

**HOUSES AND FIELDS, KIVAS AND SHRINES:
THE ANASAZI LANDSCAPE OF BANDELIER NATIONAL MONUMENT**

by

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Bandelier National Monument is located 32 km (20 mi) west of Santa Fe, occupying 132 square kilometers (51 sq mi) of the Pajarito Plateau, a high tableland of volcanic tuff lying between the Jemez Mountains to the west and the Rio Grande to the east. Bandelier covers most of the southern portion of the Plateau, along with parts of the flanks of the Jemez Mountains, with the detached Tsankawi unit 8 kilometers to the northeast (Figure 1). The Pajarito slopes gently northwest to southeast from the foot of the Jemez to the Rio Grande. Broad flat mesa tops are separated by deep canyons carved into the soft tuff by permanent and ephemeral streams. Bandelier covers a wide range of elevations, from just under 1600 meters (5300 feet) elevation near the Rio Grande, up to 3100 meters (10,200 feet) near the top of Cerro Grande. Several distinct elevational and vegetational zones are contained within the park, including juniper grasslands at the lowest elevations, piñon-juniper woodlands, ponderosa pine forests, spruce-pine forests, and mixed conifer forests at the highest elevations. The varied environmental zones provided the Puebloan inhabitants of Bandelier with a wide variety of plant and animal resources, as well as with varying opportunities for agricultural use of the landscape.

The National Park Service conducted an archaeological survey of Bandelier from ¹⁹⁸⁷1985 through ¹⁹⁹¹1990. Although the monument was created in 1916 for the express purpose of protecting the Anasazi remains within it, this was the first comprehensive and detailed inventory survey. Concurrent with the survey, Washington State University conducted test excavations at five sites (Kohler 1989, 1990; Kohler and Root 1992; Linse et al. 1993). A total of 43% of the surface area of the monument was surveyed, providing representative samples from each broad vegetation zone within the monument. Surveyed areas included both randomly selected and judgementally selected areas. The survey

identified and recorded a total of 1959 sites, the majority of which belong to the Anasazi period between A.D. 1150 and A.D. 1600 (Powers and Van Zandt 1994). After A.D. 1600, habitation within the area of the monument largely ceased. The area continued to be used sporadically in historic times, and is still used by Pueblo peoples today. Most of the Anasazi occupation of the monument is concentrated in zones under 2200 meters (7200 feet) in elevation, used for both habitation and agricultural purposes. Higher elevations were used less intensively, primarily for hunting, gathering, and raw material procurement.

This paper will focus on three main aspects of the Puebloan landscape within Bandelier: on use of the landscape for habitation, for agriculture, and for ritual activities. Changes in landscape use are related to overarching trends in population and aggregation, and in order to examine these changes it is first necessary to outline the basics of the site typology, site dating, and population estimates used by the Bandelier survey.

Site Typology, Dating, and Population

The site typology used here distinguishes between habitations and non-habitations, defined primarily on the basis of duration of occupation (Powers et al. 1994). Habitations are those sites that were determined to have been used year-round or for winter occupation, exhibiting a full range of domestic activities. Classification of sites as habitations was made on the basis of analysis of ceramic and lithic assemblages, with architecture also taken into consideration. All habitations have at least one structure present, along with sherd and lithic scatters.

Non-habitations, in contrast, were used for a limited part of the year, and show much greater variability in the nature of use. Some may have been used for a wide range of domestic activities (as in full-summer use field

houses), others for a limited range of domestic activities (as in field houses used for only a short time), and yet others for a very limited range of specialized activities (as in lithic quarries or rockshelters used as temporary camps) (Ellis 1978; Sebastian 1984). Only non-habitations with structures present will be considered here. Unknown sites could not be reliably assigned to either the habitation or non-habitation category. Within these broad categories of habitation and non-habitation, different types of sites are distinguished mainly on the basis of architectural attributes.

Habitation sites all have associated structures, and most of the non-habitation sites considered here do as well. In Bandelier there are two basic kinds of structures, masonry structures and cavate structures (Powers et al. 1994, Van Zandt 1994). Masonry structures are all built of stone masonry, usually set in adobe mortar. Adobe construction, commonly found in other parts of the Southwest, and even on other parts of the Pajarito Plateau, is almost entirely unknown at Bandelier. Cavate structures are partially or entirely excavated from the soft volcanic tuff, with or without associated masonry walls. Although rare in most parts of the Southwest, cavates are common on the Pajarito Plateau.

We have recognized three types of masonry structures and three types of cavate structures, primarily on the basis of estimated numbers of rooms. Communal pueblos and communal cavate pueblos all have at least one hundred rooms and are the largest structures found at Bandelier. All communal cavate pueblos have numerous masonry rooms built in front of the excavated cavate rooms. The largest communal pueblo within Bandelier, Tyuonyi Pueblo (LA 82), is estimated to have four hundred rooms, with parts of the pueblo originally standing three stories high. All communal pueblos have central plazas with kivas, and both communal pueblos and communal cavate pueblos typically also

have associated minor features. Not surprisingly, all communal pueblos and communal cavate pueblos are habitations.

Masonry and cavate pueblos, defined as any structures with more than six and fewer than one hundred rooms, are usually also habitations. Most have extensive associated scatters, and some also have minor features. Pueblos with kivas visible on the surface were rare, and the number of sites with kivas is undoubtedly underrepresented, since excavation data indicates not all kivas provide surface indications of their presence (Linse et al. 1992). A few pueblos and cavate pueblos were classed as non-habitations, with artifact assemblages that did not appear to reflect long-term use.

Finally, masonry small structures and cavate structures were defined as having five or fewer rooms. When the survey was designed, it was assumed that structures with so few rooms were unlikely to have been used as habitations, and indeed most were not. A few small structures and cavate structures, however, proved to have artifact assemblages that were indistinguishable from those at larger pueblos, and so are classed with other habitations despite their small size. Non-habitation small structures and cavate structures were primarily used as field houses.

The survey did encounter non-habitation sites with other kinds of structures, such as rockshelters, and a variety of non-habitation sites lacking structures, such as trails, rock art panels, sherd and lithic scatters, quarries, etc., but they will not be considered here. This paper will focus on only two kinds of non-habitation sites other than those outlined above, both of which have clear ritual functions. Shrines usually consist of a circle of heaped rock, sometimes with central stones altered into figures, such as the well-known Shrine of the Stone Lions (LA 50977). Unfortunately, few shrines have datable artifact assemblages and many have been altered by

recent use. Whether this use is by Pueblo peoples or by casual park visitors and adherents of "New Age" religions is difficult to tell (Smith 1994). The other kind of ritual site consists of a kiva or kivas not associated directly with a habitation. Isolated kiva sites are classified as non-habitations, and occasionally have nearby small structures. Clearly, though, they are not simply functioning as field houses. Although uncommon, the distribution of shrines, isolated kivas, and pueblos with kivas can provide information about the organization of ritual activity, and about changes in that organization through time.

In order to look at change through time, it is critical to have dates for the sites. All dates of Bandelier Survey sites are based on ceramic identifications made in the field. Refined ceramic dating by Jan Orcutt (1994a) allows us to look at periods shorter than the traditional ones used in the area. Orcutt defined eleven periods of prehistoric Puebloan occupation, ranging in length from 15 to 85 years (Table 1). These eleven periods will be used here to present data on changing use of Bandelier for habitation, agriculture, and ritual.

Population estimates were derived, also by Jan Orcutt (1994b), from roomblock areas and numbers of habitation rooms in each period, and Figure 2 shows the overall population curves for Bandelier. Occupation begins in the A.D. 1150s, with slow population growth in the Early Coalition Periods 1 and 2. Population begins to grow more quickly in Period 3, with a rapid increase in Period 4. The Late Coalition, here broken into two periods, shows a surprising and precipitous population drop in Period 5, followed by recovery and renewed population increase in Period 6. The overall pattern in the Classic, Periods 7 through 11, is of population decrease. The rapid population increases in Periods 4 and 6 are obviously greater than would be

possible through natural population growth, suggesting immigration is largely responsible for the increased number of people in Bandelier.

It is illuminating to compare the population graphs with those for aggregation, also the result of Jan Orcutt's work (1994b), which shows to what extent people are clustered into larger, denser villages (Figure 3).

Aggregation reaches an initial peak in Period 4, decreases in the depopulated Period 5, renews again in Period 6, and reaches a final peak in Period 8, with aggregation remaining generally high in subsequent periods despite the overall population loss in those periods. These general trends in population and aggregation are important when considering how people were using the landscape.

Period 1 (A.D. 1150-1190)

Settlement of the Bandelier area begins in the A.D. 1150s, during the Early Coalition period. During the initial colonization of the area in the Early Coalition Period 1, population is small, with most of the occupation of Bandelier along the Rio Grande and on the broad mesa top south of Frijoles Canyon (the Potrero del Rito) (Period 1 Map). Habitations are few in number, and small, most having fewer than 15 rooms. Pueblos are either isolated or appear in small groups of two or three adjacent pueblos. Habitation use-lives were probably relatively short, since occupants could simply move when agricultural lands in the vicinity of pueblos became depleted.

Period 1 ritual structures are rare, and most are directly associated with habitation sites. Three pueblos, all three among the larger pueblos in this period, have visible kiva depressions. Each obvious small cluster of pueblos has at least one with a kiva. In addition to these three pueblos with kivas, a possible great kiva depression, the only great kiva of its kind located on the survey, may date to this period as well, although it is

immediately adjacent to a pueblo that dates to the following period, and so is more likely to be associated with that pueblo.

Field houses have several nonexclusive roles in Puebloan society, functioning as temporary residences near fields (Moore 1978; Ellis 1978), as ways in which to reduce distances traveled to fields (Orcutt 1991, 1993; Preucel 1988), and as visible markers of claims to land (Kohler 1992). Because habitations in Period 1 were small, with plenty of room around them for adjacent fields, we expected to see few field houses. In contrast to our expectations, Period 1 shows a surprising number of non-habitations, outnumbering habitations about three to one. This may be because in the initial colonization some habitations were used for such short times that their artifact assemblages are indistinguishable from those at non-habitations.

What do these site distributions imply for the social landscape during the initial colonization of Bandelier? People are moving into Bandelier in small groups, and are settling in small pueblos with fewer than thirty people living in them. It is likely that these pueblos are being settled by a few related extended families. Each habitation was probably largely self-sufficient in terms of agriculture, and there should have been little competition over land, since land was in abundant supply. Short habitation use-lives make it likely that a given individual would have moved several times over the course of a lifetime, with residential mobility over the course of decades. Each pueblo may also have been self-sufficient in ritual as well, although this is more difficult to determine. If all pueblos do actually have kivas or ceremonial rooms, then ritual self-sufficiency would seem to be the case. If, however, not all pueblos have kivas, those with kivas may be serving as the ritual centers for several adjacent habitations. Without more

comprehensive data on kiva presence and absence, however, this intriguing possibility is impossible to demonstrate. Although most of the evidence points towards general independence of individual pueblos, the small groupings of pueblos suggest that inhabitants of nearby pueblos may be cooperating in some ways, perhaps through kin ties.

Period 2 (A.D. 1190-1220)

Period 2 shows a clear continuation of the pattern established in Period 1 (Period 2 Map). The overall distribution of sites is similar to that in the preceding period, although occupation has expanded to the north. The first habitation north of Frijoles Canyon is established in this period. Population is increasing slowly, probably through gradual continued immigration combined with natural population growth. All Period 2 habitations are in new locations; no pueblo sites were reused from Period 1. Habitations still have short use-lives, and most are still small pueblos, although a few larger pueblos do appear in this period, the largest having an estimated thirty-five rooms. As in the preceding period, some habitations are apparently isolated, while others are loosely clustered. Only a single pueblo, with only eight rooms, had a visible kiva (Casa del Rito, LA 3852), and it is near a slightly larger pueblo lacking a visible kiva. Although the pueblo with a kiva was excavated, the kiva was visible on the surface before excavation (Root 1994). No isolated kivas and no shrines were recorded for this period. The number of non-habitations is about equal to the number of habitations, as expected, and most are scattered fairly near pueblos. The social landscape in Period 2 shows clear continuity with the previous period, with little apparent change.

Period 3 (A.D. 1220-1235)

In Period 3, population is rising more noticeably, and the distribution of sites and people across Bandelier begins to change as well (Period 3 Map).

More habitations are built, and they are generally larger in size than in Period 2, although the largest still has an estimated thirty-five rooms. The first cavate pueblos, at Tsankawi, appear in Period 3. The Potrero del Rito and mesa tops immediately north of Frijoles Canyon continue to be inhabited, but in addition areas in the southern and ^{western?} eastern portions of the monument are colonized, probably by new immigrants, during this period. Even in the previously occupied areas, almost all habitations are in new locations, and it appears that habitation use-lives continue to be short. Habitations appear singly, in groups of two adjacent pueblos, or in a single larger cluster of five or six pueblos on the Potrero del Rito. Only a single habitation, a larger one with 20 rooms, has a visible kiva. It is located within the largest habitation cluster. Another kiva, on the same mesa to the south, appears to have been used in this period, even though the associated pueblo dates only to Period 2. Non-habitations slightly outnumber habitations, and most are still within a kilometer of habitations. P4127
almost
twice
as many

Overall, Period 3 shows gradual changes in the social landscape of Bandelier. Population is expanding with the addition of immigrants who are settling new areas of the monument. The size of groups living together increases, with a sizeable proportion of the population living in groups of thirty to sixty people (Figure 3). In addition to this evidence of aggregation, the appearance of a distinct cluster of habitations suggests the formation of at least one multi-pueblo community. Again, it is difficult to tell whether the single pueblo with a visible kiva might be serving as a ritual center for the loose multi-pueblo community. Although the relatively rarity of field houses still suggests that pueblos are agriculturally self-sufficient, and that competition over land remains low, the clustering of

pueblos implies some form of wider association or cooperation is becoming more important.

Period 4 (A.D. 1235-1250)

With rapid increase of population in Period 4, the trends initiated in Period 3 continue and intensify (Period 4 Map). The number of habitations more than doubles, and the areas initially colonized in Period 3 see expansion of occupation to the north. The small occupation at Tsankawi continues. There are noticeably more larger pueblos (almost one-third have between twenty and thirty-five rooms estimated), as population aggregates more than in the preceding period. Most habitations are again in locations not previously used, although many are in the same general areas settled in Period 3. The Potrero del Rito, heavily occupied in the preceding periods, begins to show a decrease in use, with only ^{three} ~~two~~ habitations. A single larger cluster of habitations is evident on the mesa top between Alamo and Capulin Canyons, containing eight habitations in a small area. Smaller clusters of two or three habitations are apparent also. Other pueblos still appear as isolates. Non-habitations slightly outnumber habitations, with the vast majority within one kilometer of the nearest habitation.

The first clear example of an isolated kiva site appears in this period. Perched on the edge of Medio Canyon in the far southeastern corner of the monument, the site has a single kiva near two small structures. The site has primary occupation dates in both Period 4 and in Period 8. It is impossible to tell for sure in which period the kiva was in use, although it seems most likely that the kiva was used in Period 4, with reoccupation of the site as a field house in Period 8. Interestingly enough, no habitations are near this site. The nearest is just under one kilometer away, on the opposite side of a deep canyon. Two others are just over a kilometer away, also across deep

canyons. Another isolated kiva, located on the edge of a deep canyon on the southern portion of the Potrero del Rito, may date to Period 4 (it may also date to Periods 5 or 6). It is also remote from contemporary habitations, with the nearest being two pueblos down by the Rio Grande, over two kilometers away. An adjacent ^{where} small section of mesa top is unsurveyed. In addition to the two isolated kivas, three pueblo habitations have visible kivas. Two are located adjacent to the Rio Grande, and both have been excavated, with three kivas between them (Zier 1982). This pair of sites is far from any other habitations on this side of the river. The other pueblo with a kiva is very small, with only eight rooms, and is located in the middle of the largest cluster of habitations.

Pueblo
across
canyon
to north

The social changes initiated in Period 3 continue, and are enhanced, in Period 4. The majority of all people are now living in larger pueblos, of 30 to 60 people, or even of 135 to 180 people. We continue to see clustering of pueblos into possible communities, although some pueblos are still established far from these clusters. Field house sites, though, continue to be located close to habitations, and habitation use-lives continue to be relatively short (although use-lives may be lengthening). With increasing aggregation in Period 4, there are likely to be increasing opportunities for conflicts and disagreements, with concomitant strain on existing mechanisms for community integration. Community-wide ritual is likely to be one way in which these stresses are relieved (Kohler 1989: 8). The appearance of isolated kiva sites may be one component in a new form of ritual organization. The distinct isolation of the isolated kiva sites suggests a function (or functions) that is somehow different and separate from the function of kivas at pueblos. If kivas at pueblos function to integrate the community living in that pueblo, or in a few adjacent pueblos, perhaps the isolated kivas are the loci for rituals

that bring together representatives from an entire dispersed community, or even from several communities. This must remain sheer speculation, however, lacking any ethnographic models for the use of such sites, or any other kind of information that might help us determine their function.

Period 5 (A.D. 1250-1290)

Although the first half of the Late Coalition, Period 5, shows an abrupt decrease in population, settlement within Bandelier changes less than might be expected (Period 5 Map). All habitations are in locations not used in Period 4, but most of the general areas settled in Periods 3 and 4 continue to be occupied. The obvious exception to the previous statement is that the entire Potrero del Rito now has only a single habitation site, and also has few non-habitations. Habitations still appear to be in loose clusters, most of which are in the same areas as the clusters seen in the previous period, although the clustering seems to be looser. The location of the largest cluster seen in Period 4 now shows a distribution that extends farther to the north. In addition, other small clusters are apparent in several other areas of the monument. Non-habitations still barely outnumber habitations, and again most are within a kilometer of the nearest pueblo.

Three isolated kiva sites apparently date to Period 5. The first, discussed above and dated to Periods 4, 5, or 6, is even more remote from contemporary pueblos in this period than it was in the preceding period. The second, to the north on the Potrero del Rito, was dated to either Period 5 or Period 6, and is an unusual combination of a small structure, a kiva, and a shrine, all located on the very highest part of a ridge (the shrine may have continued in use through A.D. 1600 or even to the present). Only a single habitation, with about twenty rooms, is located nearby. The next nearest habitation is over two kilometers away, across a canyon. The third isolated

about
equal

not
shown

kiva is securely dated to Period 5, and is located just over the cliff edge on the eastern side of Alamo Canyon. A remarkable site, it has two adjacent kivas, both partly excavated into bedrock, associated rock art panels, two tiny nearby structures, and hand and toe holds leading down to the kivas from the mesa edge. Only one habitation, a single small structure with fewer than six rooms, is located within a few hundred meters. The next nearest recorded habitation is about three kilometers to the north. There is a large expanse of unsurveyed mesa top immediately to the north, which may have unlocated habitations, but even if that area were to contain a habitation or two, it is still safe to say that the kiva site is relatively isolated. The three kiva sites in this period, and the one in Period 4, are all located in prominent positions far from contemporary habitations. In addition to the isolated kiva sites, a single twenty-five room pueblo has a visible kiva. In contrast to the isolated kivas, it is in a tight grouping of three pueblos on the north side of Frijoles Canyon.

With the overall loss of population in this period, people appear to have largely reverted to living in small habitations with fewer than 30 people as they had in Periods 1 and 2 (Figure 3). The people left in Bandelier do not seem to have reverted to living in largely isolated pueblos, however, since clusters of pueblos have not disappeared. Kiva sites are also present in Period 5, still isolated from contemporary habitations, suggesting that whatever role they filled in Period 4 was still an important one in Period 5, despite overall changes in population and aggregation. One shift in occupation does appear to be significant, the lack of sites on the Potrero del Rito, which was the first mesa top settled in Bandelier. The virtual abandonment of this area may be the result of short-term environmental changes working together with the effects of long-term alteration of the landscape by

continued occupation. Period 5 is a time of long sequential dry periods and low potential for agricultural production (Orcutt 1994b). By the beginning of Period 5, the Potrero del Rito had been continuously occupied and farmed for 100 years. It is possible that the use of the mesa top for agriculture, certainly more intensive and of longer duration than elsewhere in Bandelier, led to a decrease in agricultural productivity. Another potential impact of continuous use would have been deforestation and possibly associated erosion. Excavation evidence from elsewhere in the monument indicates that by the A.D. 1270s, inhabitants of Bandelier were increasingly using shrubby species rather than trees for fuel (Trierweiler and Mathhews 1993; Kohler and Powers 1993; Kohler 1994). By the early A.D. 1300s, pollen records show low levels of pine pollen, also indicating substantial reduction in trees (Huber and Kohler 1993; Kohler 1994). Decreasing use of the Potrero del Rito in Period 4 suggests that decreasing agricultural productivity and/or deforestation may have become problematic by the end of the Early Coalition. The difficult climatic conditions at the beginning of the Late Coalition may have exacerbated the problem, leading to even less intensive use of the Potrero del Rito.

Period 6 (A.D. 1290-1325)

Population rebounds, and increases dramatically in Period 6 (A.D. 1290-1325), with concomitant changes in settlement (Period 6 Map). The number of habitations almost doubles over the previous period, and aggregation also increases rapidly, with many larger pueblos. The largest pueblo is two-storied with an estimated 88 rooms, and several others have more than 35 rooms. Once again, almost all pueblos are established in locations unoccupied in the previous period. Occupation expands greatly on the mesa north of Frijoles Canyon, the first site within Frijoles Canyon is built, and the Potrero del Rito is reoccupied, but only the less-intensively used northern

portion. The southern part of the Potrero del Rito, heavily occupied earlier, is still largely abandoned. Settlement clusters are large and distinct, with very few habitations remaining remote from others. At least three large habitation clusters are evident: at least thirteen habitations on the northern part of the Potrero del Rito; ten habitations on the central part of the mesa between Alamo and Capulin Canyons; and at least nine habitations on the mesa north of Frijoles Canyon. Along with the increase in numbers of habitations, non-habitations are more numerous, although the ratio of non-habitations to habitations is little changed from previous periods. Most non-habitations are still located within one kilometer of the nearest habitation, but some now appear up to 2.2 kilometers away.

Of the two kiva sites described above as possibly dating to Periods 5 or 6, one continues to be isolated, while the other is no longer. The southernmost kiva site still has no habitations within three kilometers. In contrast, the one farther north on the Potrero del Rito is now only about four hundred meters from the nearest pueblo, and there are now numerous pueblos within two kilometers. If still in use in Period 6, the kiva and shrine at this site are not only near a number of habitations, but also near a number of pueblos with kivas of their own. It is the only kiva site to be so little isolated. In addition, another shrine (the "Big Shrine", LA 64036) dates to this period. Located on the east edge of Frijoles Canyon, it is within the cluster of habitations on that mesa top. This shrine probably continued to be used in later periods as well. Nine habitation sites have visible kivas present. Several of these nine are among the largest sites in this period; the smallest have just ten rooms. Each dense habitation cluster has at least one pueblo with a kiva within it.

Many of the social changes in Period 6 seem to parallel those seen in Period 4, although population in Period 6 is even somewhat larger. Most people are living in small- (30-60 people) and medium-sized (75 to 105 people) aggregates, and in addition it is abundantly clear that pueblos are strongly clustered into groups with anywhere from four to thirteen pueblos in close proximity. Not only have the sizes of groups sharing a single pueblo increased, but the number of people associated within a single multi-pueblo community has also increased dramatically. It is difficult to tell in what ways ritual organization is helping to cope with the renewed social stresses associated with population growth and aggregation. The first two pueblos with fully-enclosed plazas, a new form of integrative architecture, appear in this period, and a large number of pueblos have visible kivas. The isolated kiva sites may still be in use as well, but this is the last period in which they play any role in ritual organization. The location of several field houses at longer distances from habitations may indicate that with population increase and aggregation, field locations are of necessity more distant from habitations, and that land tenure issues are gaining prominence. The relatively distant field houses are probably functioning both to reduce travel time to fields and to lay visible claim to field areas.

Period 7 (A.D. 1325-1375)

In Period 7, population and aggregation both decline slightly, and there are some obvious changes in the use of the landscape for both habitation and agriculture (Period 7 Map). The detached Tsankawi unit of the monument suddenly shows an increase in the number of habitations present. In previous periods there were never more than two habitations at Tsankawi; in Period 7 there are six. Most habitations in the monument are in locations not used in Period 6, but the same general areas occupied in Period 6 are still in use,

with the exception of the northerly area between Frijoles and Alamo Canyons. The settlement clusters apparent in Period 6 have changed somewhat, but are still more or less present. The cluster in the southeastern corner of ^{western} Bandelier has expanded to six sites, the one between Alamo and Capulin Canyons now contains only four rather dispersed sites, and the clusters just south and north of Frijoles Canyons now contain fewer sites in different configurations. The southern part of the Potrero del Rito has a single habitation established on it, the first new habitation in that area in about 75 years. The first cavate pueblos in Frijoles Canyon are built at this time. Although it does not show up on the map, being obscured by later occupation, a smaller precursor to Tyuonyi Pueblo is probably occupied in this period as well (Hendron 1940; Onstott 1948).

No isolated kiva sites date to this period except for the kivas in Frijoles Canyon, which are in use through much of the Classic and are clearly directly associated with the surrounding pueblos and cavate pueblos. Only two pueblos encountered on survey had visible kivas, one in the Potrero del Rito habitation cluster and another at the somewhat isolated pueblo just south of that cluster.

Although habitation distribution has changed somewhat in this period, the really striking change is in field houses. In Period 7, field houses outnumber habitations by almost five to one. Habitations are now sitting in a veritable sea of field houses, many of which are two or even three kilometers away from the nearest pueblo. Also noticeable is that the majority of the field houses are located away from Frijoles Canyon. Potrero del Rito and the mesa north of Frijoles both have few field houses.

How people are using the landscape for habitation changes little in Period 7. There are fewer large aggregates, but the multi-pueblo communities

persist, most in generally the same areas as previous communities. Ritual use of the landscape has changed mainly in the absence of isolated kivas. In contrast, the use of the landscape for agriculture, or at least the use of field houses in connection with agricultural fields, changes dramatically. The tremendous investment in field houses is probably related to both costs incurred in traveling to fields and to issues of land tenure. Field houses at long distances from habitations would clearly help reduce time spent in travel to and from fields, and these field houses were likely to have been used for extended periods during the growing season (Ellis 1978; Preucel 1990). These distant field houses would also have served as markers of land ownership, especially in areas where competition between pueblo clusters was likely (Kohler 1992). The continued establishment of numerous field houses close to habitations is probably primarily related to land tenure and land claims, since reducing travel time was probably less important as a rationale for building them. The vast number of field houses built in Period 7 suggests that new systems of land tenure were being invented or adopted in order to relieve some of the stresses connected with land allocation and competition associated with the great population growth and aggregation in the previous period. The new system of field houses does not, however, seem to be coming into use at the same time in all parts of the monument. The relative paucity of field houses in the more northerly areas of the monument may indicate that this new way of using field houses was introduced from the south. At the same time, of course, glaze wares are moving into the Bandelier area, also from the south (Vint 1994). In Period 7 we may be seeing the formation of an ethnic boundary between the Keres and the Tewa, somewhere in the vicinity of Frijoles Canyon, probably on the mesa top immediately to the north. The boundary is marked by ceramics (Harrington 1916; Mera 1935; Vint 1994), by changes in

architecture (Carlson and Kohler 1990; Ford et al. 1972; Van Zandt 1994) and perhaps in addition by changes in the use of field houses.

Another trend in field house use that appears in Period 7 and continues through the rest of the Classic Period is the apparent deliberate reuse of some Coalition pueblos as Classic field houses (Head and Snead 1992; Van Zandt 1994). Reused sites are generally at some distance from Classic habitations, and many form distinct clusters in areas approximately equidistant from two or more Classic communities. These reused Coalition sites were probably operating as community boundary markers, establishing rights to land through symbolic links to previous inhabitants (Head and Snead 1992:6). By Period 7 the landscape of Bandelier includes abundant remains of past occupations in addition to natural features, and the Classic Period inhabitants were making deliberate use of both cultural and natural resources.

Period 8 (A.D. 1375-1400)

Overall population is dropping in Period 8, but we see rather sudden aggregation into a few habitations, most of which are very large (Period 8 Map). Only two cavate pueblos seem to be present at Tsankawi, although it is likely that the communal pueblo of Tsankawi (LA 211) had been established by this time. Very large communal pueblos appear abruptly in the same areas as the habitation clusters present in the previous several periods. San Miguel Pueblo (LA 370) is established in the southeastern corner of the monument, Yapashi Pueblo (LA 250) on the mesa between Alamo and Capulin Canyons. Although still not apparent on the map, Tyuonyi Pueblo in Frijoles Canyon is probably growing rapidly at this time (Onstott 1948), and a cavate pueblo is established in the canyon as well. A few smaller pueblos are in use as well: two in Capulin Canyon, Frijolito Pueblo (LA 78) on the edge of Frijoles Canyon, and an isolated pueblo well to the north. One small structure

habitation appears well north and one well south of Yapashi. A single isolated kiva site may date to this period. Occupied also in Period 4, in the southeastern corner of the monument, it is difficult to tell whether the Period 8 date applies to the kiva, to the nearby small structures, or both. In Period 8, as in Period 4, it is far from any contemporaneous habitations. The only other kivas in use during this period are those associated with the communal pueblos and other large pueblos, and this kiva site is most likely to have been used in Period 4, not in Period 8.

The spate of fieldhouse building apparent in Period 7 seems to have abated, with many fewer dating to Period 8, only about three for each habitation. Although there seem to be few field houses in use in Period 8, many established in the preceding period probably continued in use, and many others (not illustrated on any of the maps) are simply dated to Period 7 or later, and could well have been used in Period 8. Many of the field houses dated to Period 8 are located long distances from the habitations. It is particularly striking that only seven field houses are located within a kilometer of any pueblo, and several apparent clusters of field houses are located two and even three kilometers from the nearest pueblo. These clusters of field houses distant from pueblos may have been established near the territorial boundaries discussed above. In addition, the two small habitations distant from Yapashi Pueblo may be unusually intensively used field houses.

Period 8 sees abrupt changes in the social landscape of Bandelier. Almost everyone is now living in very large aggregates, with 135 to 180 people or more than 240 people (Figure 3). Communities no longer consist of many dispersed pueblos, instead some consist of a single communal pueblo, others of a few very large pueblos. Although these large communities are physically

separated from each other, they are connected physically by networks of trails (Snead 1993) and socially into trade and possibly alliance networks that extend well beyond the limits of the Pajarito Plateau (Head 1994; Vint 1994). The long-term residential mobility seen in earlier periods largely ceases, with most of these large aggregates remaining occupied for the next 100 years or more, but a kind of logistical mobility increases in importance. Although the aggregated pueblos are permanent dwellings, people are probably spending only a portion of the year actually living in them, with large portions of the summer spent living at distant field houses. The lack of field houses dating to Period 8 is probably partly an artifact of difficulties in dating field houses, but may also reflect a stabilization of land tenure systems and community boundaries after their establishment in Period 7. The distribution of ritual activity across the landscape also reflects the new community organization. Isolated kivas are probably absent, and all ritual architecture is at the largest pueblos. All large pueblos have kivas, "big" or great kivas, and enclosed plazas. In addition, the two largest shrines in the monument, the Big Shrine above Frijoles Canyon and the Shrine of the Stone Lions near Yapashi are probably in use during this period and are both located near highly aggregated communities. With increased use of field houses, many at long distances from habitations, ritual activity is now concentrated at pueblos. Ethnographically, people living in far-flung field houses used them as an escape from the tensions of the pueblos, but would return to the pueblos even during the growing season for important rituals (Ellis 1978). Concentration of most ritual activities at the aggregated pueblos is one way to counteract the divisions within the community that might otherwise have been exacerbated by the seasonal dispersal of population to field houses.

Period 9 (A.D. 1400-1440)

Period 9 (A.D. 1400-1440) shows continued use of the communal pueblos, with use of a few more habitations as well (Period 9 Map). A communal pueblo and a large number of cavate pueblos are established at Tsankawi. San Miguel and Yapashi continue in use, along with two smaller habitations adjacent to San Miguel. Tyuonyi Pueblo is finally visible in Frijoles Canyon, along with a cavate pueblo, and a rather surprising number of pueblos show up on the Potrero del Rito. Careful examination reveals, however, that most of the pueblos on the Potrero del Rito also have primary dates in earlier periods, implying that they may have been used as habitations earlier, and were being reused as field houses in Period 9. Only a small structure habitation near San Miguel Pueblo, a cavate pueblo south on the Potrero del Rito, and the single pueblo north of Frijoles Canyon lack earlier primary dates and probably were actually used as habitations in Period 9. No isolated kivas or shrines date to Period 9. All the communal pueblos have kivas, "big" kivas, and enclosed plazas, and Frijoles Canyon has additional kivas built in the canyon bottom near the pueblos. More field houses are located near habitations than in the previous period, but many are still far away, up to three kilometers distant.

The patterns established in Period 8 are clearly continuing in Period 9, the main difference being the establishment of a larger settlement at Tsankawi and rapid population increase in Frijoles Canyon (Figure 2). Aggregation remains high, and everybody is continuing to live in the large aggregated pueblos occupied in the previous period (Figure 3). Field houses are still being used in much the same way as in earlier periods, and ritual activity continues to be concentrated in the large pueblos.

Period 10 (A.D. 1440-1525)

Period 10 is a period of greatly declining population in Bandelier as a whole, with continued aggregation (Figure 2, Figure 3). Only three main areas of Bandelier are still inhabited: San Miguel pueblo, Frijoles Canyon, and Tsankawi (Period 10 Map). Yapashi Pueblo has been abandoned. Despite the precipitous drop in overall population, population in Frijoles Canyon continues to rise, as most of the remaining population of Bandelier appears to be moving into the pueblos and cavate pueblos in the canyon. A single cavate pueblo is still occupied to the south of Frijoles Canyon, and one small structure habitation is located on a mesa top far from any pueblos. A great number of new non-habitations are established during this period, most on mesa tops now largely unused for habitation. Many are long distances from the nearest habitation, up to five kilometers away. The one isolated small structure habitation, about four kilometers from the nearest larger habitation, may indeed have functioned as a long season field house used intensively for an entire summer. All evidence of ritual activity continues to be concentrated at the largest habitations.

Period 10 sees some dramatic social changes within Bandelier, most notably the abandonment of Yapashi and the probable movement of former Yapashi inhabitants into Frijoles Canyon. Hundreds of people are now living in Frijoles Canyon, in masonry and cavate pueblos up and down the valley, while large expanses of mesa tops to the south and east are no longer used for habitation. The construction of a big kiva and smaller kivas in Frijoles Canyon at around this time is probably a response to the need to integrate the sizeable Frijoles population. Despite the overall low population, comparable to that in Period 2, competition over land does not appear to diminish. The large numbers of new field houses established on the mesa tops, especially on

the Potrero del Rito and near the former location of Yapashi, likely reflect new demands for agricultural land by the burgeoning population in Frijoles. Competition among members of the Frijoles community, and concomitant reorganization of land tenure resulting from the influx of new inhabitants, may have now been more important than competition with inhabitants of other communities such as San Miguel.

Period 11 (A.D. 1525-1600)

In this final period of habitation at Bandelier, all habitation is at Tsankawi or in Frijoles Canyon. The population of San Miguel pueblo has moved away, probably joining relatives to the south at Cochiti Pueblo. Although the pueblos and cavate pueblos in Frijoles are still in use, population in Frijoles is dropping from its Period 10 peak as people move out of the Bandelier area entirely (Figure 2). Few field houses are built or used in this period, and apparently no new ritual structures are built in Frijoles Canyon.

The people remaining in Bandelier in Period 11 were living in only two communities physically distant from any others, though with ties of trade still maintained to communities on and off the Pajarito Plateau. Although the overall population is comparable to that in Period 10, competition over land seems to have diminished, reflected in the paucity of field houses. After A.D. 1600, the Bandelier area, and indeed the entire Pajarito Plateau, appears to have been entirely abandoned for habitation purposes. The inhabitants of Bandelier most likely joined the present settlements at Cochiti, San Ildefonso, and Santa Clara (Lycett 1989). Few sites within Bandelier show any clear historic Pueblo presence, although certain areas, such as Tsankawi, Frijoles Canyon, and the Painted Cave (LA 13662) do appear to have been used occasionally in early historic times, and some of the cavates in Frijoles

Canyon may have been briefly reoccupied after the Pueblo Revolt of 1680 (Smith 1994; Turney 1948). In addition, many of the shrines within the monument probably continue to be used by nearby Pueblo communities such as Cochiti, Santa Clara, and San Ildefonso. In general, though, after A.D. 1600 Bandelier ceased to be part of the Puebloan landscape used for habitation or agriculture, although it probably has retained a vestige of its former ritual use.

Conclusion

In examining settlement at Bandelier, we can see several overall changes in the distribution of habitations, field houses, and ritual sites across the landscape. During the initial colonization from A.D. 1150 to 1220, people are living in small social groups, using few field houses, moving frequently, with largely self-sufficient individual pueblos. As population and aggregation increase in between A.D. 1220 and 1250, people settle in new areas of Bandelier and begin to live in larger pueblos and in multi-pueblo communities. Isolated kiva sites appear, perhaps indicating the emergence of some kind of supra-pueblo ritual system. The land tenure system, at least as expressed in field house use, changes little during this time. With depopulation and then renewed population growth and aggregation in the Late Coalition, from A.D. 1250 to 1325, some distinct changes emerge, especially in the use of the landscape for habitation. Clear clusters of pueblos, probably associated into multi-pueblo communities, appear in the same general areas where the first communal pueblos will emerge within the next 50 to 100 years. The area most heavily occupied in the earlier periods is largely abandoned, never to be intensively settled in the future, and 100 years of occupation is probably beginning to have obvious effects on the natural landscape. Isolated kiva sites continue to be used. Field house sites are used in much the same way as

earlier, but a few are now being located farther from habitations, perhaps indicating the beginnings of serious competition for arable land and changes in the land tenure system.

At the beginning of the Early Classic, from A.D. 1325 to 1375, although the use of the landscape for habitation changes little, there are dramatic changes in the organization of agricultural use. Field houses are built almost everywhere, both near and far from habitations. This seems to herald a new system of land tenure and agricultural organization, either an indigenous response to pressures of population growth and aggregation, or a solution developed somewhere to the south. The aggregation into communal pueblos that is typically associated with the Classic does not occur on a large scale until after A.D. 1375, and population within Bandelier then remains in a few large aggregates until the area is mostly abandoned after A.D. 1600. From A.D. 1375 to 1440, population is divided among four large settlements roughly evenly spaced across the landscape. Each community is surrounded by field houses, and is linked to other communities by trails and trade. Almost all ritual now takes place at these large pueblos, functioning both to integrate the population at the pueblo and to help counteract the potentially divisive effects of seasonal mobility between habitations and field houses. In the Middle and Late Classic, from A.D. 1440 to 1600, we see a gradual abandonment of much of Bandelier, with remaining population moving into Frijoles Canyon, using field houses on mesa tops both nearby and in the vicinity of now-abandoned communal pueblos. Finally, after A.D. 1600, Bandelier is no longer used for habitation or for agriculture, retaining only a peripheral role in a larger Puebloan landscape.

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Table 1 is simply Table 4.9 showing Bandelier project chronology.

Figure 1 should be a general map of Bandelier showing major features and perhaps environmental zones (I didn't have one to send to Patty Crown, though).

Figure 2 is Figure 6.6.

Figure 3 is Figure 6.17.