economic and/or social interaction evident among the clusters? Is there evidence of interdependence?

Although there are notable material culture distinctions among at least some of the settlement clusters in the project area, some data—the distribution of locally produced ceramic vessels, for instance—suggest that interaction occurred among households of different clusters. Social interaction among clusters is inferred from the distribution of locally produced ceramic vessels, for instance. Allison (2010) reports that the distributions of the re-fired colors of grayware and whiteware vessels suggest that households within the same settlement clusters generally did not use ceramics made with the same clays; they may have acted independently in obtaining whiteware and grayware pottery or the raw materials for pottery making. Exchange among households would also tend to produce a pattern of heterogeneity within clusters and a lack of distinction among clusters.

In addition, ceramic data suggest that a certain level of communal feasting occurred at Sacred Ridge, particularly in the loci containing oversized pit structures. As noted above, Allison (2008:59) suggests that the high bowl frequencies at Sacred Ridge loci with oversized pit structures is due to communal pot-luck-style feasting occurring in association with these structures. If that was the case, participants of these events may have come from different settlement clusters within the community. But, as also noted by Allison, loci at Sacred Ridge had similar proportions of whiteware sherd belonging to different oxidized color groups. He suggests “this indicates that they either maintained similar exchange relationships or obtained clay from similar sources if they made their own pottery, or both” (Allison 2010:213). Another possibility is that each locus hosted communal feasts and that similarities in the proportions of various whiteware groups reflect similarities and consistency in participation in these events across the site.

Households in various settlement clusters appear to have emphasized certain tasks and the production of certain items or commodities. At Sacred Ridge, large game hunting and animal processing were conducted more frequently than in other clusters (see Figure 12.3). In the Eastern Cluster the association of high frequencies of various pottery types, polishing stones (see Figure 12.3), and the only two possible kilns found in the project area suggests that pottery production was emphasized. Blue Mesa appears to have been the cluster that produced or relied upon maize agriculture to the greatest extent (see Figures 12.8 and 12.11). This, of course, does not mean that Sacred Ridge occupants did not make pottery or grow maize, or that Eastern Cluster occupants did not hunt and grow maize. They obviously did. But it appears that various economic endeavors were emphasized in the different clusters, and this may have influenced and helped define exchange relations among the households of various clusters and encouraged a certain level of economic interdependence. However, there is little evidence of economic specialization among various households or clusters, and the interdependence of groups appears to have been far less than documented for later groups (e.g., Spielmann 1991).

Is there another level of organization above the cluster?

The Pueblo I settlement clusters identified in Ridges Basin composed a community. The following chapter attempts to characterize the structure and organization of this community and compare it with other early Pueblo I communities in the northern Southwest.
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