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The End of Farming in the “Northern Periphery” of the Southwest

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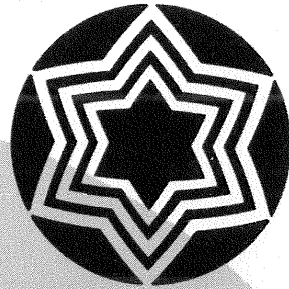
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LEAVING MESA VERDE

PERIL AND CHANGE IN THE
THIRTEENTH-CENTURY SOUTHWEST

EDITED BY **TIMOTHY A. KOHLER,**
MARK D. VARIEN,
AND **AARON M. WRIGHT**

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FOREWORD

When asked about the fabled disappearance of the Ancestral Pueblo people from the Southwest's Four Corners region, Tewa anthropologist Alfonso Ortiz famously quipped, "The Anasazi didn't disappear, they're running bingo parlors in the Rio Grande Valley." Now, of course, the bingo parlors have morphed into casinos, but Ortiz's point remains the same. Alas, the mystery of Ancestral Pueblo disappearance was resolved many years ago by archaeologists, whose findings coincided with what the modern Pueblo people had been saying all along: that the countless pithouse and masonry ruins of the northern Southwest were the "footprints" of their ancestors.

But if we know who the people were who built Cliff Palace and other Ancestral Pueblo sites in the central Mesa Verde region, the questions of why they abandoned their ancestral homes on the Colorado Plateau at the close of the thirteenth century and precisely where they went when they left have been debated for years, and a consensus has been slow to emerge. Early explanations of Apachean invaders driving the Pueblos from their homes in the cliffs were challenged and laid to rest long ago, although warfare among Ancestral Pueblo peoples is now generally conceded and its effects carefully weighed against other factors, such as disease, habitat loss, drought, and crop failure. If Ortiz was right that Pueblo ancestors moved from the northern San Juan region of Colorado to the northern Rio Grande Valley of New Mexico in the early 1300s, we certainly don't see clear evidence of these migrants in the architectural forms and material culture of late prehistoric Rio Grande archaeology. In contrast, unambiguous evidence of Pueblo immigrants from the Kayenta region of northeastern Arizona is preserved in dozens (perhaps hundreds) of archaeological sites from central and southeastern Arizona. Why should immigrants from the western Plateau construct such obvious "site unit intrusions" while those from the eastern Plateau remain virtually invisible?

As recently as ten years ago, archaeologists were convinced that environmental conditions in the northern Southwest were never so severe

The End of Farming in the “Northern Periphery” of the Southwest

James R. Allison

Prehispanic farmers belonging to the Virgin and Fremont traditions once occupied most of Utah and adjacent parts of Arizona and Nevada. Through much of the twentieth century, these areas were called the “Northern Periphery” of the Southwest, but in recent decades, both Fremont and Virgin have often been left out of syntheses of southwestern archaeology—even though they clearly had strong connections to the Southwest and represented, respectively, the northernmost and westernmost extensions of maize-based horticulture in western North America. This exclusion results from a combination of factors, the most important of which are geography and the territorial behavior of some archaeologists who chose to isolate Fremont archaeology from southwestern studies.

The goal of this chapter is to take a small step toward reversing that trend, to help (as Neil Judd once said) “the builders of the adobe dwellings [the Fremont] . . . [find] their rightful place in the story of our prehistoric Southwest” (Judd 1919:22). Specifically, I will discuss the end of farming in the Virgin and Fremont areas and consider what little evidence there is regarding how the depopulation of the Four Corners area may have affected or been affected by developments to the north and west. As reviewed by Varien in chapter 1, some archaeologists have claimed that the cascading effects of depopulations in more northern areas had a causal role in the thirteenth-century depopulation of the northern San Juan region (e.g., Davis 1964, 1965), although there has been little effort to document such effects.

I begin by briefly discussing some of the factors that have led the Northern Periphery to be left out of most syntheses of southwestern archaeology. The intellectual history I give does not directly relate to the abandonment of farming, but it is important to understanding the

(mostly arbitrary) reasons why most previous discussions of the problem exclude these regions. I follow that discussion with one regarding the difficulties with chronology and important missing data (“known unknowns”) that hinder inferences about demography and the timing of the end of farming in the Virgin and Fremont regions.

I then turn to what we do know. The radiocarbon records demonstrate that both Fremont and Virgin traditions ended close to AD 1300, and the latest sites in these areas suggest that the end of farming in the Virgin and Fremont regions was preceded by both aggregation and increased use of public architecture (presumably reflecting changes in social organization and/or ritual), although these changes occurred on a much smaller scale than did similar ones in the northern San Juan. Finally, I discuss the limited evidence for the ultimate fate of the Virgin and Fremont.

The Northern Periphery

Although hunter-gatherers occupied virtually the entire area at European contact, the area once called the Northern Periphery of the Southwest was occupied for more than one thousand years by prehispanic farmers identified by archaeologists as Fremont or Virgin Anasazi. This area straddles the Colorado Plateau and the eastern Great Basin and includes almost all of Utah, the northwest corner of Arizona, and portions of eastern Nevada (figs. 1.1, 6.1). Early archaeologists considered both the Fremont and Virgin regions as part of the Greater Southwest. For example, in 1915, Neil Judd conducted a reconnaissance in both regions and reported: “The outstanding result of this hurried survey was realization of the number and the relative importance of archaeological sites in the region traversed. Each exhibited, in greater or less degree, the effect of environment, but each had been occupied unquestionably by individuals we have come to regard as Puebloan” (Judd 1926:2).

Judd spent parts of the next five years working in the region, sandwiching his work “North of the Rio Colorado” between projects in better-known portions of the Southwest; in 1917, for instance, he spent the spring working on the restoration of Betatakin, then moved to Paragonah in southwestern Utah, where he excavated “some 40 odd houses and numerous associated structures” at the largest known Fremont settlement

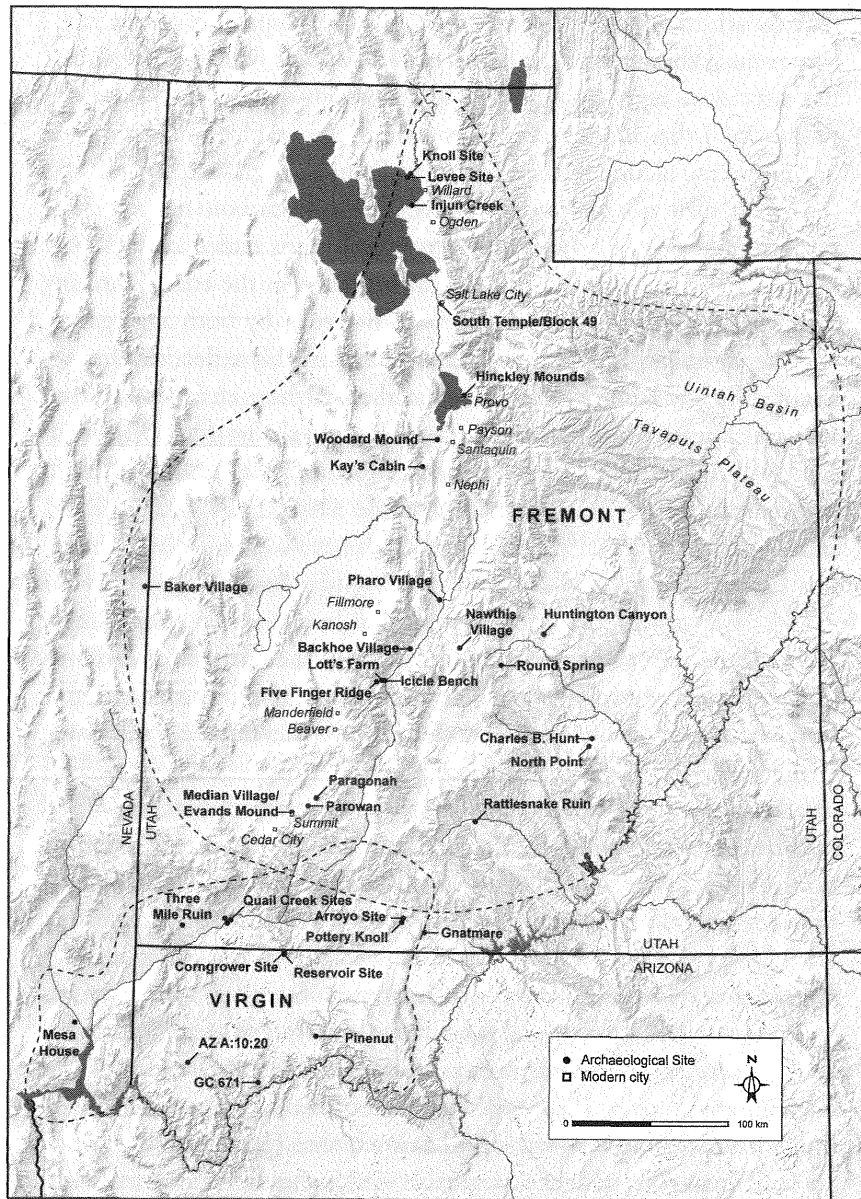


Figure 6.1. The approximate boundaries of the Fremont and Virgin regions, the locations of selected archaeological sites that date to the AD 1200s, and modern towns.

(Judd 1919:21). Between 1915 and 1920, he excavated other Fremont agricultural villages at Willard (north of Salt Lake City) and Beaver, as well as at several Virgin cliff dwellings near Kanab, and he documented numerous other sites “from the Grand Canyon . . . to the northern shore of the Great Salt Lake” (Judd 1926).

Starting at about the middle of the twentieth century, however, some Utah archaeologists began to dissent, arguing that the Fremont derived from indigenous Great Basin hunter-gatherer cultures to which “Anasazi traits were simply added” (Jennings and Norbeck 1955:8). In this view, which was most strongly expressed by Fowler and Jennings (1982), the Fremont were not peripheral to the Southwest, and were not really a southwestern culture at all—just a blip in the millennia-long hunter-gatherer prehistory of the eastern Great Basin. The Northern Periphery designation was seen as conferring “second-class status” on eastern Great Basin archaeology, and Kidder ([1924] 1962) was accused of “malign[ing] the Northern Periphery” simply by using the term (Fowler and Jennings 1982).

I agree with Fowler and Jennings (1982:111) that “whatever Fremont cultures are, they are more than simply country cousins of the Anasazi,” and—despite the title of this chapter—I do not believe that going back to considering the Fremont and Virgin areas the “northern periphery” of the Southwest would be helpful. Still, it seems that the original rejection of the Northern Periphery concept had as much or more to do with defining and defending institutional turf than it did with the nature of the archaeological record (cf. Berry and Berry 2001).

Whatever Fowler and Jennings’ motivation, the result of what they saw as “having freed the Fremont from the onus of peripherality” (1982:111) has been the theoretical and substantive isolation of Fremont studies and Fremont scholars from the southwestern research tradition. The Virgin region has also become isolated; as Lyneis says, by the 1970s, “knowledge of the region became constricted to those working within it” (1995:207). There have not been the same kinds of intentional efforts to separate it from the Southwest, but, due to its geographical remoteness from the large archaeology programs at the Arizona and New Mexico universities and the resulting small number of interested scholars, most southwestern archaeologists have little familiarity with Virgin region archaeology. Similar geographic factors helped ensure that the

deliberate amputation of Fremont studies from southwestern archaeology succeeded.

Some Difficulties

Several other factors, in addition to the decoupling of Fremont and Virgin studies from the mainstream of southwestern research, make it difficult to answer some of the most important questions about the end of Fremont and Virgin farming. Most important is the lack of well-developed chronologies. Few Fremont or Virgin sites have tree-ring dates, so absolute chronology relies largely on radiocarbon dating, which makes the precise timing of events uncertain. Relative dating techniques are also poorly developed; Fremont ceramic chronology is essentially limited to the vague idea that corrugated ceramics date after about AD 1050 or so (Richens 2000), but even this does not help in northern Utah, where corrugated ceramics are never common. Painted ceramics are also less common in northern Utah than in the southern part of the Fremont region, and variation in painted Fremont ceramic designs has never been linked to chronology.

Ceramic chronology is better developed in the Virgin region, where a sequence of design changes roughly parallels ceramic change in the Kayenta region and allows sites to be assigned to general periods based on the Pecos Classification. Moderate quantities of better-dated red- and white-ware sherds imported from across the Colorado River confirm the general sequence. But at certain times, specifically during the Pueblo I and Pueblo III periods, the Virgin region was apparently relatively isolated from other Pueblo areas to the east, and ceramic change during these periods was slow.

Connections between the Virgin region and the rest of the Pueblo world strengthened at about AD 1050, the start of what most archaeologists working in the Virgin region call the late Pueblo II period. At this time, potters began to use Sosi- and Dogoszhi-style designs on white-ware ceramics and to make some corrugated gray-ware vessels, although they never stopped making plain gray-ware vessels. Also, San Juan Red Ware and Tsegi Orange Ware vessels appeared as trade items on late Pueblo II sites as far west as southern Nevada (Allison 2000, 2008; Lyneis 1992). By about AD 1150, however, connections to the

east weakened considerably, and the pace of ceramic change slowed. Although some recognizably late white-ware designs occur, these late designs never replaced Sosi and Dogoszhi styles, which remained common through the end of the Virgin tradition.

I have argued that sites dating to the Pueblo III period (i.e., the late AD 1100s and 1200s) are characterized by high percentages of corrugated pottery (40 percent or more of sherd assemblages), the presence of at least some late white-ware designs, and (sometimes) the prevalence of crushed-sherd temper (Allison 2000, 2005). Because these measures are based on percentage representation within an analyzed sherd assemblage, distinguishing Pueblo III from late Pueblo II sites usually requires (at a minimum) sherd counts and can be difficult to do from ceramics alone, especially in the field. Many archaeologists working in the region therefore prefer to simply lump all sites with corrugated ceramics into the late Pueblo II period.

In both the Fremont and Virgin regions, then, it is difficult to recognize the latest sites without data from excavations. Further, even with excavations, dating usually relies on radiocarbon, and the imprecision of radiocarbon dating makes it difficult to know exactly which sites were among the last occupied. This situation contrasts with other parts of the Southwest, like the northern San Juan—especially in the central Mesa Verde region—where well-developed ceramic chronologies often allow archaeologists to recognize sites from the final phases of occupation based on surface evidence alone, and where numerous tree-ring dates allow extraordinarily precise dating of excavated contexts. Further, because of the difficulties in assigning even approximate dates to unexcavated sites, demographic studies in the Fremont and Virgin regions are severely limited.

Adding to the difficulties with chronology, many Fremont farming villages in the eastern Great Basin are located beneath modern towns and/or their associated agricultural fields. This pattern was noted by early Fremont archaeologists (e.g., Judd 1926; Malouf 1944), who remarked that both Fremont and early Mormon farming communities were “found along the base of the Wasatch Mountains where streams furnished water for the cultivation of foods” (Malouf 1944:319). The Mormon towns were established in precisely the best locations for irrigation-based agriculture, and the pattern suggests that horticulture at some of the largest

and longest-lasting Fremont settlements similarly relied on water from these permanent streams, although there is no evidence for any sort of large-scale water diversion. This superpositioning makes it difficult to describe the extent of many of the largest sites, much less determine when they were occupied. The problem is exacerbated by the earthen nature of Fremont architecture; deteriorated adobe storage structures often formed mounds, but there was little in these mounds to impede plowing, even when it was done with nineteenth-century technology. Substantial remains are still present near and under some modern towns, but even in the early twentieth century, it was clear that much had been lost as the towns were built and fields leveled for farming (Judd 1926).

Talbot (2000a) summarizes historical and archaeological data for large Fremont village sites, most of which have been partially destroyed by historical and modern farming and settlement. He includes sites at or under (from south to north) Cedar City, Summit, Parowan, Paragonah, Beaver, Manderfield, Kanosh, Fillmore, Nephi, Santaquin, Payson, Provo, Salt Lake City, Ogden, and Willard, all of which lie along the route of Interstate 15 as it follows the Wasatch Front, and all of which are located where streams emerge from the mountains to the east (fig. 6.1). East of the Wasatch in the Sevier Valley, Backhoe Village covers more than 1 mi² beneath the town of Richfield (Talbot and Richens 1993). Eleven of the fifteen largest known Fremont sites are either largely destroyed or inaccessible because of historical or modern development, and this total excludes a number of suspected large sites (e.g., under Salt Lake City, Payson, and Cedar City) whose size cannot even be estimated.

Some excavation data are available for a number of these sites (e.g., Dodd 1982; Green 1961; Judd 1919, 1926; Madsen and Lindsay 1977; Maguire 1894; Marwitt 1970; Meighan et al. 1956; Seddon 2001; Sharrock and Marwitt 1967; Talbot et al. 2004), but the sites are all privately owned, and in Utah (unless human remains are present), there are no state laws or city ordinances that protect, or encourage scientific excavation of, privately owned sites threatened by development. Because of this, only the Block 49/South Temple site under Salt Lake City and Backhoe Village under Richfield have seen any excavation in the past thirty years, and these excavations were limited to small areas exposed by construction projects.

The Paragonah site provides some perspective on the scale of loss. Early historical accounts describe a site consisting of four hundred to five hundred mounds covering an area of about 2 mi² (Talbot 2000a:214). By the time Judd got there in 1915, he noted “between 40 and 50 [mounds] . . . yet the sage-covered fields in which they stood were even then being prepared for cultivation” (Judd 1926:36). By the time Judd returned in 1917, more of the mounds had been leveled, “leaving a bare half-dozen large elevations in the fields already under cultivation and several smaller mounds in the sage-covered area adjoining” (Judd 1919:1). The largest of these mounds, which Judd called “the Big Mound,” was “a huge knoll, measuring approximately 225 feet in diameter and 10 feet high” (Judd 1919:3).

Judd’s excavations in the Big Mound uncovered more than forty structures, including rectangular surface structures arranged around an open courtyard, as well as three large jacal surface structures that fit Talbot’s (2000b:139) definition for “central structures” (Judd 1919, 1926:72; fig. 6.2). These central structures occur at a number of Fremont sites and are apparently a form of public architecture. Importantly, central structures at Baker Village and Five Finger Ridge (described below) appear to date to the AD 1200s, suggesting that the latest occupation at the Big Mound probably also dates to near the end of the Fremont sequence.

But by the time Meighan (1956) began work at Paragonah in 1954, the Big Mound had been destroyed. Meighan describes only thirty-two mounds remaining in the portion of the site that had never been plowed (Meighan 1956:3), and even the majority of those had been impacted by looting. Most of those mounds are still visible today, because they are on a small section of land owned by Southern Utah University that has been protected from development, but the vast majority of the settlement has been destroyed without professional excavation.

Paragonah was among the largest settlements in the Fremont region, but our knowledge of just how large it was is based mainly on nineteenth-century observations by nonarchaeologists, and there is no way to reliably determine how much of the site was occupied at any one time. Meighan estimates that “the site had a permanent population of between 100 and 400 persons” (1956:4), but this estimate relies on numerous assumptions that cannot be tested. There also is little evidence relevant

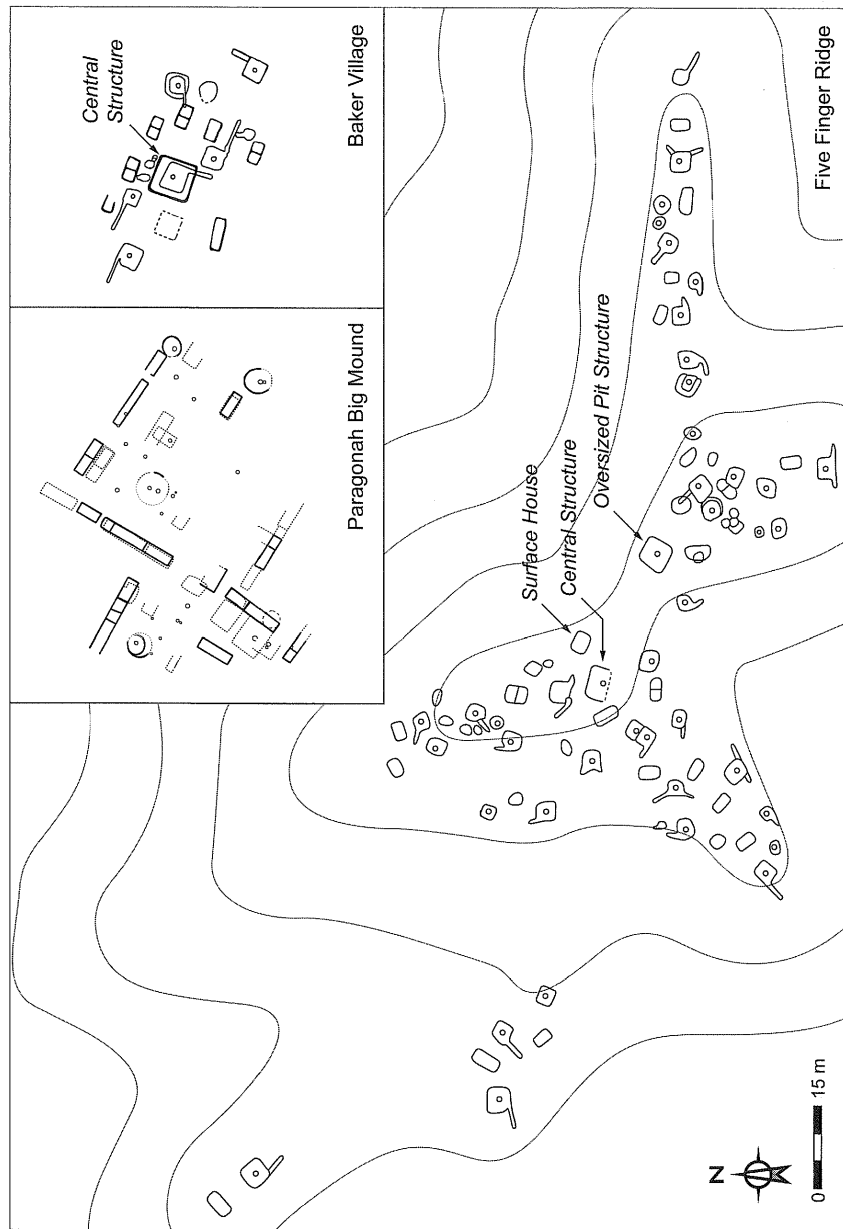


Figure 6.2. Plan maps of selected Fremont sites mentioned in the text.

to dating the abandonment of the site, and there is no way to reexamine the Big Mound, which likely contained structures representing the last periods of occupation. Similar data problems plague the interpretation of almost all the largest Fremont farming villages: we know they are big but cannot say how large they were at any particular time, when their occupation began, or when they were abandoned. At a minimum, this means there will be great uncertainty involved in any demographic reconstruction, and some of the gaps in our knowledge of large Fremont villages are unlikely to ever be filled.

Dating the End of Fremont and Virgin Farming

It is possible, however, to say something about how the Virgin and Fremont radiocarbon records compare, and to show that the end of farming corresponded closely with the depopulation of the northern San Juan region. In particular, the radiocarbon dates contradict some of the most common assertions about the timing of the end of the Virgin tradition. Traditionally, archaeologists have assumed that the Fremont tradition ended close to AD 1300 or 1350 (e.g., Berry and Berry 2001; Marwitt 1970:151; Talbot and Wilde 1989), while the end of the Virgin tradition has been placed at about AD 1150 or very shortly thereafter (e.g., Aikens 1966; Euler et al. 1979:1091; Gumerman and Dean 1989:121; Larson and Michaelsen 1990). Although many archaeologists working in the Virgin region now believe that many sites postdate 1150 (Allison 1996, 2005; Fairley 1989; Lyneis 1995, 1996), the dating of the latest sites remains controversial.

The radiocarbon records for the Virgin and Fremont regions do not support the idea that farming ended earlier in the Virgin region than in the Fremont, however. The histograms at the top of figure 6.3 are based on compilations of 409 Fremont radiocarbon dates and 162 radiocarbon dates from the Virgin region.¹ The ranges of radiocarbon dates associated with maize horticulture in the two regions are similar, although the histograms show some differences in the abundance of dates through time. Specifically, the number of Fremont dates peaks between 1000 and 950 radiocarbon years BP (probably corresponding to the early AD 1000s) and declines gradually until about 600 radiocarbon years BP (around AD 1300), with only a trickle of dates later than that. Berry and

Berry (2001; cf. Benson et al. 2007) also noted this pattern and argued that it indicated that Fremont populations peaked near AD 1000.

The Virgin dates show a more complex pattern, although this may largely be a result of the small sample of dates and dated contexts. A large number of dates cluster between about 1350 and 1150 BP (probably between AD 700 and 900), after which the number of dates drops before rising to peak again between 750 and 800 BP (corresponding roughly to the late AD 1100s or early 1200s). Again, only a few dates are more recent than 600 BP, suggesting that the Virgin tradition disappeared around AD 1300. It is not clear how closely (or whether) population trends followed the patterns reflected in the histograms, but clearly, the radiocarbon dates provide no support for the argument that the Virgin tradition ended around AD 1150, 150 years or more earlier than the Fremont.

More specifically, radiocarbon determinations of 800 BP or more recent imply that the dated events almost certainly occurred after AD 1200, and both the Virgin and Fremont radiocarbon records include a number of such dates. From the Virgin region, twenty-seven dates have radiocarbon ages of 800 BP or later; confidence intervals for the calibrated dates (fig. 6.3, bottom right) show that a few even appear to suggest true dates after AD 1300. The two latest of those dates, however, are uncorrected dates on maize; if they are approximately corrected by adding 250 radiocarbon years, they appear most likely to be from the late AD 1200s. Also, random effects attributable to counting error should mean that a few dates will always appear too late for the events they date (and a few too early). Overall, these dates strongly indicate that the Virgin tradition continued at least into the late AD 1200s.

A large number of Fremont dates similarly indicate late AD 1200s occupation (fig. 6.3, bottom left). In the Fremont region, there are fifty-nine determinations of 800 BP or later. Again, several appear likely to postdate AD 1300. It is more difficult in this case to dismiss the possibility of post-AD 1300 occupation than it is for the Virgin region; the Fremont occupation clearly continued until sometime near AD 1300, but the imprecise nature of radiocarbon dating leaves uncertainty about whether it continued slightly later than that.

Sites with these late dates are scattered thinly across both the Virgin and Fremont areas (fig. 6.1), although their distribution probably has more to do with where excavation has occurred than with the actual

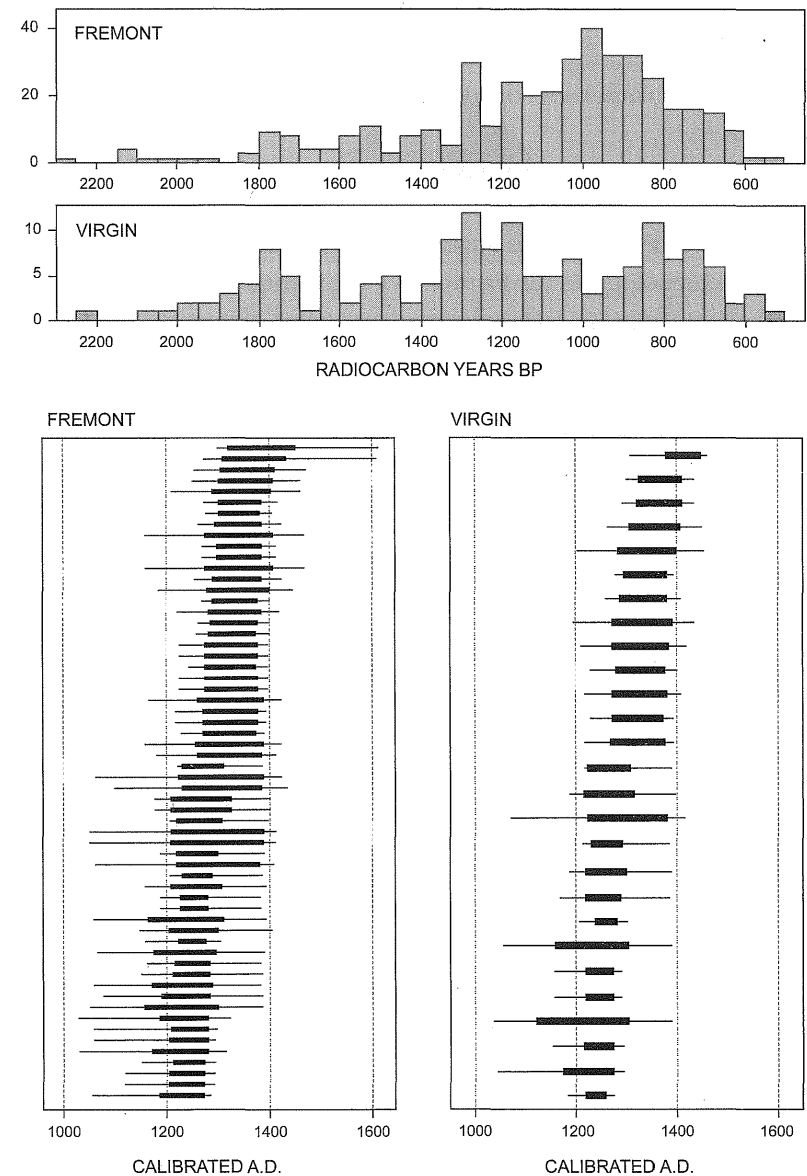


Figure 6.3. Radiocarbon dates from the Fremont and Virgin regions. At the top are histograms of the midpoints of the reported conventional radiocarbon ages. The graphs at the bottom show confidence intervals for the calibrated dates for radiocarbon determinations of 800 BP or later. The black boxes show 67 percent confidence intervals, while 95 percent intervals are shown by the lines.

distribution of AD 1200s occupations. A few Virgin sites that are dated only with ceramics are included on the map, and it is safe to assume that there are many other sites that were occupied in the 1200s that have not been dated.

So why have archaeologists traditionally assumed that the Virgin tradition ended around AD 1150 while the Fremont tradition continued until AD 1300? I think it is attributable to the lack of a well-developed ceramic chronology for the Fremont region; without recourse to ceramic chronology, Fremont archaeologists have relied almost exclusively on radiocarbon dates, while archaeologists in the Virgin region have given more attention to ceramics. Virgin ceramic styles roughly (but imperfectly) follow stylistic trends in the Kayenta region, and dates for Kayenta ceramic designs are assumed to apply more or less directly to their Virgin analogs. But this works better for some time periods than for others.

As noted above, ceramic assemblages from the latest Virgin sites can be recognized by their relatively high proportions of corrugated pottery (around 40 percent or more), by the presence of polychrome red wares, and by the presence of late white-ware designs reminiscent of the Flagstaff style. However, Sosi- and Dogoszhi-style white-ware designs are also common in ceramic assemblages from these sites, which makes them unlike AD 1200s assemblages from the Kayenta region. This has led some archaeologists to assume that the Virgin occupation ended before AD 1200, but the radiocarbon dates tell a different story.

Twelve radiocarbon dates are available from seven different sites where more than 40 percent of the ceramic assemblage is corrugated. I used the BCAL Bayesian radiocarbon calibration program (Buck et al. 1991; Christen 1994; Litton and Buck 1996) to calculate posterior probability densities for the beginning and end of the period represented by the eleven most recent of those dates, excluding one date from Three Mile Ruin as an obvious outlier (see below). This analysis² suggests that the Pueblo III period in the Virgin region (as defined above) most likely lasted around one hundred years, beginning at about AD 1200 and ending close to AD 1300 (fig. 6.4). The small number of dates, however, leaves uncertainty about the exact value of those parameters; a 67 percent confidence interval for the start of the Pueblo III period includes the years from AD 1156 to 1239, while the same interval for the end of Pueblo III is AD 1264–1328.

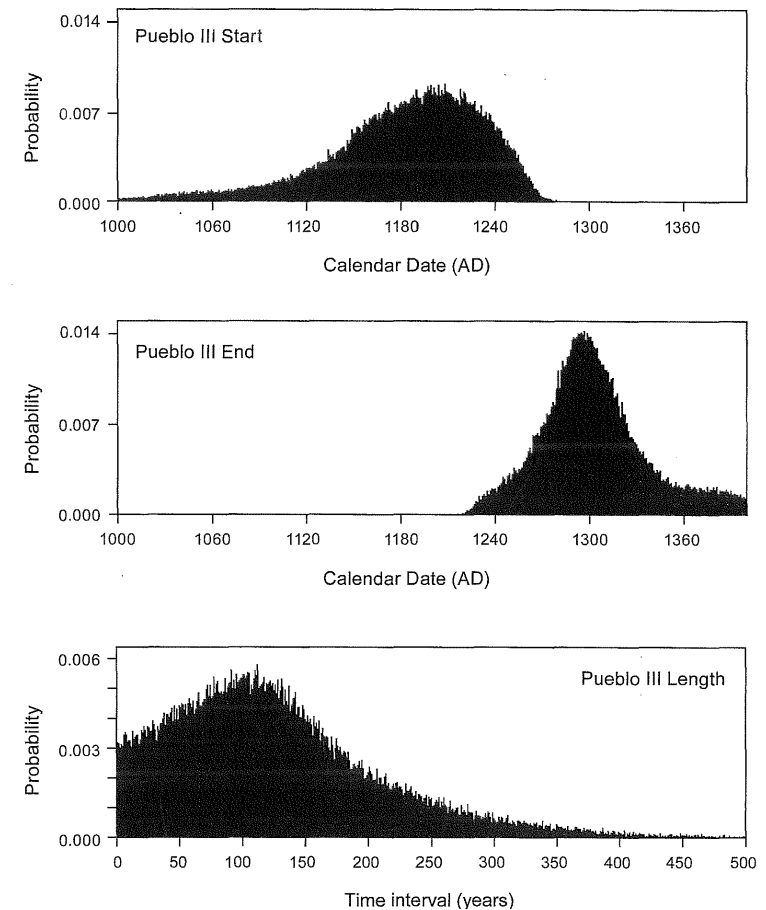


Figure 6.4. Posterior probability densities for the beginning (top), end (center), and length (bottom) of the Pueblo III period in the Virgin region, based on analysis of radiocarbon dates from sites with corrugated pottery frequencies above 40 percent. The analysis was done using the BCAL Bayesian radiocarbon calibration program (Buck et al. 1991; Christen 1994; Litton and Buck 1996).

The Virgin Region in the 1200s

During the final decades prior to the depopulation of the northern San Juan region, social and religious changes were reflected in increasingly aggregated villages, a settlement shift toward defensible locations, and new forms of ritual architecture. Some characteristics of the latest

Fremont and Virgin sites hint that similar, though much attenuated, changes may have occurred in those areas as well. The latest sites in the Virgin region show only a slight trend toward aggregation, although most are a bit larger than typical Virgin sites from earlier periods (Lyneis 1996). I focus on four sites here: Mesa House, Three Mile Ruin, the Cornrower Site, and AZ A:10:20 (fig. 6.1), all of which appear to be among the latest sites occupied in the western part of the Virgin region. That assessment relies almost entirely on ceramic dating for the first three of those sites. Because they are among the most thoroughly excavated late sites, they provide useful insights into site layouts and size.

Mesa House, located in the Moapa Valley of southeastern Nevada, was excavated in 1929 by Irwin Hayden (Hayden 1930). It has not been radiocarbon dated but it has a late ceramic assemblage, with about 69 percent of the ceramics corrugated. The core of the site comprises surface rooms surrounding a courtyard, including two large habitation rooms and about twenty-five smaller storage rooms (fig. 6.5, upper left). Another row of storage rooms extends from the southwest side of the main room block, ending in another large habitation room. Other habitation rooms are located around the margins of the site, without attached storage rooms. This suggests a modest degree of aggregation, with perhaps as many as ten households living at the site, and the differences in the ways storage rooms relate to habitation rooms suggest that some households may have controlled access to stored goods (Lyneis 1986).

Mesa House is located on a ridge top some 35 m above the valley floor. This location and the site layout led Hayden "to suppose a deliberate defensive arrangement as protection from raiding nomads" (1930:33). More recent archaeologists have also interpreted Mesa House as a defensive site and argued that it is evidence that the Virgin populations were pushed out of southeastern Nevada by the ancestors of the Southern Paiute (e.g., Ambler and Sutton 1989).

Not all late sites in the Virgin region appear defensive, however. Three Mile Ruin, for instance, has a broken circle of rooms surrounding a courtyard (fig. 6.5, middle left). It was partially excavated by the University of Utah in 1962 (Aikens 1965:47-62) and, like Mesa House, has a very late ceramic assemblage; slightly more than 70 percent of the ceramics are corrugated. The excavations uncovered three habitation rooms with a large number of smaller storage rooms attached. There

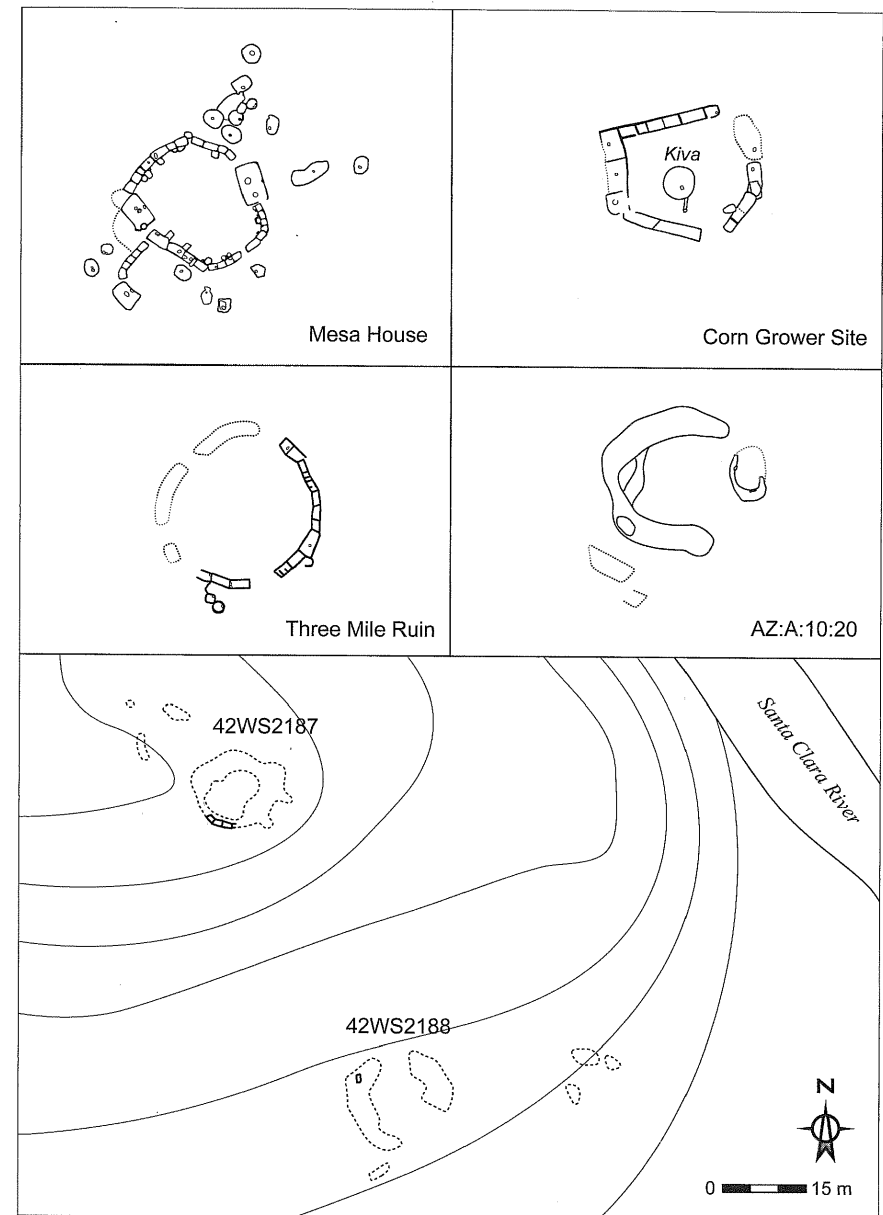


Figure 6.5. Plan maps of selected Virgin sites mentioned in the text.

is no evidence at Three Mile Ruin for anything like the numerous habitation rooms lacking contiguous storage rooms that occur at Mesa House. A recently obtained radiocarbon date of 1020 ± 40 BP comes from a poorly provenienced maize cob (the only one in the collections), which the excavators found while digging outside the wall of one of the habitation rooms. That date appears to be about two hundred years too old for the ceramic assemblage; it and a small number of Saint George Black-on-gray sherds suggest the possibility of a small earlier occupation.

In contrast to Mesa House, Three Mile Ruin is on a low terrace adjacent to the Santa Clara River floodplain. Also, while Three Mile Ruin is smaller than Mesa House, with probably at most only five or six habitation rooms, it appears to be part of a multisite settlement cluster including at least two other nearby sites, 42WS2187 and 42WS2188 (fig. 6.5, bottom), which also have very late ceramic assemblages (Allison 1990). At 42WS2187, a circular rubble mound encloses a courtyard, and the site looks like a smaller version of Three Mile Ruin, which is across the Santa Clara River, approximately 300 m to the northeast. The architecture at 42WS2188 also includes a roomblock in the form of a broken circle. Ceramics at 42WS2187 and 42WS2188 date both sites to the Pueblo III period (66 and 53 percent corrugated, respectively), although only small portions of the sites have been excavated, and neither of them is radiocarbon dated. Together, Three Mile Ruin, 42WS2187, and 42WS2188 appear to make up a multisite settlement that was about the same size as Mesa House—probably about 10 to 12 households total—although it is impossible to be certain with current data that the sites are absolutely contemporaneous.

The Corngrower Site is located just south of Short Creek, within the town of Colorado City, Arizona, and was the focus of several Southern Utah University field schools (Firor 1993; Frank and Thompson 1995; Walling and Thompson 1991, 1992, 1993, 1995). The superpositioning of numerous structures indicates a long occupation, but a total of fourteen surface rooms and a kiva appear to date to the latest occupation at the site (fig. 6.5, upper right). Hearths in four large rooms suggest that they were habitations. The rest of the surface rooms were probably used mainly for storage, although one small surface room also has a hearth.

The Corngrower site has not been radiocarbon dated, and much of the ceramic analysis has never been reported, but 67.5 percent of more than seven thousand potsherds recovered during site testing are corrugated (Walling and Thompson 1991), and the collections include a large number of Flagstaff-style white-ware sherds and polychrome red wares, confirming the late occupation.

It is not clear whether Corngrower was part of a larger, multisite community, but site density in the immediate vicinity is high, and the Reservoir Site, which has a late ceramic assemblage (81.8 percent corrugated; Allison and Colman 1998) and a radiocarbon date of 670 ± 90 BP, is only about a mile away.

As at other late Virgin sites, the rooms are arranged around an open courtyard or plaza area. At the Corngrower site, however, this courtyard space contains a masonry-lined pit structure that the excavators interpreted as a kiva. Although it lacks an identifiable sipapu, masonry-lined pit houses are uncommon in the region. Moreover, the structure has a well-constructed kiva-style vent shaft, and it has unusual floor features, including a square, slab-lined hearth and two pairs of clay-capped, sand-filled pits. Given the presence of several surface habitation rooms and the central location of the structure, it seems reasonable to consider this feature to be a kiva. Kivas are rare in the Virgin region (Lyneis 1996:21–22), however, and the presence of one at such a late site hints at changes in the use of ritual architecture in the period immediately preceding abandonment.

The fourth site, AZ A:10:20 (BLM), is located on the Shivwits Plateau about 90 km south of Three Mile Ruin. It is smaller and more isolated than the other sites described so far (fig. 6.5, middle right). The site is mostly unexcavated but includes a C-shaped rubble mound and several smaller structures. One large room, probably a habitation, is apparent in the main rubble mound, and it is likely that one or two other habitation rooms are also present. Like the other sites, it has a late ceramic assemblage (55 percent corrugated). Limited testing in 2006 yielded radiocarbon dates of 650 ± 50 and 750 ± 50 BP, suggesting occupation in the late 1200s. Full-coverage survey work near AZ A:10:20, which began in 2006, has not yet been completed, but the site does not appear to have been part of a larger cluster of contemporaneous sites.

Rather, it was probably a relatively isolated hamlet that was home to two or three families that lacked close neighbors.

The Fremont in the 1200s

Fremont sites dating to the 1200s look very different from Virgin sites, and some, especially those in the eastern Great Basin, show a much greater degree of aggregation. Some of the latest radiocarbon dates come from enormous settlements like the ones at Summit in the Parowan Valley, or Backhoe Village underneath the town of Richfield, but these sites have long occupational histories, and it is difficult to determine how large they were at any point in time. I will instead focus on two sites that appear to have been occupied primarily in the late 1200s: Baker Village and Five Finger Ridge.

Baker Village is located in far eastern Nevada, just west of the Utah/Nevada state line (fig. 6.2, upper right). The excavated portion of the site includes seven pit structures; associated adobe surface storage structures; and a large adobe "central structure," with an area of approximately 50 m², that was built over an earlier pit structure (Wilde 1992; Wilde and Soper 1999). This central structure apparently served as some kind of public architecture; Hockett (1998) argues that the concentration of faunal remains within the Baker Village central structure indicates feasting.

Midpoints of radiocarbon dates from the site range from 980 to 690 BP; four of these dates are on maize, including the earliest and the most recent, while the rest of the dates are on charcoal and thus subject to old wood problems. The early maize date comes from a test pit, and its association with the excavated architecture is unclear (Wilde 1992:46). The other three maize dates (740 ± 70 , 730 ± 100 , and 690 ± 60 BP) come from an excavated pit house, a surface storage structure, and a midden, and these suggest occupation in the late AD 1200s (Wilde 1992:47). The charcoal dates suggest earlier occupation during the 1100s, but this is likely to be a product of dating old wood. It seems likely that at least four of the seven pit structures were all occupied at once, which would suggest a population of fifteen to twenty-five people in the excavated area.

Five Finger Ridge in central Utah is similar in many ways but was quite a bit larger (fig. 6.2). It was located on a knoll 40–50 m above the

floodplain of Clear Creek, a small but permanent tributary of the Sevier River. The site was excavated by Brigham Young University in 1984 prior to its destruction during the building of Interstate Highway 70 (Talbot et al. 2000). The excavations found thirty-seven subrectangular pit structures, twenty-three circular or oval secondary pit structures, nineteen one- or two-room coursed-adobe surface storage structures; one surface habitation room, and one large central structure with jacal walls. In addition to the differences in shape, the subrectangular pit structures were distinguished from the secondary pit structures by their larger size, prepared floors, plastered walls, and substantial roofs. The secondary pit structures were expediently built, with use-compacted floors, unprepared walls, and probably brush superstructures.

Based on stratigraphic relationships and lack of superpositioning, as many as thirty-four of the thirty-seven subrectangular pit structures could have been contemporaneous, although Talbot (2000a:213) estimates only fifteen contemporaneous habitations. Sixty-two radiocarbon and nine tree-ring dates suggest an occupational span beginning in the eleventh century, with the major occupation in the 1200s, when the site appears to have been home to fifty to one hundred people. More specifically, the radiocarbon dates (all on charcoal) range from 1800 to 550 BP, although the earliest dates are clear outliers that are probably due to dating old wood.

While the latest Fremont sites clearly lasted until about AD 1300, occupation of some areas may have ended sooner. There are Fremont villages in the Uinta Basin in northeastern Utah, for example, including some large ones (e.g., Ambler 1966), but radiocarbon dates from the central Uinta Basin all predate AD 1000 (Spangler 2000a). In the rugged canyon country of the Tavaputs Plateau, south of the Uinta Basin, a complementary pattern occurs (Spangler 2000b). In this area, which includes well-publicized, archaeologically rich areas such as Nine-Mile Canyon and Range Creek, radiocarbon dates postdating AD 1000 are abundant, and they indicate use of the area through about AD 1300. Fremont sites on the Tavaputs Plateau are small and include numerous well-hidden and almost inaccessible granaries; small, apparently defensive habitations; and abundant rock art. This suggests that the Tavaputs Plateau was used from AD 1000 to 1300 by small, probably mobile, groups of people who were concerned with defense.

The eastern shore of the Great Salt Lake is another area where reliance on maize probably declined or ended earlier than AD 1300. Bone chemistry analysis on skeletal remains from fifty Fremont individuals recovered from the Great Salt Lake wetlands indicates that there was a large amount of variation in maize consumption, with variation patterned by both gender (males consumed more maize than females) and time (Coltrain and Leavitt 2002; Coltrain and Stafford 1999). Accelerator mass spectrometry radiocarbon dates were obtained for each individual, and those dating after about AD 1150 all had $\Delta^{13}\text{C}$ values suggesting little or no consumption of maize. Late dates from nearby pithouse villages (e.g., the Block 49 and South Temple sites under Salt Lake City [Talbot et al. 2004:155–158]) suggest, however, that maize horticulture continued later in some places around the Great Salt Lake.

After the Fremont and Virgin

Despite the apparent synchronicity, archaeologists have not seriously considered the possibility that the end of farming in the Virgin and Fremont regions may have been caused by regional-scale social disruptions caused by the depopulation of the northern San Juan and other parts of the northern Southwest. Instead, climate change and invading nomads have been popular explanations for the demise of both the Fremont and the Virgin (e.g., Ambler and Sutton 1989; Benson et al. 2007; Lindsay 1986). Paleoclimatic reconstructions show that in fact, the late-AD 1200s drought impacted the Fremont region (Benson et al. 2007), and both the Tavaputs Plateau sites and, more generally, aggregated sites such as Five Finger Ridge and Mesa House indicate a concern with defensive behavior (if not necessarily invading nomads) in parts of both the Fremont and Virgin regions. But it seems unlikely that any one factor accounts for the demise of farming.

Climatic variation likely played an important role, although given the geographical variability of the Fremont and Virgin regions and the variation in farming practices across the area, it is unlikely that drought alone caused the abandonment of farming. A precipitation reconstruction based on Tavaputs Plateau tree-ring data indicates that, as in the Central Mesa Verde, this area experienced generally dry conditions from about AD 1130 to 1300, with a pronounced multi-year drought

beginning in the AD 1270s (Knight, Meko, and Baisan 2010). But this should not, by itself, have led to the complete abandonment of farming. For one thing, many Fremont sites were positioned along streams that would not have dried up in even the worst droughts. Given the generally arid Utah climate, it is unlikely that most Fremont were dry farming (although direct evidence of water-control features is rare), and even in drought years, the streams should have provided sufficient moisture to support farming, although drought may have reduced stream flows and agricultural productivity. Unusually late spring or early fall frosts in cold years may have been more challenging to farmers, especially to those living at higher elevations or in more northern latitudes. But it is not clear whether (or where) cold may have been a factor. High-frequency temperature reconstructions suggest considerable variability across western North America during the critical time period; tree-ring records from the Sierra Nevada suggest temperatures at or slightly above normal in the decades immediately before and after AD 1300 (Graumlich 1993; Scuderi 1993), but a similar record from east-central Idaho indicates a period of pronounced cooling that began in the late 1200s and lasted into the AD 1300s (Biondi et al. 1999). How well these reconstructions reflect the temperature fluctuations actually experienced by Fremont and Virgin farmers is unclear, although spatial correlation suggests that the Idaho record should be relevant to at least the most northern parts of the Fremont region (Biondi et al. 1999:1447).

Whatever the causes, the timing of the end of farming in (at least) the majority of the Fremont and Virgin areas coincided closely with both the late-1200s Great Drought (Douglass 1929) and the depopulation of the northern San Juan region. It is possible that Fremont or Virgin immigrants contributed to the social and demographic changes that occurred in the northern San Juan in the late thirteenth century, but what happened to Fremont and Virgin people is unclear; there has been a tendency in the Fremont literature for those who emphasize southwestern connections to assume that most Fremont probably migrated out to the south and east, while those authors who see continuity with the Archaic period and downplay southwestern influences generally think it more likely that the Fremont simply gave up farming and reverted to hunter-gatherer lifestyles. But there is little evidence to support either position.

It is clear that, as in the rest of the northern Southwest, the end of farming involved substantial depopulation. After about AD 1300, the areas previously occupied by the Fremont and Virgin were home to people with clear links to the historical Southern Paiute and Ute. With only a few exceptions, these people were highly mobile hunter-gatherers who lived in relatively small groups. It is difficult to estimate regional populations either before or after 1300, but populations were much smaller after 1300.

Exceptions to the highly mobile hunter-gatherer pattern include what has sometimes been called the Promontory culture in northern Utah, as well as ancestral Paiute horticulturalists in southwest Utah and the Moapa Valley of Nevada. "Promontory" sites are hunter-gatherer camps concentrated in the wetlands along the shores of the Great Salt Lake and Utah Lake (Allison 2002; Allison et al. 2000; Janetski and Smith 2007; Simms and Heath 1990). They are often large, with dense accumulations of trash, including large amounts of pottery, and they appear to represent multiseasonal residential bases from which people exploited marsh resources. Some archaeologists have argued that similarities in ceramics (among other things) reflect continuity between the Fremont and these late prehispanic hunter-gatherers (e.g., Dean 1992; Simms et al. 1997). Radiocarbon dates, however, suggest that they date to the AD 1400s and 1500s, and they probably do not immediately postdate the Fremont.

Southern Paiute horticulture also *might*, but probably does not, indicate continuity with earlier Puebloan farmers. When the first Europeans arrived, ancestral Paiutes were farming along permanent streams in the Moapa Valley and in southwest Utah (Allison et al. 2008). But again, the chronology suggests a break; most ancestral Paiute sites in the region, and especially those with evidence of farming, appear to date after AD 1500. One date of 670 ± 50 BP from a site in southwest Utah that had maize in association with Southern Paiute Utility Ware (Walling et al. 1986) might indicate that Paiute farmers were in the area sometime close to AD 1300, which would strengthen arguments for continuity or contact with the Virgin. This, however, is suggested by only the one date, which is on charcoal and may be old wood.

Mitochondrial DNA studies may also be relevant to the question of continuity between Fremont and later populations, although the evidence is limited and far from conclusive. The frequencies of five mitochondrial

DNA haplotypes extracted from a subset of the skeletal remains found in the Great Salt Lake wetlands suggest that the Great Salt Lake Fremont were genetically more similar to archaeological and modern Native American populations from the Southwest than to Great Basin populations (O'Rourke et al. 1999; Parr 1998; Parr et al. 1996) (fig. 6.6). The patterns in figure 6.6 are striking, but these results should be interpreted cautiously. Sample sizes are small from many of the sampled populations, including the Paiute/Shoshone sample ($n = 9$) that most plausibly represents the post-Fremont occupants of northern Utah. Without data from a larger sample of modern Native Americans from the eastern Great Basin and data from a broader range of archaeological Fremont, Ancestral Pueblo, and Archaic populations, it is impossible to know what these patterns mean, although they do seem to imply a discontinuity between Fremont and subsequent populations.

The evidence for continuity between the Fremont and Virgin and subsequent populations is thus weak, but evidence for migration is no better. The occurrence of Bull Creek points at Pueblo III sites in southwest Colorado, including one at Castle Rock Pueblo (Crow Canyon Archaeological Center 2003; Kuckelman, this vol.), might be the best indication. Bull Creek points are one of several distinct regional styles of projectile points in the Fremont region (Holmer and Weder 1980). They are most common in the area around Glen Canyon and the Escalante River drainage, on both Fremont and Ancestral Pueblo sites. Interestingly, Bull Creek points (and, farther west, Parowan Basal-notched points) crosscut what are relatively sharp Fremont-Kayenta and Fremont-Virgin boundaries in the distributions of other kinds of material culture.

The few Bull Creek points that have been found in southwestern Colorado probably indicate some kind of contact with people to the west, but it is difficult to judge whether that contact involved migration, conflict, or trade. Other typical Fremont and Virgin artifact types are apparently absent in the northern San Juan region and the other areas to the south and east that would have presumably been the destinations for out-migrating Fremont and Virgin people. If migration was an important factor in the end of farming in the Fremont and Virgin regions, the migration seems to have been archaeologically invisible, unless people from these areas contributed to the AD 1200s population increases in some portions of the northern San Juan.

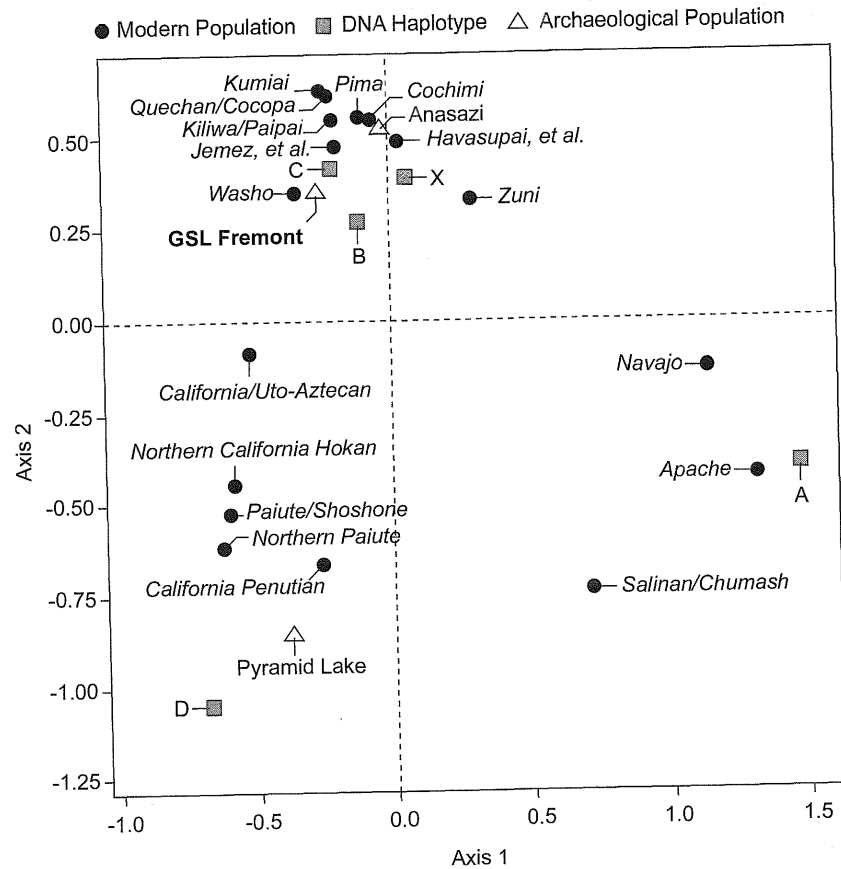


Figure 6.6. First two axes of a correspondence analysis of the frequencies of five mitochondrial DNA haplotypes in archaeological and modern Native American populations from western North America. Note that the Great Salt Lake Fremont population plots in a cluster that includes mostly southwestern and Baja California populations. Populations in this cluster tend to have relatively high frequencies of haplotypes B, C, and X, while the archaeological (Pyramid Lake) and modern Numic (Paiute/Shoshone and Northern Paiute) populations are distinguished from the Great Salt Lake Fremont primarily by high frequencies of haplotype D. The correspondence analysis is based on data reported by Lorenz and Smith (1996:311), O'Rourke et al. (1999:99), and Parr (1998:6).

Conclusion

I started this chapter with the stated goal of helping the prehispanic occupants of what was once called the Northern Periphery “[find] their rightful place in the story of our prehistoric Southwest” (Judd 1919:22)—or at least the part of the story that deals with the depopulation of the northern Southwest. This is not an easy thing to do, because the area involved is so large and chronological and demographic studies so underdeveloped. But farmers in both the Virgin and Fremont regions disappeared from the archaeological record close to the time at which people migrated out of the northern San Juan region. Previously popular assertions that the Virgin region was abandoned as early as AD 1150 are contradicted by radiocarbon dates from a number of sites, and occupation appears to have lasted into the late 1200s.

In the century prior to AD 1300, people in these regions generally appear to have lived in small settlements that may have included as many as about one hundred people but were usually half that size or less. There is not enough data for a good estimate of regional populations, but there must have been at least a few thousand people in each of the Fremont and Virgin regions in the AD 1200s. Evidence for either continuity with later populations or migration out of these regions is slim. The other possibility is a major, *in situ* population crash, but there is no direct evidence for that either, although populations were clearly smaller after the end of farming. It is, of course, conceivable—perhaps even likely—that population decline, migration, and continuity with later populations (which probably included Numic immigrants) all occurred in some combination.

Given the similarity in timing, it is unlikely that the end of farming in the Northern Periphery was unrelated to the depopulation of the larger region. As other chapters in this volume document, the last decades of occupation in the northern San Juan region were marked by social changes, including aggregation and increased use of ritual architecture. There are hints that similar processes occurred in the Virgin area and (especially) the Fremont area, although aggregation in those less densely populated areas was on a smaller scale, and the functions of Fremont central structures, which are the best candidates for ritual architecture, are not well understood.

It would be easy to speculate about the nature of the connections between the end of farming in the Fremont and Virgin regions on the one hand, and events in the northern San Juan area on the other. But it will take more and better data and more extensive efforts to synthesize the data before we can really test various possibilities. Efforts to better document and date the largest Fremont sites are especially needed; many have been obscured by modern development, but some portions of most sites remain, and study of museum collections and historical documents can supplement what will probably be limited archaeological work. Other potentially productive directions for research include further investigation of the dating and function of Fremont central structures and attempts to better document the scale and distribution of the latest communities in the Virgin region.

Much remains to be learned about the end of farming in the Northern Periphery, but it coincided closely with the migrations of Ancestral Puebloans from the northern San Juan region. The similarity in timing indicates that events in the Northern Periphery were connected to broader trends, and we won't really understand the depopulation of the northern Southwest until we can say with some certainty what happened to the Virgin and Fremont.

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Notes

1. My compilations, although undoubtedly incomplete, are an attempt to assemble all the radiocarbon dates associated with maize horticulture in the two areas. Included are dates from habitation sites as well as dates from other types of sites that were unquestionably associated with maize. In compiling the dates, I began with earlier compilations (Allison 2005; Berry and Berry 2001), which I supplemented with unpublished dates in my possession as well as a few published dates omitted in the earlier compilations.

2. My analysis used uninformative prior probabilities for all parameters. Including the Three Mile Ruin date makes the Pueblo III period appear slightly longer and start earlier. With the Three Mile Ruin date included, the posterior distribution for the start of the Pueblo III period peaks at about AD 1150, but there is little change to the posterior distribution for the end of the period.