A PRELIMINARY ANALYSIS OF BURIAL CLUSTERS
AT THE GRASSHOPPER SITE, EAST-CENTRAL ARIZONA

by
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ABSTRACT

From 1963-66 almost 200 human burials, in seven clusters, were recovered at Grasshopper, a 14th century pueblo in east-central Arizona. The burials and associated grave offerings are the data for the study. Considerable variability was observed among the clusters. Three possible causes were considered: (1) sampling error, (2) temporal, and (3) social factors. Sampling error was dismissed because (1) the size of the burial population remains unknown, and (2) the sample used was the maximum available. Temporal factors were insignificant. Grasshopper was occupied for about a century, too short a period to explain the variation as due to change through time. Two different kinds of cemeteries were defined which could accomodate all of the original burial clusters. The first were common cemeteries, located in trash mounds peripheral to the site. The second was an area of high status burials associated with a plaza in the western unit of the site. Using analogies drawn from modern Western Pueblo society, a model was generated for the social structure of Grasshopper. Social units based on (1) kinship, (2) territoriality, (3) sodalities, and (4) stratification were considered. Evidence for the first three categories was scanty; evidence for social stratification was abundant. It suggests that status was ascribed at birth through membership in kin groupings.

CHAPTER 1

INTRODUCTION

Burial analyses are a valuable archaeological tool in that they yield knowledge of graveside ritual, provide links between burial clusters and architectural units within sites and, supplemented by the use of ethnographic analogy, may serve as yardsticks for measuring change and stability in social organization and behavior through time.

Although this paper cannot be considered exhaustive or even complete because the validity of the sample is not yet known, it might serve at least to outline some of the areas mentioned above and point to others which might repay further investigation.

Location and History

The Grasshopper site (Ariz. P:14:1) is located on the Fort Apache Indian Reservation, about 95 air miles northeast of Phoenix in east-central Arizona. The area is somewhat isolated; the nearest town is Cibecue, an Apache trading center situated about 12 miles southeast of the site. The ruins can be reached only by a dirt road, often impassable during the rainy season (July, August) (Fig. 1).

The area is hilly and moderately dissected. By virtue of elevation (6,000 feet) and flora, it lies within the Transitional Life Zone (Merriam 1890), exhibiting a fauna characterized by mule deer, bear, jack rabbit, cottontail and elk. The hilly regions support

Figure 1. Location of the Site.

ponderosa and western yellow pine with juniper, manzanita, hackberry, yucca and pinon also in evidence at lower elevations. The annual temperature range is extreme. At Lakeside, about 30 miles due east of the site but on the same latitude and at approximately the same elevation, it varies from a maximum of 105° F. (July) to a minimum of -23° F. (February). The average annual rainfall is in excess of 20 inches. The growing season is on the order of 140 days per year (Smith 1930: 377-91).

The ruin itself is a large masonry pueblo, probably multi-storied, estimated to contain over 500 rooms. Elements of the site are situated on both banks of the Salt River Draw, an intermittent wash which flows into the Salt River north of Roosevelt Lake. The major room blocks lie on the west bank of the wash (Fig. 2, end pocket). Scattered smaller ruins dot the surrounding countryside. Many are contemporaneous with Grasshopper.

The site was first recorded and tested by Hough in 1919 (Hough 1930). Floral and faunal samples were taken and a number of burials were excavated northwest of the main structures in an area that Hough considered to be a plaza. Hough's sketch map indicates a pond to the north of the ruin, created by a dam on the wash built in the early 1900's. The area has since silted up and the course of the wash has shifted to the east of the site (Fig. 2).

Field work was begun in 1963 by the University of Arizona Archaeological Field School, under the direction of Dr. Raymond Thompson. Supported by the National Science Foundation since 1964, work is

to continue for approximately ten years. At the present time (June, 1967), some 24 rooms and 197 burials have been excavated. A noteworthy feature is a Great Kiva, excavated in 1964-6. For a more detailed description of the activities of the field school, the reader is referred to Thompson and Longacre (1966).

The Period of Occupation

Tentative pottery correlations and tree-ring dates indicate a period of maximum occupancy extending from about A.D. 1275 to 1350 or perhaps 1400. The tree-ring evidence is summarized in Bannister et al. (1966: 4, 5). In all but one case, the tree-ring dates are based on incomplete specimens. Because the bark is lacking, there is no way to determine the cutting date of the trees involved and so the tree-ring series represents minimum dates only.

The occupants of the Grasshopper pueblo made much use of wood as a building material and for fuel; some hundreds of specimens (both wood and charcoal) have been collected. Unfortunately, however, they favored juniper for construction purposes. Its rings are too erratic to be suitable for dating. Other species identified by the Laboratory of Tree-Ring Research were pinon, Douglas fir, and Ponderosa pine. Pinon seems to have been much used as a fuel as most of the dated specimens were recovered from the ovens in the eastern portion of the site (Fig. 2).

The ceramic inventory was also used as a chronological device, based on the pottery type tree-ring correlations of Breternitz (1966).

The period of maximum occupancy indicated by the ceramics dated slightly later than that indicated by the tree-ring dates, to about A.D. 1275-1400. The "culture type" represented during this period is termed "Late Mogollon" (Rinaldo 1956) or "Western Pueblo" (Johnson 1965: 6). The ceramic inventory, as it pertains to the burial population, is considered in more detail below.

The Size of the Site

As mentioned above, the Grasshopper ruin has been estimated to contain from 400 to 800 rooms in the two major room blocks. These are surrounded by a number of smaller units of from 20 to 30 rooms each. It is clear that it will not be possible to excavate the entire site, as money and time will not permit it. The selection of a statistically valid sample, small enough to be excavated with the time and money available, is, therefore, of paramount importance. Because of the nature of the site (a masonry pueblo), it should be possible to map nearly all of the walls in the ruin, following them out as they are exposed on the surface. The resulting rooms so defined can then be systematically numbered from "1" to "n" giving a total population (of rooms) from which a statistically valid sample might be drawn. Using a table of random digits, a 10% sample could be selected for excavation.

This technique was employed successfully in Hill's work (1965, 1966: 42, 51) at Broken K, a Pueblo III (Jennings and Norbeck 1964: 184-7) site in the Hay Hollow Valley in east-central Arizona. Faced

with similar problems although on a smaller scale, Hill obtained a tri-modal distribution of room types, based on metrical attributes alone. The validity of the room types (ceremonial, habitational and storage) was later borne out by corresponding differences in the pollen, faunal and ceramic inventories. The potential of initial classification and selective excavation offered by this technique is to be realized in ongoing research at the Grasshopper ruin. The approach is not, unfortunately, applicable to the cemeteries at the site. The analysis of the burial population will constitute the central focus of this paper.

CHAPTER 2

THE PROBLEM

In the course of four seasons of excavation (1963-66), a number of more or less discrete cemetery areas have been defined at the Grasshopper site. Tremendous variation, both in quantity and in kinds of grave goods, is apparent in the burial inventory. Further, on the impressionistic level at least, it is quite clear that the burial offerings are distributed in a non-random fashion among the cemeteries. Chi-square tests, however, are necessary to assess the degree of probability that the distribution of artifactual materials in burial context is due to chance alone, rather than some other factor. The tests would have to be based on the maximum number of burials excavated; in short on the total available for study. The only weakness in such an exercise is the possibility that the sample is not representative of the burial population as a whole. Due to a lack of time, Chi-square tests were not included in this analysis although they will be attempted in the future.

The problem of explaining the non-random distribution of grave goods in terms of some factor or factors other than chance will take up the greater part of this paper. A number of possibilities are readily apparent. The distribution might be due to sampling error or temporal factors, for example. However, if evidence of the social structure of the site is to be recovered, and this is a primary

objective; sampling error and temporal factors must be disregarded to an extent.

The Bias

Social anthropologists of the structural-functionalist persuasion, particularly Radcliffe-Brown (1952: 11) and others, have demonstrated that societies are highly integrated, patterned behavioral systems which are in constant interaction with the natural environment and which have the ability to adapt to changes in that environment. Culture, the beliefs, ideas, sentiments supported by the members of a society, is regarded as learned and shared by the individuals who internalize it. Culture effects adjustments between man, the social-biological animal, and his external environment.

Structural-functionalist theory has, in recent years, exerted considerable influence on the work of a number of younger archaeologists, notably Deetz (1965), Binford (1962, 1965, 1966), Longacre (1964) and Hill (1965, 1966), who have paid particular attention to the patterned, structured aspects of societies and who have attempted to apply structural-functional theory to the consideration of extinct social systems in an archaeological context. I think that this viewpoint has much to recommend it, especially if archaeology is to regain its rightful place as a contributing sub-discipline of anthropology. To paraphrase Hill (1966: 9) "....we should attempt to describe as much of the internal structure and social organization of a prehistoric society as it is possible to discover." This thesis is oriented along similar lines.

The Approach

If the assumption is correct that societies are patterned phenomena, then it follows that the burial population should reflect the structure of the extinct society which it represents. The problem now is to ascertain the nature of that structure. As the data were gathered in unsystematic fashion, there will be no opportunity for erecting a system of problem oriented data collection. Indeed, it is unlikely that we will ever be able to do so, at least with the methods available today, because the burial population is an unknown quantity. Therefore, we cannot employ a preconceived model to structure data gathering; we must work within the limitations of what we have. The first objective must be the derivation of a satisfactory number of directly observable descriptive criteria; criteria which we would expect to reflect the supposed structure of the extinct society. This is a relatively simple procedure, long established in southwestern archaeology. Both qualitative (age, sex) and quantitative (the number of vessels of various types) data can be accommodated. The criteria thus selected will constitute the variables to be considered in the analysis of the structure of the burial population.

The next step entails the reduction of all burials in the site into preliminary clusters; that is, those burials occurring in geographic proximity to one another will be classified together. The clusters will be analyzed impressionistically as segregate entities and preliminary conclusions will be formulated with respect to chronology and burial customs.

Finally, the variables will be coded and fed into a computer using a simple program called a digit count, explained below. The output will assess how the preliminary clusters compare with each other with respect to the distribution of pottery types and other artifactual materials. Certain elements of the burial inventory should cluster together, yielding statistically valid entities which will, in turn, be contrasted in an attempt to evaluate the nature of the differences between them. The patterned distribution of the elements will be interpreted in terms of possible ethnographic models to formulate some type of explanatory statement for the non-random distribution which we observe. The explanatory statement will be based on inferences derived from the nature of the patterning as well as correspondences with ethnographic models.

CHAPTER 3

DESCRIPTION

For the purpose of orientation, a topographic map of the site should be referred to at the beginning of this section (Fig. 2, end pocket). On it are indicated the positions of seven burial clusters, relative to architectural units and to one another. It must be assumed at the outset that the clusters might represent nothing more than the artifacts of selective excavation. Even as such, the clusters are useful in that they divide the mass of data into units of area which more nearly approximate those utilized by the occupants of the pueblo (cemeteries); -- as opposed to grid square divisions which tend to cut up units that may be more or less homogeneous.

Each cluster is described as a unit. General patterns should emerge that will permit comparisons between clusters. The bases for such comparisons are the following variables, selected as indicators of temporal and/or functional differences: age, sex groupings, burial position, orientation and grave goods (especially ceramics). The variables will be cataloged for each group. The results of such descriptions will be represented graphically in a series of charts, included in the following section. The charts, in turn, will summarize the results and serve to highlight any differences among the burial groups.

The Burial Clusters

Cluster I

Cluster I is located in the northeast portion of the site. It is composed of 27 burials, for the most part exposed by a broadside cut into a trash mound from the west bank of the Salt River Draw (Figs. 2, 5). The trash mound formerly extended across the present draw to the road on the eastern bank. When the wash was dammed in the early 1900's, it changed course and eroded most of the eastern portion of the mound, presumably carrying away an unknown number of burials. Occasionally, bones are observed protruding from the banks of the draw (Burials 8, 9, 19).

The stratigraphy is very consistent in the area of Cluster I. Essentially four layers are present. The uppermost is a sterile, red alluvial silt. It has accumulated to an average depth of 15 cm., probably as a result of seasonal flooding. As there are no artifacts in it, the silt was probably deposited since the occupation of the site. In all cases, it overlies a layer of dark grey trash.

The second layer varies considerably in thickness but averages about 30 cm. overall. It is rich in organic material, with numerous charcoal flecks and small animal bones characteristically present. Large numbers of sherds, broken points and other cultural debris are also to be noted. A similar trash layer was examined by Hough in 1919 (Hough 1930: 11, 12). A partial faunal list compiled for that report included mule deer, lynx, bear, wolf, jackrabbit and dog. Without exception, the burials appear to have been interred through this trash

layer, presumably because it was easier to dig through trash than through an undisturbed soil.

The third and fourth layers are, respectively, of red and grey clays. The red layer averages 50 cm. in thickness, the grey clay is probably that thick and more. No attempt was made in the stratigraphic test to go deeper than the grey layer. Both layers are sterile except where penetrated by the fill of burial pits. A typical cross-section is included (Fig. 3).

The burials which make up Cluster I are listed individually below (Table 2). Their positions relative to one another may be seen in Figure 5. The table immediately following (Table 1) is an explanation of symbols and abbreviations employed throughout this paper. In certain cases, additions to the table may be included in a key with a particular figure or table. This is particularly true of maps.

As Table 2 indicates, age and sex do not appear to have been significant factors in determining who was to be buried in Cluster I. Seven males and 11 females were positively identified; the remainder were immature or incomplete specimens and are not able to be sexed. The probable ages range from neonatal (Burial 44) to "old" adult (Burial 39). Orientation is more consistently east-west than any other direction. Twenty burials were arranged in this way, 16 facing east, four facing west. There are 5 north-south burials, all facing north. In two cases, the orientation was not able to be determined (Burial 11, 50). Burial position is more obviously standardized. Twenty-two skeletons were extended and supine, two were disturbed

Figure 3. Cluster I - A Stratigraphic Cross-Section. The strata shown are consistent throughout the area of Cluster I but vary in thickness, only approximating the dimensions given above. The contact between the grey trash and the red clay is markedly irregular.

Figure 4. A typical Cluster I burial. Burial 39, an old adult male, interred in the extended supine position with no burial offerings.

Table 1. A List of Abbreviations Used in the Text

<u>Abbreviations</u>	<u>Explanation</u>
B	Burial
No.	Burial Number
Orientation	The axis along which the skeleton is aligned
E/W	East-West
N/S	North-South
Facing	The Cardinal point toward which the skull is oriented
(n)	north
(s)	south
(e)	east
(w)	west
(?)	undeterminable
Position	How the skeleton is placed in the grave
E	Extended
F	Flexed
S	Supine
SF	Semi-flexed
R	Lying on the right side
L	Lying on the left side
D	Disturbed
Age	The age of the skeleton at death
A	Adult
Ades.	Adolescent
F	Foetal
NN	Neo-natal
P	Plus
None	Refers to the presence or absence of non-ceramic grave goods
Present, Absent	Refers to the presence or absence of pottery
1796-1800	Refers, on maps, to the elevations of contour lines above mean sea level, expressed in meters
Mag.	Magnetic North (on maps)
B/C	Burial Cluster (I-VII)
Cr.	Cremation
GK	Great Kiva
R	Room
T, TT	Test Trench
<u>Ceramics</u>	
B/W	Black-on-white
P.	Polychrome
B/R	Black-on-red
W/R	White-on-red
Corr.	Corrugated

Table 2. Burial List - Cluster I

<u>No.</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
1	F	c.21	E/W (e)	ES	Absent - None
2	M	21-25	E/W (e)	ES	Present - None
3	F	30-35	E/W (e)	ES	Present - None
4	?	3-5	N/S (n)	ES	Present - None
8	M	A	E/W (e)	ES	Absent - None
9	F	A	E/W (w)	ES	Absent - None
11	?	1-2	? (?)	D	Absent - None
12	?	2-3	E/W (w)	SFS	Present - Shell Turquoise beads with Head
13	?	5-6	E/W (e)	ES	Absent - None
14	M	A	E/W (e)	ES	Present - None
15	F	A	E/W (w)	ES	Absent - None
16	?	14P	E/W (e)	D	Absent - Polishing Stone (?), 1 piece of cotton string (over ribs)
17	M	16-18	E/W (w)	ES	Present - 1 Projectile Point (?-in fill)
19	F(?)	A	E/W (e)	ES	Absent - None
34	?	1-2	N/S (n)	ES(?)	Present - None
35	F	A	N/W (n)	SFS	Absent - None
36	M	c.19	E/W (e)	ES	Present - 1 Bone Awl (at top of skull), 1 Projectile Point (over knee)
(B-36 was covered by stone slabs)					
37	?	1-2	N/S (n)	ES	Present - 1 Stone Bead at Neck
38	F	c.30	E/W (e)	ES	See B-34
39	M	40P	E/W (e)	ES	Absent - None
40	F	A	E/W (e)	ES	Present - None
41	F	A	N/S (n)	ES	Present - None
42	M	c.25	E/W (e)	ES	Present - 1 Shell Pendant (in public area)
43	F	c.18	E/W (e)	ES	Present - None
44	?	NN	E/W (e)	ES	Absent - None
50	?	1-2P	? (?)	D	Absent - None
64	F	A	E/W (e)	FS	Present - None

(Burial 16, 50), two were semi-flexed (Burial 12, 35) and one was fully flexed (Burial 64). Extended burials are the rule rather than the exception at Grasshopper (Fig. 4).

The grave goods cover a wide range of objects, from turquoise beads and projectile points to pottery. Pottery is by far the most common offering. Bowls are more frequent than jars, by a ratio of 3:1, and painted pottery (including large sherds) outnumber plainwares 18 to eight. A number of types are represented but Pinto and Gily polychromes are most commonly found. Four examples of Cibecue Polychrome occur with Burial 41, a female. No differences based on sex were observed in the grave offerings, nor were the burials of women less well appointed than those of the men. Small children, presumably low on the status scale, also received their quota of burial offerings. Some burials, representing both sexes and all age groups, were devoid of any offerings. No fixed pattern was observed in placing the offerings around the deceased, although there was a tendency to group the objects around the head or at the feet.

Cluster II

Cluster II is located in the southeast part of the site, on the western bank of the draw south of Cluster I. It is a small cluster, comprising only six burials. All were found within the walls of Room 3, in a brown trash layer overlying the red clay of Figure 3. The depth of interment below the floor varies between 23 and 35 cm. The burials which make up Cluster II are listed individually below.

Table 3. Burial List - Cluster II

<u>No.</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
22	?	2-4	E/W (w)	ES	Absent - None
23	?	B-1	E/W (w)	FS	Present - None
24	?	2-4	NW/SE (se)	ESL	Absent - None
25	?	PN	? (?)	D	Absent - None
31	?	1-3	E/W (e)	FS	Absent - None
32	?	6-8	E/W (e)	ESD	Present - None
(Disturbed by B-31)					

Several notable consistencies are obvious in Table 3. All of the burials are infants or young children; the estimated ages range from prenatal (Burial 25) to about seven years. As before, orientation is commonly east-west but facing follows no such fixed pattern. All burials are supine but two (Burials 23, 31) are slightly flexed, possibly as a result of ground pressure. Sex is, of course, undeterminable in all cases. Grave goods are relatively scarce with four burials (Burials 22, 24, 25 and 31) lacking associated objects altogether. Of the vessels recovered from Burial 23 and 32, two were small plainware jars, one was a corrugated jar and one was a fragment of a Grasshopper Black-on-red bowl. The three former vessels are utility wares, the last was simply a sherd. Taken as a group, the burial offerings are scarcely impressive and might indicate individuals of low status. The fact that the burials are all within the confines of Room 3 and are all at approximately the same depth below the floor make it appear likely that they were interred through the floor, and are thus contemporaneous with the occupation of the room.

Unfortunately, no pit outlines were observed that would verify this suggestion. However, a test trench along the outside of the eastern wall of the room failed to uncover any burials. While hardly conclusive, it does indicate that the burials are in a direct relationship with the structure. A plan of Cluster II appears in Figure 6.

Cluster III

The third grouping, Cluster III, is located in the southeastern portion of the site about 100 meters northwest of Cluster II. The 12 burials came to light during the 1963-4 seasons as a result of subfloor testing in a complex of rooms (Rooms 2, 4, 8, 10, and 15) located in grid square F-3 (Figs. 2, 6). The stratigraphy is similar to that of the first two clusters except that the red alluvial silt is lacking. If it existed at all prior to the occupation of the site, it was probably removed in house construction. The burials themselves lie from 15 to 50 cm. below the floor levels of the F-3 room complex. They are intruded into the familiar trash layer and, in some cases, may rest on the contact between the reddish-brown trash and the red clay. I feel that the stratigraphy is essentially uniform throughout the eastern half of the site, any differences being quantitative rather than qualitative. The trash layer is always present, although it may vary considerably in color and thickness. Moreover, it always overlies the red clay layer which is sterile, except where cut into by burial pits and subsequently refilled with trash. The burial list for Cluster III appears in Table 4.

Figure 6. Cluster II - A Plan View. The sub-floor excavation of Room 3 had to be curtailed because of lack of time.

Table 4. Burial List - Cluster III

<u>No.</u>	<u>Provenience</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
5	Outside R 2	F	30-35	E/W (e)	ES	Absent - none, occipital deformation
18	R 4	?	3-5	N/S (n)	ESD	Absent - stone ax in fill (?), overlain by stone slabs
20	R 2	F	A	E/W (e)	ES	Absent - none
21	R 2	?	7-9	NW/SE (se)	ES	Absent - none
28	R 2	?	B-1	E/W (e)	FS	Absent - none
29	R 8	?	B-2	N/S (n)	ES	Absent - none
30	R 2	F	40P	E/W (w)	SFL	Absent - 1 shell pendant over pubic region, 1 handstone over lower chest
33	R 2 (disturbed by B-30) ?		1-2	E/W (w)	ESD	Absent - none
54	R 10	?	c.6	N/S (s)	ES	Absent - 1 Abalone shell pendant at neck
65	R 15	M	40P	N/S (s)	ES	Present - none
66	R 15 (sub-slab burial)	?	B-2	E/W (e)	ES	Absent - none
67	R 15	?	5-7	E/W (e)	ES	Absent - none

Cluster III presents certain problems. A wide age range is represented in the sample but by far the majority (75%) of the burials are infants or young children. Temporally diagnostic pottery is entirely lacking and, viewed as a whole, Cluster III is not well endowed with ceremonial objects. It might be significant that most of the artifacts are included in two adult burials (Burials 30 and 65), whereas the infants are generally not so well appointed. Orientation is almost evenly divided between north-south and east-west and between infants and adults. It probably is not a significant factor. As before, the extended supine position is favored for both adults and children, although exceptions do occur (Burials 28 and 30). One case of occipital deformation is noted (Burial 5). Occipital deformation was also recorded by Hough in 1919 (1930). The burials are found from 15 to 50 cm. below the floor levels.

It would seem likely that Cluster III represents essentially two time periods. The trash layer underlies the floors of the F-3 room complex and is, therefore, stratigraphically older. The interment of the adults might be equated with the deposition of this layer, which is possibly a thinned out extension of the trash mound of Cluster I, or another similar mound south of Cluster I.

Sub-floor burial is widespread in the Southwest (Haury 1934: 63, 143 and others), and it is probable that the majority, at least, of the infants were interred through the floors of the F-3 room complex, later in time than the adult burials. This is, of course, purely speculative as no pit outlines were recovered in the house floors

which could verify sub-floor burial custom. However, certain alignments conforming to architectural features do occur that suggest interment through the floor. These are apparent in Figure 7. Without the aid of a good pottery sample (for dating purposes) and lacking associated tree-ring dates, it is impossible to validate such a suggestion with present knowledge.

Cluster IV

Cluster IV is another small grouping associated, as was Cluster II, with a single structure. It is composed of six burials, all found within the precincts of Room 5, located about ten meters northeast of Cluster III. The burials were found from 17 to 55 cm. below the floor.

Table 5. Burial List - Cluster IV

<u>No.</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
57	F	A	N/S (n)	ES	Present - Pit cut into sterile, filled with trash
58	?	7-9	E/W (e)	FLD	Present - Pit as above
59	?	B-1	E/W (e)	ED	Absent - Bones beneath metate bin
60	?	B-2	N/S (n)	ESD	Absent - none
61	?	B-1	N/S (n)	D	Absent - 1 Steatite pendant in bone scatter, pit cut entirely into sterile, pre-trash, room
62	M	40P	E/W (e)	ES	Absent - none

In Cluster IV, sex, age, orientation and position do not follow any regular patterns. The occurrence of a Grasshopper Polychrome bowl

associated with Burial 58, an unusual flexed skeleton, should be noted as a possible time indicator (Fig. 8). The stratigraphy, however, is of considerable interest. A cross-section of the room, compressed in depth and indicating only the pertinent features, appears in Figure 9.

As Figure 9 will indicate, there is some evidence for the occupation of the area prior to the deposition of the trash layer and the construction of Room 5. Burial 61 definitely predates the trash layer (and therefore, the room) as an uncommon burial pit was recovered, the top of which extends only to the contact between the sterile clay and the trash layer, and not beyond. The interment was made from an earlier surface, the existence of which is further validated by the presence of a sub-floor hearth (Fig. 9) some 40 cm. below the floor and resting on the red clay surface.

Burial 61 is the only example in Cluster IV which certainly antedates the construction of Room 5. A number of pits penetrate the red clay to a shallow depth (a few centimeters) but are almost certainly associated with the trash layer or the later occupancy of Room 5. Burial 59 is probably contemporaneous with the occupation of Room 5 as it is suspiciously related to the metate bin (Figs. 9, 10). When viewing the remains "in situ," I got the impression that the body had been jammed into an already existing hole, hence the peculiarities in position. Of the remainder of the burials, however, one can say little. They certainly do not predate the trash layer but whether they antedate Room 5 or were interred through the floor of Room 5 is a moot question.

Figure 8. Cluster IV - An Unusual Flexed Burial.

Figure 9. Cluster IV - A Stratigraphic Cross-Section. Note the presence of features (hearth, burial pit) associated with the original ground surface, indicated by the slanted lines.

Figure 10. Cluster IV - A Plan View. Note the position of Burial 59, jammed into metate in pit.

The sub-floor trash yielded a quantity of sherds but, except in the case of Burial 58, no diagnostic pottery was definitely associated with the burials.

Unclassified Burials

With Cluster IV, the description and listing of burial groups for the eastern half of the site is complete. Three burials could not be classified as belonging to any single cluster as they were discovered by trenching. Two of them, Burials 26 and 27, underlie a row of masonry pit ovens some 20 meters south of Cluster I. Burial 26 is an adult male, between 30 and 40 years old at death, oriented east-west and facing east. He was buried in the customary extended supine position, accompanied by a shell pendant found above the pelvis and a redware bowl lying along the left leg. Burial 27 was a child of about six years of age, of undetermined sex. The bones were oriented north-south, facing south. The body was semi-flexed lying on the right side. No artifacts accompanied the remains. Both burials were interred in the familiar trash layer, here probably an extension of the mound containing Cluster I.

Burial 6 is the third burial, a female adult oriented north-south, facing south and buried in the customary extended supine position. The skeleton was uncovered during the excavation of Test Trench 9, located about ten meters north of Room 5. A Gila Polychrome bowl was recorded as lying along the right femur. No other artifacts were found. Burials 6, 26 and 27 will be designated Cluster 0 (Fig. 11).

Burial 6

Burial 26

Figure 11. Two Unclassified Burials. Burial 6, from TT 9, is an adult female oriented north-south facing south. Burial 26, an adult male, was interred prior to the construction of the pit ovens shown to the north and south of the skeleton.

The burials described on the following pages are all to be found west of the dammed wash in the western part of the site (Fig. 2). The evidence thus far seems to indicate that both banks of the wash were inhabited more or less contemporaneously and so little evidence for temporal difference can be expected in the clusters listed below.

Cluster V

Cluster V is a large grouping uncovered as a result of the excavation of the Great Kiva and the rooms surrounding it. Essentially two time periods are represented by the sample. The earlier consists of burials interred through a plaza underlying and extending west from the Great Kiva and surrounding structures. The later examples are intrusive through the floors of the buildings mentioned above. In the majority of cases, it is rather difficult to assign a given burial to one or the other period; however, some clear pit outlines and feature relationships were recovered and, wherever possible, such a designation will be made.

The stratigraphy of the area is still in the process of being worked out and a detailed and accurate description is not available at this time. However, observations taken from the burial sheets themselves and information gained by interviewing field workers who excavated the kiva are included in Figure 12).

Four strata seem to be present. The uppermost is a reddish silt with a high organic content, including a large amount of cultural debris. Primarily trash, the layer lies directly beneath the kiva floor which is of a compacted brown earth up to 15 cm. in thickness.

Figure 12. Cluster V - A Tentative Stratigraphic Cross Section. The plaza surface is defined primarily by the presence of a number of features (hearths, pits) all more or less on a single plane. Nothing approximating a hard packed floor or "walking surface" was uncovered.

The silty layer is most irregular (Fig. 12), varying from a few centimeters to about 30 centimeters in depth. Underlying it are features (hearths, pits) and a very irregular walking surface associated with the earlier plaza. Beneath that is a thick layer of grey compacted clays which intersect the plaza "surface" and grade into the red silt layer above it, extending in places to just below the floor levels of the kiva and surrounding structures. A considerable proportion of the burial pits in the kiva extend down into this grey layer and are filled with grey clay from it. The resulting pit outlines are clearly discernable in the reddish clay underlying and extending up to the kiva floor. Beneath the grey layer is a more or less sterile reddish silt, extending down to bedrock (red sandstone ?). As far as could be determined, no excavations in the kiva complex had penetrated to the base of the silt layer so it is impossible to say what lies underneath it. The nature of the bedrock is based entirely upon stratigraphic tests south and west of the kiva proper and from the test pit shown in Figure 3. However, the silt is noted in the kiva itself at the bottom of postholes at a depth of over 120 cm.

The bedrock in the area is commonly either red sandstone or limestone. Red sandstone is noted north and west of the kiva in Test Trenches 32 and 34. It should be observed that Figure 12 is essentially the same section as Figure 3 except for the absence of the lowest grey clay layer which may, in fact, be present at a depth to which the excavations have not yet penetrated. Comparable stratigraphy probably obtains for the valley itself. Trenching to the south of the site has shown this to be the case.

Cluster V contained 120 human burials, the details of which are listed in Table 6.

The burials of Cluster V show the usual wide age and sex range; the extended position is favored as before. Only 12 burials (Burials 52, 56, 63, 68, 103, 130, 136, 154, 158, 160, 164 and 171) could definitely be classified as having been interred prior to the construction of the units under which they lie, although certainly many others must fall into this category as well. Seventy-nine of the burials, or about 66%, are immature specimens and, in several instances (Burials 45, 46, 47 and 177) are definitely contemporaneous with the structures in which they were found. One of these, Burial 47, was an infant of about one year whose body was deposited in a slab-lined storage pit or posthole after the use of that feature had been discontinued (Room 12). Probably the majority of the infant burials were interred in a similar fashion, through room floors or through the floor of the kiva itself.

The percentage of immature specimens in Cluster V is unusually high in comparison with the other (large) clusters. No explanation for this phenomenon can be forwarded at this time, other than a high infant mortality rate not apparent in the other samples. It will be noted too that among the adult burials there are exactly twice as many females (26) as there are males (13). The probability that such a distribution is due to chance alone is almost nil (.001%); it may be more plausibly explained by a consideration of possible models for the social structure of the Grasshopper pueblo or by sampling error.

Table 6. Burial List - Cluster V

<u>No.</u>	<u>Provenience</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
7	TT 14-B-7 & B-10, and their grave goods are mixed	M	A	E/W (e)	ESD	Present - 1 bone awl, 1 bone needle behind skull, 1 bone awl under skull, 2 quartz crystals under back, stone beads with bones.
10	TT 14	?	A	E/W (w)	FSD	See B-7
45	R 12	?	4-5	E/W (e)	ESD	Absent - none
46	R 12	?	B-1	E/W (e)	ESD	Absent - none
47	R 12, B in slab lined pit originally posthole or storage box	?	B-1	E/W (e)	ES	Absent - none
48	R 12	?	1-2	N/S (n)	ES	Present - none
49	R 12	?	1-2	N/S (n)	ESD	Absent - none
51	R 12 - Secondary burial with occipital deformation	M	20-25	? (?)	D	Absent - none
52	R 12 - Interred prior to construction of R 12	F	A	E/W (e)	ES	Present - none
53	R 12 - sub-slab	?	PN	N/S (n)	ES	Present - none
55	R 12	?	NN	E/W (e)	ES	Absent - none
56	R 12 - Interred prior to construction of R 12; sub-slab	F	17-20	E/W (e)	ES	Present - 1 mano behind skull, 1 bone ring on 3rd finger, left hand; 1 projectile point under burial

Table 6 -- continued

<u>No.</u>	<u>Provenience</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
63	R 12 - Interred prior to the construction of R 12	F(?)	A	E/W (e)	ES	Present - 2 bone rings on 1st, 3rd fingers, left hand; 1 shell bracelet left wrist, 1 shell necklace at neck, 1 projectile point under back
68	Great Kiva	F	A	E/W (e)	ES	Absent - none
69	Great Kiva	?	2-4	E/W (e)	ES	Present - 55 <u>Olivella</u> shell beads, 4 <u>Conus</u> shell pendants, c.1000 small stone beads near right wrist; hematite fragments <u>Glycimeris</u> pendants in bone scatter
70	Great Kiva Pit outline is clearly discernible	?	c.3	E/W (w)	ES	Present - 2 turquoise ear bobs, 9 <u>Conus</u> pendants over right tibia, 250 <u>Olivella</u> shell beads between ankles, 1 turquoise bead, 1 siltstone bead over lower legs
71	Great Kiva Rectangular pit outline present	?	B-4	E/W (e)	ESD	Present - 7 shell beads over left hand
72	Great Kiva	?	c.5	E/W (e)	ES	Present - none
73	Great Kiva - pit outline present	F(?)	c.17	E/W (e)	ES	Present - none
74	Great Kiva - pit outline present	?	B-2	? (?)	D	Present - 6 shell beads scattered among bones
75	Great Kiva	F	A	? (?)	D	Absent - none
76	Great Kiva	M	35P	E/W (e)	ES	Present - 10 fine projectile points next to left shoulder

Table 6 -- continued

<u>No.</u>	<u>Provenience</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
77	Great Kiva	F	A	E/W (e)	ES	Present - 1 bracelet of 13 bone rings on left radius, 6850 stone beads on right wrist, 7660 stone beads on left wrist, 1 bone ring on 3rd finger, left hand
78	Great Kiva	?	8-10	E/W (e)	ES	Present - none
86	R 20	?	B-1	E/W (w)	ESD	Absent - none
95	Great Kiva	?	B-1	E/W (w)	ES	Present - none
96	R 20 - Clear pit outline, infant wedged into pit that was too small	?	B-2	E/W (e)	ES	Absent - none
97	Great Kiva	?	B-2	N/S (n)	ESD	Absent - none
100	Great Kiva	?	B-1	N/S (n)	ES	Present - none
102	Great Kiva	?	NN	E/W (e)	ESD	Present - none
103	R 18 - Interred prior to construction of R 18	?	c.4	E/W (e)	SFD	Present - none
104		?	PN	? (?)	D	Absent - none
105	Great Kiva B-104, 5.	?	PN	? (?)	D	Absent - none
106	Great Kiva	?	B-1	N/S (n)	ES	Present - none
107	Great Kiva	?	c.5	E/W (e)	ES	Present - 2 turquoise earrings, 2 bone rings, 1 carved piece of stone, 5 shell bracelets, left hand; 2 bead necklaces
110	R 20 - Clear pit outline overlying unexcavated burial containing manos, Pinto Polychrome sherds	?	4-6	E/W (e)	ES	Present - none

Table 6 -- continued

<u>No.</u>	<u>Provenience</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
111	Great Kiva clear pit out- line	?	B-4	NE/SW (sw)	ES	Present - 1 bead anklet, 1 stone bead bracelet on left wrist, 1 turquoise earring, left of skull
112	Great Kiva - pit outline	F	A	E/W (e)	ES	Present - none
113	R 18	?	NN	E/W (e)	ESD	Absent - none
115	R 20 - dis- turbed by B-116	F	A	? (?)	D	Absent - none (?)
116	R 20	F	40P	E/W (e)	ES	Present - none
117	R 20	?	c.13	E/W (e)	ES	Absent - red stone beads (argillite?), <u>Olivella</u> shell beads over right wrist, gray stone beads, turquoise bead and pendant over left wrist.
118	R 22	?	A	? (?)	D	Absent - none
119	Great Kiva	?	NN	? (?)	D	Absent - none
121	R 19	?	Infant	N/S (s)	ESD	Absent - none
122	Great Kiva	?	Child	N/S (n)	SF	Absent - none
123	Great Kiva	?	Infant	?	D	Absent - none
124	R 22	?	Child	E/W (e)	ES	Absent - none
125	R 19	?	Child	E/W (w)	ES	Present - none
126	R 21	?	Infant	?	D	Absent - none
127	R 23	?	c.13	?	D	Absent - none
128	Great Kiva	?	Adesc.	E/W (e)	ESD	Absent - none, pit outline
129	Great Kiva	M	Adult	E/W (e)	ES	Present - 1 chipped shale knife, 1 animal scapula, 3 projectile points, 2 turquoise earbobs, pit outline

Table 6 -- continued

<u>No.</u>	<u>Provenience</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
130	R 22	?	Child	N/S (s)	ES	Absent - 1 macaw over the chest, pit outline
131	R 21	?	Infant	?	D	Absent - 1 shell pendant, 1 projectile point
132	Great Kiva	?	Adesc.	E/W (w)	ES	Present - none, pit outline
133	R 22	F	Adult	N/S (s)	ES	Absent - 1 chert scraper, pit outline
134	R 22	?	Child	E/W (e)	ES	Present - none, pit outline
135	R 21	?	Child	?	D	Absent - none
136	Great Kiva	?	Child	E/W (e)	ESD	Present - none, pit outline
137	R 19	?	Infant	E/W (e)	ES	Absent - 4 turquoise earbobs, pit outline
138	R 21	?	Infant	E/W (e)	SFD	Absent - none
139	R 21	?	Infant	N/S (n)	SFD	Absent - none
140	Great Kiva	M	Adult	E/W (e)	ES	Present - 4 bone awls, 1 turquoise mosaic (101 pieces), 1 bone "wand," 1 bone "rasp," 128 projectile points, 2 chert knives, 1 chert flake, 8 <u>Glycimeris</u> shell bracelets, 222 shell beads, 2 shell discs, 2 mortars containing pigment, 2 marine bivalve shells 7 turquoise earbobs, pit outline
141	R 22	?	Adesc.	E/W (e)	ES	Present - 4 bone awls, 2 shell rings, 1 animal mandible, 1 turquoise necklace (beads), 1 bracelet (beads), 1 stone slab over skull
142	Great Kiva	F	Adult	E/W (e)	ES	Present - 2 chert hammerstones
143	Great Kiva	F	Adult	N/S (n)	ES	Present - pit outline
144	Great Kiva	F	Adult	N/S (n)	ES	Present - pit outline
145	Great Kiva	?	Child	N/S (s)	ESD	Present - 1 Abalone shell, 4 shell bracelets (<u>Glycimeris</u>)

Table 6 -- continued

<u>No.</u>	<u>Provenience</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
146	Great Kiva	?	Infant	?	D	Absent - none
147	R 19	?	Child	E/W (e)	ES	Present - bark mat over pit, matting under bones, 2 turquoise earbobs, pit outline
148	R 21	?	Infant	E/W (e)	ES	Absent - none
149	R 19	?	Infant	E/W (e)	ESD	Present - pit outline
150	R 22	F	Adult	N/S (n)	ES	Absent - 1 bone needle, 1 bone awl, 1 hematite fragment, 2 manos, pit outline
151	R 21	?	Infant	E/W (e)	ESD	Absent - none
152	Great Kiva	M	Adult	E/W (w)	ES	Present - occipital deformation noted, pit outline
153	Great Kiva	?	Adesc.	E/W (e)	ES	Present - 3 bone rings, 1 bracelet (stone beads), 1 turquoise pendant, 1 anklet (of <u>Olivella</u> shells)
154	R 19	?	Infant	E/W (e)	ES	Present - pit outline
155	R 21	?	Child	?	D	Absent - none
156	R 19	?	Infant	E/W (w)	ES	Present - stone slab over body
157	R 21	?	Child	E/W (e)	ES	Present - pit outline
158	R 21	M	Adult	N/S (n)	ES	Present - 1 bone awl, 18 <u>Conus</u> shell "tinklers," pigments (azurite, malachite, charcoal), 1 quartz crystal, mat over skeleton
159	R 22	?	Infant	E/W (e)	ESD	Absent - none
160	Great Kiva	?	Infant	N/S (n)	ES	Present - pit outline
161	R 19	?	Infant	E/W (e)	ES	Present - pit outline
162	R 22	F	Adult	E/W (e)	ESD	Absent - 1 shale scraper, 3 shell beads

Table 6 -- continued

<u>No.</u>	<u>Provenience</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
163	Great Kiva	M	Adult	E/W (e)	ES	Present - 1 polished agate cylinder, 2 projectile points, 1 piece natural limestone, 1 concretion, 1 clay/ochre ball, 1 quartzite nodule, 1 fossil coral, 1 schist awl, 4 bone awls, 2 quartzite manos pit outline
164	Great Kiva	F	Adult	E/W (e)	ES	Present - 2 turquoise earbobs, 2 quartz crystals, 1 animal mandible, 1 shell bracelet (<u>Glycymeris</u>), pit outline.
165	Great Kiva	?	Infant	E/W (e)	SFD	Absent - none
167	R 21	?	Child	N/S (s)	ES	Present - matting, pit outline
168	M 21	M	Adult	N/S (n)	SF	Present - pit outline
169	R 21	?	Infant	N/S (n)	ESD	Absent - pit outline
170	R 21	?	Infant	E/W (e)	ES	Present - none
171	Great Kiva	M	Adult	E/W (w)	ESD	Absent - none
172	R 21	?	Child	E/W (w)	SFL	Absent - none
173	Great Kiva	?	Infant	E/W (e)	ESD	Absent - none
174	Great Kiva	F	Adult	E/W (e)	SFL	Present - 1 projectile point, 1 incised bone fragment, slab-lined pit
175	Great Kiva	F	Adult	E/W (e)	ES	Present - pit covered with wooden beams, 1 quartz crystal, pit outline
176	Great Kiva	?	Infant	E/W (e)	SFD	Absent - none
177	Great Kiva	?	Child	?	D	Absent - none
178	Great Kiva	F	Adult	E/W (e)	ESD	Absent - pit outline
179	Great Kiva	?	Child	E/W (w)	ESD	Present - none

Table 6 -- continued

<u>No.</u>	<u>Provenience</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
180	Missing					
181	Great Kiva	?	Child	N/S (s)	ESD	Present - 1 <u>Glycimeris</u> shell bracelet, 1 <u>Olivella</u> shell bracelet (beads), 1 <u>Glycimeris</u> shell pendant (a frog with a mosaic covering), 1 turquoise tablet (pendant blank?), pit covered with wooden beams, pit outline
182	Great Kiva	?	Child	E/W (e)	ES	Absent - pit outline
183	Great Kiva	?	Infant	E/W (e)	ES	Present - 1 quartz crystal, pit outline
184	Great Kiva	F	Adult	E/W (e)	ES	Present - matting over body, 1 bone ring, hematite stains on bones, 6 <u>Glycimeris</u> shell bracelets, pit outline
185	Great Kiva	?	Child	E/W (w)	ESD	Absent - none
186	Great Kiva	?	Child	N/S (s)	ES	Present - 1 turquoise earbob, 1 quartz crystal, 1 turquoise bracelet (6 pieces), pit covered by wooden beams, pit outline
187	Great Kiva	F	Adult	N/S (s)	ES	Present - pigment (azurite), 1 turquoise bracelet (6 pieces), 1 fossil bivalve shell
188	Great Kiva	F	Adult	E/W (e)	ES	Present - turquoise chip earring (on perishable ground), pit outline
189	Great Kiva	?	Child	N/S (n)	ES	Present - pit covered with wooden beams, pit outline
190	Great Kiva	M	Adult	E/W (e)	ES	Present - pit covered with wooden beams, 5 projectile points, 2 <u>Glycimeris</u> shell bracelets
191	Great Kiva	?	Adesc.	E/W (w)	SFS	Absent - none

Table 6 -- continued

<u>No.</u>	<u>Provenience</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
192	Great Kiva	?	Infant	E/W (w)	SFLD	Absent - none
193	Great Kiva	?	Child	E/W (e)	ES	Absent - none
194	Great Kiva	F	Adult	E/W (e)	ESD	Absent - pit outline, 1 cache containing: 1 stone disc (Gabbro), 1 Crinoid stem (fossil), 3 bird claws, 1 quartz crystal, 1 obsidian pendant
195	Great Kiva	F	Adult	E/W (w)	ES	Present - 3 quartz crystals, pit outline
196	Great Kiva	M	Adult	E/W (e)	ES	Present - pit outline
197	Great Kiva	F	Adult	E/W (e)	ES	Present - pit outline
Cr.1	Great Kiva	M	Adult			Present - bones in pit (no container), 1 projectile point, 1 bone awl fragment, pit outline

With regard to temporal considerations, a problem arises when attempting to classify a burial in one or the other period (plaza or sub-floor) because, even when aided by a clearly defined pit outline, it is impossible to determine the level from which that pit was excavated. This is because the pit outlines (oval and rectangular) become clearly defined only when cleared down to the uppermost grey clay layer. Thus, they cannot be detected either at kiva floor level or in the plaza walking surface (into one of which they are intrusive) except when associated with features correlative to either one or the other period of construction. This is unfortunate as the recovery of the tops of the pit outlines would help greatly in such a distributional study as this where superpositioning of burials representative of two time periods is involved. The outlines have been obliterated by traffic on the old walking surfaces (Fig. 13).

The grave goods cover the entire spectrum from none at all to very rich burial accoutrements. However, 17 burials (Burials 56, 63, 69, 70, 76, 77, 116, 140, 141, 158, 163, 164, 174, 175, 184, 186, 190) are rather conspicuously better endowed than the rest. Twelve of these (Burials 69, 70, 76, 77, 140, 163, 164, 174, 175, 184, 186, 190) were found beneath the floor of the Great Kiva. Three (Burials 69, 70, 186) were young children and nine were adults; four males (Burials 76, 140, 163 and 190) and five females (Burials 77, 164, 174, 175 and 184). There is little that is consistent about them beyond a wealth of burial goods and a preference for the extended supine position, found in all but one (Burial 174) instance.

Figure 13. Cluster V - A Case of Ambiguous Association. Burial 168, the unusual semiflexed burial of an old man, probably associated with the plaza occupation but found below the floor of Room 21. Note the stone slab feature to the reader's left, abutting against the skeleton. This object, of undetermined function, was associated with the plaza surface.

Room 12 yielded two more "important personages," both adult females (Burials 56 and 63). Room 20 contained the remains of an old woman (Burial 116), similarly well appointed. Room 21 yielded the skeleton of an adult male (Burial 158), accompanied by 18 Conus shell "tinklers," quantities of pigment and six pots. Room 22 contained the remains of an adolescent (Burial 141) with comparable burial furniture. All were interred in the extended supine position and were oriented east-west except for Burial 158, which was oriented north-south, facing north.

In a qualitative sense, the Cluster V ceramic inventory is not exceptional. Except for its quantity (Burial 140 alone yielded 36 vessels), it fits into the emerging pattern of Grasshopper funeral ceramics. As elsewhere, vessels were concentrated at the head and at the feet. The common polychromes are of the Cibecue, Pinto/Gila, Four-Mile and Cedar Creek types. Obliterated corrugated wares are common. Pinedale Black-on-white, Black-on-red and the more unusual Salado White-on-red are also represented in the sample. All of these wares fall within the period postulated for the maximum occupancy of the pueblo, about A.D. 1250-1350 plus (Breternitz 1966).

In addition to the ceramic material, a massive quantity of bone (awls, needles and rings), stone (manos, projectile points and beads) and shell (beads and pendants) was taken from the burials of Cluster V. The 17 "important personages" mentioned above are particularly well endowed with these "extras." Burial 77 alone contained over 14,000 stone beads, originally strung as bracelets. An armlet

of 13 bone rings was also found "in situ" on the left humerus of that burial. Stone (bead) bracelets are also noted on Burials 10, 69, 117, 141 and 153. Burial 140 yielded 128 projectile points in addition to a number of other ornamental items and a large quantity of pottery vessels (Fig. 14). Burial 163, an adult male, also contains a number of unusual objects such as concretions, fossils, agate cylinder, suggestive of possible shamanistic activities by the deceased.

Marine shell was also used extensively for ornamentation. Conus (pendants), Olivella (beads) and Glycimeris (one-piece bracelets) are the common types represented. All were obtained by trade, possibly through Hohokam intermediaries, from the Gulf of California, some 200 miles southwest of the site. The quantity of shell recovered suggests a considerable and sustained volume of interaction with groups to the south and, in fact, unquestionably Hohokam artifacts have been recovered from the Grasshopper ruin.

Bracelets of one form or another (Olivella, Glycimeris) are most frequently found. They occur with Burials 63, 69, 140, 145, 158, 164, 181, 184 and 190. Shell necklaces were found "in situ" with Burials 63 and 141. Concentrations of shell beads also occur in the ankle region (Burial 70 and 153) and are probably the remains of anklets. Cluster V yielded in excess of 600 shell beads overall. Discs (pendant blanks ?), rings and unmodified shell were also recovered. Burial 181 produced a Glycimeris shell pendant carved in the shape of a frog and overlaid by a turquoise mosaic. The frog is a common Hohokam motif (Gladwin 1948); its occurrence lends additional support to the probability of contact with people to the south.

Figure 114. Cluster V - An Unusually Rich Burial. The "Chief's Burial," B-1140, an adult male from the Great Kiva, the richest burial thus far excavated at Grasshopper. Note the numerous projectile points (A), pottery vessels (B), Glycimeris shell bracelets (C), stone mortar (D), and bone awls, "rasps" (E).

It seems apparent that such common, although variable, ornamentation reflects the daily, if ceremonial, dress of the Mogollon, rather than any specific regalia associated with funerary rites. This suggestion appears to be substantiated by the lithic materials as well.

Stone was even more widely utilized than shell. Stone ornaments from Cluster V number over 16,000 items, albeit largely concentrated in Burial 77. Siltstone beads are most usually found. Although most stone was worked into beads, pendants (Burials 70, 153, 181, 194) and earbobs (Burials 70, 129, 137, 140, 147, 164, 186, 188), usually made from turquoise, are also fairly common. Turquoise beads occur with Burial 117. A cache of ten thin, finely retouched, triangular projectile points of white chert was recovered from Burial 76 while Burial 140, the richest burial at the site, yielded no less than 128 points of lesser quality. It is interesting to note that the Burial 76 points must have been manufactured as funeral offerings as they are far too delicate to have functioned in a hunting or warfare situation.

Unusual stone objects included in burial context are peculiarly shaped natural stones (concretions), chert and quartzite hammerstones, pigment nodules (azurite, hematite, malachite), schist awls, worked and unworked stone slabs, quartz crystals, chipped shale knives, scrapers, gabbro discs, axes, obsidian pendants, manos, fossil crinoids, bivalves and corals (Figs. 15 and 16).

In summary, Cluster V is exceptional for its unusually rich burials. Nothing else differentiates it from the other groups; the same mixture of pre-structure and sub-floor burials is present with

Figure 15. Cluster V - A Slab Lined Burial Pit. B-174 from the Great Kiva. Note the slabs (A) and the abundant ceramics in this grave of an adult female.

a

b

Figure 16. Cluster V - Typical Burials. (a) An adult male from the Great Kiva, extended supine, oriented east-west. (b) An adult and an adolescent respectively. They were not buried contemporaneously. Burial 191 post dates and is intrusive into Burial 193.

grossly similar grave assemblages. Unfortunately, as far as chronology is concerned, most of the pottery recovered falls within a given span of time (A.D. 1250-1350 plus) and, while useful as a temporal indicator over broad areas and within "deep" sites, it is not sufficiently sensitive to be employed as a means of dating the pre-structure versus the sub-floor periods of occupation. Tree-ring dates, almost never found in burial context, must be called upon for such a fine determination. The sample is small and not completely analyzed as yet. The time span involved, however, does not appear to have been a very long one (about 50 years).

It seems likely that the richest burials, although found below the floor of the kiva and surrounding structures, are not actually associated with that period of construction. In a number of cases the burials can be seen to underlie (and thus predate) features definitely related to the kiva complex. As they do not occur in the trash fill underlying the kiva floor but rather below it, in the relatively sterile soil below the plaza floor, the burials are likely related to the earlier structure. There is, of course, some mixing with later, sub-floor, kiva complex burials (Fig. 17).

It would be tempting to try to make a case for the kiva as an area for status burial but, as the preceding has indicated, the idea is not substantiated by the stratigraphy. However, although a plaza lacks some of the ceremonial "aura" of a kiva, the same case might be made for it as an area for status burial. To be certain, the two structures served similar functions, at least as focal gathering

a

b

Figure 17. Two Examples of Cultural Stratigraphy. (a) The skeleton was interred through the plaza floor prior to the construction of the Great Kiva; note posthole (10) from the later structure overlying the burial. (b) Another burial probably associated with the plaza. Note that the skeleton underlies a slab-lined box, a feature in the kiva.

points for the community as a whole. Finally, it should also be borne in mind that, in the majority of cases, the richest burials were those of women. This is certainly suggestive of high status for women and possibly points to a matrilineal kinship system, similar to that found in modern western pueblos (pp.114). The implications for understanding the social structure of the Grasshopper pueblo inherent in the peculiar sex ratio and grave furniture of Cluster V will be explored in more depth in the last section (Interpretation). A plan view of the cluster appears in Figure 18, end pocket).

Cluster VI

Cluster VI is composed of 14 burials uncovered by backhoe trenching in the northwest part of the site (Fig. 2). A total of five tests were made designated 32, 33, 34, 36 and 37 respectively. The purpose of the operation was to open several large stratigraphic cross-sections: (1) in a flat space surrounded by rooms and considered to be a plaza and, (2) in an area northwest of the plaza. The stratigraphy revealed is essentially similar to that described for Cluster V (Fig. 12) and will not be considered here. As a geologic section was the primary purpose for the testing, practically all of the burials were disturbed by the backhoe. However, when they were discovered, they were excavated by hand.

There is nothing particularly exceptional in Cluster VI. The same wide age-sex range is encountered and, as before, immature specimens make up the majority of the sample (Table 7). The burial pits, generally speaking, are intrusive into the red silt (Fig. 12) and are

Table 7. Burial List - Cluster VI

<u>No.</u>	<u>Provenience</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
79	(TT34)	?	c.6	N/W (s)	ESD	Present - 1 scratched quartz crystal near skull
80	(TT33)	M	A	E/W (e)	ES	Present - none
85	(TT33)	?	B-1	N/S (s)	ES	Absent - none
87	(TT33)	?	?	?	D	Present - the remains of at least two individuals are present, one is possibly a secondary burial
91	(TT36)	F	A	E/W (e)	ES	Present - none
92	(TT37)	?	2-4	N/S (n)	ES	Absent - none
93	(TT37)	F	A	E/W (e)	ESD	Present - none; resting on red sandstone bedrock 75 cm. below the surface
94	(TT33)	?	c.15	E/W (w)	ES	Present - 1 scraper next to lower arm
99	(TT33)	?	B-1	NE/SW (sw)	ES	Absent - none
101	(TT32)	?	B-1	? (?)	D	Absent - none
108	(TT32)	M	21P	E/W (w)	ES	Present - none
109	(TT32)	?	c.12	E/W (e)	ESD	Present - 1 flake knife next to left leg
114	(TT32)	?	A	? (?)	D	Present - none
120	(TT32)	?	A	E/W (w)	SFRD	Absent - yellow ochre stripes parallel to the orientation of the skeleton

filled with grey trash with the result that pit outlines are clearly defined in several instances (Burials 85, 108, 114 and 120). As no structures are definitely associated with the material, the cluster area likely represents a trash depository (I hesitate to call it a mound) similar to Cluster I. There is nothing anomalous in the ceramic material.

Extensive trenching in the plaza area has borne out the interpretation of the area as a plaza and, in several cases, portions of the old walking surface were recovered. The majority of the burials appear to be interred into the trash fill of the plaza after the use of that structure had been discontinued. It should also be noted that enough time had elapsed for a considerable thickness of trash to have been deposited in the plaza (over a meter in places). Thus, it is clear that a time gap exists between the burials of Cluster V (through plaza floor when that structure was in use) and those of Cluster VI (into trash fill of plaza after its use had been discontinued). The amount of time involved remains unknown. It is conceivable, even likely, that a considerable thickness of trash could have been deposited over a short period of time (a few years) if a large population is postulated for the site at a given point in time.

Finally, when viewing the grave goods as a whole, the fact that they are conspicuously more plebian than those recovered from Cluster V is readily apparent. This might be interpreted to be indicative of an area of lower status burials, as would also be the case with Clusters I through IV.

As the tests are simply narrow trenches through what appears to be a sizeable cemetery, little could be gained by a plan view of the cluster and none will be included here.

Cluster VII

The last burial grouping to be considered is Cluster VII. The 11 burials of this group were uncovered by a backhoe trench (T35) located south of the site on the flood plain of the Salt River Draw (Fig. 2). Due to lack of time, only eight of the burials were excavated. Considerable damage was done to the skeletons because, as was the case with Cluster VI, the primary objective of the trenching was the definition of the stratigraphy in the area.

Table 8. Burial List - Cluster VII

<u>No.</u>	<u>Sex</u>	<u>Age</u>	<u>Orientation</u>	<u>Position</u>	<u>Grave Goods</u>
81	F	A	E/W (w)	SFRD	Present - 1 polishing stone near ankles, 4 bone rings near ankles, 1 bone awl near ankles
82	M	A	E/W (e)	ES	Present - none
83	F	A	E/W (w)	ELD	Present - none
84	F	A	E/W (w)	ES	Absent - none
88	F	A	N/S (n)	FLD	Absent - none
89	F	A	E/W (e)	SFD	Absent - none
90	?	3-4	E/W (e)	ES	Absent - none
166	M	A	E/W (e)	ES	Present - none (TT38)

Cluster VII is rather unusual in several respects. For one thing, all but one (Burial 90) of the burials are adults. This is an anomalous situation not encountered in any of the other clusters.

However, it should be borne in mind that the sample comes from a single narrow trench, like Cluster VI, cut through a larger cemetery. The burials all come from the 1965 season with the exception of Burial 166 (1966). East-west orientation is the rule as before but flexed and semi-flexed burials are unusually common. Finally, one very rich burial (Burial 81) was included in the sample, while the majority are rather poor. On the face of it, Burial 81 appears to be simply an individual very well endowed with funeral offerings and not apparently representative of a "special class" as were possibly the burials of Cluster V.

On the basis of such scant testing, Cluster VII appears to be similar to the other peripheral trash mound burial groups (Clusters I-IV, VI). More excavation will be required to substantiate this possibility.

CHAPTER 4

ANALYSIS

With the completion of Chapter 3 (Description), all of the data pertinent to the analysis of Grasshopper burial customs have been introduced. The information in the description, however, is organized simply in terms of artificial clusters defined as the results of selective excavation. It is clear that this will tell little about the real structure of the burial population. On page 56, it was suggested that Cluster V, the plaza-kiva burial grouping, is quantitatively different from all of the other clusters and represents in fact an area of high status burial. The remainder of this thesis will be an attempt to demonstrate the validity of this observation.

In Chapter 2 (pp. 9), it was observed that certain objective criteria would be required as the basis for any comparative studies which might later be undertaken. These criteria, both qualitative and quantitative, must be categories which would be expected to reflect the structure of the extinct society at the Grasshopper pueblo. Further, they must be classificatory abstractions which are applicable to all of the burials in the site and which are suitable for programming in a computer. They must be designed to evaluate essentially three classes of data. The first is restricted to information concerning the skeleton itself (age, sex) and its placement in the grave. The second

deals with non-ceramic artifacts; the third class with the pottery.

The categories selected for the analysis are included in Table 9.

The Digit Count

In order to facilitate the analysis, all data were coded for use in a computer in accordance with a program called the 11401 Card Digit Count, developed by Richard Marshall of the Numerical Analysis Laboratory, University of Arizona. In brief, the program:

...reads (IBM) cards and accumulates counts of the punches which appear in up to 35 specified columns based on the grouping obtained by sorting the data on up to five other specified columns. Output is a table of counts and percentages for each break (category) in grouping as indicated by a change in any of up to five columns.

The program was designed to count and tabulate the number of single punches which appear in specified columns (called DV columns) based on a grouping of punches in other columns (called IV columns). Percentages will be computed for each tally in the output (Marshall 1965: 2).

The procedure involved in counting is rather complicated. The data cards undergo initial sorting into order on the IV columns.

The program then reads cards and adds into the specified counters until a change in any one of the IV column contents (occurs). When this happens, the counters are: 1) added to a set of "summary counters," 2) printed out and 3) reset to zero. At this point, card reading resumes until the next change in IV occurs. After the last card has been read and the last table printed out, a summary table is printed which is a "sum" of all tables printed (Marshall 1965: 2).

The "11401" refers to the IBM 11401 computer, which has a capacity of 8,000 positions of core (memory) storage. Additional (minimal) machine requirements are:

- 1) Index registers
- 2) Store address register
- 3) Move record
- 4) 132 print position printer
- 5) HI-LO-EQ compare

The programming language used is Autocoder. "The speed (of the program run) is a function of the number of DV columns specified. If there are fewer than five, the program runs at 800 cpm (counts per minute); if more than five, the speed drops to 600 to 400 cpm (Marshall 1965: 2)."

Digit count programs have been much in use at the University of Arizona since 1964. They are used primarily in making preliminary tabulations of data for survey questionnaires for the Sociology, Psychology and Engineering departments. They have their principle value in that they provide an efficient and accurate method for tabulating and storing data. The laborious and inaccurate business of working out percentages by hand is eliminated and the cards, once punched, can be adapted for use in other, more sophisticated programs (for example, CORR-2).

The punching of data onto cards is a simple procedure analogous to typing. With practice, considerable speed and accuracy can be developed. A standard IBM card has 80 columns (numbered 1-80) and 12 rows (X, Y, 0-9). The first five columns are used as a program identification code. Column 1 was used to reference the site (Ariz. P:14:1), making allowances for further expansion to include other sites. The number 1 was arbitrarily picked to designate Grasshopper. Column 2 was used to indicate the cluster number (1-7). Columns 3, 4, and 5 designated the burial number (from 001 to a possible 999). The number 15068, for example, refers to Ariz. P:14:1 (1), Cluster V (5), Burial 68 (068). Column 6, the card continuation column, is punched

when the number of columns used in the program exceeds 80 (the number of available columns) for a given item (for example, a burial). Only 61 columns were used in this particular program so column 6 was left blank. The data code sheet used in the digit count is given in Table 9. It is simply a numerical adaptation of the burial classification criteria. Columns 62-79 were left blank, making allowances for the possible expansion of the burial classification criteria. Column 80 was punched (1) to indicate the end of a card; that is, the termination of information pertaining to one specific item, a burial. One card is punched for every burial. The cards are hand sorted according to clusters and run through the computer. For each cluster, every field (that is, category) is summed separately in the output. The output also includes a final summary statement for each category but for all clusters. The cost of such a digit count is nominal, another point in favor of its adoption.

The Ceramics

Table 10 is a list of the ceramics of Clusters I through VII. The pottery is the most sensitive temporal indicator available at this time. While considerations of variability due to time factors is an important part of every site report, it is thought that the burial ceramics may also be used to shed some light on the structure of the society which produced them. The evaluation is oriented toward this latter point as well. All of the burials are included in the chart, listed according to cluster to determine if areal or temporal differences are in fact present in the ceramics.

Table 9. Burial Classification and Data Code

<u>Classification</u>	<u>Card Column</u>	<u>Punch</u>
Sex	7	
male		1
female		2
undetermined		0
Age	8	
infant (0-4 yrs)		1
child/adolescent (4-16 yrs)		2
adult		3
undetermined		0
Orientation	9	
east-west		1
north-south		2
undetermined		0
Facing	10	
north		1
south		2
east		3
west		4
undetermined		0
Position	11	
extended		1
flexed		2
semi-flexed		3
disturbed		4
Projectile Points	12	
present		1
absent		0
Beads	13	
present		1
absent		0
Bone Awls	14	
present		1
absent		0
Rings	15	
present		1
absent		0

Table 9 -- continued

<u>Classification</u>	<u>Card Column</u>	<u>Punch</u>
Pendant, Earbobs	16	
present		1
absent		0
Occipital Deformation	17	
present		1
absent		0
Sub-Slab Burial	18	
present		1
absent		0
Bracelets	19	
present		1
absent		0
Anklets	20	
present		1
absent		0
Pigments	21	
present		1
absent		0
Cibecue Polychrome (frequency)	22-23	00-99
Gila Polychrome (frequency)	24-25	00-99
Pinto Polychrome (frequency)	26-27	00-99
Pinto/Gila Polychrome (frequency)	28-29	00-99
Grasshopper Polychrome (frequency)	30-31	00-99
Four-Mile Polychrome (frequency)	32-33	00-99
Cedar Creek Polychrome (frequency)	34-35	00-99
Kinishba Polychrome (frequency)	36-37	00-99
Pinedale Polychrome (frequency)	38-39	00-99
Show Low Polychrome (frequency)	40-41	00-99

Table 9 -- continued

<u>Classification</u>	<u>Card Column</u>	<u>Punch</u>
Grasshopper B/R (frequency)	42-43	00-99
Pinedale B/R (frequency)	44-45	00-99
Pinedale B/W (frequency)	46-47	00-99
Salado W/R (frequency)	48-49	00-99
Salado Redware (frequency)	50-51	00-99
Plainware (frequency)	52-53	00-99
Indented Corrugated (frequency)	54-55	00-99
Obliterated Corrugated (frequency)	56-57	00-99
Unclassified Corrugated (frequency)	58-59	00-99
Unclassified Painted (frequency)	60-61	00-99

Table 10. Ceramic Types, Frequency and Occurrence; Clusters I - VII

Pottery Type	B/C	Burial Number																														
		1	2	3	4	8	9	11	12	13	14	15	16	17	19	34	35	36	37	38	39	40	41	42	43	44	50	64				
Cibecue P.	I																						4									
Gila P.	I																								1							
Pinto P.	I		1	1												1		1							1							
Pinto/Gila P.	I															1																
Grasshopper P.	I																															
Four Mile P.	I										1																					
Cedar Creek P.	I																	1														
Kinishba P.	I																						1									
Pinedale P.	I																						1									
Showlow P.	I																															
Grasshopper B/R	I				1																											
Pinedale B/W	I																															
Pinedale B/R	I																															
Salado W/R	I																															
Salado Redware	I																	1	1						1							
Plainware	I										1																					
Indented Corr.	I																															
Obliterated Corr.	I				1																		1		1							
Unclassified Corr.	I		1								1			1		1																
Unclassified Ptd.	I																													1		
Maverick Mtn. P.	I																															
Gila B/R	I																															
No Pottery	I	X				X	X	X	X	X		X	X		X		X			B34	X					X	X					

Table 10. -- continued

<u>Pottery Type</u>	<u>B/C</u>	<u>Burial Number</u>					
		22	23	24	25	31	32
Gibecue P.	II						
Gila P.	II						
Pinto P.	II						
Pinto/Gila P.	II						
Grasshopper P.	II						
Four Mile P.	II						
Cedar Creek P.	II						
Kinishba P.	II						
Pinedale P.	II						
Grasshopper B/R	II				1		
Pinedale B/W	II						
Pinedale B/R	II						
Salado W/R	II						
Salado Redware	II						
Plainware	II		1				1
Indented Corr.	II						
Obliterated Corr.	II						
Unclassified Corr.	II		1				
Unclassified Ptd.	II						
Maverick Mtn. P.	II						
Gila B/R	II						
No. Pottery	II	X		X	X		

Table 10. -- continued

<u>Pottery Type</u>	<u>B/C</u>	<u>Burial Number</u>												
		5	18	20	21	28	29	30	33	54	65	66	67	
Cibecue P.	III													
Gila P.	III													
Pinto P.	III													
Pinto/Gila P.	III													
Grasshopper P.	III													
Four Mile P.	III													
Cedar Creek P.	III													
Kinishba P.	III													
Pinedale P.	III													
Showlow P.	III													
Grasshopper B/R	III													
Pinedale B/W	III													
Pinedale B/R	III													
Salado W/R	III													
Salado Redware	III										1			
Plainware	III													
Indented Corr.	III													
Obliterated Corr.	III													
Unclassified Corr.	III													
Unclassified Ptd.	III													
Maverick Mtn. P.	III													
Gila B/R	III													
No. Pottery	III	X	X	X	X	X	X	X	X	X		X	X	

Table 10. -- continued

<u>Pottery Type</u>	<u>B/C</u>	<u>Burial Number</u>				
		57	58	59	60	61 62
Cibecue P.	IV					
Gila P.	IV					
Pinto P.	IV					
Pinto/Gila P.	IV					
Grasshopper P.	IV	1				
Four Mile P.	IV					
Cedar Creek P.	IV					
Kinishba P.	IV					
Pinedale P.	IV					
Showlow P.	IV					
Grasshopper B/R	IV					
Pinedale B/W	IV					
Pinedale B/R	IV					
Salado W/R	IV					
Salado Redware	IV					
Plainware	IV					
Indented Corr.	IV					
Obliterated Corr.	IV	1				
Unclassified Corr.	IV					
Unclassified Ptd.	IV					
Maverick Mtn. P.	IV					
Gila B/R	IV					
No Pottery	IV		X	X	X	X

Table 10. -- continued

Pottery Type	B/C	Burial Number																									
		7	10	45	46	47	48	49	51	52	53	55	56	63	68	69	70	71	72	73	74	75	76	77	78		
Cibecue P.	V	1										1				1		1		1			2				
Gila P.	V																										
Pinto P.	V												1											1			
Pinto/Gila P.	V																						1	1			
Grasshopper P.	V																										
Four Mile P.	V											1										3					
Cedar Creek P.	V	1																					1				
Kinishba P.	V									1																	
Pinedale P.	V																				1						
Showlow P.	V																										
Grasshopper B/R	V																										
Pinedale B/W	V	1											1												1		
Pinedale B/R	V																						1				
Salado W/R	V															1											
Salado Redware	V																										
Plainware	V						1			1			1							1					1		
Indented Corr.	V															1	1						1				
Obliterated Corr.	V										1							1			1						
Unclassified Corr.	V	1					1					1															
Unclassified Ptd.	V																										
Maverick Mtn. P.	V																										
Gila B/R	V																										
No Pottery	V		X	X	X	X		X	X			X			X				X			X					

Table 10. -- continued

<u>Pottery Type</u>	<u>B/C</u>	<u>Burial Number</u>																		
		86	95	96	97	100	102	103	104	105	106	107	110	111	112	113	115	116	117	118
Cibecue P.	V			1				1				2							3	
Gila P.	V																		1	
Pinto P.	V																			
Pinto/Gila P.	V																			
Grasshopper P.	V																			
Four Mile P.	V													1						
Cedar Creek P.	V																			
Kinishba P.	V																			
Pinedale P.	V																			
Showlow P.	V																			
Grasshopper B/R	V																			
Pinedale B/W	V											2								
Pinedale B/R	V																			
Salado W/R	V																			
Salado Redware	V													1						
Plainware	V															1				
Indented Corr.	V					2														
Obliterated Corr.	V						1	1			1	2			1			2		
Unclassified Corr.	V																			
Unclassified Ptd.	V			1																
Maverick Mtn. P.	V																			
Gila B/R	V																			
No Pottery	V	X		X	X				x	X						X	X		X	X

Table 10. -- continued

Pottery Type	B/C	Burial Number																		
		119	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138
Cibecue P.	V										1							1		
Gila P.	V										1									
Pinto P.	V																			
Pinto/Gila P.	V														1					
Grasshopper P.	V																			
Four Mile P.	V										1									
Cedar Creek P.	V																			
Kinishba P.	V																			
Pinedale P.	V																			
Showlow P.	V																			
Grasshopper B/R	V																			
Pinedale B/W	V																			
Pinedale B/R	V																			
Salado W/R	V																			
Salado Redware	V						1													
Plainware	V																			
Indented Corr.	V																			
Obliterated Corr.	V						1									1				
Unclassified Corr.	V																			
Unclassified Ptd.	V																		1	
Maverick Mtn. P.	V																			
Gila B/R	V																			
No Pottery	V	X	X	X	X	X		X	X	X		X	X		X		X		X	X

Table 10. -- continued

Pottery Type	B/C	Burial Number																		
		139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157
Gibecue P.	V		2				1			1		1			1		1			1
Gila P.	V																			
Pinto P.	V																			
Pinto/Gila P.	V		23							1										
Grasshopper P.	V		1				1												1	
Four Mile P.	V									1							1			
Cedar Creek P.	V																			
Kinishba P.	V																			
Pinedale P.	V		2	2	1							2								
Showlow P.	V																			
Grasshopper B/R	V																			
Pinedale B/W	V		2													1				
Pinedale B/R	V		2																	
Salado W/R	V																			
Salado Redware	V		3												1	1				
Plainware	V					1	1								2				1	1
Indented Corr.	V																			
Obliterated Corr.	V				1	1		1												
Unclassified Corr.	V																			
Unclassified Ptd.	V											1								
Maverick Mtn. P.	V																			
Gila B/R	V							1												
No Pottery	V	X							X		X		X	X				X		

Table 10. -- continued

Pottery Type	B/C	Burial Number																		
		158	159	160	161	162	163	164	165	167	168	169	170	171	172	173	174	175	176	177
Cibecue P.	V				1			3									1	1		
Gila P.	V			1			1													
Pinto P.	V	2					1													
Pinto/Gila P.	V						1	8									4	1		
Grasshopper P.	V										3							1		
Four Mile P.	V																2			
Cedar Creek P.	V	2																		
Kinishba P.	V																			
Pinedale P.	V										1									
Showlow P.	V																1			
Grasshopper B/R	V	2															1			
Pinedale B/W	V						1	1			1		1							
Pinedale B/R	V																			
Salado W/R	V																			
Salado Redware	V						3											1		
Plainware	V																			
Indented Corr.	V																			
Obliterated Corr.	V			1			2	1		1								1		
Unclassified Corr.	V																			
Unclassified Ptd.	V												1							
Maverick Mtn. P.	V																			
Gila B/R	V																			
No Pottery	V		X			X			X			X		X	X	X			X	X

Table 10. -- continued

<u>Pottery Type</u>	<u>B/C</u>	178	179	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	Cr.1
Cibecue P.	V			1					1			2							1		
Gila P.	V						1														
Pinto P.	V																				1
Pinto/Gila P.	V		1	4							1	3	6						3		
Grasshopper P.	V									1											
Four Mile P.	V																				
Cedar Creek P.	V			1							1										
Kinishba P.	V																				
Pinedale P.	V						1											1			
Showlow P.	V						1														
Grasshopper B/R	V									1											
Pinedale B/W	V					1					2	1						1	1		
Pinedale B/R	V												2					1			
Salado W/R	V																		1		
Salado Redware	V			1			1						1					1			2
Plainware	V																			1	
Indented Corr.	V																				
Obliterated Corr.	V			2			1		2	1	1								1	1	
Unclassified Corr.	V																				
Unclassified Ptd.	V																				
Maverick Mtn. P.	V																				1
Gila B/R	V																				
No Pottery	V	X			X			X						X	X	X	X				

Table 10. -- continued

<u>Pottery Type</u>	<u>B/C</u>	<u>Burial Number</u>											
		79	80	85	87	91	92	93	94	99	101	108	109 114 120
Cibecue P.	VI		1										
Gila P.	VI												
Pinto P.	VI											1	
Pinto/Gila P.	VI							1					
Grasshopper P.	VI											1	
Four Mile P.	VI												
Cedar Creek P.	VI												
Kinishba P.	VI												
Pinedale P.	VI												
Showlow P.	VI											1	
Grasshopper B/R	VI											1	
Pinedale B/W	VI												
Pinedale B/R	VI					1			1				
Salado W/R	VI												
Salado Redware	VI												
Plainware	VI				1								
Indented Corr.	VI	1											
Obliterated Corr.	VI												1
Unclassified Corr.	VI												
Unclassified Ptd.	VI											1	
Maverick Mtn. P.	VI												
Gila B/R	VI												
No Pottery	VI			X		X				X	X		X

Table 10. -- continued

<u>Pottery Type</u>	<u>B/C</u>	<u>Burial Number</u>							
		81	82	83	84	88	89	90	166
Cibecue P.	VII	3							
Gila P.	VII								
Pinto P.	VII	1							
Pinto/Gila P.	VII							3	
Grasshopper P.	VII								
Four Mile P.	VII	2							
Cedar Creek P.	VII								
Kinishba P.	VII								
Pinedale P.	VII								
Showlow P.	VII								
Grasshopper B/R	VII								
Pinedale B/W	VII								
Pinedale B/R	VII								
Salado W/R	VII								
Salado Redware	VII								
Plainware	VII	1							
Indented Corr.	VII								
Obliterated Corr.	VII	2	1						1
Unclassified Corr.	VII								
Unclassified Ptd.	VII			2					
Maverick Mtn. P.	VII								
Gila B/R	VII								
No Pottery	VII				X	X	X	X	

There are 103 burials which had at least one associated pottery vessel; a considerable number, of course, had more than one. On the other hand, no less than 47% (94 burials) of the total had no pottery whatsoever included in the funeral offerings. The majority of these were infants interred through the floors of rooms.

The complex social implications of the non-random distribution of ceramics in the burial population is taken up below. For dating purposes, the simple occurrence of a pottery type is thought to be a more meaningful criterion for the determination of time periods within the site than the gross frequency of vessels, which could easily skew the overall percentage of a given pottery type. For example, one extremely rich burial might yield a percentage of the total number of vessels of a given type far out of proportion to the overall frequency of that type. This might erroneously be interpreted to represent a period of maximum occupancy characterized (and therefore dated) by that particular pottery type. In other words, the number of types represented in a cluster is held to be more meaningful (for dating purposes) than the total number of vessels per type. This approach is adhered to in an attempt to establish an intra-site chronology. Frequencies, however, will not be ignored.

Before a more detailed examination of the Grasshopper ceramics can be undertaken, a few general comments on overall percentages are in order. These percentages refer only to those ceramics recovered from the burials; an all-inclusive pottery analysis is beyond the scope of this paper. The pottery classes are listed in Table 11.

Table 11. Percentage Distribution of the Major Pottery Classes. Based on the 103 burials with pottery (53% of the 197 burials recovered from the site).

Pottery Class	Percentages	
	Class	Subtotal
Plainware	.0580	.0580
Corrugated wares		.1680
Indented	.0160	
Obliterated	.1260	
Unclassified	.0260	
Painted wares		.7740
Salado Polychromes	.2750	
Cibecue Polychrome	.1390	
Unclassified painted	.0230	
Remainder	<u>.3370</u>	
Total	1.0000	1.0000

Table 11 serves to point out the gross frequency of the three major pottery classes found at Grasshopper. It discloses little about chronology except that all of the types represented fall within a considerable time range: A.D. 1250 - 1450 (Breternitz 1966). Tree-ring dates place the maximum occupancy of the site at around A.D. 1275 - 1350 (+), and an analysis of the clusters tend to bear this out. The pottery also seems to substantiate the contention that the plaza area underlying the Great Kiva (Cluster V) is at least somewhat earlier than the rest of the site, discounting for the moment the possibility of sampling error in the excavations.

On the more refined level of types, the ceramics are distributed as indicated in Table 12.

The type with the highest frequency in burial context is the so-called Pinto/Gila Polychrome, a mixture of design elements characteristic of Gila and Pinto polychromes. There were 66 occurrences of the ware, which account for 21% of the burial ceramics, distributed among 18 burials. Eleven of the burials were adults (5 males, 6 females). The rest were children.

Cibecue Polychrome has the next highest frequency with 43 occurrences (14%). It is a corrugated ware characterized by a highly polished, blackened interior. Decoration is in fugitive maroon-red and white pigments. It occurs in bowl and jar forms with the former more common. On its derivation, Haury (1934: 131) comments:

Cibecue polychrome seems to be the result of the following blend: the shape, outside decoration, and character of the decoration are attributes of the Little Colorado region;

Table 12. Percentage Distribution by Pottery Types for all Clusters

<u>Type</u>	<u>Number of Vessels</u>	<u>Percent</u>
Cibecue Polychrome	43	139
Gila Polychrome	7	023
Pinto Polychrome	12	039
Pinto/Gila Polychrome	66	213
Grasshopper Polychrome	11	035
Four-Mile Polychrome	13	042
Cedar Creek Polychrome	7	023
Kinishba Polychrome	1	003
Pinedale Polychrome	12	039
Showlow Polychrome	3	009
Maverick Mountain Polychrome	1	003
Gila Black-on-Red	1	003
Grasshopper Black-on-Red	7	023
Pinedale Black-on-Red	8	026
Pinedale Black-on-White	18	058
Salado White-on-Red	2	006
Salado Redware	21	068
Plainware	18	058
Indented Corrugated	5	016
Obliterated Corrugated	39	126
Unclassified Corrugated	8	026
Unclassified Painted	<u>7</u>	<u>023</u>
Total	310	1.000

Figure 19. Burial Ceramics I. (a) Pinto/Gila Polychrome, (b) Pinedale Black-on-red, (c) Pinedale Polychrome.

the paste, the blackening of the interiors reflect southern and western traditions. It is undoubtedly a hybrid, quite local in distribution and short-lived.

Cibecue Polychrome is included with 28 burials. Sixteen of the burials were adults (7 males, 9 females) and 12 were those of children.

The type with the third highest frequency is obliterated corrugated (39 occurrences) which accounts for 13% of the burial pottery. Obliterated corrugated is found in association with 34 burials; 18 adults (5 males, 13 females) and 16 children. Obliterated corrugated seems to be more evenly distributed among the burials with which it is associated (34 burials, 39 occurrences) than either Pinto/Gila or Cibecue Polychrome. There is no instance of a single burial associated with a large number of obliterated corrugated pots. Moreover, the age ratio (children versus adults) is reversed and the sex ratio is unusual. Perhaps the inclusion of obliterated corrugated wares in the grave is an indicator of relatively low status in the burial population.

The fourth major grouping is Salado redware (21 vessels), accounting for 7% of the burial pottery. Salado redware vessels are found in association with 16 burials; 11 adults (7 males, 4 females) and 5 children. Finally, plainwares (18 vessels, 6%) are found associated with 17 burials; 10 adults (2 males, 8 females) and 7 children. Here, as was the case with the obliterated corrugated, the sex ratio is skewed heavily in favor of females. The remaining types (39%) individually account for relatively small percentages of the total and are distributed at the percentage figures indicated in Table 12.

Figure 20. Burial Ceramics II. Various forms of Cibecue Polychrome.

Table 13 indicates the percentage, by type, of the vessels in each cluster. A table of this kind enables the reader to distinguish qualitative differences between clusters eliminating quantitative differences in cluster size. The most striking feature of Table 13 is the contrast between Cluster V, on the one hand, and Clusters I-IV, VI and VII on the other. The difference is particularly apparent in Pinto/Gila Polychrome which makes up 25% of the ceramics in Cluster V and only about 3% of the ceramics in the rest of the clusters. Pine-dale Black-on-White is restricted in distribution to Cluster V (18 occurrences) and is not found in any of the other burial areas. Pine-dale Polychrome is another example. It occurs 11 times in Cluster V and only once elsewhere. Salado redware and Plainware are also much more common in Cluster V than in the rest of the site. Finally, the average Cluster V burial contains two vessels whereas the burials in the other clusters average less than one pot (.84) each. The Type-frequency comparison between Cluster V and Clusters I-IV, VI, VII is summarized in Table 14.

Table 14 provides additional support for the working hypothesis that the burial inventories of Cluster V and of all the other clusters combined are different because Cluster V appears to be an area of high status burial. It was decided to lump Clusters I-IV, VI, VII together for comparison with Cluster V because (1) the clusters of the combined group are too small to be statistically meaningful individually and (2) the comparison of the two large groups (Clusters I-IV, VI, VII and Cluster V) better expresses the differences observed thus far. These

Table 13. Percentage, by Type, of the Vessels in Each Cluster

<u>Cluster</u>	<u>Number of Burials in Cluster</u>	<u>Number of Vessels in Cluster</u>	<u>Type</u>	<u>Number of Vessels</u>	<u>Percent</u>
0	3	2	Gila Polychrome	1	.500
			Salado Redware	1	.500
I	27	27	Cibecue Polychrome	4	.148
			Gila Polychrome	1	.037
			Pinto Polychrome	5	.185
			Pinto/Gila Polychrome	1	.037
			Four-Mile Polychrome	1	.037
			Cedar Creek Polychrome	1	.037
			Pinedale Polychrome	1	.037
			Grasshopper B/R	1	.037
			Salado Redware	3	.111
			Plainware	1	.037
			Obliterated Corr.	3	.111
			Unclassified Corr.	4	.148
			Unclassified Painted	1	.037
II	6	4	Grasshopper B/R	1	.250
			Plainware	2	.500
			Unclassified Corr.	1	.250
III	12	1	Salado Redware	1	1.000
IV	6	2	Grasshopper Polychrome	1	.500
			Obliterated Corrugated	1	.500

Table 13 -- continued

<u>Cluster</u>	<u>Number of Burials in Cluster</u>	<u>Number of Vessels in Cluster</u>	<u>Type</u>	<u>Number of Vessels</u>	<u>Percent</u>
V	120	246	Cibecue Polychrome	35	.143
			Gila Polychrome	5	.020
			Pinto Polychrome	5	.020
			Pinto/Gila Polychrome	61	.250
			Grasshopper Polychrome	9	.037
			Four-Mile Polychrome	10	.041
			Cedar Creek Polychrome	6	.024
			Kinishba Polychrome	1	.003
			Pinedale Polychrome	11	.045
			Showlow Polychrome	2	.008
			Maverick Mountain Polychrome	1	.003
			Gila B/R	1	.003
			Grasshopper B/R	4	.016
			Pinedale B/R	6	.024
			Pinedale B/W	18	.074
			Salado W/R	2	.008
			Salado Redware	16	.065
			Plainware	13	.053
			Indented Corr.	4	.016
			Obliterated Corr.	30	.123
			Unclassified Corr.	3	.012
			Unclassified Painted	3	.012

Table 13 -- continued

<u>Cluster</u>	<u>Number of Burials in Cluster</u>	<u>Number of Vessels in Cluster</u>	<u>Type</u>	<u>Number of Vessels</u>	<u>Percent</u>
VI	14	12	Cibecue Polychrome	1	.083
			Pinto Polychrome	1	.083
			Pinto/Gila Polychrome	1	.083
			Grasshopper Polychrome	1	.083
			Showlow Polychrome	1	.083
			Grasshopper B/R	1	.083
			Pinedale B/R	2	.166
			Plainware	1	.083
			Indented Corrugated	1	.083
			Obliterated Corrugated	1	.083
			Unclassified Painted	1	.083
VII	8	16	Cibecue Polychrome	3	.187
			Pinto Polychrome	1	.062
			Pinto/Gila Polychrome	3	.187
			Four-Mile Polychrome	2	.124
			Plainware	1	.062
			Obliterated Corrugated	4	.248
			Unclassified Painted	2	.124

Table 14. Frequency Comparison of Ceramic Types

<u>Type</u>	No. of Vessels in Clusters O-IV, VI, VII	No. of Vessels in Clus- ter V	Total No. of Vessels
Cibecue Polychrome	8	35	43
Gila Polychrome	2	5	7
Pinto Polychrome	7	5	12
Pinto/Gila Polychrome	5	61	66
Grasshopper Polychrome	2	9	11
Four-Mile Polychrome	3	10	13
Cedar Creek Polychrome	1	6	7
Kinishba Polychrome	0	1	1
Pinedale Polychrome	1	11	12
Showlow Polychrome	1	2	3
Maverick Mountain Polychrome	0	1	1
Gila Black-on-red	0	1	1
Grasshopper Black-on-red	3	4	7
Pinedale Black-on-red	2	6	8
Pinedale Black-on-white	0	18	18
Salado White-on-red	0	2	2
Salado Redware	5	16	21
Plainware	5	13	18
Indented Corrugated	1	4	5
Obliterated Corrugated	9	30	39
Unclassified Corrugated	5	3	8
Unclassified Painted	<u>4</u>	<u>3</u>	<u>7</u>
Total	64	246	310

differences lead to the inference that Cluster V is an area of high status burial and that the other cluster grouping is a common cemetery. In spite of efforts to increase the size (and validity) of the sample, however, it must be pointed out that the possibility has existed throughout the analysis that the distributions which have been observed have been due to chance rather than any cultural factors. The influence of chance can be assessed through the application of simple Chi-square tests to the data, a useful tool too often overlooked by, but usually familiar to the archaeologist. Due to lack of time, it was not possible to incorporate this technique into the present study. It is clear, however, that the pottery is distributed among the burial population in a distinctly non-random fashion. Indeed, four types account for some 55% of the total number of ceramics in burial context. If the pottery were distributed regardless of the factors of age, sex, status and so forth, a proportion of types in burial context similar to the over-all proportion of types within the site would be expected. The proportion of types within the site remains to be ascertained so, as yet, it is impossible to attempt a valid Chi-square test because no theoretical, or expected, value can be inserted into the formula. It is clear, however, that on the impressionistic level, chance may be dismissed as a possible factor in the distribution of burial ceramics. Other possibilities are sampling error, functional and temporal differences. Further, it was suggested above that a meaningful distinction can be made in the burial population between Cluster V and Clusters O-IV, VI, VII. This is shown most clearly in Table 14. Finally,

it is possible to contrast the ceramics of the two major cluster groupings with respect to the ages of the burials in question. Cluster V produced 65 burials which contained pottery (36 sub-adults, 29 adults). Forty-four sub-adult burials lacked ceramics altogether. Eleven adults also had no pottery interred with them. By comparison, the Cluster O-IV, VI, VII grouping yielded 35 burials (11 sub-adults, 24 adults) with pottery and 41 (26 sub-adults, 15 adults) without it.

The Non-Ceramic Data

The non-ceramic data do not lend themselves to analysis as readily as the pottery but it is apparent that two major classes of information have to be dealt with. The first of these is concerned with observations about the burial itself; the second deals with non-ceramic artifactual material. A bi-modal contrast (Cluster V/Cluster O-IV, VI, VII) will continue to be employed, its validity having been demonstrated in the preceding section. Observations on the burials themselves are considered first.

Burial Characteristics

Sex. Seventy-four skeletons were sufficiently mature for sex to be determined. Cluster V yielded an unusual sex ratio of 13 males to 26 females. Two adult skeletons could not be sexed. In the Cluster O-IV, VI, VII grouping, the ratio was similar: 13 males to 22 females.

Age. Cluster V yielded 46 infants (0-4 years), 26 children (4-12), 7 adolescents (12-20) and 41 adults (sexable skeletons). The

Cluster O-IV, VI, VII grouping produced 22 infants, 11 children, 3 adolescents and 39 adults. As far as age and sex are concerned, they are meaningless factors in cluster groupings. All ages and both sexes are mixed together except in the case of sub-floor burial, where the sample is primarily composed of immature specimens, usually under five years of age. Clusters II and III are characteristic sub-floor clusters, both associated with architectural units.

Orientation of the Skeleton. Of the 120 burials recovered from Cluster V, 104 were sufficiently well preserved for the orientation to be determined. Eighty skeletons (50 sub-adults, 30 adults) were oriented east-west; 24 (17 sub-adults, 7 adults) were oriented north-south. Of the 77 burials in the Cluster O-IV, VI, VII group, 66 were sufficiently intact for the orientation to be determined. Fifty skeletons (16 sub-adults, 34 adults) were oriented east-west; 16 (11 sub-adults, 5 adults) were oriented north-south. Reduced to percentages, 66% of the Cluster V burials are oriented east-west, 20% are oriented north-south and 14% are so disturbed that no orientation could be ascertained. Of the Cluster O-IV, VI, VII grouping, 65% were oriented east-west, 21% north-south and 14% were disturbed. It should be noted that the designation "east-west" includes axes of orientation along all degrees of the compass from E45°N to E45°S, and from W45°N to W45°S. Similarly, "north-south" includes all degrees from N45°E to N45°W and from S45°E to S45°W.

Facing. Of the 80 burials in Cluster V which were oriented east-west, 64 (53%) faced to the east and 15 (12.5%) faced to the west. Of the 24 oriented north-south, 16 (13%) faced to the north and 8 (7%)

faced south, Sixteen burials (13%) were so disturbed that the facing could not be determined. One burial faced southwest. Of the 50 burials in the Cluster O-IV, VI, VII group which were oriented east-west, 35 (45%) faced east and 14 (18%) faced west. Of the 16 oriented north-south, 12 (16%) faced north and 6 (8%) faced south. Six (8%) burials were disturbed. Two burials faced southeast and one faced southwest.

Position in the Grave. Of the 119 burials (excluding the cremation) in Cluster V, 91 or 76% were buried in the extended supine position, 1 (1%) was flexed, 11 (9.5%) were semi-flexed and 16 (13.5%) were so disturbed that burial position could not be ascertained. Of the 77 burials in the Cluster O-IV, VI, VII grouping, 56 (73%) were buried in the extended supine position, 6 (8%) were flexed, 7 (9%) were semi-flexed and 8 (10%) were disturbed.

Artifactual Material

Qualitative data continue to be the focus of concern. The presence or absence of an item is the primary consideration. Quantitative information is ignored because it is believed to be non-essential, for example, the number of beads in a burial. The result of the analysis are summarized in Table 15. The numbers refer to the number of burials marked "present" for a given category. Once again the clear distinction is made between the two major cluster groupings. When the factor of age is introduced, the following distribution results. The Cluster O-IV, VI, VII group produced seven sub-adults with non-ceramic grave offerings (9%) and 27 with none (36%). Thirty-three

Table 15. Distribution of Non-Ceramic Data - Clusters O-IV, VI, VII/V

<u>Non-Ceramic Data</u>	<u>Cluster Group</u>							<u>Cluster V</u>
	<u>O</u>	<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	<u>VI</u>	<u>VII</u>	
Projectile Points	0	2	0	0	0	0	0	9
Beads	0	3	0	0	0	0	0	14
Bone Awls	0	1	0	0	0	0	1	6
Rings	0	0	0	0	1	0	1	7
Pendants, Earbobs	1	1	0	2	0	0	0	15
Occipital Deformation	0	0	0	1	0	0	0	2
Sub-Slab Burial	0	1	0	2	0	0	0	4
Bracelets	0	0	0	0	0	0	0	13
Anklets	0	0	0	0	0	0	0	3
Pigments	0	0	0	0	0	1	0	6

adults (43%) lacked non-ceramic grave goods; 9 (12%) adult burials had them. In the Cluster V group, 18 sub-adults (15%) had ornamental items, 61 (50%) lacked them. Twenty-five adults (21%), however, had non-ceramic artifacts included with the skeleton; 17 (14%) were buried without ornaments.

The consideration of the non-ceramic materials completes the analytical section of the text. An attempt was made to present the data as free of interpretation as possible. It is contended that a clear separation must be maintained between that which is analytical and that which is interpretative in a study of this kind or empirical data and inference will become confused. While it has not always been possible to maintain such a strict separation, the interpretative statements included above are considered to be sufficiently general and hypothetical as to cause no confusion.

CHAPTER 5

INTERPRETATION

In the preceding section, chance factors were eliminated as a possible cause for the non-random distributions in the data. At that time a number of other possible causative factors were suggested which, singly or together, might be responsible for the patterns which were observed. There are three possibilities: sampling error, temporal differences, and functional (that is, social) differences. Their respective merits are discussed individually below.

Sampling Error

Sampling error must be dismissed as a possible causative factor because there is no way, as yet, of assessing the validity of the sample. The sample (197 burials) is the maximum available at the present time. It cannot be considered to represent the entire population at the site, at least it cannot be assumed that it does. Excavations thus far have been restricted to those areas indicated in Figure 2 (end pocket). Untested are the northern room blocks of both the eastern and western units of the site, the westward extension of the western unit and the scattered peripheral ruins surrounding the major structures. Until the wall mapping operation mentioned in the Introduction is completed (pp. 6), estimations of the size of the ruin, let alone the burial population, cannot even be suggested with any

degree of confidence. Indeed, it is even more difficult to see how a random sampling of the burial population might be obtained, however desirable it might be. No surface indications point out the locations of graves so no estimations can be made with respect to the size of the burial population.

The criticism might be made of this paper that, given the limitations of incomplete data, any conclusions which might be drawn would be suspect. I recognize that sampling error might be a serious factor but contend that even a preliminary study such as this is serves a valuable purpose in that it is (or should be) thought-provoking and useful in structuring future research. The entire burial population at Grasshopper will probably never be recovered, although the sample increases in size and in level of confidence with every burial excavated. To have waited, however, until 500 or a thousand burials have been recovered before writing a report would have been ill advised. A great deal might be lost with respect to research design if this course were followed. Predictability of the structure of the burial population should be the ultimate goal. To attain it, it is not necessary to dig the entire ruin first. If this were done, we would find ourselves with a mass of data and lots of hypotheses but nothing left to test them against.

Temporal Factors

The objective of this section is the erection of an intra-site chronology. Primary attention is given to the ceramics as no tree-ring specimens were found in burial context. More specifically, the

chronology is derived from a comparison of the predominant pottery types in each of the clusters. In addition, it is possible in a number of cases to relate architectural features to cemetery areas with the objective of defining relatively early and late portions of the site. An "age-map" (Fig. 23) is included to indicate, at least tentatively, those areas in the site occupied at a given period of time. The dates given in the cluster analyses below are what Breternitz (1966) calls "best dates." They refer to a clustering of dates within a wider and less reliable range. Dates which are enclosed in quotation marks are tentative dates which Breternitz considers not well supported by associated tree-ring material.

Cluster I

Cluster I has 13 kinds of pottery represented in its graves. There are single occurrences of six polychromes: Cibecue ("1337-1348"), Gila (1265-1385), Pinto/Gila (no date), Four-Mile (1300-1385), Cedar Creek (1300-1350) and Pinedale (1300-1350). The most prevalent type is Pinto Polychrome (5 occurrences); it has a rather considerable time range, extending from about A.D. 1250 to 1385 (Breternitz 1963: 392). Salado redware (3 occurrences) has similar dates (1304-1348).

The preceding dates all fall within the projected range for the occupancy of the Grasshopper ruin, A.D. 1275 - 1400. Furthermore, some of the types occur for the first time or die out within the range covered by Pinto Polychrome (the most numerous type): Pinedale Polychrome, disappearing about 1348, Cedar Creek Polychrome and Four-Mile Polychrome, beginning about 1300. Cibecue Polychrome is not, as yet,

securely dated. Perhaps the most significant comparison is among Pinto Polychrome (1250-1385), Cedar Creek Polychrome (1300-1350) and Salado redware (1304-1348). The three types are found together in Burial 36. They overlap for about 50 years, supposing that the dates for each are approximately correct. The majority of the other types cluster around 1325. Therefore, a probable date for the use of the Cluster I cemetery is A.D. 1300 - 1385. It must have begun subsequent to 1300 as neither Cedar Creek nor Four-Mile Polychrome occur until after that date.

Unfortunately, the Grasshopper Black-on-red and polychrome wares have yet to be sufficiently studied so that no dates can be assigned to them at this time. However, they appear to be local mixtures of the Salado Polychrome (Gladwin 1930) and the White Mountain Redware (Colton and Hargrave 1937: 102; Colton 1965: 38, 40) traditions, differing principally in poorer firing and paste, more fugitive pigments and cruder workmanship. They probably fall within the time period 1300-1350.

Clusters II, III and IV

Clusters II, III and IV contain only three occurrences of datable pottery. Two burials yielded examples of Grasshopper wares; one (Burial 31) is black-on-red, the other (Burial 58) is polychrome. One instance of Salado redware (1304-1348) is also recorded (Burial 65). Although the date for the Grasshopper wares is not firmly fixed as yet, their presence in association with securely-dated Salado redware points toward contemporaneity with Cluster I.

Figure 21. Burial Ceramics III. (a) Grasshopper Polychrome (Four Mile variety), (b) Grasshopper Polychrome (Kinishba variety), (c) Four Mile Polychrome.

Clusters VI and VII

Clusters VI and VII appear to date a little earlier than Cluster I, although the ceramic assemblages are largely similar to the Cluster I-IV grouping. The usual long-ranging Pinto Polychrome (1250-1385) is present, as are the Grasshopper wares ("1300-1350"). Four-mile and Showlow Polychromes (1300-1385) are also noted. There are four occurrences of Pinto-Gila Polychrome, a ware unfortunately not dated as yet. Perhaps most significant for the purpose of intra-site dating is the occurrence of Pinedale Black-on-red (1275-1325), a type not found in Clusters I-IV. The terminal date for Pinedale Black-on-red would suggest a slightly earlier period of utilization for the Cluster VI-VII cemetery, perhaps A.D. 1300-1335+.

Cibecue Polychrome is also present in some quantity (four occurrences) in Cluster VI-VII. It is tentatively dated by Breternitz (1963: 336) at 1337-1348. Breternitz' dates are not entirely convincing. In the first place, the dates are based on only two occurrences in association with tree-ring dates, both at the Canyon Creek Ruin (Haury 1934, 1938). Second, Breternitz himself comments that "Cibecue Polychrome is poorly dated. The tree-ring evidence suggests only that it was being made around 1350 (1963: 337)." Finally, Cibecue Polychrome occurs in high frequency in Cluster V which dates earlier than any other part of the site thus far excavated. At least the appearance of Cibecue Polychrome in the Cluster VI-VII cemetery does not contradict the occurrence of the more securely dated Pinedale Black-on-red (1275-1325).

It is clear that more work is needed in the Cluster VI-VII cemeteries. Those burials exposed were the results of test trenching only and probably do not provide a good sample of ceramics.

Cluster V

Cluster V yielded 22 kinds of pottery, including Pinto, Gila, Four-Mile, Cedar Creek, Grasshopper, and Pinedale Polychromes, in addition to the high frequency of Cibecue Polychrome (35 vessels, 26 occurrences) mentioned above. The most prevalent pottery type, however, was Pinto/Gila Polychrome. No less than 61 vessels of this type were reported, distributed in 15 graves. Pinto/Gila Polychrome, first defined at Grasshopper, is one of those taxonomic freaks which are created when a more refined analysis is applied to an accepted pottery type. It has a variant form which exhibits a salmon colored slip as opposed to the normal white. Pinto/Gila Polychrome is characterized by elements of both Gila and Pinto polychromes but cannot be classified as either one or the other because strict adherence to the type descriptions forbids it. It probably has a wide distribution in the Southwest but has gone unrecognized by most field workers, having been classified as either Gila or Pinto Polychrome. It is probably contemporaneous with the rest of the Salado polychromes.

There were also 18 Pinedale Black-on-white vessels recorded in Cluster V; the only occurrence of this ware noted in the burial data. Pinedale Black-on-red was also recovered. Unusual pottery included examples of Gila Black-on-red (1300-1348), Maverick Mountain

Figure 22. Burial Ceramics IV. (a) Pinedale Black-on-red, (b) Pinedale Black-on-white.

Polychrome (1265-1300), Salado White-on-red (about 1300), Kinishba Polychrome (1337-1348) and a small number of unidentified types.

A problem arises when considering Cluster V because of the certainty of the mixing of two burial periods; the earlier one involving interments through the plaza floor when the courtyard was in use (the "important personages") and the later burials interred through a layer of trash deposited on the old plaza surface. This situation, of course, has considerable bearing on any analysis of the pottery from the area. The second burial period appears to have been marked by considerable construction. It was during this time that room construction began to encroach on the old plaza surface, forming as it did so, the north, south, and west walls of the Great Kiva. That structure was subsequently roofed over. All building activities were not confined to the kiva period, however. A roofed corridor, located on the south side of the plaza, appears to date from the earlier period. It is similar in configuration and location to a roofed corridor reconstructed by Cummings (1940) at Kinishba, another Pueblo IV site located some 45 miles southeast of Grasshopper. The corridor at Kinishba also led into a plaza. At Grasshopper, tentative tree-ring dates and the presence of Pinedale Black-on-white in unquestioned association with the corridor point toward contemporaneity with the plaza occupation.

The buildings associated with the construction periods yielded a considerable number of tree-ring specimens and they must be referred to for possible assistance in understanding the Cluster V chronology

(Bannister and others, 1966: 4, 5, 8, 51). The significant dates in the publication are the outside dates for they more nearly approximate the year when the tree was cut. It should be borne in mind, however, that the outside dates are not cutting dates and, as such, are a minimal series only. The average of 11 dates from the Great Kiva is A.D. 1283. Two similar dates from the corridor roof average A.D. 1303. A single date from the plaza test trench (32) read A.D. 1279. Six dates were recovered from the rooms built on top of the old plaza surface (Rooms 19, 21 and 22). They averaged A.D. 1280. Unfortunately, the information provided by the tree-ring series is inconclusive because, although association is reliable, cutting dates are entirely lacking. The outside dates indicate only that the period of construction postdates A.D. 1291 (average).

The unusual distribution of Pinedale Black-on-white may signify a time difference between Cluster V and the other cemeteries. Haury and Hargrave (1931: 74, 75) note that Pinedale Black-on-white was the last survival of the black-on-white pottery tradition (in the area) and that it was replaced slowly after about A.D. 1290 by Pinedale Polychrome (1300-1348) and, ultimately, by Four-Mile Polychrome (1300-1385). It did not, of course, all disappear at once and the Grasshopper specimens might be either later (regional) survivals or heirloom pieces. The former is the more likely possibility. Recent authors would assign somewhat later dates to Pinedale Black-on-white. Breternitz, on the basis of associated tree-ring evidence, would date it from 1275 to 1348 (1963: 390). It appears that it had persisted, at

least in the Grasshopper area, a good deal longer than had originally been suspected. However, the fact that it is present in Cluster V and in none of the other cemeteries would suggest that, whatever its absolute time range may be, Pinedale Black-on-white had disappeared from the burial inventory by the time the other cemetery areas came into use. It is possible, of course, that the presence of the ware in the kiva-plaza cemetery and its absence elsewhere could be accounted for by a functional explanation. Pinedale Black-on-white might have functioned in ceremonial activities associated only with the kiva-plaza precincts, for example, or its use might have been restricted to those individuals buried in the Cluster V cemetery. Of these two possibilities, the former can probably be disregarded because sherds of Pinedale Black-on-white are found in considerable quantity in rooms and on the surface over most of the site.

Other evidence lends support to a relatively early date for Cluster V. The presence of Pinedale Black-on-red, with a terminal date of A.D. 1325, suggests slight overlapping with Clusters VI and VII and may mark the transitional period between the abandonment of the plaza and the construction of the Great Kiva. Moreover, during the subfloor testing of Room 14 (Fig. 2), the base of a wall was uncovered extending under the west wall of the room at a depth of more than two meters below the surface (and almost a meter below the room floor). This was the first evidence of superimposed architecture in the Cluster V area. The wall may or may not have been associated with the plaza surface. The situation suggests, however, that an

unknown amount of time must have elapsed since the structure of which the wall was a part fell into disuse and a meter of trash was permitted to accumulate on top of it.

So far stress has been placed on those factors which support an early date for Cluster V. On the other side of the ledger must be noted the occurrence of the relatively later wares: Pinedale, Cedar Creek, and Four-Mile polychromes (beginning 1300), all of which are present in moderate frequency (Table 10, pp. 68). They may be intrusive from the later period mentioned above but there is no way to determine if this is indeed the case. Also, it is necessary to account for the occurrence of Cibecue Polychrome ("1337-1348"). As noted above, the tree-ring evidence for Cibecue Polychrome is not good. More information will be needed for adequate dating. If Breternitz' dates are correct, there is the possibility that the burials containing Cibecue Polychrome date from the later, intrusive period. However, I suspect that the dating is at fault here and will have to be revised downward into the recovery and evaluation of more examples of Cibecue Polychrome associated with datable tree-ring specimens.

On the basis of the foregoing evidence, I would assign a probable date of A.D. 1275-1325 to the early (plaza) component in Cluster V. This date is based on the presence of Pinedale Black-on-red in the sample, the tree-ring dates, and the stratigraphy. It is also supported to a degree by the sparse and sporadic occurrence of relatively early tradewares such as Maverick Mountain polychrome (1265-1300) and Salado White-on-red (about 1300). The later component

appears to be more or less contemporary with the Cluster VI-VII cemetery. A date of A.D. 1300-1350+ is suggested as reasonable for the kiva complex.

A Cluster Chronology

To recapitulate, then, there are essentially three periods which may be defined, at least on a tentative basis, as derived from the burial materials.

The earliest period, Period 1, A.D. 1275-1325, is centered on the old plaza area in Cluster V, underlying the Great Kiva and its related structures. Interment is through the plaza floor and probably in trash deposition areas peripheral to the plaza but as yet untested. The oldest rooms at the site might be expected to be located around the plaza.

By Period 2 times (A.D. 1300-1335/50), the area of occupation had apparently expanded to include the Great Kiva, constructed during this period, and its ancillary structures. Surrounding this nucleus, as evidenced by Test Trench 35 (the southern projection in Figure 23, are trash deposition areas which contain some of the burials for that period (and possibly Period I). Trash and naturally deposited sediments covered the western half of the plaza by this time and some percentage of the burials there also date from Period 2. Clusters VI and VII and the late component in Cluster V are assigned to Period 2.

Finally, in Period 3 times, the eastern bank of the (old) wash, in many cases overlain by a layer of Period 2 trash, was utilized for house construction as the population increased (A.D. 1300-1385).

Clusters I, II, III and IV belong to this latest period. The portions of the site occupied during the three time periods are represented graphically in Figure 23 (end pocket).

Three things should be borne in mind when considering the foregoing model. In the first place, it is based solely on the burial materials, contrasted with one another to yield the sequence posited above. The burial assemblages are not correlated with room contents. Such a correlation is beyond the scope of this paper. The time-area map (Fig. 23) involves architectural units, more or less central to the areas utilized as cemeteries at given time periods. However, the materials from these rooms have not yet been compared with the materials from the projected correlative burial areas.

Second, as was pointed out in the section on Sampling Error, excavation at the site has so far been largely restricted to the southern half. It is impossible to say where the northern units fit into the picture. Additional research on either one of these questions will probably alter the preceding model significantly.

Finally, it must be remembered that no hard, fast divisions can be made between the time-area periods, except in an arbitrary way. To be certain, they graded into one another both temporally and spatially and considerable mixing was the result.

Social Factors

An Overview of the Prehistory of Eastern Arizona - A.D. 1100-1300.

As far as social structure is concerned, the extinct society at the Grasshopper site is inextricably linked with, and largely a

product of, the evolution of culture in eastern Arizona. To place the ruin in its proper perspective with regard to cultural development and environmental adaptation, it is necessary to review some of the conclusions from the excavation of earlier sites to the north of Grasshopper, on the southern edge of the Colorado plateau. This review makes it possible to integrate Grasshopper into an internally consistent model for the study of culture process in eastern Arizona.

Two sites are pertinent to the review, both excavated by the Southwest Archaeological Expedition of the Chicago Natural History Museum, under the direction of Dr. Paul S. Martin, during the period 1959-1964. Based at Vernon in east-central Arizona (Fig. 24), the project's objective was to investigate a number of ruins located in the same environmental zone but covering a long temporal span. The Hay Hollow Valley, located some 30 miles northwest of Vernon, was selected for the study because it fulfilled the prerequisites for the investigation and was close enough to Vernon to make excavation feasible. It was expected that the cultural continuum recovered by the investigations would be useful in the study of cultural process (the mechanisms of stability and change), changes in population size, and settlement patterns. The earlier sites are disregarded because they are not directly related to this problem. Emphasis is placed on two communities which together span the period A.D. 1100 to 1270.

The earlier of the two sites is the Carter Ranch ruin (Martin et al. 1962; Longacre 1963, 1964, 1966), a masonry pueblo composed of 39 rooms and an associated, although not contiguous, Great Kiva. The

Figure 24. A Map of east-central Arizona.

site, located in the southern end of the Hay Hollow valley, was occupied from about A.D. 1100-1200. Carter Ranch is important for a number of reasons. Earlier sites in the valley were small pit house villages containing ten to 20 structures, little changed from early Mogollon times (about A.D. 600). Later, the pit houses are replaced by masonry pueblo architecture, but the size of the community remained stable. In each case, the sites appear to have been inhabited by a small kin-related group, probably a single lineage. The subsistence base was corn agriculture, supplemented by hunting and gathering. At Carter Ranch, Longacre (1963, 1964) was able to demonstrate the presence of two such lineages, occupying two different portions of the site and maintaining two discrete cemetery areas. The demonstration was accomplished through the use of a ceramic design attribute analysis, the results of which yielded a bi-modal distribution of stylistic elements. Postulating female potters with matrilineal post-marital residence, this distribution could be explained in terms of the following model, paraphrased from Longacre (1964), which he derived in part from Eggan's (1950) study of modern Western Pueblo society.

In a kinship structure characterized by matrilineal post-marital residence, the manufacture of ceramics is passed down from mother to daughter. The pottery produced by such groups of related females (matrilineages) constitutes a stylistic microtradition, distinctive enough to be recognizable from other similarly derived microtraditions. Microtraditions thus defined are more similar internally, cross-cutting a number of pottery types, than "X" microtraditions are alike for a given pottery type.

Once it was established that there were two such microtraditions at Carter Ranch, it became possible to correlate architecture with burial areas, employing the ceramic analysis mentioned above. From this, Longacre concluded that Carter Ranch was occupied by two corporate units, most probably matrilineages, which occupied and maintained control of room blocks and cemeteries through matrilineal inheritance over a considerable period of time (about four generations).

The approach sketched above represents something of a "first" in Southwestern archaeology but of major significance to this study is the fact that by 1100, the size of the local group had rather abruptly doubled. Also, at the same time, the number of such sites in the Hay Hollow Valley showed a corresponding decrease. This points to a concentration of population in fewer, but larger, sites; the beginning of a trend which was to culminate in the thinly distributed but massive historic pueblos still occupied today (for example, Zuni). What caused the population concentration?

Before an answer to this question may be attempted, however, it is necessary to consider briefly the second site, Broken K pueblo (Hill 1965, 1966). Broken K is a roughly rectangular masonry pueblo, one story in height, containing 95 rooms located around a central plaza. It is situated at the opposite end of the valley from Carter Ranch and is dated by the radiocarbon method to A.D. 1150-1270. The methodology employed by Hill is similar to that used at Carter Ranch, although perhaps on a more sophisticated level.

At Broken K, Hill was able to isolate five localized matrilineages, which he prefers to call uxorilocal residential units in the tradition of Service (1962: 120). These, in turn, were grouped into two larger residence units, indicative of a higher degree of socio-cultural integration than was present at Carter Ranch. It should also be borne in mind that Broken K is more than twice as large as Carter Ranch and, although partially contemporary with it, was occupied well into the thirteenth century. Furthermore, Broken K was the only site left in the Hay Hollow Valley by A.D. 1270. Finally, it too was abandoned and the valley became depopulated. The evidence from Broken K indicates an acceleration of the trend toward population concentration in fewer sites first seen at Carter Ranch. Again: "what were the causal factors?"

The evidence for the causes of population concentration and the eventual abandonment of the Hay Hollow Valley comes from diverse sources, but is nicely summarized in Longacre (1966: 95-102). A combination of environmental factors appears to be responsible for the population shifts. Pollen analyses were extensively utilized in the interpretation of climate but palynological studies (Martin et al. 1962: 191-194); Hevly 1964) fail to indicate any major climatic changes. However, both at Broken K and at Carter Ranch, the pollen reports do show slight shifts in frequency which, taken together, point to a series of subtle environmental changes.

Pollen spectra studies by Schoenwetter (Martin et al. 1962: 194-206) point toward a slight shift in the rainfall pattern beginning

around A.D. 1050. This corresponds neatly with the date for the beginning of population convergence in the Hay Hollow Valley, as seen at Carter Ranch. Later, around 1300, environmental changes also appear to account for a lowering of the mean annual temperature in the Hay Hollow Valley by perhaps two or three degrees. This apparently insignificant change had far reaching results for it reduced the number of frost-free days on the plateau to below 120 days per year. This is significant because 120 frost-free days are the minimum required to bring a corn crop to maturity. Longacre (1966: 95) notes that farmers in the Vernon-Snowflake area today consider themselves fortunate if a crop of corn reaches maturity once every three or four years. It is clear that such a sporadic crop would not be suitable as a subsistence base and, in fact, the pollen evidence points to increased exploitation of wild cereal crops at Broken K after about 1250 (Hill 1965).

Finally, it is difficult to resist introducing evidence of the Great Drought of A.D. 1276-1299 into this problem (Douglass 1935: 47, 48). The well-founded criticisms of Gladwin (1947) and others have led to an intensive restudy of the complex relationship between the annual growth cycle and climatic factors (Fritts and others 1965) but the evidence for a severe and protracted drought over much of the plateau appears to be confirmed. Although the drought seems to have reached maximum severity in 1281-1283, and in 1293, after the abandonment of Broken K (1270), it is possible that it contributed to the final abandonment of portions of the Colorado Plateau by A.D. 1300. The drought is not demonstrated as causal for population movements all over the plateau. For example, in Tsegi Canyon, some 175 miles

to the north of the Hay Hollow Valley, there is no good evidence of a drought. Arroyo cutting, suggestive of considerable (seasonal) rainfall, appears to be the dominate erosional form there. In the Vernon area itself, there is no evidence for a drought, possibly because no suitable tree-ring material has been preserved. Pollen data (Hevly 1964) from the area are suggestive of a slight lowering of the mean annual temperature rather than any sudden decline in precipitation, however. In review, it would seem that the influence of the drought on the plateau was somewhat localized. It also appears to have effected conditions to the south of the plateau, in the transitional zone below the Mogollon Rim (Fig. 1) for it is clearly indicated in the tree-ring material from Grasshopper, a point to which I shall return below.

Given the combination of factors mentioned above, it is possible to explain the changes in settlement patterns and in social integration as adaptations to an increasingly hostile environment (abstracted from Longacre 1966). Beginning around 1100, it became increasingly necessary for the inhabitants of the scattered single villages to concentrate in those areas (usually stream valleys) where a reliable water source could be found. This led to the convergence of unrelated populations at a limited number of sites (for example, Carter Ranch). The corresponding increase in population density must have necessitated a change in the mechanisms required for the integration of the newly formed community. It is apparent that the kinship ties of the pre-1100 villages would be inadequate for dealing with the

heterogeneous society created by the convergence of many such single villages in an "oasis" situation. New forms of social integration had to be developed. It is suggested that religion was one such form, for the earliest Great Kivas appear at that time in the Hay Hollow Valley. Religion appears to have been unsuccessful, however, for after 1200 the Great Kivas were no longer constructed. The convergence of population continued, leading to fewer and larger sites and culminating (on the plateau) with sites like Broken K. At Broken K, Longacre (1966: 100) suggests that a pattern of reciprocal exchange of products (and probably services as well) constituted a strong integrative mechanism which led to the interdependence of the heterogeneous social units which made up the population at that site.

There can be no doubt that the plateau societies adopted, altered and finally rejected a number of different forms of social integration in their attempts to cope with an increasingly dense population in an increasingly severe environment. But, in the end, all were apparently unsuccessful for by about 1270, the plateau was abandoned except where the microenvironmental zones of deep valleys still permitted suitably higher annual temperatures for the growing of reliable corn crops. By A.D. 1300, conditions became too extreme for subsistence corn agriculture in the upland plateau sites and they were abandoned. It is suggested that the population might have moved south into the broken and dissected transitional zone below the Mogollon Rim. Here it became concentrated in a few extremely large pueblos, examples of which are Grasshopper, Kinishba and Point of Pines. The deep river

valleys continued to be occupied for about a century longer than the rest of the Plateau. The Shumway Ruin, Table Rock, Hooper Ranch, the Four Mile Ruin and other valley sites were not abandoned until about 1400.

It should be noted that prior to this time (1300), the evidence suggests that some of the transitional zone valleys, such as the Salt River Draw, contained a relatively sparse population, dependent on hunting and gathering as well as corn agriculture. William J. Robinson suggested to me that the area was not suitable for agriculture because, prior to the coincidence of the three climatic factors mentioned above, it was too heavily forested to make farming practical, given a digging stick technology. With the shift in rainfall pattern (not yet demonstrated at Grasshopper) and the presence of the Great Drought (well documented), it is possible that a considerable thinning out of the forest environment may have occurred. This would have produced a topography more amenable to exploitation by digging stick agriculture. The Salt River Draw was not entirely devoid of population, however. A number of agricultural villages have recently been found within a two mile radius of Grasshopper. They encompass the period from Mogollon I (about A.D. 1) to Pueblo IV (Grasshopper), so it is apparent that the region was not so heavily forested as to preclude all effective agriculture. It is suggested, however, that the population increased considerably around 1300, as was the case at Point of Pines. This remains to be demonstrated.

The change in temperature does not appear to have effected the growing season in the transitional zone in any significant way. Corn

agriculture is still a practical operation in Cibecue today. Probably this may be attributed to the lower elevation. It would appear, then, that as the population declined on the Plateau in response to climatic changes, those same conditions might have created a new area (the transitional zone) to the south which could be "colonized" by the displaced Plateau farmers.

This model explains a lot of things about the Grasshopper ruin. It is in accord with the date for the initial occupation of the site (about 1300), it explains the seeming lack of time depth (about 100 years) at the ruin, and the apparent contemporaneity of many of the surrounding sites. The model is also supported by the data from Point of Pines (Haury 1958), another large Pueblo IV ruin, some 75 miles southeast of Grasshopper. The Point of Pines region also appears to have been occupied prehistorically for a long time. A small but relatively stable population inhabited the area from about A.D. 400 until about A.D. 1100 - 1200, depending for subsistence upon corn agriculture supplemented by hunting and gathering. Starting around 1100, the population increases slowly but steadily with a noticeable sharp rise at around 1300. The trend toward fewer but larger sites is apparent at Point of Pines beginning at 1100. There is also good evidence at Point of Pines for a prehistoric migration from northern Arizona during this period (Haury 1958: 1 - 8). This takes the form of an intrusive pueblo occupation site, apparently coexisting with the indigenous people for about 15 years. The site is characterized by pottery from the Kayenta area and is securely dated by the tree ring method at A.D. 1285 - 1300. The pueblo was apparently burned in 1300,

possibly by the inhabitants of Point of Pines. The period is termed the Maverick Mountain phase at Point of Pines. It is now possible to go on with the evaluation of the social structure as evidenced in the burial population at Grasshopper.

Grasshopper

There are innumerable ways of approaching the study of structure in society and as many ways of dealing with social integration as there are integrating mechanisms. Spicer's four-fold analysis of the parts of a social system (presented in class at the University of Arizona) was adopted as the basic framework upon which to organize our discussion of the Grasshopper burials.

Spicer contends that it is possible to view all social systems in terms of four complexly interrelated "subsystems" (adapted from Lowie 1948). First, and of primary importance in primitive societies, is the kinship subsystem; status-role behavior defined in terms of biological descent. Kinship subsystems are universal in human society. Second are coresidence subsystems; status-role behavior organized with reference to residence groups. All societies organize some of their activities in terms of residence groups for residence is universally used for assigning and achieving roles. The familiar concept of territoriality involves role behavior defined in terms of membership in a residence group. Third are sodality subsystems; those roles and structures membership in which is determined by voluntary association. Sodalities are not universally found. They characterize the tribal level of sociocultural integration, as defined by Service (1963), and are found in chiefdoms and states but are lacking in bands. Finally,

the fourth major part of a social system is the stratification subsystem. Stratification, or rank, may be defined as roles or structures, the basis of which is a relative evaluation by the members of a society which results in the assignment of high or low status to individuals as members of social units.

Kinship. Evidence concerning the structure of the kinship subsystem at Grasshopper is tenuous indeed. Ceramic attribute analyses similar to those used with such success at Carter Ranch (Longacre 1963) and Broken K (Hill 1966) must be conducted before any definite statement can be made on the subject. With respect to kinship, little patterning can be observed in the behavior of the ceramics, non-ceramic artifacts or in the burial attributes themselves that promises to shed much light on the problem, except in a general way. Likewise, the ethnographic material dealing with the modern Western Pueblos can be used only to a limited extent to provide an explanation for the burial distribution.

Eggan (1950), in his excellent discussion of the social organization of the Western Pueblos, makes note of the burial customs of the Hopi (pp. 57 - 59, 130), Zuni (pg. 195), Acoma (pp. 236, 237) and Laguna (pp. 266, 267) communities. In each case, however, the influence of Christianity appears to have altered radically, although not replaced, the aboriginal pattern. This fact is more evident in the mythology surrounding death than in the burial customs themselves.

The Hopi funeral rites vary somewhat between villages but have a number of consistent elements shared by all groups. Death is feared in Hopi society and the body is prepared and buried as soon after death

as possible. Indications are that the father's sister officiates on these occasions. She "washes the deceased's head for the last time," places prayer feathers on the body and a "cloud mask" of raw cotton over the face. The burying is done by a father or son of the deceased, assisted by any man who is willing to help. Burial grounds are located at the foot of the mesas.

The flexed body is interred with food and water along with a vertical stick to . . . allow exit from the grave. . . . The property of the dead passes by inheritance to his or her relatives. The house and furnishings and the clan lands assigned to a household are corporate properties held in trust by the lineage, but personal property may be disposed of as desired. A woman . . . leaves her belongings to her daughters . . . a man leaves ritual property to his brothers or nephews but . . . his personal property and sheep are usually divided among the children, the sons often taking the major share. (Eggan 1950: 58)

At Zuni, a slightly different pattern prevails.

According to Cushing, the dead were formerly cremated and their ashes thrown into the river . . . now they are buried in the churchyard, with their heads to the east. The father's mother or father's sisters bathe the deceased and dress the body. The clan of the deceased and the spouse's clan are notified, as are the society (sodality) mates, and relatives come to mourn. The brother or father's brothers of the deceased dig the grave and bury the body. The father's mother will carry a deceased infant to the cemetery, though one dying at birth may be buried under the floor of the house. If a wife has died, the father's sister of the husband comes to the house before the burial and takes him to his people, washing his head. He does not return to his wife's household: "Death takes two, not one," say the Zuni. (Eggan 1950: 195)

Eggan also notes that the katchina mask of the deceased is buried near his grave, as are offerings (type unknown) made by the family.

At Acoma, the accounts of death and burial vary somewhat.

In the Origin Myth the medicine men prepared the first dead for burial, painting their faces in the prescribed manner and cutting their hair and attaching feathers to it. According to White, the faces of the males are painted with designs used when they were first presented to the sun at the naming ceremony;

girl's faces are smeared with pollen....It is not clear whether these are clan designs or not. Burial is in the churchyard...both the father's people and the mother's people (participate). The father makes prayer sticks for the deceased...a woman relative breaks a jar of water over the grave...the heads of a widower and his children are washed by the women of his mother's household...he may elect to return home with his mother or remain in his wife's household to look after the children (Eggan 1950: 237).

The Laguna custom is as follows:

At death, the medicine man comes and prepares the body for burial. A father's clanswoman, normally the father's sister,washes the corpse. The mother's brother or father may dig the grave, the body is buried with the head to the east....After the death of a wife, a husband may stay with her family to look after the children or he may return to his mother's or sister's house. Houses are inherited by the women of the household, fields and sheep are now divided among the children. Ritual knowledge and paraphernalia are...inherited in the female line, except for masks (Eggan 1950: 266).

The preceding quotations suggest that, in the ethnographic situation at least, funerals function as community solidarity reinforcing mechanisms. Both affinal and consanguineal relatives participate in strictly defined ways for example, the role of father's sister, ameliorating to an extent the divisive character of the matrilineages so strongly emphasized in Western Pueblo society. This is an integrative mechanism which may have done much to increase social solidarity in prehistoric times as well. It is clear, however, that radical changes have occurred in the nature of contributed burial offerings, probably due to the influence of Christianity. These differences are most apparent when contrasting the burial offerings as described by Eggan with those recorded for Grasshopper. At Carter Ranch, Longacre (1963) was able to correlate room blocks (probably occupied by

matrilineages) with cemetery areas, using the ceramic design attribute analysis mentioned above. If affinal and consanguineal kin participated in the funeral ceremonies at Grasshopper, that fact should become apparent in the nature of the contributed grave offerings. A design attribute analysis will be necessary to demonstrate this, however, because the pottery types themselves do not reflect any patterning which can be explained by inferred kinship factors.

Other correspondences between the ethnographic situation and the Grasshopper burial assemblages are burial with the head facing east, (Zuni, Laguna) and sub-floor interment of infants (Zuni). The former custom is probably related to devotion to the sun, a well-developed Western Pueblo trait (Hopi). Phratry designations note relationship to the sun. The sun also figures prominently in Western Pueblo mythology. Sub-floor burial can be tied in with the custom of waiting for a period of time before naming children. This is an important part of the clan initiation ceremony (Hopi). Before this period has elapsed (20 days in Hopi society), the child is not a clan member and must be accorded differential treatment. Should it die, it could not be buried with its (future) clansmen. In this connection, Eggan (1950: 47) also notes that "children who die in infancy, or before being initiated into the Katsina cult (at age 8 to 10), are buried in different locations." Western Pueblo society is characterized by a whole series of similar transition rites, extending from those concerned with birth (such as naming, clan initiation) to those conferring adult status. These ceremonies constitute, in effect, an age-grading

system and are apparently reflected to an extent prehistorically in the burial assemblage at Grasshopper. The burial data from room clusters also appear to support, at least impressionistically, Eggan's contention (1950: 262, 263) that the minimal social unit appears to be a compound extended family, consisting of two or three generations (Fig. 25).

Finally, it is clear from the analysis that the burial population at Grasshopper has a very peculiar sex ratio: 26 males, 48 females. This is a site-wide phenomenon but is particularly apparent in Cluster V (13 males, 26 females). It would probably be most reasonable to account for this distribution in terms of sampling error. There are still large portions of the site that have not yet been tested. It is possible, of course, that some males were buried elsewhere, perhaps, in conflict situations, those killed on raids would be buried away from the pueblo. Kinship factors may be involved as well. Perhaps there are cemeteries reserved for the burial of certain of the male adults. This would not be unexpected in a society as highly stratified as Grasshopper appears to have been. A better sample is needed to answer these questions.

Coresidence. Social units which have their bases in coresidence are composed of individuals whose status-roles are defined in terms of where they live. In primitive society, the number of social units with a purely territorial (that is, residential) basis is extremely limited. An extended family, for example, has a double basis for role recruitment: territorial relationship and geneological

Figure 25. A Diagram of a Typical Matrilineal Extended Family. Key: $\triangle$ = male, $\circ$ = female, F = "father," M = "mother," FS = "father's sister," MB = "mother's brother," X = the matriline, $\triangle$ = members of a given lineage, $\blacktriangle$ = members of other lineages, - = a marriage (after Schusky 1965: 31).

relationship. It is easy, however, in contemporary society to isolate groups the basis for membership in which is territorial location alone. The status-role of "citizen of the United States" is an example. According to Service (1963), territorially-defined roles have three primary functions: (1) policy making, (2) administration and (3) adjudication. In other words, they combine to form the "leadership" of the community. Generally speaking, however, such status-roles are not segregate entities in primitive society. They are closely inter-related with other roles which have a different basis for recruitment: for example, kinship. An example of a kinship-linked territorial unit in modern Western Pueblo society is the Hopi Bear Clan. After 1600,

...the village chieftaincy became associated with a single clan, the Bear clan, but political power and control were never wholly placed in the hands of the chief. Rather the village remained organized on the basis of reciprocal services performed by various (internal) groups for the benefit of all and depended on external pressures for much of its integration (Eggan 1950: 130).

It is doubtful if there are any purely territorially defined roles noted in the ethnography of the modern Western Pueblos. At the present time there are, of course, village "governors," councilmen and so forth, in short, a territorially-defined political hierarchy instituted by the Bureau of Indian Affairs, but these offices are not part of the aboriginal pattern. It would appear that, before government control was initiated, most offices which had a territorial function were hereditary as well (and, therefore, also had a kinship basis). Decisions were made by a council of priests (Zuni) or some similar body, membership in which tended to be hereditary in the sense that

it was restricted to a single clan. The aboriginal system remains in force today, although restricted in scope by the secular powers of the governor and the village council.

Much more may be said about territorially defined social units but a discourse at length on this interesting subject cannot be justified in the context of this paper. The analysis of the burial at Grasshopper did not lead to the identification of those individuals with territorially defined status. There can be no question that such individuals existed, however. It is even possible to suggest that statuses existed, in contradistinction to the modern Western Pueblo model, which were defined solely on a territorial basis. However, it is not yet possible to identify them. The extinct society represented by the Grasshopper pueblo gives every indication that it was the equal of the modern Western Pueblos in terms of the inferred complexity of the social organization. At Grasshopper, it would not be unreasonable to expect that statuses which had their basis in territoriality might also be defined in terms of kinship, as in the modern Western Pueblos, or indeed, in terms of social stratum.

Sodalities. Sodalities, or non-kin based voluntary associations (Tonnies 1957), are a ubiquitous feature of Western Pueblo society. They are found in all of the communities, but are most elaborately developed in the fraternal associations of the Hopi and the Zuni. It is possible in a general way to equate them with special interest groups which do not have a kinship basis for membership recruitment. Perhaps one of the best measures of the complexity of a society is the number of different kinds of sodalities in which its

members participate (Officer 1954). The Western Pueblos support dozens of such groups. The best known are the Katchina cults which are represented in all of the villages. They are the classic example of a sodality pan-tribal in scope (as, for example, among the Hopi), the mechanism which characterizes the tribal level of socio-cultural integration in the Service (1963) typology. There are, of course, a number of other kinds of sodalities; priesthoods, kiva societies, even gaming parties, some of which (priesthoods) may have political functions (Kroeber 1917: 183). Whatever the special interest group involved, however, they all share the characteristic of role recruitment based on voluntary association.

It is clear that sodalities are cogent integrative forces in that they cross-cut kin and territorial based social units. As was the case with territorially-defined social groups, sodalities act to reduce the divisiveness of the strong matrilineages which characterize, to a greater or lesser extent, the modern Western Pueblos. As Kroeber (1917) has pointed out (with reference to Zuni):

Four or five different planes of systematization cross-cut each other and thus preserve for the whole society an integrity that would speedily be lost if the planes merged and thereby inclined to encourage segregation and fission. The clans, the fraternities, the priesthoods, the kivas, in a measure the gaming parties, are all dividing agencies. If they coincided, the rifts in the social structure would be deep; by countering each other they cause segmentations which produce an almost marvelous complexity, but can never break the national entity apart (in Eggan 1950: 217).

Zuni social integration is the most complexly organized of all of the Western Pueblos, but Kroeber's statement holds true for the other villages as well.

The presence of sodalities in the modern Western Pueblos can, in certain cases, be discerned in the nature of the funeral offerings. Eggan (1950: 195) points out that, at Zuni, the katchina masks of the deceased is buried near his grave, along with other offerings. At Laguna, however, the mask is inherited in the male line, in contradistinction to other ceremonial property, and is not included with the burial offerings. The Grasshopper burials contain no recognized evidence of sodalities. A number of circumstances could account for this situation. It is entirely possible that sodality contributed burial furniture was of a perishable nature (a wooden mask, for example) and that no trace of it remains today. It is also possible that sodality contributed burial goods were not recognized as such in the analysis. Finally, sodalities might have been present but contributed nothing to the burial offerings of their membership.

The possibility cannot be disregarded, of course, that there were no sodalities at Grasshopper but the inferred nature of the social organization at the site argues against this suggestion. Seen in the perspective of the development of culture in eastern Arizona, it would be most unlikely if sodalities of one form or another had not developed by Pueblo IV times. The evidence suggests that as early as A.D. 1100 (Pueblo II), population convergence due to environmental stimuli was beginning to create communities large enough and composed of sufficiently heterogenous populations to preclude the effective use of kinship as the sole basis for social integration. As noted above, it was also during this period that the first Great Kivas appear in the Hay Hollow Valley. At Carter Ranch, a single Great Kiva was found

associated with a site occupied by two distinct lineages (Longacre 1963). This is strongly suggestive of the presence of a non-kin based kiva society (a religious sodality), cross-cutting and integrating the dual lineage kinship organization at the site. It would not be unreasonable to expect such an integrative device as a sodality to have developed at Carter Ranch, given the conditions of the time and the necessity for integrating an increasingly complex and heterogenous population. At Grasshopper, a site many times as large as and far more complex than Carter Ranch, we could surely expect an even more elaborated development of sodalities, taking into consideration the fact that the stimulus for the development of sodalities (environmental stress) had intensified rather than ameliorated during the intervening two centuries which separate the occupation of the two sites. Furthermore, the size and heterogeneity of the population had increased many times over at the Grasshopper ruin. In conclusion, it would seem reasonable to expect sodalities at Grasshopper, but their presence at the site remains to be demonstrated. The preceding argument, therefore, through lack of evidence, must fall into the realm of speculation.

Social Stratification. Stratification, or ranking, may be defined as roles of structures based on a relative evaluation by the members of a society that results in the assignment of high or low status. It is important to establish here that this definition refers not to ranking in authority roles, a cultural universal, nor to prestige, a function of how well an individual fulfills his role (another universal). Stratification must be defined in terms of

privileges in a society assigned or achieved by individuals as members of a social unit. Differentially available privileges will lead to ranking of social units, as I will try to indicate below. Stratification is characteristic of chiefdoms and is found in the state level of socio-cultural integration but is not present, according to Service (1963) in bands or tribes, which are essentially egalitarian in nature.

With respect to Western Pueblo society, it may be possible to take issue with the proposed egalitarian nature of tribal societies.

Service (1963: 114) states that

The egalitarian nature of (band) society, the lack of political hierarchies and dominant groups, continues in tribal society. Leadership is personal - charismatic - and for special purposes only in tribal society; there are no political offices containing real power, and a "chief" is merely a man of influence, a sort of advisor. The means of tribal consolidation for collective action are therefore not governmental.

It is clear that in Western Pueblo society, supposedly on the tribal level of socio-cultural integration, we can see the emergence of social stratification, as defined above. At Zuni, for example, there are 14 priesthoods in which reside the ceremonial and, to an extent, political authority of the tribe. The priesthoods are hereditary within matrilineages but they are not equally distributed among the eight Zuni clans. Rather, four of the most powerful priesthoods are concentrated in the Dogwood clan. Four others, of lesser importance, are lodged in the Corn clan. Three are in the Eagle clan and one each is controlled by the Badger and Sun clans respectively. The remaining three clans have no representation whatsoever in the priesthoods (Eggan 1950: 200, 204). This distribution concentrates political and ceremonial

authority in the Dogwood clan, creating to an extent, a hierarchical structure maintained and reinforced by the hereditarily super-ordinate position of that particular kinship unit.

Zuni is characterized by the most complex social organization of any of the Western Pueblos. The elaboration of Zuni social structure may be, in part, attributed to Spanish contact. Perhaps a better known example of such "incipient (or weakened) stratification" is the Hopi Bear clan (and phratry). There are 12 phratries represented in the Hopi villages, containing a total of some 53 clans. At all of the villages except Walpi (where it is extinct), the Bear clan has obtained "a pre-eminent position, bolstered by ceremonial associations and the (mythologically sanctioned) control of land (Eggan 1950: 119)." The Bear clan has the sole privilege of selecting from its membership the village (peace) chief. The position of the village chief is of considerable importance. Theoretically, he "owns" the land and any crop produced thereon. The people address him as "father" and are considered his "children" (Eggan 1950: 107). The superordinate position of the Bear clan is further reinforced by village endogamy.

From the two examples cited above, it would appear that the tribal level of socio-cultural integration is not always as egalitarian as Service would have us believe. In the Western Pueblos, privileges (and power) are restricted to certain segments of the society and rank is awarded on the basis of membership in a particular social unit (for example, the Dogwood, Bear clans). Stratification units are not segregate entities, however, and must be seen in terms

of a basis in kinship, in this case, clans. The preceding discussion has real significance to the consideration of the social structure of Grasshopper, for a highly stratified society is evident in the analysis of the burial population at the site.

It is clear that two quite different populations are represented in the Cluster V/Cluster O-IV, VI, VII dichotomy described in the analysis. The factors of age, sex, orientation, position and facing, however, are meaningless in making this classificatory distinction. All ages and both sexes are represented in random fashion in the two major cluster groupings. The same is true for the other categories. Only on the basis of grave goods and provenience can the two groups be defined in a meaningful way. The tremendous variation observed in the burial population can be explained in terms of a model for social stratification. In drawing analogies with the modern Western Pueblos, however, the fact must be taken into consideration that (1) modern Western Pueblo burial customs have been influenced somewhat by Christianity, and (2) the exact nature of contributed burial offerings is not recorded in detail. A contrast of Cluster V with the Cluster O-IV, VI, VII grouping can now be attempted. First, however, a point of similarity between the major cluster groupings is the fact that, as a rule, the grave goods associated with immature specimens tend to be the objects of personal adornment such as pendants, anklets, bracelets, rings, rather than objects of possible functional significance (pottery vessels). The presence of pottery with adolescents and adults but not with infants or children could

be interpreted as an indicator of the age at which the individual became a functioning part of the community; that is, when he or she attained adult status. A detailed analysis by a physical anthropologist has not yet been completed for the skeletal material and such an analysis is a pre-requisite before such a problem can be effectively investigated. The numerous transition rites which are a characteristic feature of Western Pueblo society have already been mentioned. It is possible that specific kinds of artifacts may be found associated with burials of specific ages. This would point to an elaboration of passage rites analogous to the modern Western Pueblos, constituting, in effect, a system of age-grading which would be reflected in the burial population. More precisely, individuals of one age-set would be characterized by different ornaments or pottery from those of another age-set, indicating their relative statuses in the age-grading system. So far, however, this is only suggested in the burial data.

Numerous references have already been made to Cluster V as an area of high status burial. This fact is particularly evident in Tables 11, 15 and 16. It is now possible to make some inferences about the nature of the status differences which have been observed. When the distribution of grave goods is compared with the ages of the burials, it becomes clear that sub-adults make up a considerable proportion of the richly appointed burials in Cluster V. By contrast, the Cluster O-IV, VI, VII grouping includes very few infants and children whose burials could be considered well endowed. This is

suggestive of the manner in which statuses were assigned at the Grasshopper ruin. If high status can be equated with many and low status with few burial offerings, it is clear that in Cluster V there are several sub-adults (even neo-natal infants) who must be classified as high status individuals. It is equally apparent that it would have been impossible for these individuals to have achieved status. The conclusion follows that statuses were ascribed (Linton 1936: 113). This begs the question: "ascribed in terms of what?"

In the review of the ethnography, an attempt was made to demonstrate that stratification based on lineage affiliation does, in fact, occur to a limited extent in Western Pueblo society. A model which posits a system of ranked lineages best explains the situation at Grasshopper as well. Status ascription in terms of lineage rank would account for the differential treatment of sub-adults in Cluster V. It would be possible to argue that the richly appointed adult burials reflect achieved status (for example, successful warriors) but such is clearly not the case with infants. The only claim they can lay to rank of any kind must be kinship based; that is, through their own parentage. This all fits in well with the definition of a stratified society already presented. The basis for classification is a relative evaluation by the members of a society which results in the assignment of high or low status. We are obviously not dealing with the ranking of authority roles (at least so far as infants are concerned) nor are we recovering evidence of individual prestige. Finally, stratification is in terms of membership in a social unit, in this case probably

Figure 26. Cluster V - High Status Sub-Adult Burials.

a lineage, and is not assigned on an individual (that is, achieved) basis. Burials of high status lineages appear to be localized in the Great Kiva-plaza area. Cemeteries utilized by lineages of lower status are found distributed throughout trash deposition areas on the peripheries of the site.

We can make no pretense of understanding the complexities of social ranking at Grasshopper beyond the outline given above. The anticipated design attribute analysis should do much to elucidate this situation. It is clear, however, that the evidence indicates a society with a much more elaborate development of stratification than is present in the modern Western Pueblos. It is possible to suggest an explanation, admittedly untested, for this situation couched in terms of our review of the prehistory of eastern Arizona.

Earlier, it was contended that population convergence due to environmental stress may have led to experimentation in new forms of social integration (Longacre 1966). It was also pointed out that some of these forms were apparently successful for a time, later became inadequate, and were subsequently discarded. An example suggested by Longacre (1966) for the Carter Ranch site was religion. In the same article, Longacre also postulated a network of reciprocal exchange of goods and services as a possible integrative mechanism for the later, larger Broken K site. Given conditions of re-adaptation to a new environment and a large and heterogeneous population, it would not be unreasonable to expect a continuation of this trend at Grasshopper. But the Grasshopper ruin represents a far larger and, if the

model postulated above is correct, more heterogeneous society than does Broken K. While it is true that mutual economic interdependence is a strong force for social cohesion given heterogeneous groups, the integrative function of such a system might begin to collapse if too many uncoordinated, egalitarian units were introduced into the exchange network. It seems probable that some form of authoritarian directive agency would have to develop to formalize and coordinate such a complex system of reciprocal exchanges. Whatever this agency might be, it would have to occupy a superordinate position with respect to other groups in order to exercise effective control over them. A lineage powerful in terms of leadership in ceremonial associations, perhaps bolstered by a monopoly on the production of some economically important item, would be in a most favorable position to exert its influence over similar but less well endowed groups. Once a lineage gained ascendancy, the relationship of the other lineages to it would be defined in the mythology as in the Hopi example, creating thereby a hierarchical structure of a chiefdom-like nature. I would like to speculate that something similar to this occurred at Grasshopper.

I am not suggesting that Grasshopper was a chiefdom. There is, as yet, no evidence of a centralized economic redistributive agency, the hallmark of the chiefdom level of socio-cultural integration in the Service (1963) typology. Yet it seems apparent that Grasshopper was not a tribe either, for tribes, according to Service, are universally egalitarian in nature. The reader should not be surprised at this taxonomic difficulty.

The period immediately preceding and encompassing the occupation of Grasshopper was one marked by subtle climatic shifts. This is particularly apparent in the tree-ring evidence from the site according to William Robinson. Culture has long been accepted as mankind's unique way of adapting to his external environment. Culture, then, in order to be effective, must be as fluid as those influences to which it must adapt. Societies, the observable manifestations of this adaptation, are in a constant state of flux, one social form changing imperceptibly into another in response to changes in the social or natural environment. Any rigid typology, and all typologies are rigid by nature, must fail to embrace all of the resulting social forms. I am of the opinion that the social organization of the Grasshopper pueblo represents one such transitional stage.

CHAPTER 6

CONCLUDING REMARKS

It was my hope at the outset to try to establish as clear a picture of the social structure of Grasshopper as was possible, given the restrictions of the burial data and the limitations of inexperience. In order to do so, I have tried to depart from the customary cataloging of artifactual materials and explore, sometimes in an admittedly speculative fashion, some of the ways in which the structure of an extinct society can be recovered from the archaeological evidence. Further, an attempt was made to discuss the Grasshopper ruin within the context of an evolutionary continuum of social forms, with the objective of developing an internally consistent model to explain the suggested social structure at the site. In all of these endeavors, speculation has played an important part. Such speculation, however, is drawn primarily from the suggestion of analogous situations to the modern Western Pueblos. It is useful because it acts to formulate questions and stimulate discussion. Whether the questions formulated can be readily answered or not is unimportant. What is significant is that they are being asked.

If I limited myself strictly to the concrete evidence revealed by this paper, I could list the following accomplishments: (1) a tentative internal chronology was proposed for the site, (2) functionally-specific areas were defined within the site; that is, common

cemeteries as opposed to those reserved for high status individuals, (3) some inferences were made concerning the nature of the patterned burial inventory and a model was devised for social stratification which is coherent in terms of the evidence and the reconstruction of eastern Arizona prehistory, and (4) certain methodological techniques were employed which show promise of being more widely applicable to archaeological data.

The preceding conclusions have value as small contributions to the study of the processes of social change and stability in the context of the development of the prehistory of eastern Arizona. From here, we must proceed to formulate generalizations which express the changes in social structure which we observe. These generalizations must be tested in other situations to determine their validity. Only through a continuing process of formulation and testing can we arrive at the cross-culturally applicable laws which govern changes in social forms. The development of such a body of laws must be the ultimate goal of anthropology.

In conclusion, the foregoing is not intended as anything more than a preliminary report; it must be regarded as such by the reader. At the least, the paper should provide a corpus of data for further research; it should provoke questions which may channel the investigations of others. If this latter objective has been realized, then I feel that my efforts have been adequately repaid.

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FIGURE 2. A TOPOGRAPHIC MAP OF THE SITE.

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