

Ceramic Dating of Bandelier Cavates

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Contents

List of Tables	ii
Introduction	1
Sampling Areas	1
Chronology and the Rio Grande Series	2
Cavate Chronology	4
Ceramic Patterns	8
Summary	10
References	12

List of Tables

Table 1. Rio Grande Ceramic Dates.	3
Table 2. Ceramic Samples and Occupation Spans for Bandelier Cavates.	5
Table 3. Dates and Ceramic Associations from Bandelier.	7
Table 4. Ceramic Data and Tests.	9

In mid-December, 1986, archaeologists from the Branch of Cultural Research, NPS, visited the five groups of cavates in Bandelier National Monument which were the subject of an architectural recording project earlier in the year (Toll 1986). This visit was for the purpose of ceramic sampling in order to obtain ceramic dates as was done for those cavate sites surveyed during the 1985 pilot survey at Bandelier (McKenna and Powers 1986). Ceramic dating of the cavate groups was deemed necessary to provide some control over the temporal dimension in any assessment of cavate variability in the pending analysis of cavate architectural data. This report presents the cavate chronology as well as points out some ceramic differences between the cavate groups.

Sampling Areas

Cavate refuse scatters are diffuse. In covering approximately 32400 sq. m. of sample area in two days only 2553 sherds were located and identified. This average of 0.08 sherds per square meter is in stark contrast to extremely high density scatters around Tsankawi'i and Yapashi pueblos proper where surface sherd scatters were as high as 254 sherds per square meter and no lower than 87 sherds per square meter. In the sample survey only two, a trail and a small structure, of the 21 fully recorded sites showed ceramic densities lower than those recorded at the cavates (McKenna and Powers 1986:Table 8). No dense ceramic trash was noted in cavates nor along the flat rubble/talus margins immediately fronting cavates. As observed by Toll (1986), some variability in the relative frequency of ceramics between cavate scatters is evident. Extensive areas of rubble mound or talus slope in front of recorded cavate groups were scoured to locate ceramics. Ceramics were collected, identified, tabulated and replaced (scattered) in the same general area from where they were collected. No ceramics were located in any Frijoles cavates and only four Biscuit B sherds were observed in separate cavates at Tsankawi'i. Cavate Groups A, F, I, and M were sampled in Frijoles Canyon; the "Cuevitas Arribas" (Toll 1986:4) were not sampled. At Tsankawi'i the cavates were subdivided into three sampling units and at Frijoles Group F, two subdivisions were maintained.

Location and general physiography of the cavate groups is fully described by Toll (1986). The following sample areas provided "all observed" counts from the cavate groups:

Group A: the talus/rubble fronting the west half of the group, from the central kiva to cavate A-1 (108 m E-W x 20 m N-S, ceramic n=253). In addition two 2x1 m grids were sampled at 16 and 34 m east of the central kiva in the soil-fan bordering the talus/house rubble.

Group F: the talus/rubble mound fronting the entire group of architecturally sampled cavates to just above the old tourist trail. Two cavate groups were apparent, those constructed on the south side of some detached tent rocks, and those along the main cliff at the top of the talus. The lower group (L on the ceramic form) was sampled in an area (24m N-S by 23m E-W, ceramic n=263) directly downslope, while the remaining area (R on ceramic form) was associated with the upper cavates (ca. 41m E-W by 30m N-S, ceramic n=282; total ceramics n=545).

Group I: rubble mound and talus fronting the architecturally sampled cavates (60m N-S by 30 m E-W, ceramic n=174), down past the old tourist trail to near the base of the talus slope.

Group M: rubble mound and talus fronting cavates, primarily between drainages flanking the central portion of the architecturally sampled cavates, erosion having denuded slopes along the east and west margins of this cavate group (55m E-W by 40m N-S, ceramic n=672).

Tsankawi'i: architecturally sampled cavates were located at the east end of the Tsankawi'i loop trail. Three sample areas were defined, an eastern and central group were located in gray tuff just below the mesa top, and a lower or western group was situated in a red tuff (Toll 1986:37-38). The eastern group consisted of cavates to the east of the ladder/trail to the mesa top and Tankawi'i Pueblo (an irregular 58m E-W by 30m N-S, ceramic n=362). The central group consisted of scatter below cavates along a lower trail and to the west of the mesa-top loop-trail access (50m NE-SW by 45m NW-SE, ceramic n=141) with the lower margin of collection for east and central sample areas ending at the top of the lower red tuff layer. The west, or lower, sample area fronted cavates below this red layer of tuff (91m NE-SW by 17m NW-SE, ceramic n=406). The west cavate sample was taken in halves for comparison because the northeast half of this sample area lay below the cavates in the upper gray tuff and undoubtedly contained some ceramics from this upper scatter. The ceramic sample from the Tsankawi'i cavates is 906 items.

Chronology and the Rio Grande Series

Ceramic chronologies and type descriptions are based on information presented in the sample survey report for Bandelier (McKenna and Powers 1986) and summarized on Table 1. Unidentifiable or chronologically nonsensitive categories are often composites of technically separate classes such as "whiteware" which are undecorated portions of bichrome service wares whether those specimens be technically black-on-white or black-on-cream. As discussed by Toll (1986), cavate sites at Bandelier have seen heavy visitation and their ceramic compliments have been relentlessly attended to by collectors for decades. This has resulted in both attrition, particularly of decorated sherds, and sherds of a generally smaller, nondescript character, which are important points to the evaluation of cavate ceramics.

Ceramics and the chronological data base in the Rio Grande region are not an iron-clad situation and "ceramic chronology" is, at best, a working relationship between two independent data sets that requires constant scrutiny and evaluation. The default time spans assumed (Table 1) in dating the present samples are, naturally, no more accurate than the current literature poses them. A healthy degree of skepticism and periodic reevaluation of ceramic chronologies is necessary because such constructs rest on the broad extension of limited chronometrics, with some inherent imprecision, and the necessity of accepting uniformitarianism as a characteristic of the "type" ceramics across space. Types, such as San Lazaro G/Poly, with extremely short time spans are more justifiably suspect than unimpeachably sensitive time markers (F.H. Ellis p.c. 1985). While there is no reason, beyond simple contentiousness, to

Table 1. Rio Grande Ceramic Dates.

	McKenna & Powers 1986	Hubbell & Traylor 1982	Snow 1982† Warren 1979	Breternitz 1966*
Kwahe'e B/w	1000-1225	950-1225	950-1225	1125-1200
Socorro B/w	1100-1250	1050-1275		1050-1275
Santa Fe B/w	1175-1300+	1175-1300+	1175-1300	1200-1350
Wiyo B/w	1250-1400	1250-1400	1300-1400	1300-1400
Biscuit A	1350-1450	1350-1450	1350-1450	1375-1450
Biscuit B	1425-1550	1425-1550	1425-1550	1400-1550
Galisteo B/w	1300-1400	1250-1400	1250-1350	1300-1400
Tsankawi'i B/c	1500-1675	1500-1675	1550-1625†	1500-1600
Tsankawi'i Poly	1675-1720	1675-1720	1675-1720	post 1500
Kapo Black	1650+	1650+	1650+	
Posugue Red	1675+		1675+	
Potsuwi'i Incised	1450-1550	1450-1550	1450-1550	1425-1525+
Glaze A	1315-1425		1300-1450†	
Agua Fria G/r		1315-1425	1315-1425	
Cieneguilla G/y		1325-1425	1325-1425	
San Clemente G/Poly		1315-1425	1315-1425	
Cieneguilla G/Poly		1325-1425	1315-1425	
Glaze B	1400-1450	1400-1450	1400-1450†	
Largo G/y-r			1400-1450	
Largo G/Poly				
Glaze C			1450-1490†	
Espinosa G/Poly	1425-1490	1425-1490	1425-1490	
Glaze D			1490-1515†	
San Lazaro G/Poly	1490-1515	1490-1515	1490-1515	
Glaze E			1515-1625†	
Puaray G/Poly	1515-1650	1515-1600	1515-1650	
Pecos G/Poly	1515-1700	1515-1700		
Escondido G/Poly	1515+	1515+		
Encierro G/Poly				
Glaze F			1625-1700†	
Koyiti G/y-r			1650-1700+	
Koyiti G/Poly				

*base reference Smiley et. al 1953.

suspect ceramic chronology on the Pajarito Plateau is totally out of step with the Rio Grande chronological sequence, some differences are likely given the Pajarito is a definable geographic remove (see Lang 1982) from the central Rio Grande area on which much of the sequence is based, and the chronologic data presently used are unstructured and inadequate beyond a very crude "regional" level.

The chronology of the sequence itself rests on widely scattered, poorly provenienced data (Smiley 1951), summarized and ceramically correlated by Smiley and others (1953), and taken verbatim in the most "recent" 20 year old gospel on ceramic dating for Rio Grande types (Breternitz 1966). Dates available from Bandelier sites poorly reflect the temporal range of ceramics actually present (Table 3). Certainly more recent work, with better provenience/ceramic associations, is available for a reappraisal of the general Rio Grande sequence and perhaps for a more rigorous scrutiny of areas within the region.

Temporal variation to that taken as the norm, in subregional ceramic sequences, has been noted by Mills (1986) along the lower Rio Grande, and is just as likely on the Pajarito. Another indicator that subregional ceramic temporal variation is operative is the differences in date assignments to the same pottery types by recent projects in the Rio Grande region (see Table 1). Both more extensive dating of Pajaritan contexts and a complete summary of more recent work is needed before a Pajaritan chronology can be redefined and compared to the general Rio Grande sequence. Ceramic chronologists (above) traditionally track "trade" items on a separate time line than indigenous wares because nonlocal types tend to occur longer in regions removed from the production center; using the default time spans for these trade types, which are assumed to be a substantial component in Bandelier ceramic assemblages, further muddles the assignment of site chronology.

Cavate Chronology

The ceramic samples from the Bandelier cavates suggests some variability in occupation; cavate groups show variation in initial occupation and periodicity in reuse. All cavates show occupation during the Coalition and Classic Periods in the fourteenth, fifteenth, and early sixteenth centuries with only one, Frijoles Group M, showing early eighteenth century ceramics (Table 2). In general, based on relative frequencies of ceramics, early occupations are most evident in the upper Frijoles groups with later occupations more evident in cavates further down canyon. Tsankawi'i cavates are contemporaneous with the mesa-top pueblo (A.D. 1250-1550).

In the Frijoles groups, Group A (A.D. 1225-1550) is estimated to have been begun at 1225 because of the relative amount of Santa Fe to Wiyo and later black-on-whites. Group F (A.D. 1100-1175 and 1315-1550) seems to have seen two separate occupations, one during the (late) Developmental Period and another during the Classic with evidence of occupation during the Coalition Period, as represented by Santa Fe Black-on-white, absent. This pattern is consistent in both upper and lower (tent rock) subgroups at Group F with no one part of the site ceramically distinct from the other. Group I (A.D. 1275-1525) shows

Table 2. Ceramic Samples and Occupation Spans for Bandelier Cavates.

	Tsankawi'i Cavates					Tsankawi'i Pueblo			Frijoles Cavates					Yapashi Pueblo	
	E	C	W	N	%N	Pueblo	%N	A	F	I	M	N	%N	Pueblo	%N
Rio Grande Series															
Kana'a Gray											1	1	0.1		
Corrugated			2	2	0.2	1	0.2		3	2	2	7	0.4	6	0.7
Smeared Corrugated	5	3	5	13	1.4	25	2.6	19	4	3	18	44	2.6		
Indented Corrugated	8	4	3	15	1.6	7	0.7	1	7	4	3	15	8.9	14	1.7
Smeared-Indented	15	13	13	41	4.5	13	1.4	23	3	2	25	53	3.1	107	13.0
Tesque Series															
Plain											3	3	0.2		
Indented									3			3	0.2		
Smeared Indented		2		2	0.2			12	3		4	19	1.1	12	1.5
Sapawi'i Washboard	186	38	205	429	47.2	299	31.6		2	1	6	9	0.5		
Plain Ware															
plain gray	37	24	36	97	10.7	149	15.8	158	318	98	404	978	57.9	308	37.3
striated plain								7	2		3	12	0.7	1	0.1
Culinary Total	251	84	264	599		495		220	345	110	469	1144		448	
Percent Culinary	69.3	59.6	65.0		65.9		52.3	72.1	64.0	63.2	69.8		67.7		54.3
Kwahe'e B/w									6			6	0.6		
Santa Fe B/w	3	1	5	9	1.0	2	0.2	8		4	5	16	6.8	16	1.9
Wiyo B/w			1	1	0.1	4	0.4	1	1		1	3	0.2	3	0.4
Biscuit A	20	11	28	59	6.5	15	1.6	2			2	4	0.2	12	1.5
Biscuit B	12	11	35	58	6.4	53	5.6	7	22	7	26	62	3.7	16	1.9
Sankawi'i B/c	5	5	7	17	1.9	93	9.8							1	0.1
PII-III M/w									1			1	0.1		
PIII-IV C/w	15	6	13	34	3.7	74	7.8		1	1	3	5	0.3		
whiteware	44	15	44	103	11.3	187	19.8	10	18	1	11	40	2.4	21	2.5
Tewa plain buff		3		3	0.3	2	0.2		2	6	6	14	0.8		
Historic poly											1	1	0.1		
Matte-Decorated Total	99	52	133	284		434		28	51	19	54	152		69	
Percent Matte-Decorated	27.3	35.9	32.8		31.2		45.9	9.2	9.5	10.9	8.0		9.0		8.4
Kapo Black											1	1	0.1		
Plain Red	3			3	0.3	6	0.6		1		3	4	0.2		
Potsuwi'i Incised		1		1	0.1	3	0.3		2		3	5	0.3		
Plain Total	3	1		4		9			3		7	10			
Percent Plain	1.7	0.7			0.4		1.0		0.6		1.0		0.6		

Table 2 cont.

	Tsankawi'i Cavates					Tsankawi'i		Frijoles Cavates					Yapashi		
	E	C	W	N	%N	Pueblo	%N	A	F	I	M	N	%N	Pueblo	%N
Glaze A															
Agua Fria G/r	1			1	0.1	1	0.1		3	2	4	9	0.5	13	1.6
Cieneguilla G/y											1	1	0.1	2	0.2
Cieneguilla G/Poly								1				1	0.1		
San Clemente G/Poly								1	1	1		3	0.2		
Glaze B															
Largo G/r									2			2	0.1	3	0.4
Largo G/y										1	1	2	0.1	5	0.6
Largo G/Poly														5	0.6
Glaze C															
Espinosa G/Poly										4	1	5	0.3	4	0.5
Glaze D															
San Lazaro G/Poly						1	0.1	9	14	4	7	34	2.0		
Glaze E															
Puaray G/Poly						1	0.1				3	3	0.2		
Escondido G/Poly									4			4	0.2		
Pecos G/Poly						1	0.1								
G/r bodies	6	3	4	14	1.5	1	0.1	34	79	17	72	202	9.9	151	18.3
G/y bodies	1			1	0.1				1	1	4	6	0.4	51	6.2
G/Poly bodies	1	2	4	6	0.7	2	0.2	12	35	15	49	111	6.6	74	9.0
unident. glaze									1			1	0.1		
Glaze Total	9	4	9	22		7		57	140	45	142	384		308	
Percent Glaze	2.5	2.8	2.2		2.4		0.7	18.7	26.0	25.9	21.1		22.7		37.3
Grand Total	362	141	406	909		945		305	539	174	672	1690		825	
Percent	39.8	15.5	44.7		100.0		100.0	18.0	31.9	10.3	39.8		100.0		100.0%
Ceramic Dates	1300- 1650	1300- 1650	1300- 1650			1250- 1675		1225- 1550	1100- 1175/ 1315- 1550	1275- 1525	1250- 1550/ 1695- 1720?			1250- 1675	

Table 3. Dates and Ceramic Associations from Bandelier.*

Group M: 1 date, 1493c, Room 1-2. Ceramics; Biscuit A & B, Sankawi'i B/c, Rio Grande Glazes I-V (p.38-39).

Tyuonyi: 16 dates, 1383+-1466c with cluster of 10 dates at 1417-1505 which were lost. Ceramics; Kwahe'e B/w, Santa Fe B/w, Wiyo B/w, Biscuits A & B, Sankawi'i B/c, Postuwi'i Incised, Rio Grande Glazes I-V (p.21).

Rainbow House: 20 dates 1421-1453 with best group at 1448-1451. Ceramics; Biscuits A & B, Sankawi'i B/c, Rio Grande Glaze I-V (p. 26).

Frijolito: 3 dates 1431-1447. Ceramics; Kwahe'e B/w, Santa Fe B/w, Wiyo B/w, Biscuits A & B, Rio Grande Glaze I-III with White Mountain Redwares as trade (p.26).

*Smiley et. al 1953.

little evidence of a late Coalition Period occupation as represented by Santa Fe Black-on-white (2 vessels), while at the terminus of the ceramic sequence, Glaze D polychromes are more similar in rim form to earlier Glaze C forms than the other Glaze D examples encountered in other cavate groups. This suggests Group I may have been the shortest occupied of all the sampled cavate groups with a late beginning date and an earlier ending date. Group I also has the fewest number of ceramics tallied in a sample area comparable to those covered at other cavate groups. This low frequency of sherds may be a reflection of a shorter occupation span, but a sample size problem, no matter the cause, is evident and is probably more critical to Group I's temporal assessment than any peripheral interpretation. Group M (A.D. 1250-1550 and post 1695 [to 1720?]), shows the only clear evidence of early historic ceramics, although such evidence is not clear in the present sample. A single Kapo Black and historic polychrome jar base were the only representatives of this late assemblage in the 1986 sample. However, Turney's 1948 work (as reported in Toll 1986:7-8) makes this Pueblo Revolt-early eighteenth century occupation at Group M abundantly clear and there seems no reason to equivocate based on the paucity of historic ceramics in the present sample. The mid-1200s through mid-1500s occupation at Group M seems indicated by the continuum of decorated types from Santa Fe through Biscuit B and Glaze E ceramics. Glaze D is taken to have lasted longer than the traditional 20 year span ending at A.D. 1515 while the Glaze E sample is largely finished in muted fawn and tan tones taken to be a style of coloration likely coeval with late Glaze D and predating what may be the later use of light cream slips in Glaze E—hence the terminal date of 1550 for Group M's initial occupation. No Glaze F was identified at any of the cavate groups sampled.

Ceramic samples from the Tsankawi'i Pueblo proper suggested a date of A.D. 1250-1675 based on traditional time spans for the production of Tsankawi'i Black-on-cream in conjunction with minor but consistent amounts of Santa Fe and Wiyo Black-on-white; beginning dates nearer 1300 and ending dates nearer 1650 may be more appropriate. Cavate samples suggest a similar time span for those features. No confidently identifiable glaze types were found in the cavate samples, but the impression from partial rims and surface attributes of glaze sherds is that glaze import became more common during and after Glaze D; a similar situation was noted in the mesa-top pueblo samples as well.

Two other cavate groups in Frijoles Canyon, sampled during the 1985 test survey, also had ceramics indicative of late occupation. Cavates B-70 and B-71 (portions of Groups C and B respectively) had even less abundant sherds than the present sample of cavates, but had early historic types of Kapo Black, Tewa Polychrome, and Glaze E. These cavate groups were dated A.D. 1450-1700 and 1500-1700 respectively; again sample size problems undoubtedly affect the assessment of occupation span. Cavate pueblos sampled away from the main clusters in Frijoles Canyon and around Tsankawi'i show earlier, more discrete occupation spans. IA50909, south of Frijoles Canyon in the Corral Hill area of Bandelier National Monument, was primarily a Coalition Period site dating A.D. 1200-1425 (McKenna and Powers 1986:Table 9). Coalition Period occupation was

also the main period for cavates surveyed north of Bandelier by the Pajarito Archaeological Research Project (Hill and Trierweiler 1986). Aggregation to cavates associated with large communal pueblos at lower elevations seems to be a trend through time and is one factor in making indistinct, discrete occupational episodes for cavate groups or for intra-group temporal differentiation.

Ceramic Patterns

The chi-square statistic was used to test for differences in the ceramic populations of the cavates. Vessel forms, reduced to open ("bowls") or closed ("jars"), occasionally ware, and provenience were the dimensions of the tests. Data and test results (Test # below) are presented on Table 4. Undoubtedly multivariate techniques would bring greater interpretive strength to the patterns suggested by these exploratory tests, but such methods are more appropriate to a better sample. The .05 level was accepted as significant and only those tests where statistically significant differences were found are discussed.

In the tests of intragroup subdivision of sample areas for Group F and at Tsankawi'i, no differences could be found in the general vessel populations; surface ceramic evidence cannot be used to support special use of cavates at the subdivision level as presently measured. However, consideration of only decorated ware distributions in the Tsankawi'i red tuff cavates indicates there is a significant difference in those ceramics associated with the cavates in the western half of that group (Test 1). These ceramics show a greater than expected number of service ware (e.g. decorated or white ware) jars in comparison with ceramics associated with red tuff cavates lying directly under cavates in the overlying gray tuff.

In the intragroup comparisons at Tsankawi'i (Test 2) a significant difference is noted between the eastern group and the central and western groups. Jars are higher than expected in the eastern group while bowls are more common in the central and western group; eastern and western group distributions are the strongest contributors to this pattern. Distributions of service ware only (Test 3) reinforce this observation with bowls being more common in the western and central groups with jars high in the east group. A test of ware distributions (Test 4) shows culinary (exclusively jars) more than expected in the east group which again contributes to chi-square's value in determining a significant difference in form distribution between these cavate subdivisions at Tsankawi'i. In comparing cavate ceramic distributions with those of the pueblo there is general agreement in form ratios (bowls:jars, Tsankawi'i=1:2.9; cavates=1:2.9), but decorated bowls (Test 5) are higher than expected at the cavates than in the main pueblo midden sample, where jars are more common.

No significant difference was found in form distributions between the Frijoles cavates. There is some indication, however, that form distribution differs between cavate sites and some communal pueblos. A test (Test 6) of culinary versus service ware distributions shows that culinary ware is significantly more abundant at cavate sites while service wares are relatively

Table 4. Ceramic Data and Tests.

<u>Site Form Data:*</u>		all ceramics		tests	decorated only		tests
		B	J		B	J	
Frijoles Cavates							
A		47	206		47	26	
F		119	424		119	80	
I		38	136		38	26	
M		110	553		110	70	
B-70 (C)		14	56		14	15	
B-71 (B)		21	54		21	14	
Tsankawi'i Cavates							
East		69	280	2	69	29	3
Central		40	101	2	40	17	3
West		120	285	2	120	21	3
Frijoles Cavates A-M		314	1319	7	314	202	8
Tsankawi'i Cavates		229	666		229	67	5
Tsankawi'i Pueblo		255	645		255	150	5
Tsankawi'i all		484	1311	7	484	217	8
Yapashi Pueblo		234	572	7	234	124	5,8
Intra-site form data;							
Group F	Lower	53	210		52	43	
	Remainder	66	214		66	37	
Tsankawi'i	East	83	196		83	9	1
	West	37	89		37	12	1
<u>Site Ware Data:</u>		Culinary		Decorated			
Tsankawi'i	East	251		98			4
	Central	84		57			4
	West	264		141			4
Tsankawi'i Cavates		599		296			6
Frijoles Cavates		1104		540			6
Yapashi Pueblo		448		377			6
Tsankawi'i Pueblo		495		450			6
<u>Tests:</u>							
Test #	N	χ^2	d.f.	p	C	Cells <5	
1	141	5.456	1	0.020			
2	895	10.250	2	0.006	0.106	0	
3	296	9.216	2	0.010	0.174	0	
4	895	7.929	2	0.019	0.019	0	
5	701	16.596	1	0.000			
6	4309	84.469	3	0.000	0.139	0	
7	4234	39.476	2	0.000	0.096	0	
8	1575	8.834	2	0.012	0.075	0	

*unknown forms excluded

more common at communal pueblos. Grayware, being almost entirely closed forms, it follows that closed forms are expected to be relatively more common on cavate sites in subsequent tests. Comparison of all forms between the Frijoles cavates, Yapashi, and Tsankawi'i pueblo plus cavates (Test 7) show the Yapashi and Tsankawi'i samples to be higher than expected in bowls while the Frijoles cavates are higher in jars. A contingency table test of the Tsankawi'i pueblo and cavate ceramic forms showed no significant difference, permitting their treatment as a unit in Test 7. A test considering only service wares (Test 8), however, shows that the Tsankawi'i sample is higher than expected in bowls and the Frijoles cavates are higher in jars while forms at Yapashi occur as expected. While some differences may be related to ware form trends, where glaze ware production is more often associated with closed forms and Tsankawi'i's matte-paint bichrome tradition with bowls, some differences may be related to differing emphasis in site functions involving ceramic use. However, the consistently low value for the coefficient of contingency (C on Table 4 tests) indicates a weak association between site types and the ceramic dimensions of form and ware in the present data.

The distinction in ware varieties between the two areas, Tsankawi'i and Frijoles, needs no test to illuminate. All samples show culinary ware as the majority of the ceramic assemblage. The culinary wares are distinct between the two areas with the micaceous paste Tesuque Series dominating the Tsankawi'i assemblage and sand tempered Rio Grande Series utility wares most abundant in the Frijoles cavate sites. The pattern in decorated or nonculinary ceramics is even more sharp with glaze-paint ware clearly associated with the Frijoles cavates (23% of the assemblage) and non-glaze service wares with Tsankawi'i (31% of the assemblage). While the ordering of the ware representations is clear, there is relatively more matte-paint tradition ceramics in the Frijoles sample (9%) than there is glaze-paint material in the Tsankawi'i sample (2%) (see Table 2).

Summary

As might be expected, the surface sherds inventoried at the Bandelier cavates provide date groups too broad to be sensitive for fine-grained temporal comparison or structuring during analyses of architectural variability. All architecturally sampled cavate groups overlap for some undeterminable period(s) during their occupation; it is not possible to isolate "earlier" from "later" groups of cavates either within or between sites based on the ceramic sample. This is not to say that temporal differences are not present, they are, but that the nature of the ceramic samples does not permit their spatial correlation to groups of cavates within sites nor to discretely meaningful temporal placement of cavate sites in respect to one another.

Temporal holes exist which may relate to some cavate variation, but confidence in assessing those "holes" depends on one's willingness to accept chronological evidence from very sparse, widely scattered and heavily picked over ceramic samples. Major temporal distinctions as suggested by the present sample are:

- 1) the early, apparently noncontinuous, occupation of cavate Group F,

- 2) the late early historic re-occupation of Group M.
- 3) the apparent relatively short, possibly less intense, occupation at Group I.

These distinctions generally suggest that occupation of cavates was discontinuous, at least in the Frijoles groups. The spotty evidence of historic reoccupation is clear at Groups M, B (B-70) and C (B-71). Prehistoric periodicity in occupation is also suggested by stylistic trends in some cavate groups such as the similarity of Glaze D to C rims in Group I and the apparent discontinuity in some type sequences, although this may be reading more into the sample/type tabulations than is warranted. No temporal distinctions are evident among the cavates or between the cavates and the main pueblo at Tsankawi'i.

Some functional differences are suggested between cavates and between cavates and nearby communal pueblos. A very real difference in functional emphasis at cavate sites is implied by the greater than expected number of culinary vessels. The association of closed forms with the Frijoles cavates is particularly strong where both culinary and service ware jars occur in greater than expected frequencies. However, while culinary is the majority ware at all sites examined here, it must be suspected that the elevation of grayware at cavate sites is, at least in part, a function of long collection of decorated sherds. Some difference in service ware proportions in sections of the red tuff cavates and in vessel forms between the cavate subgroups at Tsankawi'i also suggests some functional variation, as reflected by ceramics, may in fact exist within cavate groups. Perhaps this inference is stronger as a common sense assertion than is evident in the ceramic data given the host of caveates that can be mustered against the distributional integrity of cavate surface ceramics.

Economic, possibly ethnic, differences are certainly reflected in the relative proportions and types of wares in the Tsankawi'i and Frijoles samples. The mirror image, relative proportions of micaceous to sand tempered culinary, and matte-bichromes with glaze-paint ware are clear indicators of differing patterns in ceramic circulation, and, by extension, spheres of production and exchange. Nevertheless, functional patterns of ceramic use, when compared with a limited sample of community pueblos, tend to cross-cut these differences in both the Tsankawi'i and Frijoles cavate samples giving possible reality to a measurable difference in site types which may be more clearly expressed in architecture than the ceramics.

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