

**The Protohistoric Pueblo World,  
A.D. 1275–1600**

**Edited by E. Charles Adams and Andrew I. Duff**

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## The Formation of Settlement Clusters on Anderson Mesa

Wesley Bernardini and Gary M. Brown

The prehistory of Anderson Mesa has been neglected. Research by the Museum of Northern Arizona (MNA) and others to define the "Sinagua culture" focused on Flagstaff, with Anderson Mesa assumed to follow the trend (Colton 1946; Pilles 1996). Yet the area is unique. While Flagstaff was heavily occupied up through Pueblo III times, Anderson Mesa was the center of northern Sinagua occupation by A.D. 1275. Some attention was generated during the late 1970s and early 1980s when researchers at Arizona State University (ASU) focused the Chavez Pass project on the Pueblo IV period occupation of Anderson Mesa. Their major concern was Nuvakwewtaqa (Chavez Pass Ruins), the largest prehistoric community in the area. As with the few previous projects on Anderson Mesa, publication of basic information was sparse, although these data were employed in provocative reconstructions of socio-cultural organization and change (Upham et al. 1981; Upham and Plog 1986).

We hope to revive interest in Anderson Mesa by providing empirical data on Nuvakwewtaqa and another late prehistoric settlement cluster and discussing basic research that is less controversial than that which fueled the original Chavez Pass/Grasshopper debate (e.g., Upham and Plog 1986). Anderson Mesa differs in significant ways from other settlement clusters. An important contribution of this volume should be recognition that Pueblo IV is synonymous with variability, not just in artifacts and architecture but also in the great villages and towns they represent.

### The Study Area

Anderson Mesa is a basalt-capped plateau extending southeast over 40 miles from Flagstaff to Clear Creek (fig. 11.1). The Mogollon Rim marks the southern edge; the northeast is an ecotone where uplands descend toward the Little Colorado River about 35 miles from Anderson Mesa. The local prehistoric cultural tradition was named Sinagua ("without water") to highlight the sparse water resources and absence of perennial rivers (Colton 1946).

The northeastern edge of Anderson Mesa is a zone of cultural transition. Anderson Mesa is classifiable archaeologically as Sinagua based primarily on the dominance of Alameda Brown Ware, a distinctive paddle/anvil plainware tradition, while areas just to the east are considered Mogollon, those to the north Anasazi, and those to the south Salado. The Sinagua area is traditionally divided into a southern and northern branch separated by the Mogollon Rim. This chapter is concerned with two site clusters along the northeastern edge of Anderson Mesa where the northern Sinagua were concentrated during the Pueblo IV period. While these late pueblos on Anderson Mesa form two distinct clusters, all are within the 36 km radius cited as the limit of one-day travel on foot (Drennan 1984). Outside of these clusters, Old Caves Pueblo is the only site known to have been occupied after A.D. 1300 in the northern Sinagua area; it is located approximately 80 km north of Nuvakwewtaqa in the Cinder Hills volcanic zone surrounding Sunset Crater. The nearest Pueblo IV villages in any direction are those in the Homol'ovi group 65 km to the northeast.

Chavez Pass forms a natural break in the northeastern rim of Anderson Mesa. This route between the Colorado Plateau and Verde Valley was used by Spanish explorers, Euro-American settlers, and the Hopi during ethnohistoric times (Colton 1964; Fewkes 1904; Pérez de Luxán, 1929). The densest site cluster in the northern Sinagua area is located at Chavez Pass; Nuvakwewtaqa consists mainly of three separate but intervisible pueblos.

The second cluster on Anderson Mesa is located 13 km northwest of Chavez Pass. The Upper Grapevine cluster is also dominated by three large residential sites: Grapevine, Kinnikinnick, and Pollock, but they are more dispersed than Nuvakwewtaqa and are not intervisible. The confluence of Kinnikinnick and Grapevine canyons forms a natural break in the northeastern escarpment of Anderson Mesa, although it is not as pronounced or as easily traversed as Chavez Pass.

### Field Research

Archaeological investigations in the area started in 1896 when Fewkes (1904) plowed the middens at Nuvakwewtaqa in search of burials. During the next 77 years, research at Nuvakwewtaqa was limited to collections of ceramics (Colton 1946:72), additional artifacts (J. Wilson 1969:272-73), and tree-ring specimens (Bannister, Gell, and Hannah 1966:10; Douglass 1938:13), mainly from surface contexts. Extensive excavations were conducted by ASU from 1977 to 1982, along with surface collections, mapping, and salvage of looted burials (Batcho 1978; Brown 1982a; Upham 1978). The 1982 excavations were assisted by New Mexico State

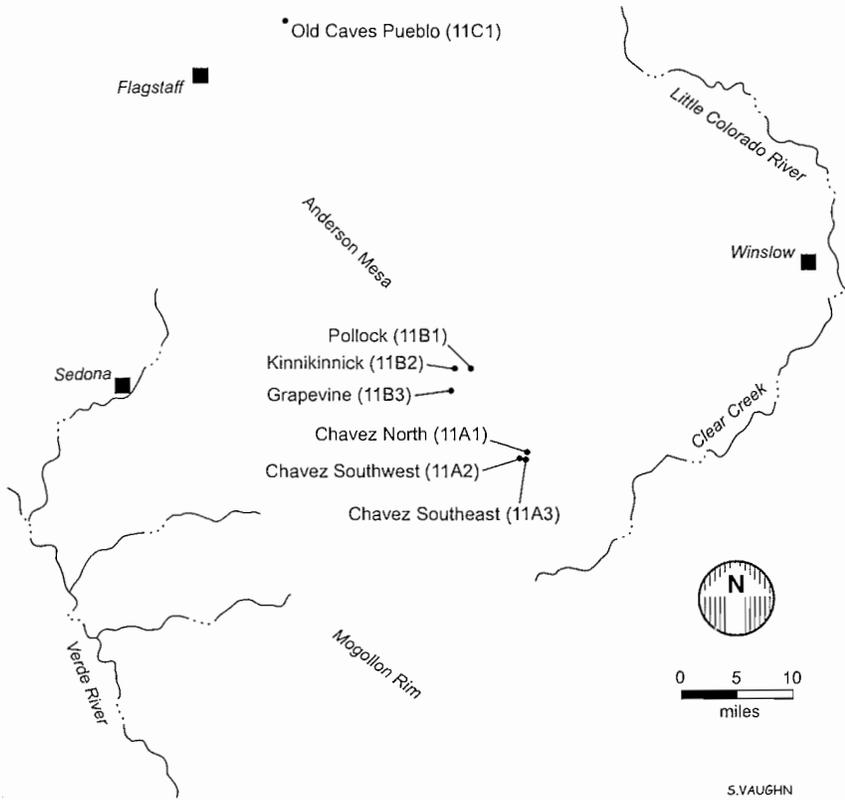


Fig. 11.1. Pueblo IV sites in the Anderson Mesa area.

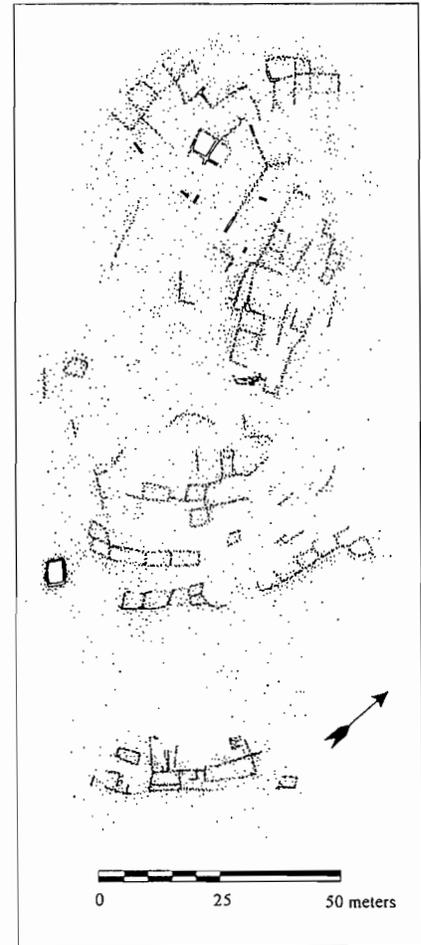


Fig. 11.2. Chavez North at Nuvakwewtaqa.

University and the University of Chicago. Recently, Bernardini remapped the three main pueblos at Nuvakwewtaqa as part of his ASU dissertation research (figs. 11.2 and 11.3).

The only other major excavation project on Anderson Mesa was that of MNA and the University of Illinois during the 1950s at the Pollock site complex (McGregor 1956). A manuscript describing this work (McGregor n.d.) is currently being edited for publication by Christian E. Downum (personal communication, 2001). The University of Illinois also excavated a multiple reinterment of five individuals, eroding from a hillside below Kinnikinnick (Wilson, Winston, and Berger 1961). Previously, only a single room at Kinnikinnick had been excavated by MNA (Connor 1943).

The limited excavations on Anderson Mesa are mirrored by generally light survey coverage. The area was included in Colton's (1946) and Wilson's (1969) reconnaissance studies of the northern Sina-

gua. A 1980–1981 project included surface collections at several Pueblo III sites and all known Pueblo IV habitation sites in the northern Sinagua area (Brown 1982b, 1990a). The Coconino National Forest has generated the most extensive inventory data, mainly through scattered small-scale compliance surveys that have been incorporated into regional syntheses (Pilles 1996). The only large survey project is that by ASU at Chavez Pass from 1978 to 1980, completely covering a one-mile (1.6 km) radius around Nuvakwewtaqa and sampling areas beyond this core area (Henderson 1979, 1980). Several sites identified on the ASU surveys were tested by the University of Chicago in 1981 (Batcho 1982). More recently, rock art surveys were conducted at Nuvakwewtaqa (Schoonover and Kolber 1996) and Kinnikinnick, Grapevine, and Pollock (Bernardini 2001a). Total station maps were also prepared by Bernardini (figs. 11.4 and 11.5).

### Chronology

The northern Sinagua chronology is complicated because of the degree of archaeological variability even within narrow slices of time (table 11.1). It was this kind of synchronous variability that led Colton (1946) to propose that a land rush into the Flagstaff region from various cultural areas occurred in the aftermath of the Sunset Crater eruptions during the 11th century. Fred Plog (1989) advanced a similar perspective for the period from A.D. 1275 to 1400, arguing that large and small villages reflected socioeconomic differences among contemporaneous people living on Anderson Mesa.

Competing scenarios would have been resolved long ago if sites on Anderson

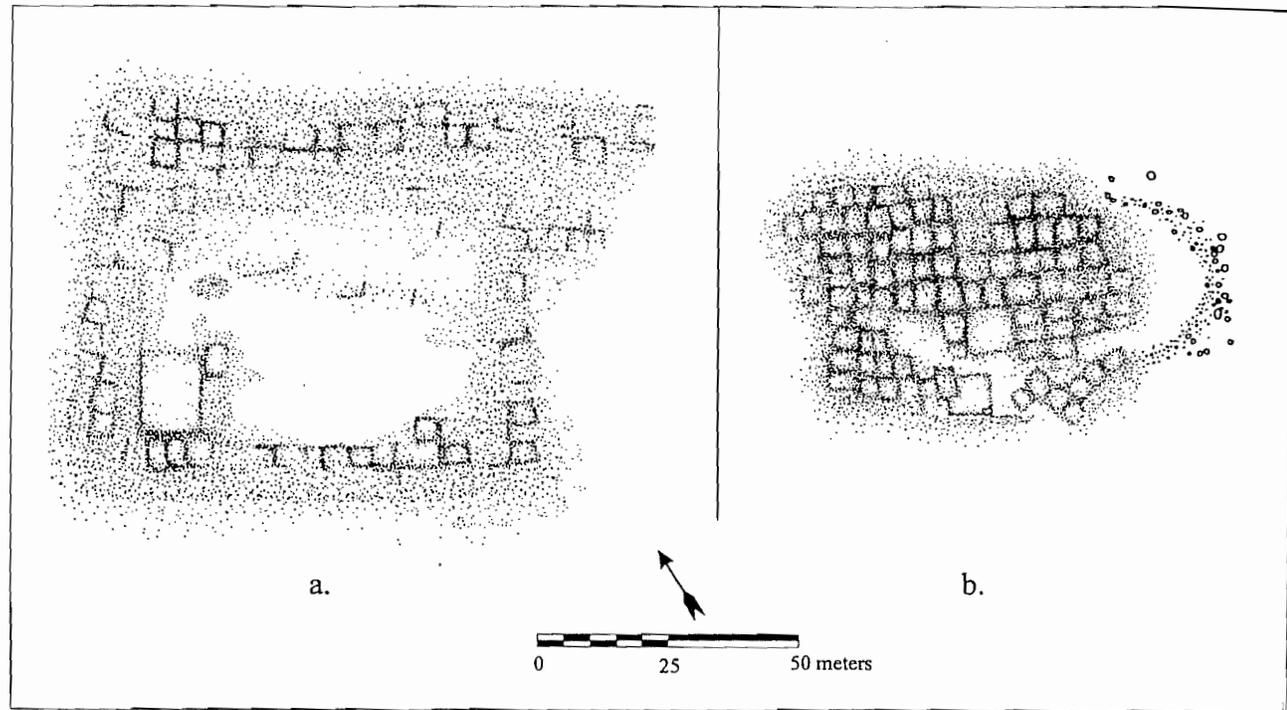


Fig. 11.3. Chavez SW (a) and Chavez SE (b) at Nuvakwewtaqa.

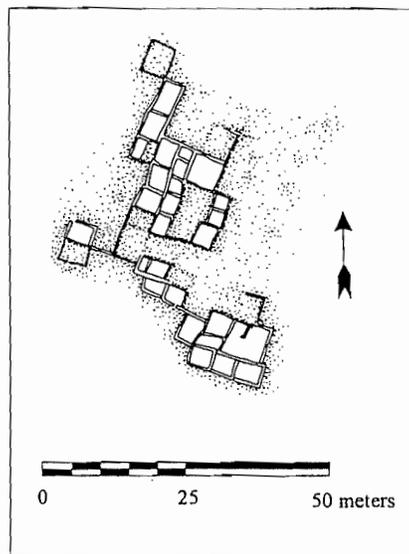


Fig. 11.4. The Pollock Ranch site.

Mesa could be easily dated. However, absolute dating has been difficult even at excavated sites. Decorated ceramics are scarce compared to most parts of the Southwest, primarily because almost all of them represent tradewares. While Puebloan ceramic assemblages commonly con-

tain 20–40% decorated pottery, those on Anderson Mesa have 5% or less. Small sites surrounding Nuvakwewtaqa frequently lack decorated pottery entirely (Henderson 1979).

The northern Sinagua chronology is not well suited to our study of the Pueblo IV period. Instead, we employ two subdivisions of the Pecos Classification, bolstered by absolute dates wherever possible: the period A.D. 1260–1325 we refer to as the Pueblo III-IV transition; the period A.D. 1325–1400 is designated middle Pueblo IV for consistency with other chapters in this volume. Occupation of Anderson Mesa ended by A.D. 1400.

#### The Late Prehistoric Settlement Pattern on Anderson Mesa

The Pueblo III period has been described by Pilles (1996), who notes that settlement around Flagstaff and much of the northern Sinagua area ended with the Turkey Hill phase. On Anderson Mesa, where occupation persisted for another century, the Pueblo III-IV transition (A.D. 1260–1325)

was a time of intense population aggregation. Chavez Pass and Upper Grapevine witnessed the growth of sizable villages surrounded initially by smaller but more numerous settlements. Small Pueblo II sites are widespread along the northeastern edge of Anderson Mesa, but nearly all were abandoned by the late 13th century (Henderson 1979; Pilles 1996).

#### Large Sites

Sites larger than 50 rooms are rare in the northern Sinagua area, but six Pueblo II sites on Anderson Mesa and one site near Flagstaff fill this criterion (appendix).

*Nuvakwewtaqa.* The extensive site complex at Nuvakwewtaqa has three major pueblos and several smaller room block residential terraces, water/soil control features, and additional structures.<sup>1</sup> The major ruins occupy prominent landforms separated by only a few hundred meters (Bernardini 2002:fig. 3-7).

Chavez North (fig. 11.2) contains an array of terraces and walls built all over

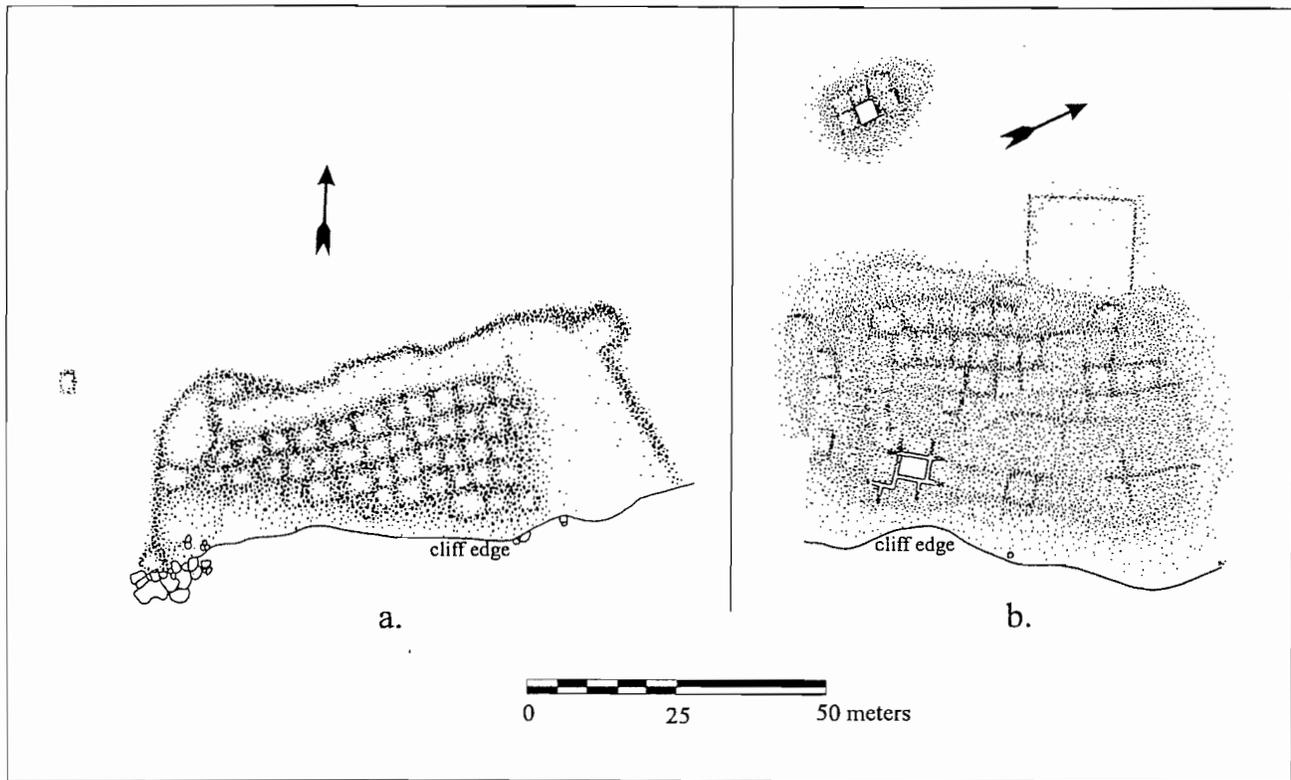


Fig. 11.5. Grapevine Pueblo (a) and Kinnikinnick Pueblo (b).

top and sides of a steep knoll, with several definable room blocks represented. Prehistoric excavation of structures into the steep hillsides at Chavez North created a terraced landscape that must have resembled a multistory pueblo prehistorically when these single-story structures were standing; however, they represent an informal agglomeration of small residential and nonresidential architectural units, some connected by walls or shared courtyards (Brown 1990b:fig. 2.5). Mapping and room estimates at Chavez North are complicated by erosion, downslope deposition, and a generally dense scatter of rubble on the steep hillside where most structures are situated. We estimate 95 one-story rooms in the main residential complex. Excavation would probably increase the room count, as well as the number of earlier pit houses known to be buried at Chavez North.

On the opposite side of Chavez Draw, 400 m away, Chavez South is dominated by two very imposing multistory room blocks:

Chavez SW (fig. 11.3a) is the largest; Chavez SE (fig. 11.3b) is located 125 m away. The southern room blocks appear as two massive humps of rubble backed against a volcanic dike that runs along a southeast-trending saddle-shaped ridge. Despite their close proximity, these two contemporaneous pueblos have strikingly different layouts. Chavez SE was built on a natural hill, rather like Chavez North, but the compact room block is more massive, depending less on the setting to appear monumental. Chavez SW was constructed around a central, rectangular plaza enclosing roughly 2,500 m<sup>2</sup> of open space. The regular layout of the pueblo suggests considerable planned construction. Multistory rooftops were stepped downward toward the plaza, itself a split-level surface with upper and lower levels divided by single-story rooms and retaining walls. As much as 2.4 m of rubble throughout much of the northeast and northwest sections of the room block probably represents numerous three-story rooms; excavations in

the northeastern portion uncovered over 2 m of stratified architectural collapse containing at least three, and possibly four, collapsed stories (Brown 1982b:23–29, 83).

At roughly 400 total rooms, Chavez SW was without doubt the largest pueblo in the northern Sinagua area, more than twice the size of the second largest site (table 11.2).<sup>2</sup> From a similar ground plan, Upham (1982:178) estimated 434 ground-floor and 247 upper-story rooms, assuming a smaller average room size and a large number of “storage rooms” along the exterior sides that are not visible on the modern ground surface. At Chavez SE, Upham (1982:178) estimated 179 ground-floor rooms and 135 second- and third-story rooms, but excavations revealed only two layers of roof fall in the tallest part of the pueblo (Brown 1982a:32–40); thus, we do not believe there were any third-story rooms. At nearly 200 total rooms, our estimate still identifies Chavez SE as the second largest pueblo in the study area.

The slope between the two southern

**Table 11.1** Reconstructions of Northern Sinagua Cultural Sequence Compared to Pecos Subperiods as Used in This Chapter

Date A.D.	Pecos	Foci (Colton 1946)	Phases (Plog 1989)	Phases (Pilles 1996)	Sunset Crater Volcanic Periods
1500	Middle Pueblo IV				Post-Eruptive
1400	Early Pueblo IV	Clear Creek	Clear Creek	Clear Creek	
1300	Pueblo III-IV Transition	Turkey Hill		Turkey Hill	
	Late Pueblo III		Hiatus C		
1200	Early Pueblo III	Elden	Elden B	Elden	
			Elden A		
1100	Late Pueblo II	Padre, Angell, Winona	Padre	Padre	
		Hiatus	Angell	Angell-Winona	
1000	Middle Pueblo II	Rio de Flag	Rio de Flag	Rio de Flag	
	Early Pueblo II		Hiatus B		
900			Sunset		
800	Pueblo I	Sunset	Hiatus A	Sunset	
700				Cinder Park??	Cinder Park
600	Basketmaker III	Cinder Park			
500					

“Great Plaza,” an unbounded area of approximately 3,750 m<sup>2</sup> adjacent to the north side of Chavez SW. There is a large ovoid depression to the immediate east of the Great Plaza that is frequently referred to as a ball court, but backhoe trenching and test excavations showed that it more likely represents a clay quarry pit and possible construction staging area (Brown 1982a:69-72).

Large communal structures occur in all three of the main pueblos. Although those at Chavez South have been called “great kivas” (Brown 1982a; Upham 1982), they are comparable to “community rooms” identified throughout the northern Sinagua area. Extensive test excavations within the large square-to-rectangular structures showed that all three were roofed (Brown 1982a; Debra Foldi, at Chavez SE, personal communication, 1982). However, only the “great kiva” at Chavez SW had specialized features such as a bench and floor vault. Estimated floor areas are 131 m<sup>2</sup> (Chavez SE), 166 m<sup>2</sup> (Chavez North), and 198 m<sup>2</sup> (Chavez SW). The latter had evidence of a massive four-post roof-support system that may have been unnecessary in the smaller community rooms. The Chavez North structure was evidently enclosed by only three walls, opening to the northeast.

**Table 11.2** Minimum, Midpoint, and Maximum Room Estimates for Large Pueblos on Anderson Mesa

	Ground-Floor Rooms			Upper-Story Rooms			Total Rooms			Percent Upper-Story Rooms		
	min	mid	max	min	mid	max	min	mid	max	min	mid	max
Chavez SW	193	225	256	138	173	208	331	398	464	42%	43%	45%
Chavez SE	132	138	144	32	58	81	164	196	225	20%	30%	36%
Chavez North	84	95	105	0	0	0	84	95	105	0	0	0
Pollock	—	48	—	—	8	—	—	56	—	—	14%	—
Kinnikinnick	78	90	103	64	76	86	142	166	189	45%	46%	46%
Grapevine	49	56	64	0	8	16	49	64	80	0	13%	20%
Total	536	652	672	234	323	391	770	975	1,063	30%	33%	37%

Note: The midpoints are bolded in the table and used in the text to derive closest approximations.

room blocks consists of roughly 8,500 m<sup>2</sup> of open space that is partially bounded by two smaller room blocks at the northern and southern edges. Chavez SW and SE shared a large cemetery in this open area. A

trail descends from here toward a detached plaza of moderate size (1,250 m<sup>2</sup>) overlooking a spring (Brown 1990b:fig. 2.3). A bench to the north of the basalt spine has been partially leveled to enhance the

*Upper Grapevine.* In marked contrast with Nuvakwewtaqa, the large pueblos constituting the second cluster are each over 2 km apart. Nevertheless, relative to other site clusters discussed in this volume, the Upper Grapevine cluster is compact, covering only about 40 km<sup>2</sup>. The Pollock Ranch site is near the confluence of Grapevine and Kinnikinnick canyons, while the two other sites are located on canyon rims.

Pueblo III and IV components at the Pollock site (fig. 11.4) include dispersed pit structures, terraces, and other features surrounding an irregular, multistory room block. No communal architecture is evident, although small courtyards may occur among the rooms, and level ground to the west could have served as a plaza. A

small, partially subterranean kiva with a bench, platform, flagstone floor, and possible sipapu was excavated, along with much of the room block and additional, outlying pit structures (McGregor 1955, 1956, n.d.). With about 56 mostly one-story rooms (McGregor 1956:49), Pollock barely makes the "large" site category (table 11.2). However, a vast, heavily modified cultural landscape surrounding the site complex is indicated by rock art (Bernardini 2001a) and extensive terraces (McNutt 2001).

Kinnikinnick Pueblo (fig. 11.5b) is a huge rubble mound perched on the edge of Kinnikinnick Canyon. The site was mapped by John Wilson (1969) and later by Brown and Bernardini on separate occasions. All agree that the main room block was mostly two stories high and that a portion toward the southeast had a third story. The rooms at Kinnikinnick form a solid block with no discernable internal courtyards or other open space. Low masonry walls attached to the northwest corner of the room block define a rectangular structure of approximately 276 m<sup>2</sup>, much larger than typical Sinagua community rooms.

A much smaller one-story rectangular room block is located immediately west of the main room block, and the area between the two structures is a potential communal area, although no formally defined plaza is evident. A series of terraces to the north and south of the pueblo is similar to landscape features surrounding Pollock. Our estimate of roughly 166 total rooms (table 11.2) makes Kinnikinnick the largest pueblo in the Upper Grapevine drainage, comparable to Chavez SE.

Like Kinnikinnick, Grapevine Pueblo (fig. 11.5a) consists of a large, rectangular room block situated along a canyon rim. Most rooms are arranged into four rows on a regular grid, with the central portion probably built all at once. Except for the southern edge, which coincides with the canyon escarpment, the room block is surrounded by a substantial masonry wall. This wall creates a plaza on the eastern side of the pueblo, a narrow strip along

**Table 11.3** Temporal Estimates of Occupied Rooms and Momentary Population (in parentheses) for Each Site

	Temporal Interval					
	1250-1275	1275-1300	1300-1325	1325-1350	1350-1375	1375-1400
Chavez SW	111 (222)	276 (552)	237 (474)	218 (436)	181 (362)	70 (140)
Chavez SE	53 (106)	110 (220)	84 (168)	99 (198)	120 (240)	32 (64)
Chavez North	51 (102)	66 (132)	32 (64)	—	—	—
Pollock	21 (42)	42 (84)	21 (42)	10 (20)	—	—
Kinnikinnick	38 (76)	63 (126)	94 (188)	125 (250)	63 (126)	30 (60)
Grapevine	—	—	25 (50)	44 (88)	64 (128)	64 (128)
Total	274 (548)	557 (1,114)	493 (986)	496 (992)	428 (856)	196 (392)

the north, and several ovoid spaces on the western side. Massive rock walls below the rim also enclose the site along the side facing the canyon.

Grapevine is the only Pueblo IV site on Anderson Mesa that has not been tested. It is unclear whether or not the sizable rubble mound represents multistory architecture. We assume the presence of some two-story rooms in our estimate of approximately 64 total rooms (table 11.2).

#### Small Sites

The survey conducted by ASU during the Chavez Pass project included complete coverage of a one-mile radius centered on Nuvakwewtaqa and sample transects across the eastern edge of Anderson Mesa, including areas surrounding both Pueblo IV settlement clusters (Henderson 1979, 1980). Several hundred sites were recorded, and an exceptionally high density occurred near Chavez Pass. Despite this intensive survey, no small habitations anywhere on Anderson Mesa can be placed squarely into the Pueblo IV period. Even field houses are scarce around Nuvakwewtaqa during our period of interest, with only three such sites postdating A.D. 1250 identified (Henderson 1980:40).

Fred Plog and other researchers (especially Upham et al. 1981) attempted to account for the lack of 14th-century pottery at small outlying sites by hypothesizing that elites restricted access to polychromes and other imported goods. However, this model is inconsistent with the occasional

occurrence of typical Pueblo IV ceramic assemblages at agricultural sites in the Chavez Pass survey area and current dating of the specific types present at most survey sites. Further, small sites around Nuvakwewtaqa differ from large sites even in their plainware assemblages, the latter being dominated by basalt-tempered Chavez Brown (Henderson 1979). Even if some diagnostic artifacts were not evenly distributed, extensive testing of small sites (Batcho 1982) should have provided evidence of Pueblo IV occupation if any significant number persisted into the 14th century.

Late 13th-century sites are slightly more numerous, clustering at Chavez Pass. Six habitation sites within the pass north of Nuvakwewtaqa were probably occupied as late as A.D. 1300 (one having a 1288 tree-ring date), although only one site contains over 20 rooms. By the 14th century, occupations in both the Nuvakwewtaqa and Upper Grapevine settlement clusters were restricted almost exclusively to large pueblos, and few architectural features of any kind were built in the surrounding countryside during farming, hunting, gathering, and other resource collection activities.

#### Demography and Settlement History

Our population estimates take room size and site chronologies into account (table 11.3). We adopt a conservative figure of two people per room.<sup>3</sup> Site histories were inferred through a much closer examina-

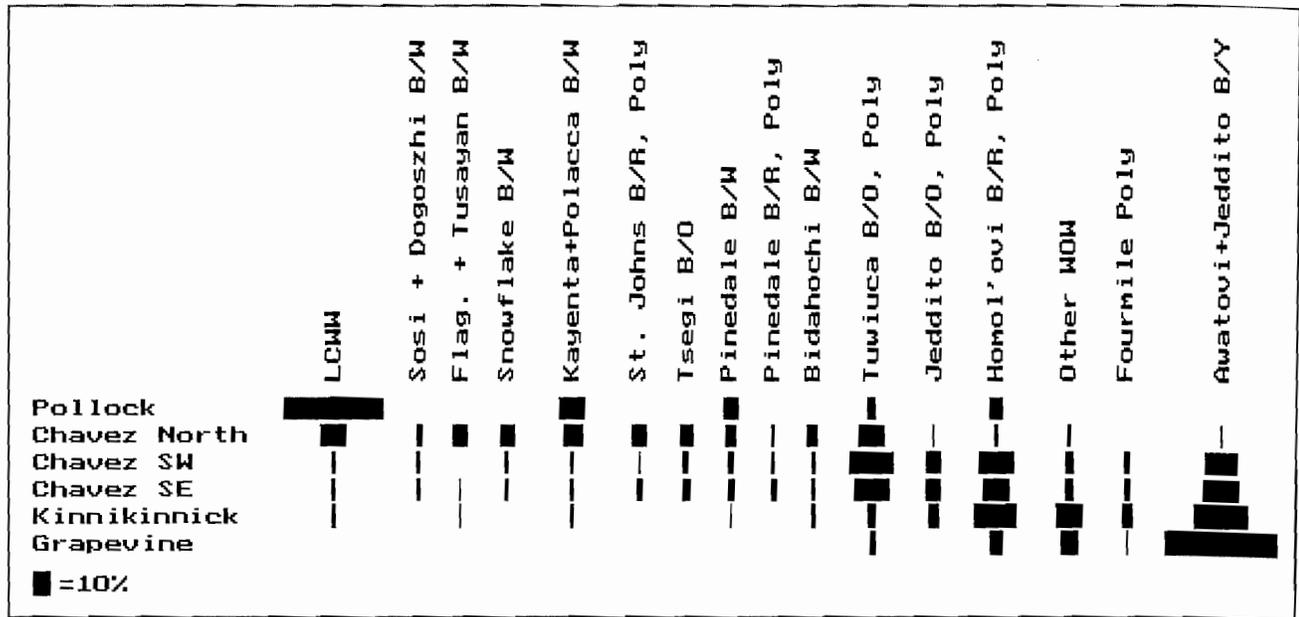


Fig. 11.6. Ford diagram of decorated ceramics from Anderson Mesa late prehistoric sites. (WOW: Winslow Orange Ware; LCWW: Little Colorado White Ware) "Other WOW" category includes Chavez Pass B/R, Chavez Pass Polychrome, and Unidentified Polychrome.

tion of the ceramic assemblages than we can provide in this short chapter, along with the scarce tree-ring dates. Relative frequencies of major ceramic categories having restricted manufacture dates suggest that some, but not all, variation in settlement configurations can be attributed to time (fig. 11.6).

Decorated ceramics from Pollock indicate a long and relatively early occupation, including a pit house component (McGregor 1956). Although there are some early non-cutting dates, most tree-ring specimens collected from the main room block indicate construction ca. A.D. 1275–1300 (fig. 11.7). The latest date of all (1303vv) is from a pit structure. This date and the spatial association of other pit structures with the room block suggest that a clear separation of earlier pit house and later pueblo occupations is not tenable, a situation common at Sinagua sites. In fact, McGregor identified Jeddito Black-on-yellow in the late-dated pit structure and other contexts, including the pueblo, suggesting significant occupation well into the 14th century (C. Downum, personal communication, 2001).<sup>4</sup> From the available evidence, we suggest a span from ca.

A.D. 1200–1350. A maximum population of 85 people is estimated at A.D. 1300, a figure that would increase if pit structures were taken into account.

Kinnikinnick is well dated in terms of construction dates, although most tree-ring specimens are from one room (Connor 1943). These dates show transitional Pueblo III–IV construction followed by one date of 1374vv, the latest tree-ring date in the study area. Decorated ceramics indicate major occupation from ca. A.D. 1250 to 1385, the roughly even frequencies of Winslow Orange and Jeddito Yellow wares suggesting a peak at roughly 1330–1340. Our peak population estimate is 250 people. Grapevine's peak population is about half this amount, but it occurred later and may have been comparable to Kinnikinnick in size by the middle 14th century, when population there was on the decrease. The peak at Grapevine occurred about A.D. 1370–1380 with a full occupation ca. 1300–1400. The Grapevine dates are generated solely from ceramic dating and are based primarily on the abundance of Jeddito Yellow Ware and absence of white ware; no absolute dates are available.

Nuvakwewaqa has an occupational his-

tory that is longer than that of all three Upper Grapevine sites combined. Chavez North began with a cluster of pit houses destroyed by later construction (Brown 1982a:46–64). Early ceramics identified in downslope midden deposits probably derive from this occupation, ca. A.D. 1075–1225. We attribute the abundance of Tsegi Orange Ware at Chavez North to a strong middle/late 13th-century occupation, contrasted with Chavez SW and SE, where Tsegi comprises less than 20% of the decorated orange ware. Chavez North contains small numbers of late polychromes and only four Jeddito Yellow Ware sherds in a sample of 664 decorated ceramics. Tree-ring dates fall mainly in the late 13th century. Overall, datable materials suggest major occupation from approximately A.D. 1225 to 1320. Population peaked at roughly 143 people around A.D. 1275–1280 and then began a gradual decline.

The ceramic assemblages from Chavez SW and SE are similar, indicating contemporaneous occupations during the Pueblo III–IV transition and Pueblo IV period. The abundance of both Winslow Orange and Jeddito Yellow wares indicates lengthy occupations. The general ratio of orange

	Chavez North	Chavez South	Pollock	Kinnikinnick
121		9		
122			5	
123	1	<b>58</b>	6	<u>8</u>
124		1	<u>344</u>	24
125	<u>499</u>		4	<u>4577</u>
126	<u>444444</u>		28	<u>9</u>
127			12477	0003588999
128		78	001244466	0444557788
129	8		2	0000113344456667
130	1	347	3	011333444556888888888888
131				000001223
132		<u>57</u>		
133				
134		<b>5</b>		
135				
136		7		
137				4

Fig. 11.7. Stem-and-leaf diagram of tree-ring dates from Anderson Mesa late prehistoric sites. Cutting dates are underlined. Bold indicates that type of date is unknown. Twelve non-cutting dates from Pollock and Kinnikinnick between A.D. 1095 and 1205 are not shown.

to-yellow wares (3.8:1 at Chavez SW and 2.6:1 at Chavez SE) indicates that most of the assemblages can be placed between 1250 and 1350. More specifically, the ratio of earlier black-on-orange types in the Winslow series (Tuwiuca and Chavez Pass) to later Homol'ovi Polychrome ranges from 1.33:1 at Chavez SE to 1.41:1 at Chavez SW, suggesting that occupation was especially intense prior to 1300. Despite a few early non-cutting dates and two poorly provenienced late dates, most tree-ring dates cluster between 1287 and 1327 (fig. 11.7). Major construction at the two main room blocks likely occurred between 1275 and 1330.

A fine-grained inspection of the decorated ceramic assemblages suggests that occupation at Chavez South may have been somewhat bimodal. The Homol'ovi Polychrome to Jeddito Yellow ratio is 1.02:1 at Chavez SW and 0.68:1 at Chavez SE, the latter indicating an especially pronounced second peak in the occupation at Chavez SE (table 11.3). We believe that both occupations ended ca. A.D. 1380–

1385, and certainly by 1400. The scarcity of ceramics that necessarily postdate 1350 (e.g., 2 Sikyatki Polychrome and 11 Zuni Glaze specimens in a sample of 1,553 decorated sherds from Chavez South) corroborates the abundance of orange wares and red wares over yellow wares in demonstrating a declining population during the 14th century.

Earlier components are evident at the two southern pueblos. Ceramic data point to components at Chavez SE dating ca. A.D. 1175–1275 and at Chavez SW dating ca. A.D. 1200–1275, confirmed by the presence of buried structures underneath surface rooms and middens.<sup>5</sup> Pre-A.D. 1300 sherds were recovered in roughly equal frequencies during extramural tests around all three pueblos, with Chavez SW producing the greatest abundance anywhere at Nuvakwewtaqa, suggesting that the scale of architectural components predating construction of Chavez SW and SE may be comparable to Chavez North. These remains are swamped by the enormous quantities of later materi-

als at Chavez South, but late Pueblo III sherds such as those associated with the Tsegi Phase are nevertheless common. We estimate a total population of roughly 430 people at Nuvakwewtaqa between A.D. 1250 and 1275, a figure that should be increased to about 500 to account for contemporaneous small sites aggregated nearby. The Upper Grapevine cluster had far fewer people, at least within large sites, but there are insufficient data to estimate population for small sites in that area.

The overall peak occupation at Nuvakwewtaqa clearly took place when Chavez SW reached its initial peak by A.D. 1300. Our population estimates for Nuvakwewtaqa between A.D. 1275 and 1300 total 904 people for the three room blocks combined, over twice the previous interval. Even if our previous estimate of 500 people for the entire settlement cluster was in place by A.D. 1250, a moderate annual growth rate of 0.1% would account for only 526 people by A.D. 1300, far short of the estimated population for this time. Even an aggressive growth rate of 0.3% would account for only 626 individuals by A.D. 1325, barely two-thirds of the estimated population.

Such calculations are tenuous for the Upper Grapevine cluster, especially without more survey data. Nevertheless, we are reasonably sure that additional Pueblo IV sites of comparable size do not occur in the immediate area. Based on current information, the Upper Grapevine peak occurred between A.D. 1325 and 1350 and probably did not exceed 400 people.

#### Exchange, Interaction, and Migration

Evidence for long-distance exchange of decorated ceramics, obsidian, and shell is abundant on Anderson Mesa. Exchange of orange wares, yellow wares, and obsidian with the Homol'ovis and Hopi Mesas was especially intense, indicating strong interaction with settlement clusters to the north. This northern alignment predates the Pueblo IV period, al-

though it is much more pronounced during this later time. At Nuvakwewtaqa, Tsegi Orange Ware is the most common decorated ceramic in Pueblo III assemblages: at 30%, considerable exchange with the Kayenta area can be inferred, yet Cibola White Ware constitutes almost 20%, and various ceramics from other areas are well represented. In Pueblo IV assemblages, however, Nuvakwewtaqa is dominated by Winslow Orange Ware (50%), produced in the Homol'ovi area (Lyons 2001), and Hopi/Kayenta ceramics (Jeddito Yellow and Orange wares, combined representing 35%). White Mountain and Roosevelt Red wares each make up less than 5% of the Pueblo IV collection, indicating much less interaction with Cibola and Salado groups, and Cibola White Ware and Zuni Glazes are very rare.

Obsidian was a potentially important export that may have been exchanged for northern ceramics. Although obsidian was not available locally, Kinnikinnick and Grapevine are distinguished by phenomenal quantities of lithics in general and obsidian in particular (Brown 1982b, 1990a). Over half of the flaked-stone assemblages at both sites are obsidian, indicating intensive direct procurement, since contemporaneous sites closer to the obsidian sources (primarily Government Mountain) are few and do not have remotely comparable obsidian assemblages. This focus on flaking technology and obsidian suggests that the Upper Grapevine settlement cluster may have been a major supplier of obsidian both to Nuvakwewtaqa, where obsidian does not exceed 10%, and to sites such as the Homol'ovis, where obsidian is much less abundant but Winslow Orange Ware was produced as a potential trade item.

The economic implications of this exchange system are great. Moreover, exchange is also a social transaction, providing opportunities for people from distant places to swap information as well as goods. In the highly aggregated and rapidly consolidating landscape of the Pueblo IV period, exchange may have provided an im-

portant opportunity to obtain information about potential migration destinations.

Migration was prevalent across the Southwest during the Pueblo IV period, as widespread 13th-century settlements consolidated into a handful of site clusters by A.D. 1400, leaving only Hopi, Zuni, and Acoma in the Western Pueblo area. As the process of demographic consolidation progressed through the 14th century and distances between population centers widened, information about potential migration destinations must have become increasingly valuable. At some point, the demographic balance in northern Arizona must have tipped so heavily toward Hopi and Zuni that continued residence elsewhere would have been isolating, undesirable, and perhaps even dangerous. In this situation, villages with strong or numerous ties to potential migration destinations may have played a special role in the movement of both goods and people. In this respect, evidence for abundant exchange could indeed signal regional prominence (*sensu* Upham 1982). However, the status of individuals involved in exchange may have stemmed not only from accumulation of wealth but from their role as information brokers for potential migrant and host groups.

Frequent exchange between Anderson Mesa and sites in the Homol'ovi and Hopi settlement clusters would have provided information about, and ties to, potential migration destinations to the north. There is much less evidence for exchange with potential migration destinations to the west, east, and south. Significantly, at least 10 Hopi clans trace their ancestral migrations from southern Arizona through Nuvakwewtaqa and other Anderson Mesa villages on their ways north, eventually to Hopi (e.g., Yava 1978:62-70). In fact, Hopis refer to places such as Nuvakwewtaqa as "staging areas," where migrants hoping to gain entrance into a Hopi village would gather and tap into information streams before undertaking a final set of migrations to Hopi (Eugene Sekaquaptewa

in Courlander 1982:145; Leigh Kuwan-wisiwma, personal communication, 2000). Thus, Anderson Mesa villages may have acted as funnels, drawing in diverse populations from central and southern Arizona, many of whom later emigrated north to Homol'ovi and Hopi.

The demographic evidence presented above supports a picture of migration into Anderson Mesa villages. Even extremely high growth rates would leave numerous residents at Nuvakwewtaqa unaccounted for, pointing to immigration as a likely source for these individuals. The architecture of Chavez SE, which can be divided into multiple construction segments on the basis of offset walls and differences in room orientation, is also potential evidence of waves of immigrants (Bernardini 2002).

Hopi traditions offer valuable insights into the process of postulated migrations. They describe migration as continuous, unsynchronized moves by small, independent, socially distinct groups, sometimes between contemporaneous villages. The resulting migration pathways linking ancestral villages to Hopi resemble the irregular pattern of fractured glass more than they do spokes on a wheel. This pattern of movement would have distributed migrating groups unevenly within a settlement cluster, ensuring that even neighboring villages contained residents with a diversity of backgrounds. Support for this scenario is found in the rock art associated with settlement clusters on Anderson Mesa (Bernardini 2002). When analysis is restricted to elements resembling those used by contemporary Native American groups to symbolize group identity, each village is found to contain a distinct set of images (fig. 11.8). Marked differences between even neighboring villages (e.g., Chavez SW and SE) suggest that groups with different "totemic" associations stemming from different social histories may have populated each site.

Further support is provided by a similar pattern of diversity in ancestral Hopi

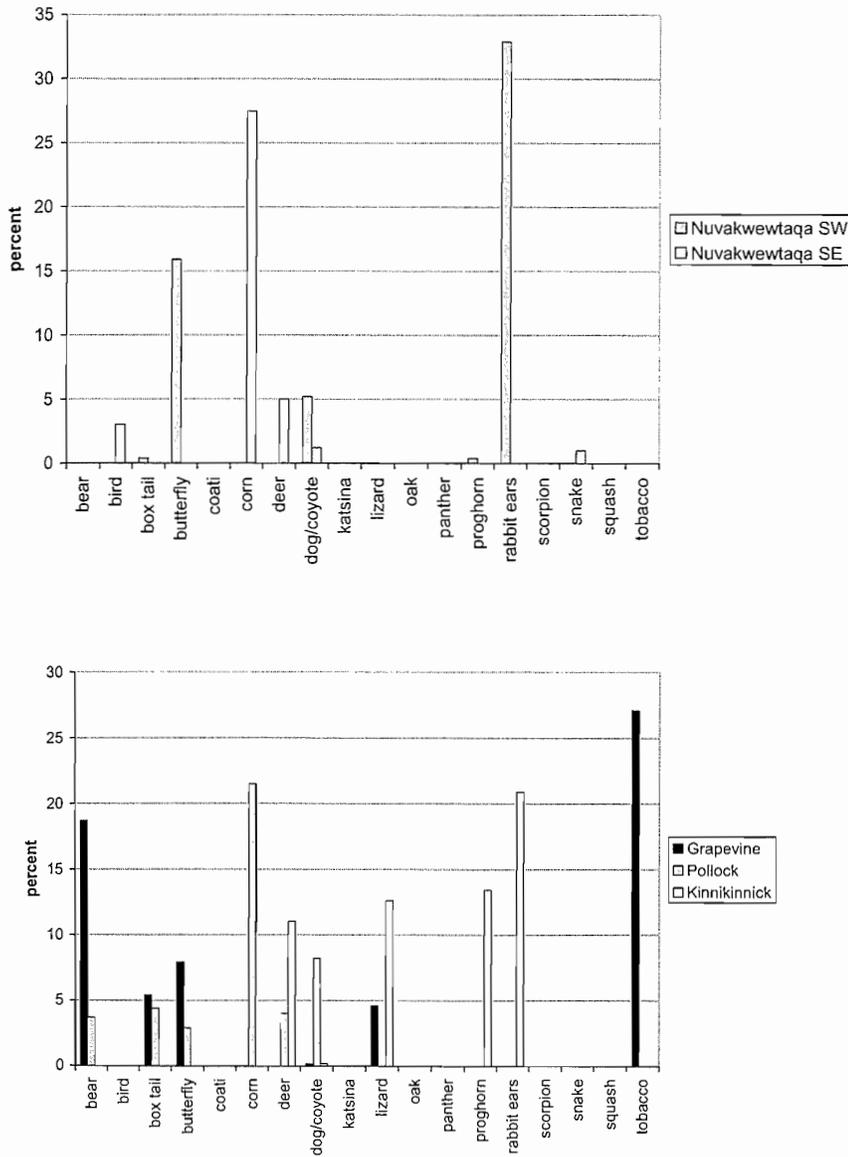


Fig. 11.8. Percentage of rock-art symbols at Anderson Mesa late prehistoric sites.

ceramic compositional data (Bernardini 2002). Each Anderson Mesa village that has been analyzed contains Jeddito Yellow Ware with a distinct set of compositional signatures, suggesting ties with different production groups on the Hopi Mesas. This pattern mirrors that in the rock art data and suggests that groups of people within different Anderson Mesa villages established contacts with Hopi groups independently of their neighbors.

The degree of interaction within and between the Nuvakwewtaqa and Upper

Grapevine settlement clusters was probably significant. Minimally, the Upper Grapevine villages would have had to exchange marriage partners with Nuvakwewtaqa (or elsewhere) to maintain a viable mating network. A shared, locally manufactured plainware tradition across both Anderson Mesa clusters also speaks to the flow of technological information, people, and/or pots between them. Kinnikinnick and Grapevine were undoubtedly major obsidian suppliers in a trade network in which Chavez SW was also an important

player and a substantial consumer of obsidian.

Nevertheless, diversity and difference in architecture, communal structures, and source populations outweigh similarities between these villages. Differences in material culture between neighboring Chavez SW and Chavez SE, including architectural layouts, lithic materials, rock art, and demography demonstrate clearly that spatial proximity does not necessarily reflect shared history or identity of their residents. Ultimately, what united residents of the Anderson Mesa clusters may have been their shared geographic and social proximity to the emerging regional hubs in the Homol’ovi and, especially, the Hopi clusters. Interaction with these clusters and with groups desiring access to them linked Anderson Mesa villages into structurally similar relationships with different sets of host and migrant groups.

#### New Perspectives on Anderson Mesa

The occupational history of the Nuvakwewtaqa and Upper Grapevine settlement clusters demonstrates that diverse architectural layouts can be contemporaneous and that different trajectories may lead toward large aggregated pueblos. We would describe Chavez North at A.D. 1300 as a large series of single-story rooms, some sharing courtyards and others not interconnected; this configuration conforms to the “clustered room block” site type in Pilles’s (1996) Pueblo III classification. The monumental, multistory, plaza-oriented configuration of Chavez SW was also well established by this time, while Chavez SE was developing into a large massed pueblo with smaller enclosed plazas. These three pueblos provide examples of diverse yet contemporaneous site types within sight of one another.

We believe the key to understanding this diversity lies in the complex occupational histories that we have tried to elucidate. Some differences among the pueblos may be social, some economic, and

some possibly political. However, some differences are historical, including the origins and cultural backgrounds of people who came to trade or assume residence. Villages created through the aggregation of local, dispersed populations may yield forms of organization and interaction that differ from villages containing significant immigrant populations, which in turn may be expected to vary widely depending on the source, diversity, and rate of arrival of immigrants.

Sinagua villages share a propensity for exchange, motivated in part by the lack of a local decorated ceramic tradition. The great size and density of Anderson Mesa late prehistoric villages concentrated interaction with nonlocal populations to an unprecedented degree. The unique so-

cial and geographic position of these villages allowed them to assume a central role in the circulation of goods, information, and people. Nuvakwewtaqa's population and participation in interregional affairs peaked around A.D. 1300, relatively early compared to neighboring areas, suggesting that Anderson Mesa villages may have helped to produce, rather than simply reflect, some of the broad demographic and cultural patterns observed during the Pueblo IV period. Clearly, the full story of these dynamic places has yet to be told.

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