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CHAPTER 3.

Malpai Borderlands Prehistory

History of Research

Systematic archaeology in the Malpai Borderlands begins with D. D. Gaillard's (1896) map of the elevated Cloverdale Playa beachline in the San Luis Valley. During his involvement with the U.S.-Mexico International Border Survey, Gailard was drawn to this feature by local ranchers' reports of a massive Native American dam. Familiar with the scale of prehistoric irrigation in the Phoenix Basin, he accepted the raised beachline as evidence of a massive water control construction and reported his findings in the *American Anthropologist*. The dam was almost immediately recognized as a prominent but natural topographic feature by a variety of geographers and archaeologists, such as Ellsworth Huntington (1914) and E. B. Sayles (n.d.). Nonetheless, the Cloverdale Indian Dam continues to appear in listings of prehistoric Southwestern reservoirs and other water control features (for example Crown 1987a: 220).

Archaeological reconnaissances in the study area from the 1920s to as late as the 1960s were intended to document the northern extent of the Chihuahuan polychrome tradition (Brand 1943; Carey 1955, 1956; Kidder and others 1949; Sauer and Brand 1930; Sayles 1936) or were the byproducts of several excavation programs in the boot heel region of New Mexico (Lambert and Ambler 1961; McCluney 1965a). Generally, the reports for these surveys disclose repeated visits to the same large late prehistoric pueblos, and publications provide minimal descriptive detail and locational information. When available, however, archival notes and records of these investigators hold the potential for important clues to features and site structure no longer visible because of vandalism and other degrading forces.

Systematic surveys have been infrequent. Frank Findlow and Suzanne De Atley (De Atley 1980; De Atley and Findlow 1982; Findlow and De Atley 1976, 1978) surveyed randomly placed 3.25 by 0.1 mile transects in each of the 16 Animas and Playas Valley townships defined as their Hidalgo Project study area. They estimate systematic coverage of 4 percent of the study area, and they recorded, collected, and in some cases conducted limited excavations at over 100 sites. The records and materials are not currently available in any public repository; evaluation of survey results must rest on published literature. John Douglas (1987) conducted a survey of similar intensity on approximately 1,700 ha (4,200 acres) or 1.7 percent of the San Bernardino Valley in southeastern Arizona.

There is a long history of poorly reported, small excavations by both archaeological professionals and amateurs in the Malpai Borderlands (for example, see Carey 1931; Mills and Mills 1971; Myers 1985; Osborne and Hayes 1938). However, larger excavation programs, culminating in detailed reports, are far fewer in number. The work by A. V. Kidder and the Cosgroves (1949) at the Pendleton Ruin constitutes the most intensive excavation at a single site in the study area (table 3.1 and fig. 3.1). They considered the site to be an "outpost" of Casas Grandes at the start of work at Pendleton in 1933. The absence of a variety of Casas Grandes-style architectural traits (for example collared postholes, platform and scalloped hearths, keyhole doorways), high frequencies of local Cloverdale Corrugated utility wares, and relatively low amounts of Chihuahuan polychrome pottery suggested a "peripheral" development for which they adopted the term "Animas," previously used by Gladwin (1933) and Sayles (1936). A focus on the relationship between the late

Table 3.1. Summary of large site excavations in the Malpai Borderlands.

Site	Location	Estimated total rooms	Number of rooms excavated
Pendleton Ruin	Animas Valley	100 to 125[a]	93 excavated or outlined[b]
Box Canyon	Animas Valley	120 to175;[a] 350[c]	18 excavated, 39 outlined[c]
Clanton Draw	Animas Valley	20+ [c]	11 excavated
Joyce Well	Playas Valley	50+;[d] 150 to 250[a]	45 excavated
Slaughter Ranch	San Bernardino	40+[e]	14 excavated [f]
Boss Ranch	San Bernardino	20+[g]	11 excavated[h]

[a] O'Laughlin and others n.d.; [b] Kidder and others 1949: 124; [c] McCluney 1965; [d]McCluney n.d.; [e] Arizona State Museum site card; [f] Mills and Mills 1971; [g] John Douglas, personal communication; [h] Douglas 1996

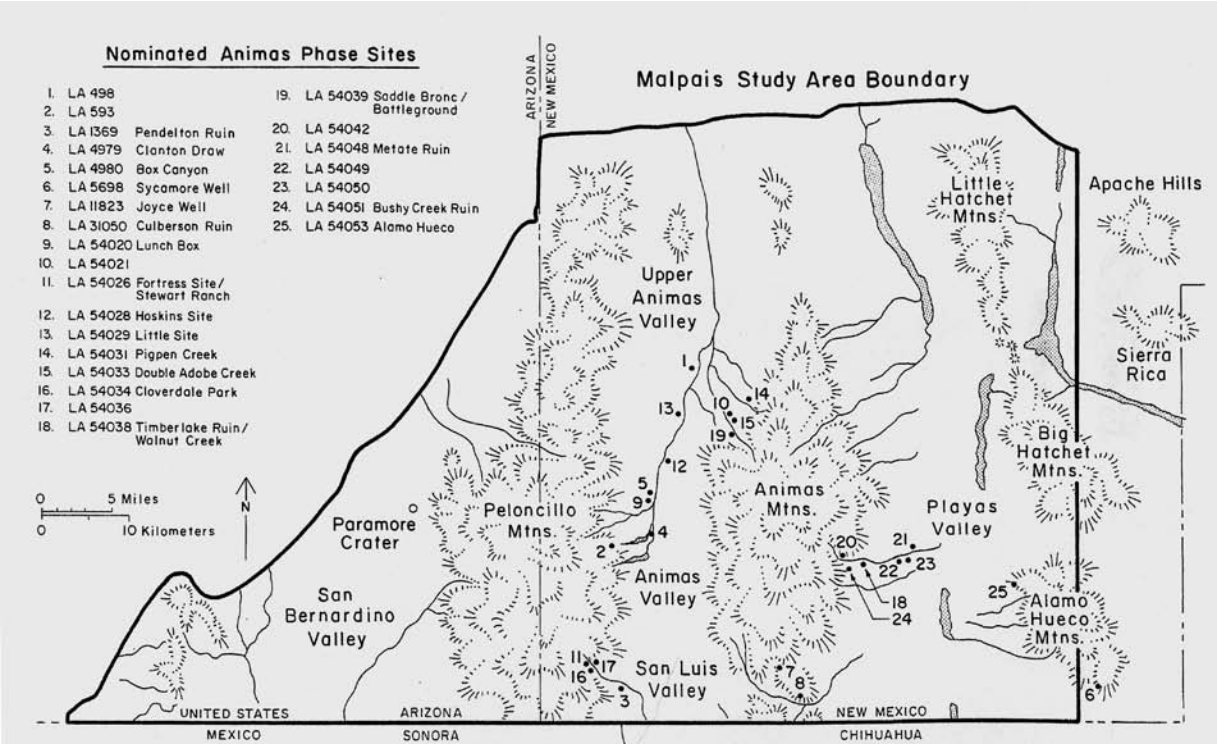

Figure 3.1. Locations of sites in a thematic nomination to the National Register of Historic Places (Duran 1992).

prehistoric pueblos of the Malpai Borderlands and Casas Grandes has stimulated most subsequent excavations.

At least limited excavation has been conducted at six other late prehistoric sites in the study area (see table 3.1 and fig. 3.1). E. B. McCluney (1965a) from the School of American Research excavated at the Clanton Draw and Box Canyon sites in the upper Animas drainage and exposed a portion of the Joyce Well site on Deer Creek in the Playas Valley (McCluney 2002: 16). Several excavations in the San Bernardino Valley have also been conducted at late prehistoric or Animas phase pueblos. Jack and Vera Mills (1971) excavated a large portion of the Slaughter Ranch pueblo, the largest site in the valley, but these remains have only been minimally reported. John Douglas (1990, 1996) and Richard Myers (1985) conducted excavations at the related Boss Ranch and San Bernardino sites as part of Cochise College field classes. Douglas' work represents the only instance of excavations in the Borderlands study area using contemporary recovery techniques, such as systematic screening of fill and flotation.

One of the most comprehensive and well-documented investigations in the Borderland study area pertains to an unpublished reconnaissance survey of Animas phase sites by T. O'Laughlin, J. Ravesloot, and M. Foster (n.d.) of the Jornada Anthropological Research Association. This survey developed background information on 25 sites for a thematic nomination to the National Register of Historic Places (fig. 3.1). This nomination was prepared by

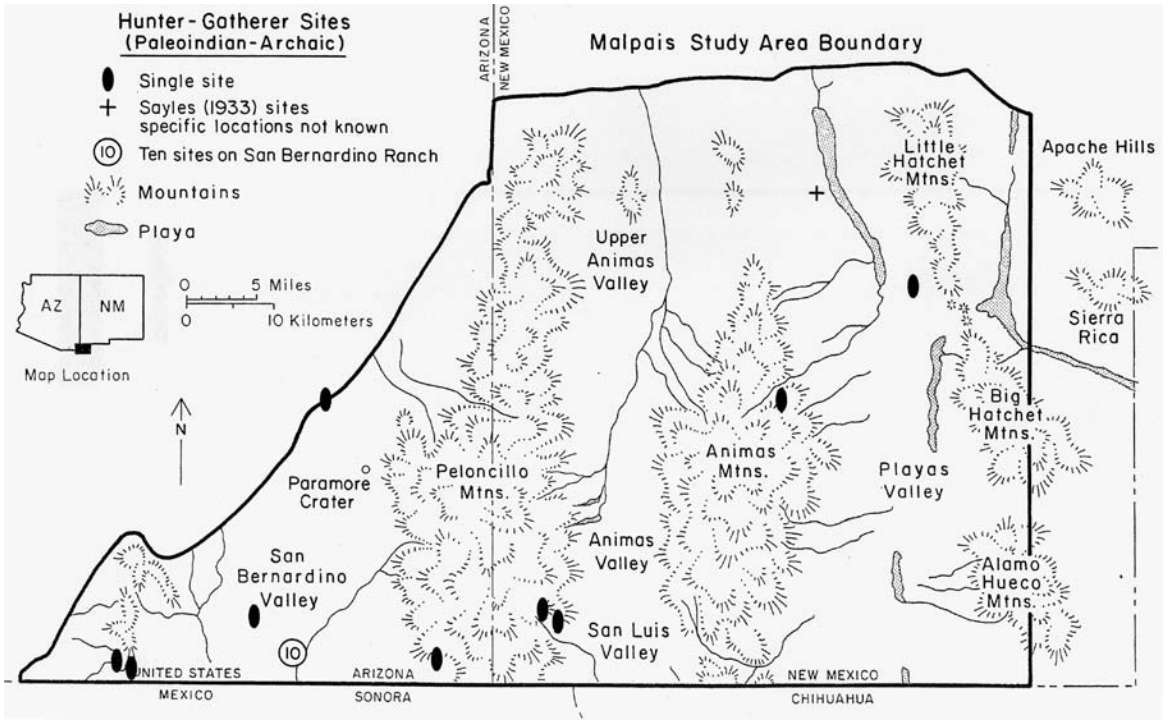

Figure 3.2. Distribution of Paleoindian and Archaic sites based on site file information.

Meliha S. Duran (1992) and is currently pending review. Development of the nomination led to proposals in the U.S. Senate by New Mexico Congressman Ralph Blending for a National Monument centering on the Animas sites. The interpretive theme for this Monument emphasized continuity with Casas Grandes and Mexican high cultures to the south (Schaafsma n.d.a). Support for a National Monument could not be generated among local ranchers and landowners, and the proposal lapsed. The plans for a major exhibit focusing on Malpai Borderlands study area sites with the theme "A Gateway to Mexico" (Schaafsma n.d.b) have been temporarily put on hold.

The presence of Casas Grandes, only 100 km (62 miles) to the south, is probably the single most important factor influencing interpretation of Malpai Borderlands prehistory. Casas Grandes is without question the largest and most complex site in the Greater Southwest. This late prehistoric town had a population numbering several thousand and an impressive array of public architecture, including several ballcourts and 18 ceremonial mounds or platforms. The presence of similar polychrome ceramics and architectural styles in the Malpai Borderlands made early investigators look to Casas Grandes for their comparisons and expectations. Detailed and largescale excavations by Charles Di Peso (1974) at Casas Grandes during the 1960s reinforced this point of comparison. Extensive reconnaissance surveys south of the San Luis and Playas Valleys (Brand 1943; Sayles 1936) and the San Bernardino Valley (Braniff-C. 1992; Di Peso n.d.; Sauer and Brand 1930) demonstrated spatial continuity in ceramic and architectural styles. The level of information for the intervening area did not approach that available for the Borderlands and Casas Grandes for many years. Only recently have systematic survey efforts begun to provide measures of Casas Grandes influence at varying distances to the north from that site (Braniff-C. 1992; Whalen and Minnis 2001).

Culture History

Paleoindian Hunters (10,000 B.C. to 7000 B.C.)

Widely distributed projectile points typical of both early and late portions of the Paleoindian period have been found on the surface as isolated artifacts within and immediately adjacent to the Borderlands study area (Di Peso 1965; Huckell 1971; Myers 1967, 1976). James Fitting and T. Price (1968) report a late Paleoindian surface assemblage consisting of points, unifacial tools, and debitage from a terrace above Cloverdale Creek in the Animas Valley. A high frequency of debitage in this assemblage suggests workshop activities (Fitting and Price 1968: 7–8). Figure 3.2 combines site location information for the Paleoindian and Archaic periods.

Although only surface artifacts have been discovered to date, the Borderlands study area may offer opportunities to examine the human role in Pleistocene extinctions of an array of small and large mammals. U-Bar Cave in the Hachita Mountains has produced deposits of mid-to-late Wisconson age (30,000 to 15,000 B.P.) with extensive fossil mammal, bird, and reptile assemblages (Harris 1985, 1987). Near the western edge of the study area, buried late Pleistocene/early Holocene deposits occur in Whitewater Draw (Waters 1986: 41), and these stratigraphic units have also yielded a variety of extinct large mammals (Antevs 1983; Haury 1960; Sayles and Antevs 1941). Significantly, the study area is near the classic Clovis kill and butchering sites of Lehner, Murray Springs, Escapule, and Naco (Haury 1953; Haury and others 1959; Haynes and Hemmings 1968; Huckell 1982).

Archaic Foragers (7000 B.C. to 1500 B.C.)

There is limited evidence for Early and Middle Archaic utilization of the study area. The two largest systematic surveys (De Atley 1980; Douglas 1987, 1990) record numerous lithic artifact scatters but none that could be unequivocally dated to the Archaic with diagnostic artifacts. Stephen Lekson (1992a: 64) suggests that casual collection of surface artifacts may produce a distorted impression of the intensity of Archaic occupation, using an example from Findlow and De Atley's survey (1976, 1978) in the vicinity of Playas Lake. They located 25 extensive scatters of flaked stone and fire-cracked rock on old beach lines and concluded, in the absence of stylistically diagnostic artifacts, that these were the remains of resource exploitation by ceramic period peoples (Findlow, personal communication in Lekson 1992a: 64). Lekson notes that the well-documented collection of hundreds of Middle and Late Archaic projectile points by Donald Formby (1986) from Playas Lake beaches suggests intensive earlier use, and that previous collecting may be in large part responsible for the failure to recover these diagnostic artifacts during survey. On the other hand, the authors observed large numbers of stylistically Archaic projectile points in well-documented collections recently made by Jeff Shauger while mapping fencelines and other modern features on the Gray Ranch in the Animas and Playas Valleys. These fencelines crosscut many of the Findlow and De Atley transects; the fact that Shauger could find points suggests that the intensity of previous investigations rather than depletion by collectors limited the recovery of Archaic diagnostics.

Another biasing factor for Archaic representation in survey results may be the burial of relevant deposits. Buried Archaic sites have been recorded in the San Bernardino Valley (for example see Neily and Beckwith 1985), and E. B. Sayles (n.d.) reports Archaic remains 1 m (3.3 ft) or more below the surface of former Lake San Luis beachlines. Studies of such buried contexts in Whitewater Draw (Sayles 1983; Sayles and Antevs 1941), adjacent to the western edge of the study area, have allowed definition of the Cochise Archaic sequence for southern Arizona and New Mexico. More recently, investigations here have produced numerous radiocarbon dates and geological assessments of environmental change (Waters 1986).

Preceramic Farmers (1500 B.C. to A.D. 200)

Late Archaic settlements with numerous houses, large bell-shaped storage pits, burials, formal groundstone, high ubiquity of maize in flotation and pollen samples, and instances of well-developed middens are now well documented in the Santa Cruz and San Pedro Valleys of southern Arizona (S. Fish and others 1990, 1992; B. Huckell 1990, 1996; Mabry 1994, 1996). Probable Late Archaic houses have been reported to the north of the study area along the upper Gila River and in the Sulphur Springs Valley (Fitting 1972b; Minnis 1980; Sayles 1945, 1983) and to the east along the Rio Grande (Honea 1965; Lekson 1992a: 62–64; O'Laughlin 1980). Charred corn of Archaic age has been dated immediately to the east of the study area in Dona Ana County, New Mexico (Upham and others 1987).

Projectile points (Lambert and Ambler 1961: 33, fig. 19) and perishable remains such as atlatls and certain types of sandals (Lambert and Ambler 1961: 84–85) suggest stylistically Late Archaic occupations at U-Bar Cave in the Hachita Mountains. However, these artifacts cannot be clearly associated with the copious amounts of corn and other domesticates recovered at this site. Frequent San Pedro, Cienega, and Cortaro projectile point forms in the Jeff Shauger collections from the Gray Ranch indicate widespread Borderland occupations contemporary with those in the San Pedro and Santa Cruz Valleys. Owen Davis (2001: 408) identified corn pollen in an Animas Creek cienega near the Gray Ranch headquarters. It is associated with a radiocarbon date of approximately 3400 B.P. Davis' analyses of cores from other cienega deposits immediately adjacent to the study area have also yielded corn pollen in the 2000 to 3500 B.P. range.

Late Archaic settlement locations may be buried in alluvium along primary and secondary drainages and on alluvial fans as is frequently the case in the Santa Cruz and San Pedro Valleys (S. Fish and others 1992; B. Huckell 1996). A second possibility is that at least some hill and mountain occupations in northwestern Chihuahua,

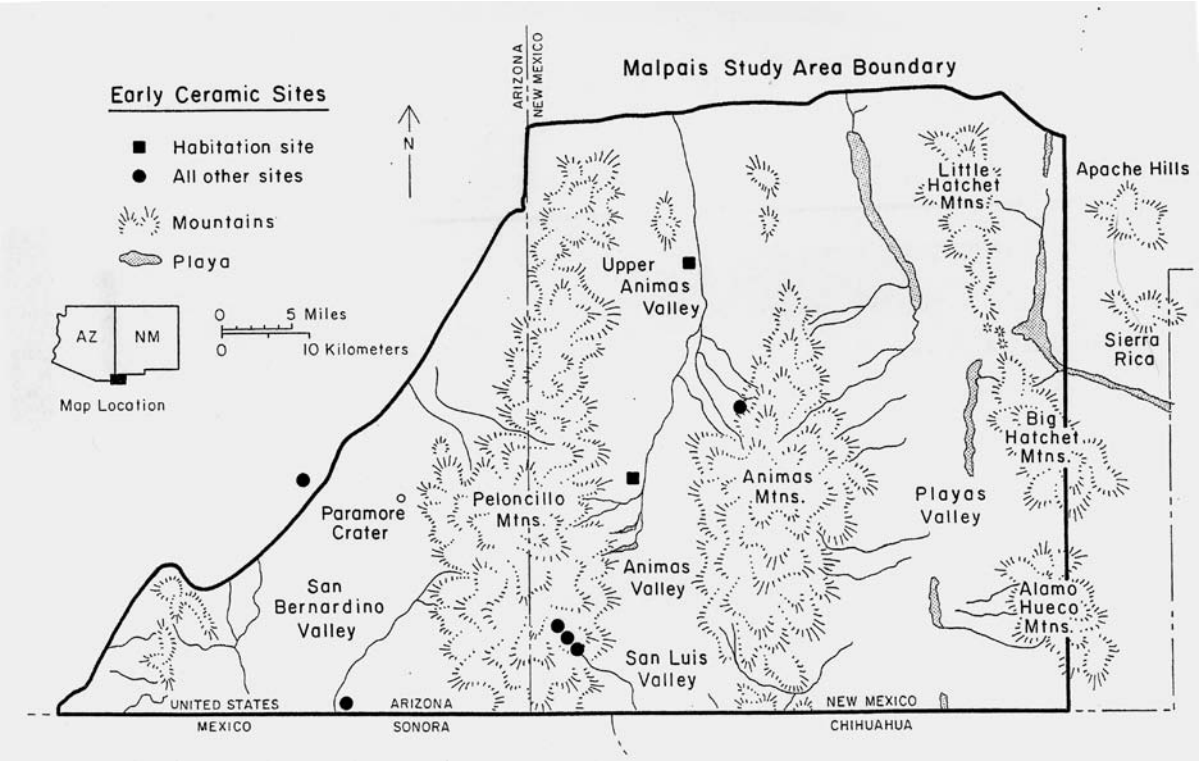

Figure 3.3. Distribution of Early Ceramic (Pithouse Hamlet) sites based on site file information.

southwestern New Mexico, and southeastern Arizona date to preceramic times (Hard and Roney 1999; Roney and Hard 2004). These villages share most of the characteristics of the later *cerros de trincheras* village sites of southern Arizona and northern Sonora in having dry-laid masonry terraces and other features constructed on dark volcanic hillsides (Downum and others 1994). Several of these sites near Janos, Chihuahua, mapped in detail (Roney and Hard 2004), have dark midden deposits that contain diverse flaked and groundstone assemblages and suggest residential refuse. The associated artifacts are stylistically Late Archaic. Construction and hillside modification at some of these sites is massive. For example, at Cerro Juanaqueña, Hard and Roney (1998; Hard and others 1999) calculate that the summit and hillside have been transformed by 8 km (5 miles) of terrace wall and that all rock has been removed from over 10 ha (25 acres) of the hill summit. A terraced hillside without ceramics has been reported in the upper reaches of Deer Creek in the Playas Valley (Cosgrove and Cosgrove n.d.; Kidder and others 1949: 149; Osborne and Hayes 1938: 22), and such sites are believed to be present in the San Bernardino Valley (John Douglas, personal communication). The authors observed basin metates, many one-handed manos, and a stylistically Late Archaic projectile point during a visit at the Deer Creek terraced hillside or fortified site.

Pithouse Hamlets (A.D. 200 to A.D. 1000)

Survey records reveal only a few habitation sites in the Borderlands study area that can be assigned to this ceramic interval with any certainty (fig. 3.3). Findlow and De Atley (1978; De Atley 1980; De Atley and Findlow 1982) recorded eight "early" San Luis phase sites in their Hidalgo Project investigations in the Animas and Playas Valleys. Systematic survey has revealed several additional sites of this period in the San Bernardino Valley (Douglas 1990; Neily and Beckwith 1985). Although brownware sherds are ubiquitous, occasional occurrences of Mogollon Red-on-brown, Three Circle Red-on-white, and Mimbres Boldface Black-on-white ceramics demonstrate later pithouse period use of the study area as well. Excavations (Minnis and Wormser 1984; Sayles 1945) in adjacent desert areas suggest that many of the numerous brownware sherd and lithic scatters recorded in the study area may similarly reflect habitation remains; a relatively complete sequence of occupation may be present as in the adjacent Sulphur Springs Valley (Sayles 1945, 1983) and nearby San Simon Valley (Gilman 1997).

In mountainous zones to the north, early pithouse villages are frequently found on high, steep-sided mesas and occasionally have dry-laid masonry walls (Lekson 1992a: 13), raising the possibility of continuity with

previous Late Archaic hillside sites (Hard and Roney 1998). Some scholars have inferred defense as a primary location consideration (LeBlanc 1980a), but Lekson (1992a: 13) points out that distance and difficulty of access to water limit the power of this explanation. To Lekson (1992a,b), Cable and Doyel (1987), and a variety of other Southwestern archaeologists, there appears to be synchroneity in changing village layout over time in the southern deserts from the Rio Grande to the Phoenix Basin during the pithouse period. The earliest pithouse settlements are invariably small with an average of seven structures (Lekson 1992a: 13). Sites such as Cave Creek and San Simon villages just north of the study area had an estimated 20 to 30 people (Cable and Doyel 1987: 61). By A.D. 500, larger villages with one or two large communal, "great kiva-like" structures were built in many parts of the region (Anyon and LeBlanc 1980; Cable and Doyel 1987, Di Peso 1956, 1958, 1974). A few of the latest pithouse sites in east-central New Mexico are large; for example, the late pithouse component at Galaz site has approximately 100 pithouses (Anyon and LeBlanc 1984: 94), and there are perhaps 200 at Lee Village (Lekson 1992a: 14).

Shifting seasonal occupation has been the dominant model used to interpret pithouse period settlement patterns in the southern deserts. On the basis of ethnographic analogy, Patricia Gilman (1987, 1997) has argued that pithouse architecture is most frequently associated with seasonal mobility and movement of residence during the year. Applying these precepts to San Simon settlement data northwest of the Malpai Borderlands, Gilman (1987: 207) infers that villages were occupied during the winter, near agricultural fields and stores. Sherd and lithic scatters are the remains of summer and spring foraging activities. So few sites have been assigned to the early ceramic period in the Malpai Borderlands study area that no clear picture of settlement pattern emerges (fig 3.3). Study area reconnaissance and site visits during investigations for this study suggest that early ceramic remains are dramatically underrepresented in current archival information and that systematic searches of site surfaces would yield diagnostics indicating many more components of this period.

Mimbres Horizon Villages (A.D. 1000 to A.D. 1200)

The widely distributed complex of Mimbres style ceramics, architecture, and settlement organization extends far beyond the Mimbres Valley of southwestern New Mexico—east to the Rio Grande (Lekson 1989a; M. Nelson 1993), north to the San Franciso Mountains (Lekson 1992a,b), south to the Janos area of Chihuahua (Brand 1943; Carey 1931), and west to the San Bernardino and Gila Valleys of southeastern Arizona (Douglas 1990; Sauer and Brand 1930). This phenomenon is sometimes conceptualized as an interaction sphere or regional system resembling that of the pre-Classic Hohokam (Lekson 1993, 1992a,b; Upham 1992; Wilcox 1991). The transition from pithouse to pueblo architecture and the florescence of the Classic Mimbres Black-on-white pottery mark this period. Although none have been excavated, sites of this period in the study area appear to contain both pithouse and pueblo architecture and may yield low frequencies of Mimbres Black-on-white pottery.

Mimbres pueblos in the homeland of this horizon are occasionally large, with a few exceeding 300 rooms. In the Malpai Borderlands, the Maddox Ruin in the Animas Valley may be such a site. Locational continuity with major pithouse period villages is frequent in the Mimbres Valley. Although great kivas may have been present at a few large Mimbres pueblos and at dispersed communities of small sites (Anyon and LeBlanc 1980; Lekson 1989b), open plaza areas replaced kivas as communal features at most settlements. A majority of large settlements and settlement clusters in the Mimbres Valley and some other locales in New Mexico appear dependent on irrigation strategies for agriculture (Creel and Adams 1986; Herrington 1979, 1982; Lekson 1992a: 16). A close correlation exists between the total number of Mimbres rooms and amount of irrigable bottomland in valleys (Lekson 1986).

Variable estimates of terminal population for the Mimbres Valley range from 1,500 to about 5,000 (Blake and others 1986; Minnis 1984, 1985; Nelson and others 1994), and there is a consensus that regional population for the larger extent of Mimbres style probably does not exceed 10,000 or 20,000 (Lekson 1992a: 18). Small populations spread over large distances are consistent with the perception of an "essentially egalitarian people. . .with the emergence of an incipient elite" at some locations (LeBlanc 1983: 148). Between A.D. 1180 and 1200, a rapid demographic and social collapse of the Mimbres heartland was followed by a hiatus and then reoccupation by later and culturally distinct peoples. This progression is considered a landmark event of regional prehistory (LeBlanc 1989). A climatic downturn, the attraction or competition occasioned by the florescence of Casas Grandes, and marauding Apaches (LeBlanc 1989) have all been considered as causal agents. Recent investigators have suggested that changes at the end of

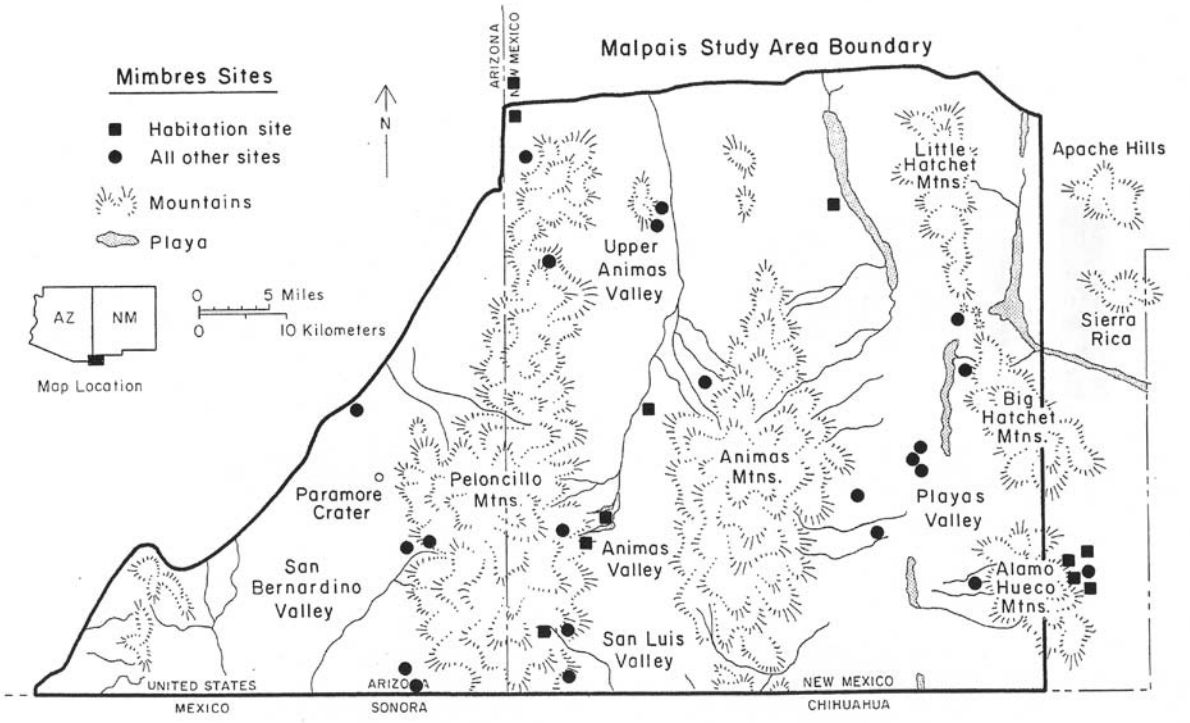

Figure 3.4. Distribution of Mimbres horizon sites based on site file information.

the Mimbres horizon may not have been so dramatic as previously portrayed, and that the transition may have extended over a considerable period (Creel 1997; Lekson 1992a). Instead, it may be useful to view the Mimbres "collapse" as part of a broader reorganization of population and society that occurred at about this time across the southern deserts and throughout the Southwest (Cordell and Gumerman 1989; P. Fish and Fish 1994).

Pueblos with Mimbres ceramic types exceeding 100 rooms are known along Animas Creek in the Borderlands, and smaller pueblos and pithouse settlements are scattered throughout the bootheel of southwestern New Mexico (Lekson 1992a: 16). John Douglas (1990: 174) considers pithouse architecture as the dominant form throughout the period in southeastern Arizona. No excavated architectural plans or materials are available within the study area. Although site densities certainly never approached those of the Mimbres Valley, available survey data suggest that the Animas Valley, and probably the San Bernardino Valley as well, had significant Mimbres period populations.

Figure 3.4 depicts the settlement pattern of the Mimbres Horizon as revealed in site file information. With the exception of a habitation locale at the edge of the large playa in Playas Valley, sites classified as having residential characteristics are near relatively permanent water sources on major mountain drainages as they emerge onto basin bajadas or at the edges of cienegas. Diagnostic painted pottery in assemblages dating prior to A.D. 1200 is relatively rare in the Borderlands and undoubtedly contributes to an underestimation of the frequency of these components, as does the infrequency of readily visible puebloan architecture at this time.

Late Prehistoric Pueblos (A.D. 1200 to 1400/1450)

The adobe pueblos of southwestern New Mexico and southeastern Arizona that recall Chihuahuan styles have attracted sporadic archaeological attention since the 1920s (Brand 1943; Gladwin and Gladwin 1934; Kidder and others 1949; Sauer and Brand 1930; Sayles 1936). This stylistic complex has been termed the Animas phase in the archaeological literature. It is characterized by large, puddled adobe pueblos, roomblocks built around plazas, an absence of kivas, the sporadically recorded occurrence of Casas Grandes style ballcourts, and a high proportion of Ramos Polychrome and other Chihuahuan ceramics. Interpretation of these manifestations is almost always in terms of interaction with the regionally preeminent site of Casas Grandes, although the nature and strength of such relationships have been hotly debated.

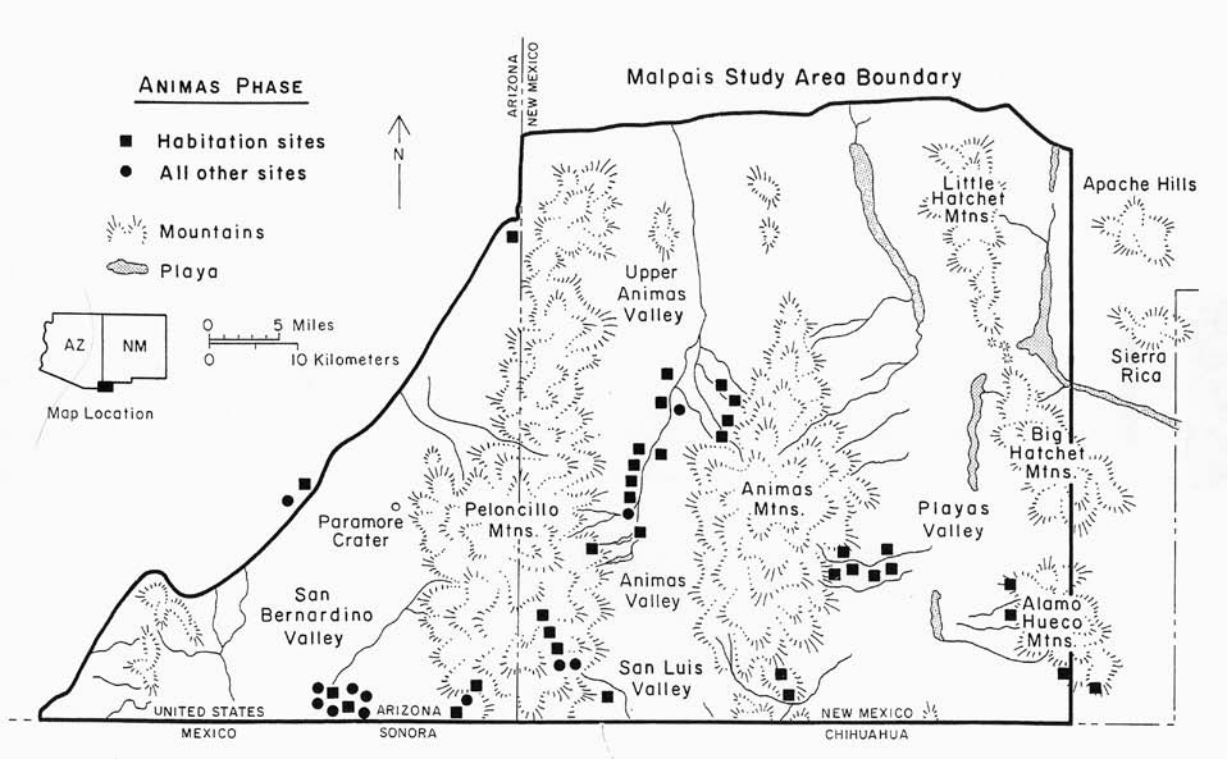

Figure 3.5. Distribution of Animas phase (late prehistoric) sites based on site file information.

The Database

Boundaries for the Malpai Borderlands study area almost precisely correspond to the northern distribution of ceramic assemblages with high proportions of Chihuahuan polychromes and sites assigned to a Chihuahuan tradition (Sauer and Brand 1930). Locations of the largest pueblos (100 or more rooms) are well known in regional archaeological reconnaissances (Brand 1943; De Atley 1980; Kidder and others 1949; Sayles 1936). Sample survey in the bootheel region of New Mexico has suggested to Suzanne De Atley (1980: 30) a hierarchical settlement pattern with large central sites (100 to 500 rooms) separated by distances of approximately 15 km (9 miles). On the other hand, John Douglas (1995) infers largely autonomous villages from settlement distributions in the western part of the study area. Detailed maps and descriptions for 30 sites were prepared in conjunction with a thematic nomination of Animas sites to the National Register of Historic Places (Duran 1992).

Figure 3.5 shows the locations of late prehistoric sites recorded in the study area. Although the largest sites are well known, systematic survey data are limited. Regional surveys in the bootheel segment of New Mexico and in the San Bernardino Valley of Arizona are environmentally stratified samples at 2-percent levels. Nothing comparable to full-coverage data exists for any significant subsection of the Borderlands study area; consequently, relationships between large pueblos and the smaller units of settlement pattern are unknown. Without sufficient settlement pattern data on a regional scale, inferences about village autonomy (Douglas 1995), settlement hierarchy (De Atley 1980), multisite communities (P. Fish and Fish 1994), and interaction between territorial units are somewhat speculative.

Chronology

Chronology is key in interpreting late prehistoric developments in the Malpai Borderlands study area. Table 3.2 compares current regional chronologies for southwestern New Mexico, southeastern Arizona, and northern Chihuahua. On the basis of ceramic cross-dating, most archaeologists working in southwestern New Mexico and southeastern Arizona placed the large, late pueblos in the range of A.D.1250 to 1450 (Brand 1935; Kidder and others 1949; McCluney 1965a, 2002: 39). In fact, the constellation of decorated ceramic types occurring at these sites (St. Johns Polychrome, Gila Polychrome, Tonto Polychrome, Pinedale Polychrome, El Paso Polychrome, Chupadero Black-on-white, and an assortment of Chihuahuan types) has come to be regarded as the hallmark of 14th and 15th century occupations in the southern Southwest (Doyel 1976; Thompson n.d.;

Table 3.2. Comparison of relevant chronological sequences for the Malpai Borderlands study area.

	Phase sequence southwest New Mexico	Period sequence southwest New Mexico[a]	Revised Casas Grandes phase sequence[b]	Revised Casas Grandes period sequence[b]	Phase sequence Malpai Borderlands[c]	Ceramic period sequence used in this overview
A.D. 1500 -			Diablo	Medio		
1400 -	Cliff (Salado)	Late Pueblo	Paquime		Salado	Late Prehistoric Pueblos
1300 -	Black Mountain (Animas)		Buena Fe		Animas	
1200 -						
1100 -	Classic Mimbres	Early Pueblo	Perros Bravos	Viejo	San Luis	Mimbres Villages
1000 -						
900 -	Three Circle	Late Pithouse				Pithouse Hamlets
800 -	San Francisco					
700 -						
600 -	Georgetown					
500 -	Cumbre	Early Pithouse			??????	
400 -						
300 -						
200 -						
100 -						
A.D. 1 -	Late Archaic	Late Archaic				Preceramic Farmers

[a] Nelson and Anyon 1996; Stuart and Gauthier 1981.
[b] Dean and Ravesloot 1993.
[c] De Atley 1980.

Wilcox and Shenk 1977: 64–68). This same ceramic assemblage also characterizes the major construction episodes at Casas Grandes and provided the basis for a 14th century dating assignment in most early regional syntheses (Carey 1931; Gladwin 1957; Kidder 1924; Sauer and Brand 1930; Sayles 1936).

With Di Peso's (1974) large-scale excavations at Casas Grandes in the 1960s, general consensus on regional chronology was shaken. Tree-ring dates appeared to place major construction at the site to an interval between A.D. 1060 and 1340. Therefore, Di Peso's interpretations emphasized comparison with cultural developments at the same time in the Mimbres and Chaco regions to the north. This radical transformation of Southwestern culture history was met by a combination of skepticism, criticism, and adjustments to local sequences to better fit this new framework (Braniff-C. 1986; LeBlanc 1980b, 1986; Lekson 1984; Ravesloot 1979; Wilcox 1986). For example, Stephen LeBlanc (1980a, 1986) developed a model for the Mimbres Valley in which there was collapse and abandonment at about A.D. 1100, an occupational hiatus, and reoccupation by participants in the Casas Grandes interaction sphere, which he dated between A.D. 1200 and 1300. Recent reevaluation of the tree-ring evidence for Casas Grandes clearly demonstrates that the major occupation at this pivotal site occurred between A.D. 1300 and 1500 (Dean and Ravesloot 1993: 96–97).

Further complicating regional chronology, Di Peso (1974: 46) accepted and reported three radiocarbon dates suggesting a 16th century occupation at Joyce Well (table 3.3). He interpreted these dates as evidence that scattered Tardio period populations from Casas Grandes occupied the bootheel section of New Mexico and nearby areas after the collapse of that site. Both De Atley (1980) and Carpenter (1992) point out that these dates were all derived from carbonized corn and never corrected for differential absorption of ^{13}C and ^{14}C fractions. If an estimated average correction of 200 years were made, all three samples would date to the latter half of the 1300s.

Table 3.3 presents chronological data from excavated sites with radiocarbon and tree-ring dates in and immediately adjacent to the Malpai Borderlands study area. Obsidian hydration dates from two analyses (De Atley 1980: 77–80; Stevenson and others 1989) tend to broadly conform to associated radiocarbon dates and estimates from ceramic assemblages. Table 3.3 underscores the limited number of absolute dates from the study area and vicinity. Problems resulting from poorly understood proveniences and lack of current correction factors for radiocarbon dating further complicate the chronological picture. Available dates from nearly all large sites

Table 3.3. Absolute dates for sites in and immediately adjacent to the Malpai Borderlands.

Site	Ceramic cross-dating	Radiocarbon	Tree ring	Archaeomagnetic
Clanton Draw	1350–1375[a]			
Box Canyon	1350–1380[a]			
Joyce Well	1250–1400[b]	1620 ± 110; 1590 ± 100; 1565 ± 110[i]	1249p–1308vv[j]	late 1300s[k]
Pendleton	1300–1375[c]			
Culberson	1200–1450[d]	1360 ± 60[h]	1183–1282vv; 1185–1284vv[j]	
Boss Ranch	1150–1450[e]	1400 ± 80; 1430 ± 50[e]		
Kuykendall	1300–1450[f]			1385 ± 23; 1375 ± 18[j]
Slaughter Ranch	1300–1500[f]			
Ojo de Agua	1250–1450[g]	1580 ± 180; 1522 ± 41; 1420 ± 70; 1666 ± 40[g]		
Double Adobe Cave	?	545 ± 90[h]		
Maddox Ruin	1000–1400[d]	1230 ± 60[h]		
Hildalgo Survey 1	?	1420 ± 60; 1060 ± 60; 1200 ± 60[h]		
Hildalgo Survey 65	?	1185 ± 60[h]		
Hildalgo Survey 15	?	1060 ± 60; 875 ± 60[h]		

References: [a]McCluney 1965; [b]McCluney n.d.; [c]Kidder and others 1949; [d]O'Laughlin et al. n.d.; [e]Douglas 1996.; [f]Estimate by P. Fish; [g]Braniff 1992: 547; [h]De Atley 1980: 69; [i]Di Peso 1974: 46; [j]Mills and Mills 1969a; [k]Curtis Schaafsma, personal communication.

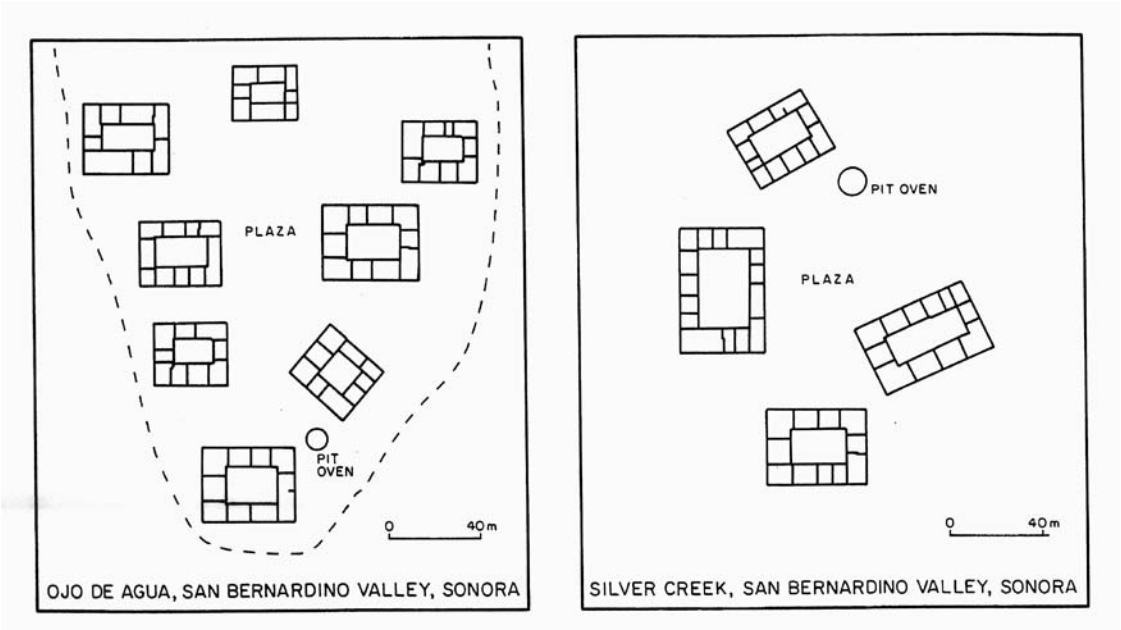

Figure 3.6. Selected site plans with compound architecture.

generally parallel ceramic estimates and postdate A.D. 1200. The late dates from Ojo de Agua are particularly intriguing as they are in clear association with ceramic assemblages (the range of polychrome types and Cloverdale Corrugated utility ceramics) and architecture that characterize late prehistoric (Animas phase) occupations in the Borderlands.

Geographic Variability

The presence of two stylistically discrete late prehistoric occupations in the Malpai Borderlands study area has been long distinguished on the basis of distinct plainware utility types (Brand 1943; Sauer and Brand 1930). One subdivision is in the Animas and San Bernardino Valleys and corresponds to utility ceramic assemblages dominated by Cloverdale Corrugated; the other is located in the Playas Valley where utility ceramics are principally Playas Red. Differences in frequencies of Chihuahuan and Salado polychrome types (Nelson and Anyon 1996: 284) also figure in this distinction; Salado polychromes are more common with Cloverdale Corrugated and Chihuahuan polychromes are more frequent with Playas Red.

Architectural tendencies crosscut these ceramic spheres. Compounds and *cimientos*-type wall footings (cobble or slab alignments without discernible melted adobe) are more frequent in the west, particularly in the San Bernardino Valley with Cloverdale Corrugated. At the largest sites such as Kuykendall (Mills and Mills 1969a,b), a short distance northwest of the study area, and Ojo de Agua (Braniff-C. 1992), spatially separate compounds are formed by a single row of rooms on all four sides of an open interior. At Ojo de Agua and other Sonoran sites recorded by Di Peso (n.d.), large open areas among the compounds may represent a central plaza (fig. 3.6). Contiguous roomblocks and plaza arrangements that have been designated as "puebloan" are recorded in the Animas and Playas Valleys (fig. 3.7). Massive, coursed adobe construction of the roomblocks, resulting in architectural remains of mounded adobe, is more commonplace in the Playas Valley. Smaller sites in the San Bernardino, Animas, and Playas Valleys exhibit great variability and range from isolated structures or field houses, to sets of contiguous rooms, to compounds with a few rooms dispersed in the courtyard or attached to the outer wall.

Geographic and stylistic contrasts have been noted between spatially discrete compounds and roomblocks of contiguous units (Brand 1943: 117; Douglas 1995: 243–244). The designation of "puebloan" for the roomblock layouts is suggestive of underlying cultural and organizational differences as well. However, roomblock sites are more "puebloan" than compound sites only in the sense of larger masses of contiguous rooms; neither of the architectural types exhibits northern elements such as kivas.

Questions among sites with compound and roomblock arrangements concerning organizational carryovers or similarities also can be raised, if not resolved, by our current understanding of site layouts. Di Peso's sketch of Ojo de Agua compounds (fig. 3.6) shows eight units, each outlined by a single row of rooms. If those compounds were conjoined along their outer edges, they would form a series of plaza and roomblock arrangements, with a row of two (or sometimes more) back-to-back rooms between adjacent plazas (fig. 3.7). Such a structure generally parallels the layout of the Joyce Well site

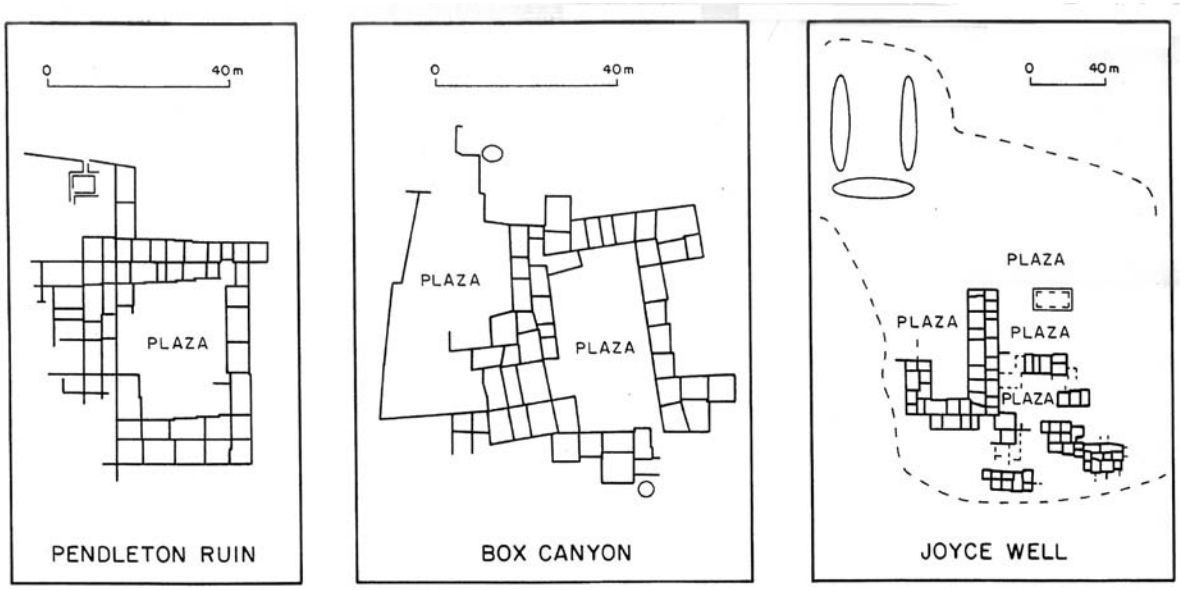

Figure 3.7. Selected site plans with roomblock architecture.

(fig. 3.8), which has five identified plazas and several more probable ones. The open areas in the center of Ojo de Agua compounds could conceivably correspond to the large plaza at Joyce Well. Pendleton and Box Canyon could be smaller multiples of similar arrangements (fig. 3.8). Precise comparison is not possible with sketch maps of most large sites, but the dimensions of plaza units at the three sites in fig. 3.7 appear similar to dimensions of Sonoran compounds provided by Di Peso (fig. 3.6). Thus, sites with separate compounds and sites with roomblocks and plazas may share aspects of demographic and organizational structure.

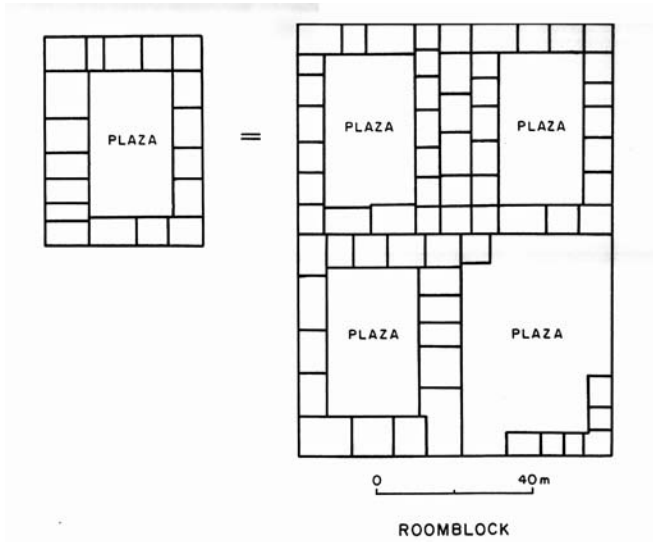

Figure 3.8. Comparison of residential units in idealized compound and roomblock architecture.

Architectural and ceramic styles of the late prehistoric Malpai Borderlands are more closely allied to expressions to the south than to the north. Sites with high frequencies of Cloverdale Corrugated extend to the south in the northern portion of the Carretas Basin and along the southward flowing streams immediately across the border from the San Bernardino Valley in Sonora. Whereas many of the larger sites in the Carretas Basin have even more massive, coursed adobe walls than in the study area, Ojo de Agua and other large Sonoran sites west of the Carretas Basin consist of compound and *cimientos*-style architecture. Brand (1933) and Sayles (n.d., 1936) record many mounded Chihuahuan sites with evidence for massive, coursed adobe south of their Borderlands counterparts at Joyce Well and the Culberson Ruin in the Playas Valley.

Subsistence

Qualitative evidence indicates that late prehistoric inhabitants of the study area had strong agricultural orientations. Ratios of formal groundstone grinding implements to sherds appear well within the range of excavated assemblages from Hohokam and Salado contexts to the north and west (table 3.4). In fact, high frequencies of well-worn grinding implements have often been used by study area researchers to characterize Animas phase remains (Brand 1943: 119–122; Kidder and others 1949: 142).

Three kinds of botanical samples supply information pertaining to Malpai Borderlands subsistence. Excavations in dry deposits in Pinnacle Cave, Buffalo Cave, and U-Bar Cave in the Alamo Hueco Mountains on the eastern edge

Table 3.4. Comparison of groundstone frequencies among sites in the Northwest Periphery, Hohokam, and Salado Regions.

Site or site group	Location	No. of sherds	No. of manos and metates	Groundstone ratio[a]	Reference
Pendleton	Cloverdale Creek	2,765	261	9.45	Kidder and others 1949
Joyce Well	Deer Creek	9,985	78	.78	McCluney n.d.
Box Canyon	Animas Valleu	1,017	17	1.67	McCluney 1965
Clanton Draw	Animas Valley	1,167	14	1.19	McCluney 1965
Boss Ranch	San Bernardino Valley	28,959	42	.15	Douglas 1985
Los Morteros	Tucson Basin	39,002	258	.66	Wallace 1995
La Lomita	Phoenix Basin	9,943	66	.66	Mitchell 1990
U:9:95 (ASM)	Phoenix Basin	5,216	33	.63	Doyel and others 1995
U:9:97 (ASM)	Phoenix Basin	907	23	2.54	Doyel and others 1995
Livingston Site Group	Tonto Basin	75,628	331	.31	Jacobs 1995
Roosevelt Community Development Sites	Tonto Basin	90,316	192	.21	Elson and others 1995

[a]The groundstone ratio is calculated by dividing number of manos and metates by total number of sherds and multiplying times 100.

of the study area furnished an array of well-preserved perishable artifacts and large quantities of cultivated and noncultivated plant foods (Lambert and Ambler 1961). Excavations at Pendleton Ruin, Box Canyon, Clanton Draw, and Joyce Well produced records of plant materials, although systematic recovery techniques such as screening and flotation were not employed. Hugh Cutler (1961; Cutler and Cutler 2002: table 3.1; Cutler and Eickmeier 1965; York 1961) provides quantified lists of plant remains for the caves, Box Canyon, Clanton Draw, and Joyce Well, but only impressions are offered by Kidder and others (1949) for the Pendleton Ruin. Data based on standard screening of all deposits and flotation analyses are available only for the Boss Ranch site (Adams n.d; Douglas 1996).

Charred corn remains are consistently described as abundant at excavated sites in the study area (Kidder and others 1949: 142; McCluney 1965a: 21, 36; 2002: 45–46). At Joyce Well, corn was present in many rooms and described as stacked like cordwood in several rooms (Cutler and Cutler 2002: table 3.1). Out of 25 flotation samples, 23 (92 percent) contained corn at the Boss Ranch site (Adams n.d.; Douglas 1996)—a high rate of recovery when compared with analyses for other prehistoric Southwestern farmers. Four varieties of corn that Cutler classified as Pueblo, Onaveno, Pima-Papago, and Reventado/Chapalote were usually present in assemblages at the dry caves, Box Canyon, Clanton Draw, and Joyce Well.

Other identifications of cultivated crops include numerous instances of cotton, several varieties of beans, cucurbits, and bottle gourd (Adams n.d.; Cutler and Eickmeier 1965; Kidder and others 1949; Lambert and Ambler 1961). The frequency of cotton in excavated samples is of note, particularly as no systematic methods such as flotation or even screening were attempted at most sites. Cotton is reported from the Alamo Hueco Caves (Lambert and Ambler 1961), Boss Ranch (Adams n.d.), and Joyce Well (Cutler and Cutler 2002: 100).

Tabular knives, usually associated with the harvest and processing of agave, are conspicuous components of lithic artifact assemblages, and large roasting pits are frequently found in both residential sites and as isolated features. Amerind Foundation site file information indicates that large ovens may be formal elements of plaza arrangements surrounded by compounds in the San Bernardino Valley and in the valleys of northeasternmost Sonora. Although this archaeological evidence suggests that agave or perhaps yucca or sotol were important sources of food and fiber, no direct evidence currently supports cultivation of agave as now recognized in the Hohokam region (see Fish and others 1985).

The record of wild plants from excavated study area sites, including dry caves, is modest compared to cultivated resources. Potential food resources include grass, yucca, sotol, mesquite legumes, acorns, walnuts, dock, and prickly pear, but ubiquity of each is often limited to a single instance and is always much lower than corn. Likewise, animal bones are not particularly common in excavated contexts. Kidder and others (1949: 142) specifically comment on their rarity at the Pendleton Ruin. With systematic recovery through screening and flotation at Boss Ranch, only 178 faunal specimens could be classified into the broad categories of canine (coyote and dog), artiodactyl (deer and antelope), or lagomorph (cottontail and jackrabbit). This assemblage was dominated by lagomorphs. Aside from the addition of a few small mammals (fox, rocksquirrel, skunk, bobcat, wood

rat) and unidentified birds, a composite faunal assemblage from all reported late prehistoric sites is almost identical to that of Boss Ranch (Douglas 1996: 192–193).

Little direct information exists on agricultural technology and field locations. Location near surface flows and alluvial fans suggests an emphasis on small-scale irrigation and floodwater strategies. In a catchment analysis for residential sites, Frank Findlow (1979) suggests that there is a primary emphasis on first- and second-order streams permitting ditch irrigation and a secondary emphasis on alluvial fans. On the basis of farming observed in Mexico, Sauer and Brand (Brand 1933, 1943: 117–122; Sauer and Brand 1930: 426, 443–444) during early reconnaissance surveys in the region, drew similar conclusions about the importance of irrigation. By comparing catchments around these sites and randomly placed plots on Landsat photographs of the study area, Findlow and Confeld (1980) identified distinctions in soil composition at stream margins that they suggested could be associated with past farming activity. Supporting this interpretation, Allen Dart (1986) identified actual changes in waterlaid soil types, as classified by the Soil Conservation Service, along the paths of former Hohokam irrigation canals in the Phoenix Basin.

Stone features associated with prehistoric agriculture are not well documented in the study area. Without locations or descriptions, Brand (1943: 117) mentioned considerable use of stone for terracing in the San Bernardino Valley and along the Rio Bavispe, but noted its absence in the Animas drainage. In a large-scale map of Casas Grandes settlement pattern, Di Peso (1974: vol. 4, map insert) indicated several instances of extensive checkdam systems in the Playas Valley. The few instances in site files of features that might be agricultural usually consist of only one or two alignments.

Issues in Demography and Settlement

Comparative Population—Estimates by Findlow and De Atley (1976) and by Lekson (1992a) suggest that Borderlands population was relatively low in number and density. Findlow and De Atley proposed population of approximately 1,300 persons with a density of 0.96 individuals per square mile. Using Longacre's (1975) formula, Lekson (1992a: 113) projected back from this estimate to derive a figure of approximately 640 contemporary rooms within the study area outlined by Findlow and De Atley in their Hidalgo Project. Possibly a few hundred additional occupants could be added from southeastern Arizona portions of the Malpai Borderlands not included in the Hidalgo Project design. Brand (1943; Sauer and Brand 1930) believed that population sizes and densities were significantly greater among related peoples near Janos and in the Carretas Basin, the Bavispe drainage, and portions of the San Bernardino Valley to the south.

To put modest Borderlands population into perspective, contrasts can be made with more densely settled populations in surrounding areas. For example, residents of Casas Grandes alone have been estimated in a range between 2,500 and 5,000 (Di Peso 1974; Lekson n.d.); unfortunately there is no sound basis at present for estimating outlying population in any area approximating the size of the Borderlands. A rough comparison of magnitude vis-à-vis Hohokam large-scale irrigators along the Gila River also is revealing (table 3.5). An average population of 2,300 has been calculated for a single community, consisting of one mound center and its outlying settlements. Six such communities share an extensive canal network on the Gila River, for a possible total of 13,800 people in an area a fraction of the size of the Borderlands.

Short-Term Sedentism—Restricted refuse, limited architectural remodeling and superpositioning of features, and low numbers of burials at late prehistoric sites in the study area and in adjacent regional sectors have led researchers to believe occupation spans were short (Carmichael 1990; Douglas 1990; Kidder and others 1949: 146; Nelson and LeBlanc 1986; Upham 1992). Nelson and Le Blanc (1986) coined the descriptor "short term sedentism" to describe agriculturally committed and aggregated populations that occupy sedentary communities in sequential locations. More recently, Nelson and Anyon (1996) presented a model of "fallow" valleys in which sedentary populations shift from valley to valley to allow regeneration of critical resources. They posit a sequence of shifts in sedentary villages from the Mimbres Valley south to the Animas and Playas Valleys and then north to the Cliff and Mule Creek regions.

Depletion of faunal (Douglas 1996; Nelson and LeBlanc 1986) and fuelwood (Minnis 1985) resources are mentioned as examples of factors that might precipitate cycles of population movement. Soil exhaustion (Sandor and Gersper 1988; Sandor and others 1986) is also sometimes cited as a factor influencing regional settlement. Sequential movement might be the simple and convenient solution to resource depletion under conditions of low and discontinuous regional population. However, it is also clear that long-term sedentism was maintained in other sectors of the Southwest under environmental constraints as stringent or more so than those seen in southwestern New Mexico by Nelson and Anyon (1996).

Table 3.5. Interregional comparison of estimates for demographic parameters and resource requirements.

Community	Estimated population[a]	Hectares of farmland[b]	Cords of firewood[c]
Late Prehistoric Animas Pueblos	1,300	520	2,600
Average Hohokam Platform Mound Community in the Casa Grande Irrigation Community	2,300	1,041	3,450
Casa Grande Irrigation Community	13,800	6,245	9,370

[a]The estimate for the Animas population is from Findlow and De Atley (1976: 40), as amplified by Lekson (1992: 113). Estimates for an individual Hohokam platform mound community and the entire Casa Grande system are based on Crown (1987b) and the population/ha ratio for Pima irrigated land in Castetter and Bell (1942: 54).
[b]Estimates for the Hohokam are from Crown (1987b), and for the Animas region were derived from the population/ha ratio of Pima irrigated land.
[c]Fuelwood consumption per capita is based on Spoerl and Ravesloot (1994). Consumption estimates are arbitrarily reduced by 25 percent for Animas and 50 percent for the Hohokam because of proportionately milder climates.

To develop a general comparison, fuelwood and agricultural land requirements are examined for late prehistoric inhabitants of the study area and a single irrigation community of settlements sharing a canal network on the Gila River that was continuously inhabited for at least 800 years (table 3.5). Touchon (1988) used estimates for Emory oak in low-yield zones near the study area to show that sustained fuelwood needs could be supplied for the entire Borderlands population from approximately 155 km^2 (60 square miles). However, sustainable fuel for the Classic period Hohokam in the Casa Grande irrigation community is a problem of substantially greater spatial scale. Between 388 and 971 km^2 (150 and 375 square miles) of Sonoran Desert would be required to sustain the estimated level of fuelwood consumption by the Casa Grande community. This population was concentrated in an area of 78 km^2 (30 square miles). Problems of resource sustainability for even the largest Borderlands settlement clusters were minor compared to similar challenges for these densely packed Gila River irrigators.

Ceramic variability from one valley to the next is critical to Nelson and Anyon's (1996: 279) argument of sequential movements among fallow valleys. They reason that regional phases are difficult to establish because the ceramic assemblages in each valley are somewhat different, probably resulting from a lack of contemporaneity. Their model does not take into account the fact that the ceramic divisions among Borderlands valleys continue to the south into Chihuahua and Sonora, as do distributions of settlement during this period (Brand 1943; Sauer and Brand 1930; Whalen and Minnis 2001). Crossing the border at Antelope Wells, Brand (1943) continued to record Animas-like sites into the Carretas Basin. Files at the Amerind Foundation document six large sites (100 to 400 rooms) along the San Bernardino River between Fronteras and the international border in Sonora, suggesting that Slaughter Ranch and perhaps the Boss Ranch/San Bernardino complex are the northernmost expressions of a settlement distribution that stretch a considerable distance into Mexico.

The quality and extent of archaeological work in the Malpai Borderlands study area make it difficult to evaluate the "Short-term Sedentism/Fallow Valley" hypothesis. Site survey records do indicate that some continuity exists in settlement location between Mimbres horizon and later prehistoric villages. Large assemblages of heavily worn and worn-out grinding implements exist at many sites, suggesting some span of stable occupation (see, for example, Kidder and others 1949: fig. 22–23; and Brand 1943: 118–120, particularly the description of Double Adobe Creek on p. 119). The same degree of ceramic variability noted by Nelson and Anyon (1996) for Borderlands sites also occurs to the south among the contemporary sites of northern Sonora and Chihuahua and must reflect cultural factors as well as time. Finally, as will be discussed in the following section, even the most generous population estimates suggest that the Borderlands region always had relatively low populations, which should have exerted less pressure on resources than residents of various other Southwestern regions.

Settlement Hierarchies and Territorial Communities—Several discussions of late prehistoric settlement hierarchies in the study area have focused on site-size rankings. Steven LeBlanc (1989: 193) uses differences in site size as evidence that large pueblos were lower-order centers in the Casas Grandes polity. Findlow and De Atley (De Atley 1980; Findlow and De Atley 1976) also suggest an Animas phase settlement hierarchy, although they do not imply a dependency relationship with Casas Grandes. Their hierarchy is based primarily on site size, supported by artifact densities and diversity. The hierarchy consists of primary and secondary villages and at least some field houses.

Douglas (1995: 247–248) takes issue with attempts to define any sort of settlement hierarchy or integrative settlement structure above the village level. He observes a strong correlation between settlement size and agriculturally favored locales and favors a strong likelihood that tendencies towards larger site size may occur later in time during the Animas phase. He notes that archaeologists in the region frequently divide occupational loci dispersed over several kilometers but functioning as a single village into multiple sites; separate designations for the Boss Ranch and San Bernardino sites is a good example (Douglas 1996; Myers 1985). Finally, Douglas (1995: 246–247) and De Atley (1980) both note the apparent absence of ritually integrative features that mark integrative or communal nodes in a settlement hierarchy.

Earlier records, new comparative information, and site visits undertaken in the course of preparing this overview strongly suggest that politically and ritually integrative nodes marked by ballcourts are present in late prehistoric Borderlands settlement. These features may have been frequently overlooked by study area investigators because of their unobtrusive character and failure to match expectations for ballcourt morphology. Recent survey investigations in the Casas Grandes region have demonstrated numerous instances of ballcourt structures and have provided new criteria for their recognition elsewhere (Naylor 1995; Whalen and Minnis 1996). In the area surrounding Casas Grandes, courts in locales with appreciable settlement do not always occur within the largest site. Orientation seems to be consistently north-south. Although some Chihuahuan ballcourts are clearly I- or T-shaped, others are marked on the surface by simple parallel arrangements of rocks (Whalen and Minnis 1996).

The clearest examples of ballcourt structures in the Malpai Borderlands are at Joyce Well (Carpenter 1992) and the Timberlake Ruin (O'Laughlin and others n.d.). Both consist of north-south parallel embankments delimiting field areas of 650 and 850 m^2 (6,997 and 9,149 ft^2) respectively. A third possible instance is a heavily disturbed depression and set of embankments at the Maddox Ruin in the Animas Valley (Thomas O'Laughlin, personal communication). This feature is also oriented north-south and has an area of approximately 700 m^2 (7,535 ft^2). A fourth probable ballcourt, at New Mexico EE:5:1 (Animas Peak), is located to the south in the Animas Valley and was recorded by Roger Kelley (1963). The structure is oriented north-south with a field area of 480 m^2 (5,167 ft^2) and is associated with a pueblo of approximately 100 rooms. On the site card, Kelley indicates that the court is associated with School of American Research site 62Hi5 (the Cowboy site). Recent information from Roger Kelley (personal communication) and Curtis Schaafsma (personal communication) indicated that the actual site location might be near Clanton Draw. Brief reconnaissance by the authors in the vicinity of Clanton Draw and the Cowboy site failed to reveal evidence of a court. Using locations of known ballcourts and approximate locations for others, late prehistoric settlement in conjunction with ballcourt distributions is presented in figure 3.9. Finally, since preparation of this volume, a small (440-m^2 [4,736-ft^2]) ballcourt oriented north-south has been identified at the Culberson Ruin 7 km (4.3 miles) southeast of Joyce Well (Skibo and others 2001: 120).

Several ballcourts and possible ballcourts are reported just beyond the boundaries of the Malpai Borderlands study area. A court was recorded immediately west of Janos by Whalen and Minnis (2001). Naylor (1995) describes a ballcourt at Las Palmas just off the Janos-Carretas Pass Road in Chihuahua. William Doolittle (1984) describes two possible ballcourt structures in the Rio Sonora farther to the west. Beatriz Braniff-C. (1992) describes rectangular enclosed structures (*corrales*) that Whalen and Minnis (1996) believe may be ballcourts elsewhere in northern Sonora. A north-south Casas Grandes-type court is also recorded at the Santa Cruz site east of Nogales, Sonora (Kelley 1963; Wilcox and Sternberg 1983: 127). North-south parallel alignments at two sites north of Nogales along the Santa Cruz River reported by Frick (1954, also Whittlesey 1996) fit the criteria for additional instances.

The "great kiva," a likely ballcourt, at the Ringo site northwest of the Borderlands, may have implications for ballcourt recognition. The feature was marked on the surface by a shallow depression that was delimited by low adobe walls upon excavation. The flat floor showed patches of a former adobe surface. The feature is oriented north-south and encompasses approximately 900 m^2 (9,688 ft^2). The excavators, Alfred Johnson and Raymond Thompson (n.d., 1963: 469), considered the possibility of a ballcourt structure but rejected the idea because the structure was rectangular, unlike the oval courts of southern Arizona. Based on current knowledge of the Chihuahuan instances, Raymond Thompson (personal communication) now believes that this feature is most probably a Casas Grandes-style ballcourt. Without surface markers, other adobe courts might be dismissed as in the Ringo site instance.

Given conceptual and physical problems of recognition, it seems likely that ballcourt structures were at least somewhat more numerous than present records indicate for the Borderlands and other portions of the

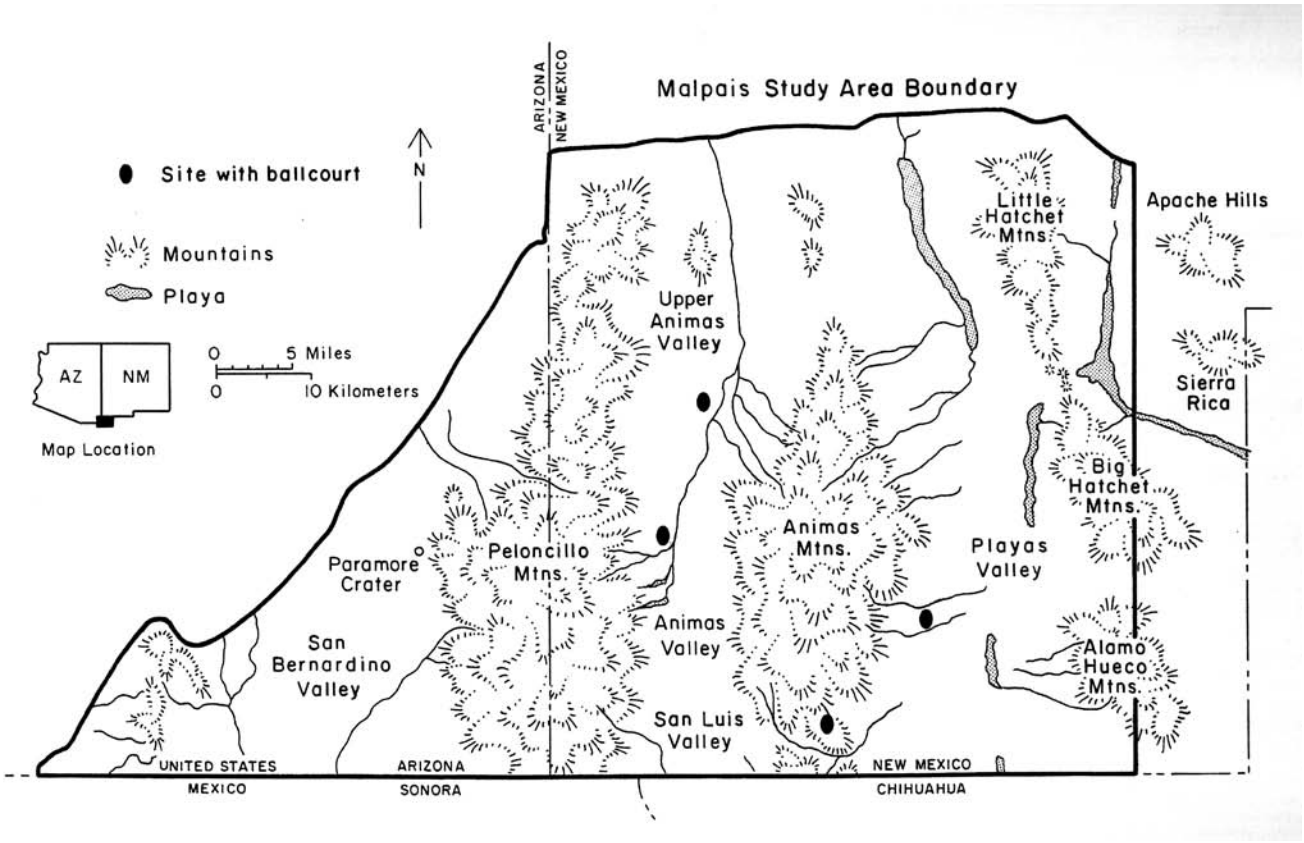

Figure 3.9. Distribution of probable ballcourts in the Malpai Borderlands.

northwestern periphery of the Casas Grandes regional system. We believe that these structures served as the focal, communal architecture for multisite communities similar to those now well established for the Hohokam culture area (S. Fish and Fish 1994) and other parts of the Southwest (Adler 1996; P. Fish and Fish 1994). In the apparent absence of kivas, platform mounds, or other integrative structures, events associated with ballcourts probably represent institutions and activities that crosscut social constituencies and ideologies, promoting commonality throughout community territory. A detailed model for zonally arranged multisite communities with differentiated topographic opportunities in the Malpai Borderlands is offered in chapter 6.

In a recent reanalysis of the occupational history of the Pendleton Ruin, John Douglas (2004: 432–434) argues that rooms at the plaza edge were intentionally filled to form a platform mound during the mid-14th century. Room walls would have functioned as retaining walls for mound fill as in well-documented Hohokam platform mounds in the Safford (Mills and Mills n.d.), Tonto (Craig and others 1998), and Tucson (Hayden 1957) Basins. It is conceivable that other such instances of mound construction will be identified in the Malpai Borderlands and the broader Casas Grandes regional system. If so, another indicator of centralized ritual or public architecture will be available to identify differentiated settlement patterns and community organization.

Regional Integration and Interaction

The degree to which Borderland settlements were integrated by the Casas Grandes polity has been the crux of a debate central to the interpretation of late prehistory in the Borderlands. Charles Di Peso (1974: 778) viewed Animas phase sites initially as satellites providing Casas Grandes with turquoise and obsidian, and later as population refuges after the collapse of the city in the early 14th century. Similarly, Steve LeBlanc (1989) portrays Animas settlements as outposts of Casas Grandes developed following the collapse of the Chaco Canyon and Mimbres cultural systems and the demise of their role in trade with central Mexico.

Other models portray considerably less economic and political dependency on Casas Grandes. De Atley (1980) and De Atley and Findlow (1982) describe Animas phase settlements as a frontier phenomenon, with loose participation in a Casas Grandes exchange system. Paul Minnis (1984, 1989) finds little linkage between the two areas and describes Borderlands villages as essentially autonomous.

Table 3.6. Distribution of Casas Grandes architectural traits among excavated late prehistoric sites in southeastern Arizona and southwestern New Mexico.

Site	T-shaped or keyhole doorways	Raised hearths	Scalloped hearths	Collared postholes	Reference
Ringo Site					Johnson and Thompson 1963
Kuykendall	Present	Present		Present	Mills and Mills 1969a,b
Boss Ranch					Douglas 1985, 1996
Clanton Draw					McCluney 1965
Box Canyon	Present	Present		Present	McCluney 1965
Pendleton					McCluney n.d
Joyce Well	Present	Present	Present	Present	Kidder and others 1949
Montoya		Present		Present	Ravesloot 1975
Walsh		Present		Present	Ravesloot 1975

Douglas (1995) argues that relationships were probably dynamic and situational, dependent on shifting alliances and exchange relations. The several measures traditionally used to measure Casas Grandes-Animas interaction are architectural traits, ceramic styles and production, and access to prestige goods.

Architectural Traits—Comparison with Chihuahuan patterns of architecture have been used to both support (Brand 1943; Carpenter 1992; Di Peso 1974; Le Blanc 1989; Ravesloot 1979) and refute (Douglas 1995: 243; Kidder and others 1949: 146) Animas phase affinity with Casas Grandes. The absence of T-shaped or keyhole-shaped doorways, raised and scalloped hearths, collared postholes, and subfloor inhumations at the Pendleton Ruin caused Kidder (Kidder and others 1949) to reject a Chihuahuan affiliation and to adopt the term "Animas." More recent excavations have demonstrated the widespread existence of these traits in southwestern New Mexico and southeastern Arizona (table 3.6). These traits measure relationships at the level of horizon style and reflect some degree of acceptance of "norms" that serve to distinguish broad cultural patterns. However, they do not measure intensity or manner of interaction.

Ceramic Styles and Production—John Carpenter (1992) shows that Animas phase settlements fall within a zone of Ramos Polychrome distribution that is separated from Casas Grandes by an intervening area of Carretas and Huerigos polychromes (fig. 3.10). Suzanne De Atley (1980; De Atley and Findlow 1982) attempted to measure the integration of the Borderlands region by Casas Grandes through attributes of style, but her results have been seriously challenged on grounds of sample size and an assumption of local production of ceramics (Douglas 1995: 247; Minnis 1984, 1989). Recently, some compositional evidence has indicated that local production of Ramos Polychrome occurred in the Sulphur Springs Valley of southeastern Arizona (Woosley and Olinger 1993), and at the Culberson Ruin (Woosley and Olinger 1993) and Joyce Well (Carpenter 1992, 2002) in southwestern New Mexico.

Access to Prestige Goods—Minnis (1984, 1988, 1989) argues that certain types of prestige goods characteristic of Casas Grandes are rare (shell, turquoise) or absent (copper, macaws) in Animas phase sites. On the other hand, John Douglas (1995: 246) points out that frequencies of prestige items may not equate with level of interaction or strength of integration. Douglas also notes that, with few burials and no exposed ritual contexts, excavated data may not be adequate to make such comparisons. Nevertheless, qualitative data from the study area and adjacent locations indicate a degree of access to prestige goods. Abundant shell and numerous artifacts of turquoise, slate, and hematite were recovered from funerary contexts at Joyce Well (McCluney 2002: 34–35), the one site where significant numbers of burials have been excavated. Two small copper pendants were recovered from the San Bernardino site (Myers 1985). Further south in the San Bernardino Valley, Braniff-C. (1992: 496) reports three copper bells from Ojo de Agua and two from Rancho Baviso. U-Bar and Pinnacle Caves produced large quantities of scarlet macaw feathers (Lambert and Ambler 1961: 101; C. Schaafsma, personal communication). Although not fitting the criteria established by Minnis and others (1993: 272–273), a possible macaw pen was identified at Slaughter Ranch (Mills and Mills 1969a).

Antelope Wells obsidian is a Malpai Borderlands resource that might have been economically valuable to Casas Grandes. Recent x-ray florescence studies of obsidian samples from the vicinity of Casas Grandes indicate frequent use of this resource. Furthermore, regional obsidian studies have also revealed that Antelope Wells material seldom occurs in assemblages to the north and west outside the distribution of Chihuahuan polychrome

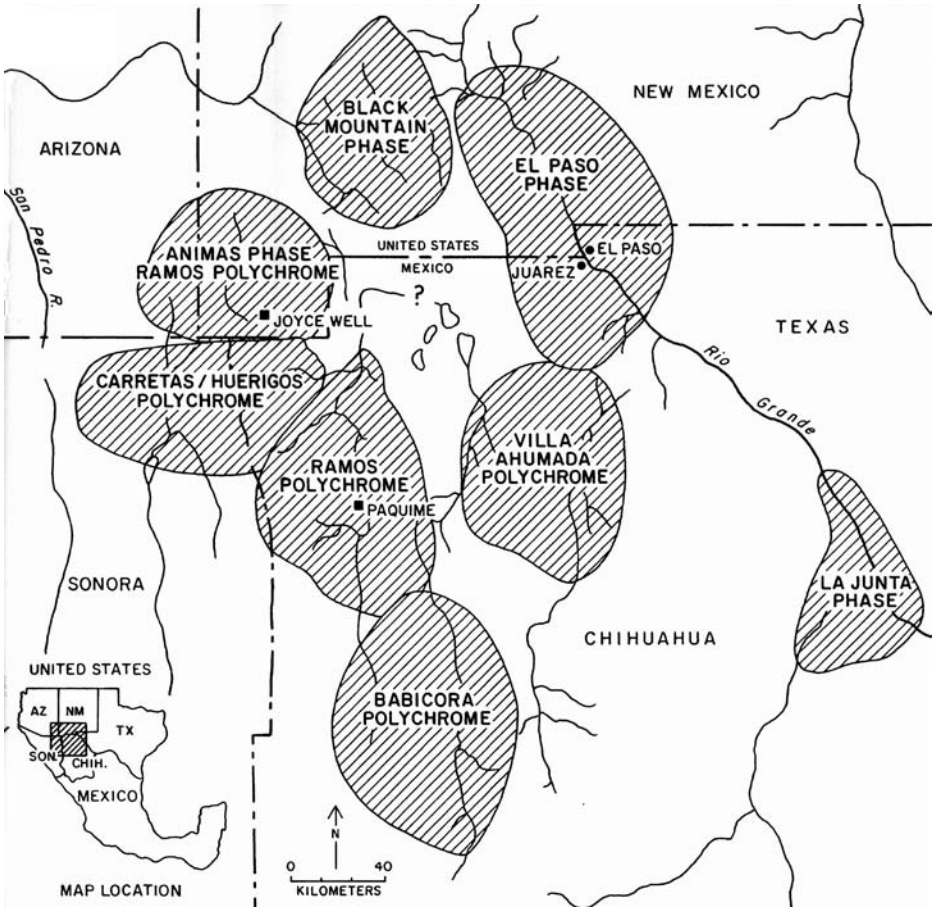

Figure 3.10. Distribution of Chihuahuan polychrome styles as outlined by Carpenter (1992).

(Steve Shackley, personal communication). Although this possible pattern of dual overlapping distributions does not necessitate any kind of economic dependency between the Malpai Borderlands and Paquimé, it deserves investigation as it may signify the directionality and special concentration of some economically interactive relationships.

A Final Comment on Regional Interaction

Most discussion of Casas Grandes-Borderlands interaction has focused on the presence or absence of dependency relationships in a political and economic sense. We can agree with Douglas (1995) and Minnis (1984, 1989) that current evidence for such asymmetric interaction is limited. On the other hand, it seems likely that late prehistoric Borderlands inhabitants participated at some level in an ideology that was shared with, and most elaborately encoded at Casas Grandes. This ideology involved the construction of ballcourts, and related tenets were probably symbolized in certain ceramic and architectural "horizon styles" (see Wilcox 1995: 289). This ideology was clearly differentiated from a Hohokam and western Salado ceremonial focus on platform mounds to the northwest and an Anasazi kiva and plaza orientation to the north. Massive hillside structures of the major trincheras villages may delineate a similarly distinctive realm of ideological orientation to the west in Sonora (Downum and others 1994: 292–293; P. Fish and Fish 1994: 22).

Casas Grandes clearly was a central exponent of this ideology. As defined archaeologically, this ideology likely represents a phenomenon broader than religion per se, perhaps in the realm of "world view." Archaeologically recognized variants of architecture and ceramics are subsumed by the most conservative distribution of ballcourts (Whalen and Minnis 1996). This stylistic diversity is increased if most of the instances proposed herein prove viable. The number and variety of ritual features at Casas Grandes set this site apart from all other sites in the region containing ballcourts. Eighteen platform mounds, each with a different shape, three ballcourts, and a wide range of ritual rooms are present. Each of these probably served as a location for ceremonies that affected some segment of the Casas Grandes population (see Minnis 1989: 277–280). Current archaeological data are insufficient to clarify the roles Casas Grandes served

in this regional ideology; sharply contrasting models can be fitted to existing data.

David Wilcox (1995: 289–292), for example, proposes a system of ceremonial exchange between local elites, fostered by a version of the Mesoamerican ballgame, as a mechanism through which Casas Grandes exercised its influence and control. For the sphere within a 3.5 day walk of Casas Grandes that includes the Malpai Borderlands, he defines a system that was economically differentiated and politically dominated by the preeminent center. According to this model, the Casas Grandes regional system variously linked local elites to the center, and differentially facilitated exchange and tribute flowed among village or community nodes. As a result of recent surveys and ongoing excavations designed to illuminate the role of Casas Grandes in regional settlement, Whalen and Minnis (2000, 2001) find little support for Casas Grandes hegemony or integration of outlying settlements beyond a range as short as 30 km (19 miles). Thus, based on the distribution of elements such as site size, ballcourts, production of crafts, and other exotics such as macaws and ceramics, these researchers would exclude the Borderlands and adjacent areas in Mexico from any direct political and economic influence of Casas Grandes. Furthermore, they argue that the notable sparsity of courts at a distance from Casas Grandes denotes substantially weaker local integration and that presence of courts need not imply any type of integration into the Casas Grandes regional systems (Whalen and Minnis 1996: 741–744)

Plausible models for ideological centrality and directional emphasis in material exchange can be offered that do not emphasize political or economic domination. For instance, Casas Grandes could have been the destination for regional pilgrimages, serving to ideologically reinforce and unite outlying populations without tribute or political control. Models featuring pilgrimage have been considered for Chaco Canyon (Judge 1984: 241–242, 1989). There are examples of such pilgrimages in the ethnographic literature. For example, the annual Festival of San Francisco in Magdalena, Sonora involved multiethnic participants from all parts of Sonora and southern Arizona and is thought to have precontact origins (Dobyns 1960; Griffith 1992). Pilgrimages represented an individualized mechanism through which widely separated communities might participate at different levels in Casas Grandes ideology. Trade, local alliances, and a variety of other political and economic negotiations were likely byproducts of such occasions.

Just as it is difficult with existing data to detail the kind of regional integration embodied by Casas Grandes-style ballcourts, it is difficult to specify their significance at the local Borderlands level. Although all northern and western examples would fit into Whalen and Minnis' (1996: 737) simple, open ballcourt category, these too are morphologically variable. This variability includes size, construction material, and labor investment, which may have functional, ideological, and hierarchical implications. Unfortunately, none of the northwestern periphery sites with consensual or suspected ballcourts can be viewed in a context of comprehensive local settlement.

Despite these problems, the nature of the ballcourts themselves offers some insights into probable roles in local territorial organization. The communal nature of ballcourt construction is generally accepted. Furthermore, events held at these structures are also considered to be communal and frequently to have involved the competitive interaction of separate territorial entities. This interaction could have involved individual villages, but in the case of Hohokam ballcourts, interaction is generally conceived as taking place between "communities" or groups of settlements (Wilcox and Sternberg 1983). This kind of interpretation of ballcourt function seems no less applicable for Casas Grandes-style structures. It follows, then, that Borderlands sites with ballcourts served as integrative nodes for some community-like set of additional settlements.

Whalen and Minnis (1996) observe that the small number of courts at a distance from Casas Grandes indicate the majority of populations in these areas were not involved in ballcourt activities. However, the nature of internal integration and external interaction associated with ballcourt institutions is unknown. Whereas the participation of individual villages in Casas Grandes interactions may indeed have been autonomous in some cases (Douglas 1995), the presence of multiple ballcourts implies that groups of settlements also participated as territorial units in an ideology most elaborately expressed at that site. If ballcourts served as loci of intercommunity observances, the *raison d'etre* for their construction was a form of peer polity interaction.

To fully understand late prehistoric Borderland patterns within the context of the greater Southwest, the scale of reference ultimately must be extended beyond the Casas Grandes world system. Ballcourts were constructed in this system during an era when fully differentiated public architecture first appeared in other large sectors of the southern Southwest outside the earlier distribution of Hohokam-style ballcourts and Mogollon communal kivas. In addition to the Casas Grandes system, including Casas Grandes itself, these regional developments encompassed the appearance of platform mounds in Papagueria and the Tonto Basin and most likely the elaborated trincheras

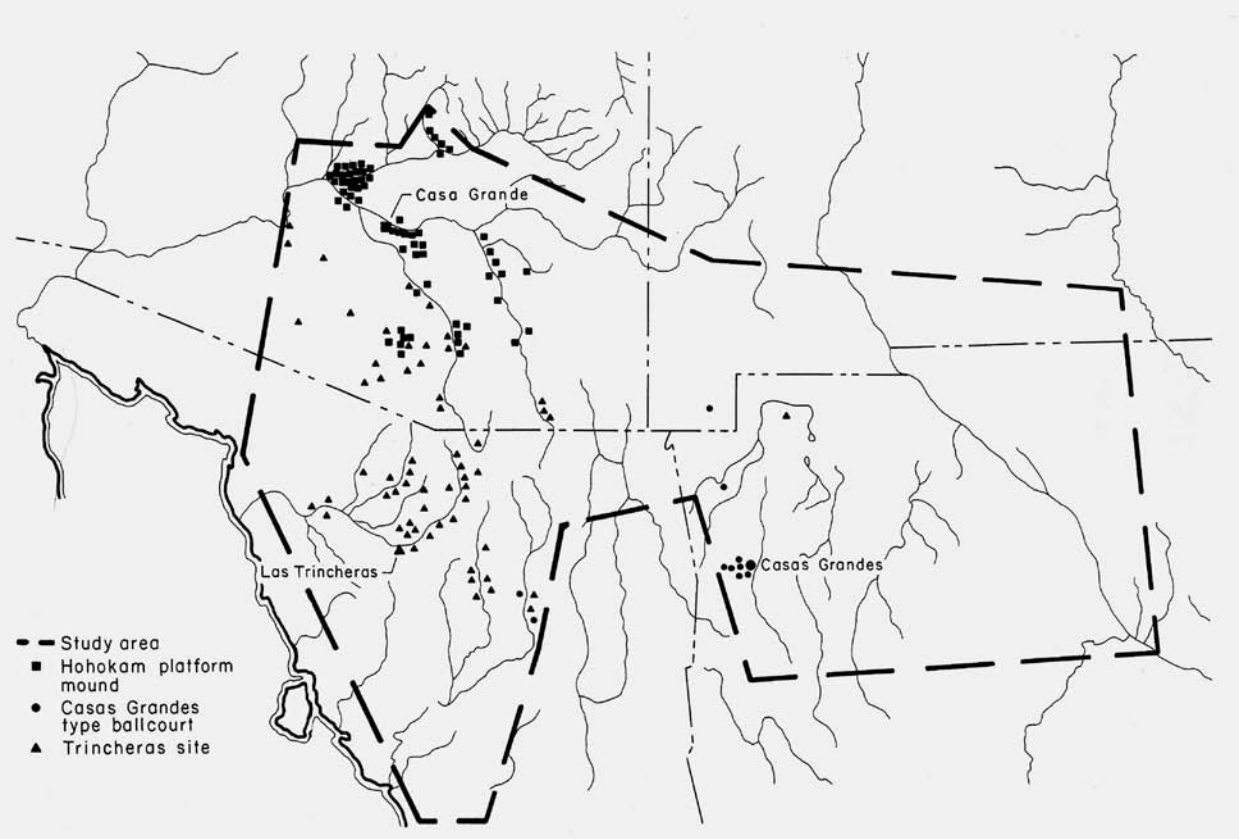

Figure 3.11. Confirmed and probable ballcourts in northern section of Borderlands study area.

phenomenon centered in northern Sonora (P. Fish and Fish 1994: 21–24). The confirmed and probable ballcourts of the northwestern periphery in figure 3.11 begin to fill a gap in the regional distribution of public architecture, and by inference community organization, in the poorly investigated area of juncture among Casas Grandes, Classic Hohokam, and Trincheras traditions. These developments also coincide with a dramatic reorganization of populations through abandonments and aggregation across the Southwest.