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THE MULTI-INDIVIDUAL CREMATION PHENOMENON OF THE SANTA CRUZ DRAINAGE

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ABSTRACT

Multi-individual cremation deposits found in the upper Santa Cruz River drainage were previously interpreted as the result of hypothesized cultural contact in the area. A review of 50 cremation deposits for which detailed analyses are available indicates that multi-individual cremation deposits are the result of incomplete gleaning practices and have doubtful cultural significance. Hypotheses are generated from the present data which account for the apparent variation in cremation practices within the study area.

INTRODUCTION

In an earlier volume of *The Kiva*, Reinhard described a small cremation series recovered from Nogales, Arizona (Reinhard and Shipman 1978). The method of interring the cremation deposits and the ceramics associated with the interments were demonstrated to be different from contemporaneous Hohokam villages in the Tucson Basin and Salt-Gila drainage. It was hypothesized that the observed differences were the result of cultural contact between the Hohokam and Trincheras cultures in the Nogales area. The area of cultural mixing was expanded to include the southern Santa Cruz drainage between Tubac and Nogales, Arizona.

Included among the cultural differences between the upper Santa Cruz drainage and northern Hohokam centers was the find of multiple cremation deposits. We now feel that this interpretation cannot be supported with current data. The inclusion of multi-individual cremation deposits in the repertory of upper Santa Cruz material culture is now seen as an attempt to make a cultural discrimination from what was probably an insignificant behavioral variation in the cremation process.

Since the publication of that article we have examined a second cremation series from the Santa Cruz drainage. These deposits were found on the grounds of St. Andrew's Episcopal Church in Nogales. They were carefully excavated and curated by the Reverend Douglas Lorig, the church's rector, and Ray Brown, a capable amateur archaeologist. Subsequently, the Reverend Lorig

notified the Arizona State Museum, and analysis of the material was undertaken in 1977.

After examination of the St. Andrew's Site remains, we reviewed the analysis sheets for all other cremation deposits recovered from the upper Santa Cruz drainage (Figure 1) which had been processed by the Arizona State Museum; 50 deposits were excavated between Tubac and Nogales, including the St. Andrew's Site remains. These deposits came from four sites, all dating in the Rillito-Rincon time phase. Two Baca Float sites, AZ DD:8:122 (ASM) and AZ DD:8:128 (ASM), were excavated by Doyel (1977), with osteological analysis completed by Shipman and Wolf (1977). The third site was AZ EE:9:68 (ASM), focus of the original article concerning southern Santa Cruz cremation practices (Reinhard and Shipman 1978). The fourth site is the St. Andrew's Site, AZ EE:9:67 (ASM). The cremation data from all of these sites are on file in the Human Identification Laboratory, Arizona State Museum.

TERMINOLOGY

The examination of Hohokam cremation deposits has resulted in a fairly extensive system of terms. The terms refer both to the cremation process itself and to the find of cremated bone in archaeological context. There is also some measure of synonymy among terms, making the system at times baffling and imprecise. To limit terminological confusion in the discussion of the southern Santa Cruz cremation remains, we believe it useful to define some of the terms employed in the study of human cremated remains.

Primary Cremation

Primary cremation is the practice of burning a body on a pyre or over a shallow pit and leaving the ashes and bone where they fall without separating the bone for burial elsewhere. In archaeological context this refers to the remains of a primary cremation. A description of primary cremations in archaeological context and a reconstruction of the process of primary cremation has been presented by Wasley and Johnson (1965:53-54, 66-67).

Secondary Cremation

This refers to the sorting of bone from ash at the place of burning and interring the separated bone at some point away from the place of burning. Secondary cremation is a misnomer, for it actually refers to the deposition of bone, not to the process of burning a body. It is also inaccurate in that secondary cremation deposits usually contain only a portion of the bone from a cremation episode and, therefore, are not totally representative of an actual cremation. The term cremation implies the presence of a complete individual. We prefer the term cremation deposit in place of secondary cremation.

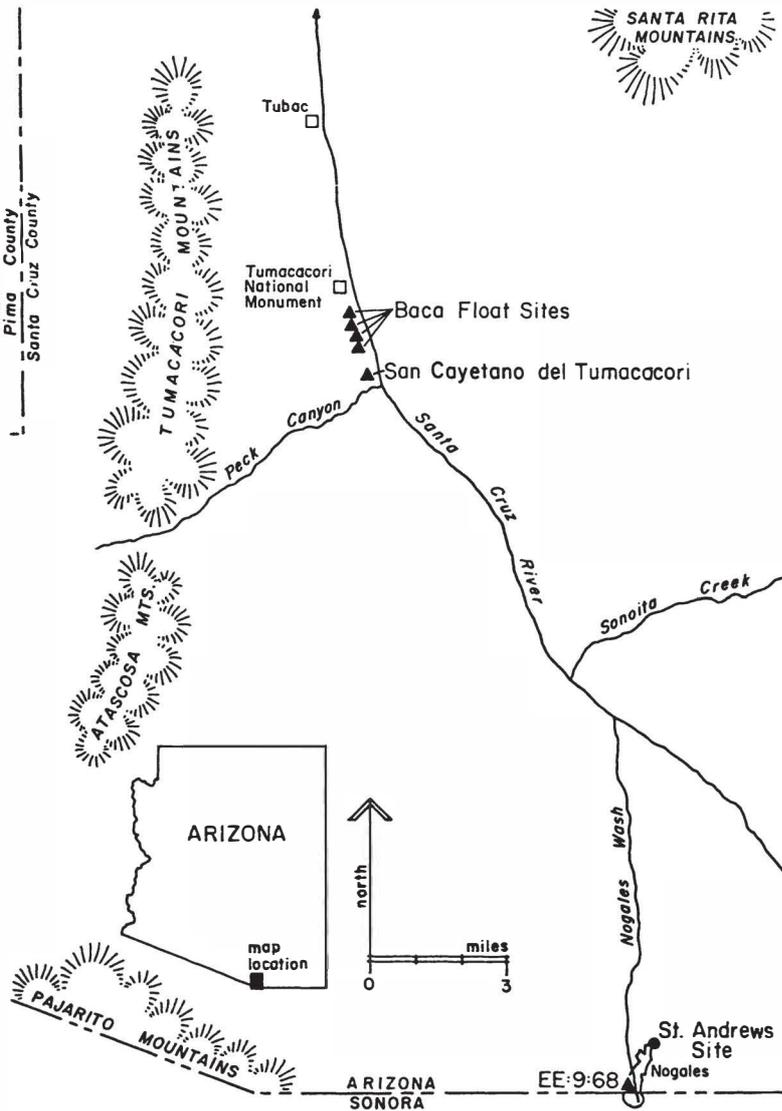


Figure 1. The upper Santa Cruz drainage showing locations of sites with cremations discussed in this paper.

Cremation Deposit

We are introducing this term to refer to any parcel of bone of any size found away from the actual place of burning. It is important to make the distinction between "cremation" and "cremation deposit" because most deposits contain less bone than expected from the burning of a body. Binford (1972) determined that the bone weight resulting from the cremation of a human adult should be about 1,750 g. The weights of Hohokam cremation deposits almost always weigh much less (Birkby 1975; Shipman and Wolf 1977; Reinhard and Shipman 1978). The average weight of unmixed cremation deposits of adults from the southern Santa Cruz River drainage is only 610 g or about 35% of the expected weight. It is obvious that these parcels of bone do not represent complete individuals, that is, cremations. Instead, they can be said to represent only a portion of a cremation's potential residue. Therefore, Hohokam cremation deposits do not contain or represent an individual *per se*, but merely a portion of an individual. In other words, a Hohokam cremation deposit cannot be utilized in the same quantitative manner as a primary inhumation; although 20 deposits of human calcined remains may be excavated from a given site, they may not necessarily represent 20 individuals. Instead, they could represent the bony remnants of as few as one or two individuals (depending, of course, on the amount of bone in each deposit) to as many as the total number of separate aggregates recovered. In the case of a multi-individual cremation deposit, the calcined bone can be said to contain the identifiable remains of more than one individual.

Partition Burial

Because of low bone weights measured for Hohokam cremation deposits, it has been suggested that once the bone was removed from a crematorium it was partitioned into several parcels and serially buried (Haury 1976:171; Shipman and Wolf 1977). This is partition burial. Attempts have been made to demonstrate the practice of partition burial by the Hohokam of Snaketown (Birkby 1976) and by the inhabitants of the St. Andrew's Site. These two attempts were unsuccessful.

There is ethnographic reference to partition burial in the writing of Spier (1933:303). This is cited by Haury (1976:171) as supporting the notion that the Hohokam also practiced partition burial. Bradley (1980) disputes the significance of this reference, pointing out that Spier noted the partitioning and burial of bone within the limits of the crematorium. The separate parcels of bone were not removed from the place of burning to be buried elsewhere.

Whether or not partition burial was practiced by the Hohokam is an essential question, especially if attempts are ever made to extract demographic information from Hohokam cremation deposits. If partition burial was practiced,

the actual number of people represented by a cremation series may be only one-fourth to one-third the number of deposits present in that series. Future work in the Hohokam area should include this problem and attempt to resolve it.

Partition burial is synonymous with serial cremation (Shipman and Wolf 1977; Reinhard and Shipman 1978).

Gleaning Practices

This is the process of sorting bone from the crematory after firing for burial elsewhere. Gleaning practices are relevant to the general problem of why Hohokam bone weights are so low. Poor gleaning practices could result in low bone weights. Incomplete gleaning of cremations may result in multi-individual cremation deposits.

Multi-individual Cremation Deposit

This is the find in archaeological context of a cremation deposit which contains portions of two or more individuals. This is most common in the southern Santa Cruz River drainage although similar deposits are reported from the Tucson Basin (Bradley 1980), Snaketown (Haury 1976: 171), and the San Pedro River Valley (Fink n.d.; Shipman n.d.). A multi-individual cremation deposit has also been reported from a Mogollon site at Point of Pines (Merbs 1967).

THE SANTA CRUZ CREMATION SERIES

The discussion below focuses on the four cremation series recovered from the southern Santa Cruz River drainage between Tubac and Nogales. Fifty cremation deposits were analyzed, 14 of which are mixed multi-individual deposits. Hence, 64 age and sex determinations were made from the 50 deposits. We caution the reader not to interpret this as the remains of 64 separate people; if serial burial was practiced the number of individuals represented could fall well below 64. It can only be said that the mixed and unmixed deposits contain 64 fragmentary parcels of bone. Therefore, it is the cremation deposit, not the cremation itself, that is used as the analytical unit in this paper.

In Table 1 the deposits have been listed in descending order of bone weight with sex/age determinations, identification of multi-individual deposits, and site number. All but three of the interments were found inside jars so we believe that the amount of bone found in the cremation deposits is the amount initially placed in situ; that is, there was little chance of postdeposition disturbance or scattering of the remains.

The first deposit weighs enough to be considered the complete gleaning of a single cremation placed in a single jar. The weight is well within the weight range expected for the cremation of an adult. This indicates that if partition

Table 1. Analyzed cremations from the upper Santa Cruz River.

Weight in grams	Age/Sex	Multiple individual	Site
1812	adult male		AZ DD:8:122
1576	adult male, adult female?	yes	AZ DD:8:128
1256	adult male		AZ DD:8:122
1246	adult male		AZ EE:9:67
1153	adult female?		AZ DD:8:128
1152	adult female		AZ DD:8:122
1145	adult male		AZ EE:9:67
890	adult male		AZ DD:8:122
725	adult		AZ DD:8:122
711	adult male		AZ EE:9:68
635	adult male?		AZ DD:8:122
580	adult female, subadult	yes	AZ DD:8:122
551	adult male?		AZ DD:8:122
465	adult		AZ DD:8:122
400	adult male		AZ EE:9:67
367	adult male?		AZ DD:8:122
340	adult female?		AZ:DD:8:122
326	13-16 yrs.		AZ:DD:8:122
312	adult, 4-5 yrs.	yes	AZ EE:9:67
273	3-6 yrs., adult	yes	AZ:DD:8:122
234	6-7 yrs., fetal/neonate	yes	AZ EE:9:67
211	adult		AZ:DD:8:122
162	adult, 0-1 yr. child	yes	AZ EE:9:67
154	adult male?		AZ EE:9:68
146	adult male?		AZ:DD:8:122
129	adult, 0-1 yr.	yes	AZ EE:9:67
108	2-3 yrs., adult	yes	AZ EE:9:67
107	adult, < 6 yrs.	yes	AZ EE:9:68
106	2-5 yrs., 0-2 yrs.	yes	AZ EE:9:68
98	adolescent		AZ:DD:8:122
95	3-5 yrs.		AZ:DD:8:128
91	adult, < 6 yrs.	yes	AZ EE:9:68
84	adult, fetal/neonate	yes	AZ:DD:8:122
57	2-5 yrs.		AZ EE:9:68
46	2½-5½ yrs.		AZ EE:9:67
39	4-6 yrs.		AZ:DD:8:122
31	adult male		AZ EE:9:68
29	adult		AZ:DD:8:122
25	adult		AZ:DD:8:122
24	3-6 yrs.		AZ:DD:8:122
24	3-5 yrs.		AZ:DD:8:122
16	3-6 yrs.		AZ:DD:8:122
14	2-5 yrs.		AZ EE:9:68
13	child		AZ:DD:8:122
10	9 mo.-1½ yrs.		AZ:DD:8:122
10	3-7 yrs.		AZ:DD:8:122
9	adult, subadult	yes	AZ:DD:8:122
4	adult		AZ:DD:8:122
1	subadult		AZ:DD:8:122
*?	adult male, child	yes	AZ EE:9:67

*This cremation deposit was recovered in 1967 by construction workers who sent the bones to the Arizona State Museum but kept the cremation jar. Since the details of the exhumation are not known and some bone may have been lost by the workers, we feel the cremation weight is not accurate. Consequently, that weight was not included in this table.

Cremation deposits from AZ DD:8:122 and AZ DD:8:128 were analyzed by Jeff Shipman and Lori Wolf. Those from AZ EE:9:68 were done by Jeff Shipman. All AZ EE:9:67 cremations except the last entry were done by T. Michael Fink. The last entry was examined by Walter Birkby. These data were extracted from analysis sheets on file at the Arizona State Museum's Human Identification Laboratory.

burial was practiced, it was not done consistently. The low weights of the other deposits show that varying amounts of bone were sealed in the jars. This suggests that there was much variation in gleaning and deposition habits, a situation similar to that of the Snaketown cremated remains (Birkby 1976).

Of the 13 multi-individual deposits for which there are accurate bone weights, 11 fall in the middle weight range between 84 and 580 g. Although neither "individual" in a multi-individual deposit is completely gleaned from the crematorium, there is a difference in the "degree of completeness" between the individual remains within such a deposit. The greater bulk of any mixed deposit constitutes many fragments of one individual. The second individual is represented by only a few fragments, generally one to three teeth and cranial pieces, and is always much more poorly represented than the first. In 10 of 14 multi-individual deposits, the largest portion of the bone is attributable to an adult with a lesser amount representing a nonadult. It would appear that the mixing of the osseous material was due to postdeposition disturbance, but interrerring the deposits within jars should rule out this possibility. A second and more likely consideration would be that the remains became mixed while in the crematorium. This is supported by the excavation of crematoria in the Hohokam area, of which 14 have been found. Eight were encountered at Snaketown in 1964 (Haury 1976:166) and all contained burned human bone. In one of these, fragments of three separate individuals were identified (Birkby 1976:380). Two other crematoria were found at the Painted Rocks Reservoir, Arizona (Wasley and Johnson 1965:41-42, 23-24). Both of these contained burned bone. At these villages postcrematory gleaning of bone was incomplete and probably lead to the mixing of bones from two or more separate individuals. Data concerning the four crematoria found in the 1934-1935 Snaketown excavations are incomplete regarding bone remains.

Although no crematorium has been excavated in the upper Santa Cruz drainage, the presence of multi-individual cremations suggests that gleaning practices were incomplete and led to a high degree of mixing between cremation episodes.

DISCUSSION

The 50 cremation deposits analyzed herein from the upper Santa Cruz drainage do not provide sufficient data on which to base a comprehensive reconstruction of cremation practices in the area. However, they are suggestive of certain patterns that may reflect prehistoric behavior.

Because of the presence of multi-individual deposits and variable bone weights, we believe that differential care was taken with the cremation processes of individuals who inhabited the St. Andrew's Site and the other sites from which cremation deposits were recovered. The data suggest that special care was taken in the cremations of certain adults, probably including pre-firing cleaning of the crematoria of miscellaneous bone and more complete postfiring gleaning. This is supported by the fact that of the 11 cremation deposits weighing more than the average of 610 g, only one is a multi-individual deposit. Without taking precautions against the chance mixing of bone, more of the high weight deposits would contain fragments of two or more individuals, for with more bone being gleaned the chances are increased of picking up an odd bone fragment left from a previous cremation. We are assuming that special crematoria were used repeatedly for the burning of the dead. This assumption may seem faulty considering the low mortality present in small villages such as the four we are studying. With a low mortality rate it may seem unlikely that small villages would have established a crematorium. However, cremation was a major practice throughout the Hohokam area. As noted above established crematoria are associated with Hohokam cremations. Therefore, we believe that our assumption is valid, at least at this point in the study of aboriginal Southwest cremation.

The amount of care taken during the cremation process is, at least in part, a function of the age of the individual. Nonadults are most frequently found among the cremation deposits of the lowest weights. This is not surprising considering the difference in size between adults and children. However, the weights and bone inventory are still lower than what would be expected. This is possibly due to especially incomplete gleaning of immature remains. Consequently, these remains are most frequently mixed with other cremations in multi-individual deposits which fall in the middle weight ranges.

Table 2 compares the ages of individuals in mixed and unmixed deposits. This table shows that nonadults are more frequently present in multi-individual deposits. There are actually more nonadults represented in the 14 multi-individual cremation deposits than in the 36 unmixed deposits. Of the seven infant or fetal/neonates identified, six came from multi-individual deposits. This may indicate that the remains of very young individuals were not gleaned from the crematoria at all. Except for tooth and cranial fragments, the high heat and raking of Hohokam crematory fires might all but destroy the tiny bones of youngsters thereby reducing the chances of complete gleaning of these remains.

Table 2. Age identification made from single and multiindividual cremation deposits.

	Unmixed deposits	Multi-individual deposits
Adult	22	13
Adolescent	2	—
Child	11	9
Infant	1	4
Fetal/neonate	—	2

The ungleaned remains would show up in the cemeteries only after being fortuitously mixed with other cremation deposits. This interpretation is supported by the fact that nonadult remains, when present, occur primarily in multi-individual cremation deposits and rarely in separate, segregated units. Also, it can be stated that immature remains, in Hohokam cremation context, are far less represented than those of adults. This is directly contrary to the general demographic profile of prehistoric societies. It is not unusual for nonadults to comprise approximately 30 to 40 percent of a skeletal sample from a non-Hohokam site.

This interpretation can only be tested by the excavation of several crematoria and careful study of the remains found therein. We expect a high proportion of fetal and infant remains to be found in crematoria excavated in the upper Santa Cruz drainage.

SUMMARY

The data at hand suggest that cremation practices in the upper Santa Cruz River drainage were highly variable. However, it appears that with certain adults special care was taken during the cremation process. The cremations of other adults and nonadults were less meticulous which resulted in low bone weights exhibited by most of the cremation deposits and the mixing of bone from separate cremation episodes which result in multi-individual deposits. We suggest that fetal/neonate and infant remains were not gleaned from the crematoria and became mixed with subsequent cremations, primarily of adults.

The testing of the above reconstruction is dependent on the excavation and examination of more cremation deposits and the crematoria in which the burning took place.

We feel the interpretations presented above, rather than those relating to cultural contact, are supported by our data. Thus, multi-individual cremation deposits are more easily understood as the result of incomplete gleaning.

The broader question concerning partition burial has yet to be answered. Until partition burial is demonstrated to be a Hohokam practice or disproved as such, the archaeologist must be wary of drawing too many conclusions from Hohokam remains, especially in the realm of demographics.

We believe that the interpretation of Hohokam cremation practices is as yet a pioneering area with many basic problems to be addressed. It will take much concentrated effort focused on the problems cited above before the ambiguities created by cremation practices can be clarified.

ACKNOWLEDGEMENTS

This work would not have been done if not for the Reverend Douglas Lorig whose interest and forethought resulted in our opportunity to analyze the St. Andrew's Site remains. His curation of the remains and Ray Brown's skillful excavation of cremation deposits after being exposed by workmen are commendable. Credit is also due to Gwinn Vivian who encouraged our work and provided room in the Arizona State Museum to complete the artifact analysis. Walter Birkby of the Museum's Human Identification Laboratory provided space for the bone analysis. We also thank Beth King of the Center for Western Studies, Inc., for her review modifications to the manuscript and Verna Ellsworth who prepared the final typed draft. Our review of general cremation terminology was drawn from discussions with Walter Birkby and Jeff Shipman of the Human Identification Laboratory. Their expertise in human bone analysis and willingness to share their knowledge certainly benefitted us. Finally we would like to express our thanks to our close friends, Stan and Frank, who provided the major impetus for this study.

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