

# Homol'ovi IV: The First Village

E. Charles Adams



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# Homol'ovi IV: The First Village

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# Chapter One

## Introduction

E. Charles Adams

Homol'ovi IV (AZ J:14:15 [ASM]) is the earliest village of the Homol'ovi settlement cluster founded in the 1250s by immigrants from the vicinity of the Hopi Mesas (Figure 1.1; Adams 2002; Lyons 2001).

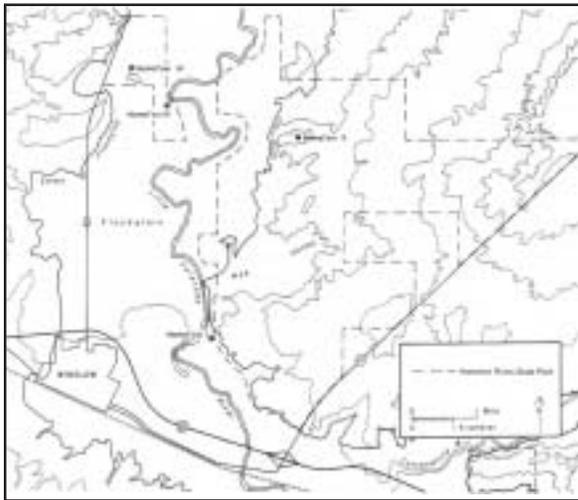


Figure 1.1 Map of settlement cluster

Although established by a relatively small group of individuals who built perhaps 20 rooms, the village rapidly grew to about 200 rooms, many of which were probably occupied simultaneously. The first settlers selected the top of a small butte about 15 m high on the west side of the Little Colorado River. Homol'ovi is a Hopi word meaning “be mounded up” (Hopi Dictionary Project 1998) and refers to the numerous small hills and buttes in the area. Homol'ovi IV was established on one of these. Although the first settlers used the top of the butte, the lack of room caused later immigrants to occupy the south and east sides of

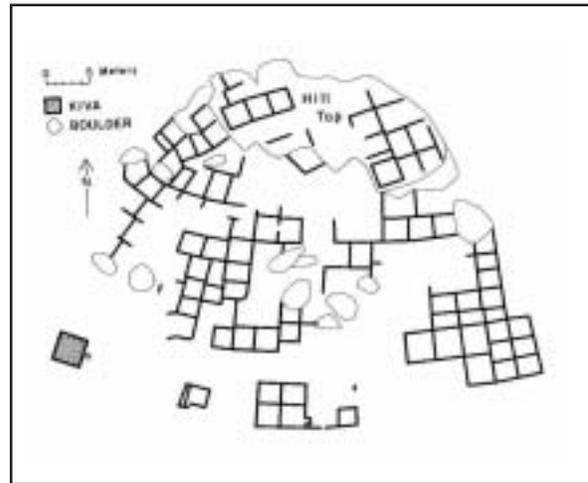


Figure 1.2 Map of Homol'ovi IV

the butte. The village grew accretionally from top to bottom until parts of nine arcs of rooms encircled half the butte (Figure 1.2). The latest and lowest rooms were constructed on middens that had accumulated to a depth of over 1 m, thus sealing the earlier deposits. At the base of the butte on the south to southeast portions of the village was located an unbounded plaza containing at least two kivas. Farther south were numerous large roasting pits and to the east was the cemetery area. On the west side of the butte are numerous large boulders that once capped the butte. Most have extensive petroglyphs whose style and iconography suggest they were made by the Homol'ovi IV inhabitants (Cole 1992).

Homol'ovi I was privately owned by the O'Haco family, local ranchers, until 1988 when ownership was transferred to Arizona State Parks and it came under the management of Homolovi Ruins

State Park. Park staff constructed a fence around the village to protect it from visitors and livestock. During the 1989 nine-week field season of the Homol'ovi Research Program (HRP), 10 structures, the plaza, and numerous isolated features were excavated at Homol'ovi IV using staff and students from the University of Arizona and volunteers from Earthwatch. In addition to excavations, Douglas Gann, then an undergraduate, uncovered and mapped most of the walls of Homol'ovi IV. These maps enabled Gann to produce computer simulations of the village and HRP to reconstruct the growth of the village during its brief occupation.

The predominant decorated pottery at Homol'ovi IV consists of two types from two wares: Jeddito Black-on-orange or Tsegi Orange Ware, which was manufactured at villages located on or adjacent to the Hopi Mesas; and Tuwiuca Black-or-orange, a local copy of Jeddito B/o, of Winslow Orange Ware (Hays-Gilpin, Bubemyre, and Senior 1996; Lyons 2001). The close stylistic and technological relationship between the two types and the Winslow Orange Ware types in general suggest the immigrants that founded and settled Homol'ovi IV originated from the vicinity of the Hopi Mesas. The strong preference for the tops of buttes or small mesas, similar kiva architecture, and similar room size and village layout expressed by contemporary villages throughout northeastern Arizona further support Homol'ovi IV immigrants as originating from the north. Indigenous settlement has been ruled out by the absence of any evidence of occupation of the local area at the time of Homol'ovi IV's founding (Adams 2002; Lange 1998; Young 1998).

At the time of abandonment of Homol'ovi IV there was increasing presence of polychrome varieties of the black-on-orange types. The polychrome types become predominant at nearby Homol'ovi III, which was founded in the 1280s (Adams 2001). Their rarity at Homol'ovi IV (see ceramics chapter) suggests abandonment in the 1280s and 1285 has been selected as the midpoint to that decade.

Due to the 30-year span of occupation and the rarity of trash-filled rooms in either excavated or vandalized rooms, it is reasonable to argue that virtually the entire village was occupied at one time. Excavations reveal that 2-4 rooms were used by a household. With an estimated 200 total rooms, maximum population could have approached 200. Adams (2002) has speculated that Homol'ovi IV occupants could have founded or were early occupants of Homol'ovi I, about 5 km upstream from Homol'ovi IV because Homol'ovi I grew to such a large size in a matter of only a few years. If Homol'ovi I were indeed the destination for Homol'ovi IV, the reasons for the move could have been the more favorable location of Homol'ovi I, where the river flows year-round and the floodplain is at its widest (Adams 2002).

This begs the question of why wasn't Homol'ovi IV built where the river flows year-round initially, rather than 2-3 km below where the river begins to flow underground due to the absence of bedrock in the streambed. First, it should be noted that One Drop Spring is located about 0.5 km west of Homol'ovi IV. Together with several other nearby springs, these could have provided an adequate drinking supply. Homol'ovi IV was founded at its location because of the morphology of the butte. For whatever reason, villages during the mid-1200s in northeastern Arizona were built on the tops and sides of buttes or small mesas. Homol'ovi IV was built following local custom. However, there are other buttes nearby. Why was this one selected? When one stands on top of Homol'ovi IV it is possible to see the San Francisco Peaks, which today are sacred to the Hopi, and were probably also sacred in the late 1200s. This claim is bolstered by the depiction of the San Francisco Peaks as a mural on a kiva at Homol'ovi II dating to the 1350-1375 period and excavated by HRP in 1994. Their location strongly suggests a ritual purpose and this was supported by Hopi religious leaders who viewed the mural (Adams 2002). Thus, in the 1250s when Homol'ovi IV was founded, the butte

on which it was located was the best possible location. The ability to view the San Francisco Peaks might also inform us as to the probable reason for so many villages being located on the tops and sides of buttes. I suggest that this reason is ritual or sacred rather than defensive, as argued by others (Haas and Creamer 1993; Haas and Wilcox 1994; LeBlanc 1999). Certainly, in the Kayenta area of northeastern Arizona, line-of-sight between settlements was important (Haas and Creamer 1993) in the latter half of the 13<sup>th</sup> century. This certainly cannot be the case for Homol'ovi IV because there was no one with whom to be in line-of-sight.

In addition, most of the population lived along the sides and even on the flat slopes at the base of the butte. Finally, the north and west slopes were left unguarded. The village could have been easily approached at night and the boulders on the west side could have hidden potential assailants. None of this suggests a classic defensive posture or that defense provides an adequate, let alone a complete explanation of Homol'ovi IV's location on a small butte. Recent research in cerros de trincheras in the Borderlands area of northern Sonora and southeastern Arizona suggests a plausible model that some cerros de trincheras were constructed for their "monumentality" (O'Donovan 2002). A southern or eastern perspective of Homol'ovi IV (Figure 1.3) would have presented a village appearing seven to nine stories, perhaps 18 m, tall. Even the access via trails and stairs through and around the rooms encircling the south and east sides is similar to trails on cerros de trincheras (Downum, Fish, and Fish 1994). At the contemporary village of Hoyapi, or Little Giant's Chair, 8 km south of Second Mesa is located the nearest similarly situated village. As with Homol'ovi IV, Hoyapi consists of at least 200 rooms and occupies a saddle to the volcanic outcrop of Little Giant's Chair as well as the south, southeast, and southwest sides and base of the butte. Villages contemporary with Hoyapi on the Hopi Mesas (Adams, LaMotta, and Dongoske 2004) in contrast are not situated on the tops or sides of buttes. This suggests a special role for

Hoyapi and probably a special role for Homol'ovi IV. Hoyapi represents the southern edge of the Hopi settlement cluster from about 1250 to 1350, based on surface ceramics. Homol'ovi IV may have been an extension of that boundary to Hopi far to the south. Adams (2002) has recently suggested that the establishment of the Homol'ovi cluster with Homol'ovi IV in the 1250s and its expansion to five villages in the 1280s was an expression of boundary maintenance and control of critical riparian resources by Hopi living on the mesas. Looked at from this perspective, Homol'ovi IV may indeed have needed to be defensive.



Figure 1.3 South view of Homol'ovi 4

So where does this leave us? It would seem that Homol'ovi IV played many roles and was located on its butte for many complementary reasons. Among these are boundary definition and defense, environment, ritual, and monumentality. These possible purposes for Homol'ovi IV provide a context for the analyses to follow. The concluding comments will revisit these possibilities in light of the excavated material culture.

#### **PURPOSES FOR HOMOL'ОВI IV: MATERIAL CULTURE EXPECTATIONS**

Given the possible roles for Homol'ovi IV when it was established, it is important to outline expected

outcomes of material culture given each role. With these expectations in mind, it will be easier to evaluate the data and to make conclusions about what material remains should look like.

### **Defense**

If the construction of Homol'ovi IV is focused on defense – the fear of attack by others – then our expectations, following LeBlanc (1999) and Haas and Creamer (1993) should be:

1. Hilltop locations or high, unbroken walls should be featured. Although Homol'ovi IV is on a hilltop, given that most of the village spills down the sides and onto the flat floodplain at the foot of the butte, we would expect high, unbroken walls at the base (LeBlanc 1999:56-57).

2. Given that the walls of the structures could form this barrier, we would not expect any exterior walls to have doors or windows (LeBlanc 1999:57).

3. Haas and Creamer (1993) note that defensive locations for Kayenta area villages, which date 1250-1300 or contemporary with Homol'ovi IV, feature the entire village on the mesa or butte top with defensive walls across any access points.

4. LeBlanc (1999:63-65) argues that rapid construction of the village using ladder construction suggests perceived threats from outside and the need to aggregate quickly. The presence of such construction would support the defensive nature of the site.

5. LeBlanc (1999:69-71) notes that large nomad's lands together with clusters of settlements are typical of times of warfare and need for defense. The spacing of Homol'ovi IV at great distance from any other contemporary villages fits this pattern, but there is no associated settlement cluster.

6. LeBlanc (1999:73) also notes that villages are located on prominences for line-of-sight communication. Homol'ovi IV could certainly fit this model, but there is no contemporary settlement within 50 km. Its closeness to a large mesa on the west would block line-of-site.

7. If warfare were endemic, burning of numerous rooms to the entire village of Homol'ovi IV could be an expected outcome (LeBlanc 1999:81-83).

8. In terms of artifacts, LeBlanc (1999: 102-112, 116-117) notes that iconography can often depict violent acts or objects of warfare, such as shields or weapons. The presence of considerable rock art at Homol'ovi IV, therefore, could depict acts or objects of war.

9. LeBlanc (1999:112-116) also notes that large numbers of projectile points, axes, and daggers would be expected in the archaeological record and should occur at Homol'ovi IV beyond subsistence needs.

10. It is expected that trade relationships with nearby settlements might not exist or could be in flux due to hostile relationships. Nevertheless, trade might exist with more distant groups or with local groups as relations changed through time (LeBlanc 1999:297-300).

11. Because aggregation is a typical defensive response to external threat, it is expected that Homol'ovi IV should be a product of local aggregation (LeBlanc 1999:62-63). Therefore, continuity of occupation shown through maintenance of ceramic and other traditions combined with abandonment of local small sites should occur.

12. Population growth, as represented through village size and layout, should be rapid as nearby small villages are abandoned and to have the size to defeat or deter attack from nearby settlements.

### **Border Maintenance**

A slight variation on the defense theme is Adams (2002) argument that Homol'ovi IV was just the first in a line of villages established at Homol'ovi to maintain or reinforce the boundaries of communities existing on the Hopi Mesas. If this is the case, then, the elevated nature of Homol'ovi IV may be to maintain this watchdog role. If Homol'ovi IV was established to create a boundary or to

assert ownership of the Little Colorado River valley around Homol'ovi, the expectation is a settlement similar to ones at Hopi at the time, a village of some size (population) to be able to reinforce ownership of the area, precedence of use of the area by people ancestral to Hopi, continued strong ties to Hopi from Homol'ovi IV.

1. Migration from a distant source would be one possible expectation of a model based on boundary maintenance. Adams (2002:93) argues that Homol'ovi IV was settled by immigrants from the Hopi Mesas based on pottery, architectural layout, room size, and kiva size and configuration.

2. Another implication of the border model is that a perceived threat recently developed in the area. The 1250-1300 period on the Colorado Plateau was a time of extensive population movement (Cordell 1997). Groups leaving the Kayenta area of northeastern Arizona were migrating to Point of Pines and other locations in east central and southeastern Arizona beginning in the 1250s of 1260s (Haury 1958; Lindsay 1992; Woodson 2000). This could have presented a real threat to 13<sup>th</sup> century Hopi use of this area.

3. History of use of the Homol'ovi area prior to the founding of Homol'ovi IV was dominated by northern groups, especially from the Hopi Buttes and Hopi Mesa areas (Adams 2002; Lange 1998). This prior use suggests the area would naturally be considered part of Hopi Butte/Hopi Mesa territory.

4. Homol'ovi IV, as a boundary community, is expected to maintain close ties to villages on the Hopi Mesas, which should be apparent in the material record throughout the village occupation.

5. Initial population should be sizeable to establish the settlement and to act as a suitable deterrent to competitive settlements by other groups.

6. The need to protect an area implies that it has a history of value to the group. Therefore, the area around Homol'ovi IV should have resources of value to Hopi mesa communities.

7. Rock art at Homol'ovi IV would include symbols denoting ownership, such as clan symbols.

### **Ritual and Monumentality**

Recently archaeologists (Downum, Fish, and Fish 1994; O'Donovan 2002; McGuire 1998) have advanced the theory that with their location on prominent hills and their massive walls at least some cerros de trincheras along the international border between Arizona, New Mexico, Sonora, and Chihuahua were established in part for ritual or symbolic importance. Such monumentality reinforces or establishes power relationships based on ritual. Throughout northern Arizona after A.D. 1150 to about 1300, villages were built on the tops and sides of buttes. If this expression were to create power or status differentials in pueblo culture for this period, our expectations would be:

1. Construction would be on the top of the butte first and would house the most prominent members of the village.

2. If the top rooms are not for habitation, the architecture may be for ritual purposes and be distinctive in size, type of wall, or other ways.

3. The sides of the butte would be expected to have architecture. This architecture will probably be domestic.

4. There may be restricted access to the top, but it should not be a barrier, such as a wall.

5. If power relationships are being emphasize at Homol'ovi IV, these are probably based on ritual. It would be expected, therefore, that ritual structures should be present within the room blocks as well as on top of the butte or more public spaces.

6. Ritual artifacts should be concentrated in rooms on top of the butte or in areas with restricted access.

7. Rock art at Homol'ovi IV should be esoteric and some may not be accessible or visible to the general population.

Of course, none of these models may explain the true reasons Homol'ovi IV was built on a butte and established on a particular butte, or elements of all models could be true. The following chapters will discuss the general environment and location of Homol'ovi IV, a description of the

village and details of architecture defined through mapping and excavations, the chronological basis to dating Homol'ovi IV, the artifactual assemblages collected during excavations, and conclusions where the evidence supporting or not supporting the various models will be reconsidered.

## Chapter Two

# Environment

E. Charles Adams

### GEOLOGY AND GEOLOGICAL RESOURCES

Homol'ovi IV sits on top and along the south and east sides of a 15 m-high butte whose cap rock is erosion-resistant Moenkopi Formation. On Homol'ovi IV and surrounding buttes, the Moenkopi Formation consists of 3-5 m of dense, fine-grained reddish-brown sandstone that is underlain by interbedded layers of silts and clays that are red, green, and yellow (Lange 1998:4). The interbedded layers are exposed on the north and west sides of the butte and are visible in a vandalized room at the base of the cap rock on the south-east side of the butte. Lange (1998:4) notes that some of the clay layers are suitable for pottery and mortar used to cement the rock walls of the village. Such a use could explain a large undercut area on the northeast side of the butte, adjacent to the pueblo's walls, where the clay has been tested and found suitable for clay or mortar. The undercut nature of the beds are identical to clay beds beneath Walpi on First Mesa that the potters dug out for their pottery clays (Stephen 1936). The color and sand-silt-clay ratios of some of the clays match the mortar and plaster recovered from excavated or stabilized walls of the village.

At the base of the butte are cobbles of chert and some quartzite that cap outcrops of Moenkopi Formation throughout the Homol'ovi area. Kolbe (1991) interpreted these as erosional remnants of the Shinarump Conglomerate that still overlies the Moenkopi Formation on the mesa west of

Homol'ovi IV and the mesa on which Homol'ovi II is situated, directly east of Homol'ovi IV. The Shinarump Conglomerate is considered by most geologists to be the basal member of the Chinle Formation (Chronic 1983). The Shinarump is variously cemented causing some sections to erode into the cobbles, such as are visible at the base of Homol'ovi IV, whereas other sections form solid caps to mesas. Many of the chert cobbles at Homol'ovi IV have been broken by the inhabitants of Homol'ovi IV and are the primary source of cores for the flaked stone industry at the village. The quartzite members have frequently been battered from their use as pecking stones to shape manos and metates, shape building stone, or peck glyphs into the boulders on the west and southwest side of the butte.

Some members of the Shinarump conglomerate were cemented with opaline silica or quartz and were the primary source of ground stone material for Homol'ovi IV occupants and subsequent generations of Homol'ovi villages, although Moenkopi Formation sandstone having quartz and calcite cement was also used (Fratt and Biancianiello 1993). A quarry for opaline silica cemented Shinarump Conglomerate used in ground stone manufacture at Homol'ovi I has been identified near Homol'ovi I (Adams 2002). The quartz and calcite cemented varieties could have been obtained from outcrops west of Homol'ovi IV. The Moenkopi Formation sandstone was derived from the Homol'ovi IV or other nearby buttes. The sandstone slabs used as flagstones on Homol'ovi

IV and other Homol'ovi village kiva floors and for various bins was obtained from a source southwest of Homol'ovi IV called Five Mountains (Fratt and Biancaniello 1993).

### WATER RESOURCES

As noted in chapter 1, Homol'ovi IV is located to take advantage of two sources of water: nearby springs at the base of the Moenkopi Formation in the mesa to the west and the Little Colorado River to the east. The Moenkopi Formation underlies the floodplain to about 2 km north of Homol'ovi I causing the river to flow above ground. Beyond this point the river flows underground except during high stream flows, which usually occur in March and April due to snowmelt and in the summer from mid- to late July to mid-September from monsoon rains (Adams 2002; Lange 1998). When the river was dry near Homol'ovi IV, occupants could have accessed water by traveling upstream 4 km of walking to One Drop Spring or other springs to the west. One Drop Spring is 1 km west. According to Mike O'Haco, who has ranched the area since the 1960s, the spring was developed by ranchers in the 1920s or 1930s by building a berm around the spring to hold water for livestock. Any prehistoric development of the spring was destroyed as a result. Whether One Drop Spring or other more distant springs could have met the water needs of the Homol'ovi IV occupants is unknown, but it certainly could have complemented river water. Although it is possible the river flowed as far north as Homol'ovi IV when it was occupied, the absence of fish in the faunal remains, which are abundant at Homol'ovi I (Strand 1998), suggests this was not the case.

### CLIMATE, FLORA, AND FAUNA

Winslow is located 9 km south of Homol'ovi IV and has a weather station. Average annual pre-

cipitation is just 20 cm (8 in) and is evenly divided between winter snow and summer rain (USDA, SCS, ERS, and USFS 1981). Homol'ovi IV is at 1478 m (4850 ft) elevation. Lowe (1964:36) classifies the area as Great Basin Desertscrub, a member of the Great Basin Desert within the Upper Sonoran Life Zone. Plant variety, except along the river, is severely restricted and low diversity in plants means that animal variety is similarly restricted (K. Adams 1996, 2001; Miksicek 1991; Pierce 2001; Strand 1998; Szuter 1991). At present the plant and animal resources around Homol'ovi IV are severely depleted due to grazing, but even prehistorically they were inadequate to sustain hunters and gatherers as determined by the almost total lack of archaeological sites predating the introduction of maize (Lange 1998). Even then, sustained occupation of the area was not achieved until the founding of Homol'ovi IV in the 1250s (Adams 2002; Young 1996). As Lange (1998:6) notes:

Although there are a number of wild plant species that can be used for a variety of purposes, there are relatively few in the Homol'ovi area that can provide substantial food resources. Numerous grasses have abundant, usable seeds, but their unpredictable annual production and the intensive harvesting effort required mean that grasses cannot be a staple "crop" to sustain anything but a seasonal population. Thus, any use of the region before the advent of domestic crops is expected to be only seasonal and temporary and may have continued to be seasonal even after the arrival of such crops.

As noted in Adams (2001:9-12), away from the influence of the river the vegetation can be divided into mesa, buttes, and terraces; side drainages; and sand dunes. The most ubiquitous plant in all three areas is snakeweed (*Gutierrezia sarothrae*), which is a disturbance plant and in-

dicative of domestic livestock grazing that began in the area as early as the 1860s and 1870s with the Hashknife Outfit and local Mormon communities. Other dominant plants in the vicinity of Homol'ovi IV included shadscale (*Atriplex confertifolia*), four-wind saltbush (*Atriplex canescens*), rabbit brush (*Chrysothamnus albidus*), and rice grass (*Oryzopsis hymenoides*). Dune areas to the west of Homol'ovi IV were dominated by sandsage (*Artemisia filifolia*) with ring muhly, Mormon tea, and narrow-leaf yucca also present. Toward the river, the outer floodplain is dominated by greasewood (*Sarcobatus vermiculatus*) with occasional dense stands of desert olive (*Forestiera newmexicana*), shadscale, various cheno-ams, pickleweed (*Allenrolfea occidentalis*), the introduced camelthorn (*Alhagi camelorum*), and older stands of cottonwoods. The inner, active floodplain is now dominated by the introduced tamarisk (*Tamarix pentandra*), with scattered willow (*Salix* sp.), cottonwood, various cheno-ams, beeweed (*Cleome serrulata*), and sunflower (*Helianthus annuus*).

Today and in the past the most common animals are cottontail (*Silvilagus*) and varieties of jackrabbit (*Lepus* spp.) followed by various rodents. Sitgreaves (1954:36) observed beaver and porcupine in the area, whereas Whipple (1856) noted the abundant waterfowl. Lesley (1929:201) mentioned elk, deer, and antelope as seasonal visitors to the river. Prairie dogs have now reinhabited the area, although not yet near Homol'ovi IV. Lizards are plentiful at Homol'ovi IV, especially the great basin and plains varieties, as are Great Basin rattlesnakes and gopher snakes. Red-tailed hawk, turkey buzzard, kestrel, western meadowlark, morning dove, mocking bird, raven, various owls, golden eagle, and zone-tailed hawks have been observed in the vicinity of Homol'ovi IV. Sandhill crane, blue heron, Canadian goose, teal, and various ducks are seasonal visitors in the winter, spring, and fall, with the heron spending the summer.

## PALEOENVIRONMENT

As summarized in the Homol'ovi III report (Adams 2001:12-16), research since 1984 on various of the villages in the Homol'ovi cluster has resulted in a clear picture of what the environment looked like before, during, and after the occupation of Homol'ovi IV (K.Adams 1992, 1996, 1999, 2001; Kolbe 1991; Miksicek 1991; Pierce 2001; Strand 1998; Strand and McKim 1996; Szuter 1991; Van West 1996; Young 1996). Karen Adams (1997) and Jennifer Strand (1998) have summarized the plant and animal material respectively from Homol'ovi IV, which will be presented in chapters to follow.

Kolbe (1991) and Van West (1996), using correlations between the modern tree-ring record, river discharge, and depositional or erosional events, have reconstructed river discharge and alluvial events for the Little Colorado River during the Homol'ovi IV occupation. Kolbe (1991) defined three major periods between 1250 and 1400: (1) 1262-1299 when river discharge was 18 percent below average resulting in erosion of the floodplain; (2) 1300-1337 when river discharge was 20 percent above average resulting in deposition on the floodplain; and (3) 1338-1400 when river discharge fluctuated between below, above, and normal. Van West (1996) refined Kolbe's chronology with her model suggesting river discharge was low between 1250-1300 making the floodplain suitable for farming and settlement. The period 1300-1334 was wet and the floodplain would have been avoided for occupation. As with Kolbe, the period 1335-1400 was variable. Thus, both models suggest that Homol'ovi IV was settled at or near the beginning of a period of below average river discharge that made the floodplain suitable for settlement and farming. Roofing material collected from Homol'ovi IV is 59 percent cottonwood, 36 percent nonconifer, and 5 percent ponderosa pine (Adams 2002: Table 3.4). The pine is almost certainly a stray piece of driftwood,

whereas the other 21 samples could have been collected locally. Cottonwood is still locally abundant in the upper and lower floodplains today and the data suggest it could have served the earliest pueblos in the area with most of their roofing needs (Adams 2002:Figure 3.4). Sampling from nearby Homol'ovi I, II, and III deposits point to few substantial differences between either plant or animal resources during the late 1200s and today. The only exceptions are known local extinctions, especially of fish, and drastic reductions in other riparian species, such as muskrat and beaver, or alterations resulting from livestock grazing. This has resulted in local grasses being replaced by small bushes or other forbes, especially snakeweed. In addition to the effects of livestock grazing, the introductions of tamarisk, as an erosional control agent from 1900-1940, and camelthorn, after World War II as an ornamental, have been devastating to riparian and floodplain habitats of the Little Colorado River and elsewhere (Colton 1937; Graf 1978; Harris 1966; Hereford 1984; Horton 1964; Robinson 1965).

There are at least two other areas available to inhabitants of Homol'ovi IV that could add to the floral assemblage: (1) the side canyons, especially Chevelon and Clear Creek, that provide the year-round flow of water to portions of the Little Colorado River just upstream from Homol'ovi IV. Even today, these canyons are filled with black walnut, Oregon grape, hackberry, Gambel's oak, and other species not present in the modern Little Colorado River floodplain. (2) Driftwood deposited on the floodplain by periodic floods brings an abundance of plant material from all higher elevation environmental zones, including spruce, white fir, douglas-fir, ponderosa pine, pinyon, juniper, Gambel's oak, box elder, black walnut, hackberry, and others (Adams 2002; Adams and Hedberg 2002). Sampling of a modern driftwood pile deposited by January 1993 floods mirrored species distribution recovered from roofing members at Homol'ovi I, II, III, and IV (Adams 2002; Adams and Hedberg 2002). This suggests the use of driftwood by the occupants of these villages, particularly the large villages of Homol'ovi I and II.

## Chapter Three

# Previous Research

### E. Charles Adams

Remarkably, no formal professional excavations have been conducted at Homol'ovi IV until those conducted by the Homol'ovi Research Program in 1989. During his three weeks of excavations in the area in June 1896, Fewkes (1898, 1904) excavated in Chevelon, Homol'ovi I, II, and III, noted the existence of Homol'ovi IV, but did not take time to conduct excavations. From 1897-1900 the Field Museum of Natural History conducted excavations at Homol'ovi I, II and Chevelon under George Dorsey, J.A. Burt, and Charles L. Owen but also ignored Homol'ovi IV (Adams 2001:17; Lyons 2001). Nevertheless, the Field Museum did purchase 3000 artifacts, primarily pottery, from the local sheriff, Frank Watron that had been vandalized from all of the villages in the Homol'ovi cluster, including Homol'ovi IV. These artifacts are clearly primarily from burials.

Leslie Spier (1918:311) described several of the villages, including Homol'ovi IV. His wife Mera made collections from most of the villages in 1931. From the late 1920s through the mid-1930s, Harold S. Colton, Lyndon L. Hargrave, and others from the Museum of Northern Arizona (MNA) visited sites throughout northern Arizona in compiling the first ceramic typology (Colton and Hargrave 1937) that has become the standard for northern Arizona and has been emulated across most of the Colorado Plateau. It was during this period that MNA archaeologists visited the Homol'ovi villages and Colton named Homol'ovi IV, *Tuwiuca*, a Hopi term describing the step-like

fashion of the room blocks on the side of the butte. Colton incorporated this name into his ceramic typology for the area in the form of Tuwiuca Black-on-orange and Tuwiuca Orange, which are the earliest forms of the local decorated ceramic series that came to be known as Winslow Orange Ware (Colton 1956; Hays 1991; Hays-Gilpin, Bubemyre, and Senior 1996; Lyons and Hays-Gilpin 2001). This naming seems appropriate because Tuwiuca Black-on-orange comprises 73 percent of the decorated ceramics excavated from the village (Bubemyre 1993).

During the period following World War II, virtually no attention was paid to Homol'ovi IV, except by local residents of Winslow, who named the village, Pottery Hill, after the ubiquitous pottery found across the village. The land was owned by the Mike O'Haco family, who owned expanses of land north of Winslow and in the vicinity of Chevelon Butte, 20 miles south southeast of Winslow. The physical prominence of Homol'ovi IV and its proximity to the main road leading north out of Winslow toward the Navajo Reservation made it ripe for pothunting. Locals tell the story that it was a favorite place to visit for a Sunday afternoon picnic by the family while they excavated first the cemetery area then the room blocks of the village. By the 1970s it had also become one of the many town dumps outside the city limits. A well-worn road encircled the Homol'ovi IV butte and all along the flanks of the butte there was trash – large appliances, tires, standard household trash, tree and bush branches, and so on.

When Homolovi Ruins State Park was created in 1986, Homol'ovi IV was still owned by the O'Haco family. Almost immediately State Park personnel began discussions with Mike O'Haco to exchange state land near Interstate 40 for the land around Homol'ovi IV. This exchange was consummated in 1988 and the Park enclosed the site with

a fence later that year. With Homol'ovi IV now on state land and protected by a fence, the Homol'ovi Research Program could commence excavations, which it did in 1989. The HRP excavations were conducted during a single field season, but resulted in excavation of parts of 10 structures and several cubic meters of plaza and/or midden space.

# Chapter Four

## Research Design and Methodology

E. Charles Adams

The research at Homol'ovi IV was guided by the typical concerns of space and time, but also origins and migration, village organization and growth, and relationship to other Homol'ovi villages. These concerns will be addressed separately below.

### SPACE AND TIME

Since the time of Colton (Colton 1956; Colton and Hargrave 1937), archaeologists believed that Homol'ovi IV was occupied only during the early, or Tuwiuca Phase, occupation of the area, or about 1250-1300. Surface evidence of pottery collected by HRP from the village prior to its excavation revealed no Jeddito Yellow Ware with yellow hues, confirming Colton and subsequent (Hantman 1982) evaluations of these general dates. HRP work at Homol'ovi III (Adams 2001) had suggested that the pottery at Homol'ovi IV looked even slightly earlier with few polychromes and dominated by black-on-orange types. This raised the possibility that Homol'ovi IV was earlier than Homol'ovi III and possibly the earliest of the Homol'ovi villages. Determining the relative date of its founding became a priority. If Homol'ovi IV was the earliest village, HRP was curious as to whether or not it predated other villages or its occupation overlapped with Homol'ovi III and others.

Related to its occupation was determining the spatial extent of the village and its related features, including pit structures, or kivas, and pla-

zas. Just how large was Homol'ovi IV? Estimates had ranged from less than 100 rooms to 250 rooms by HRP alone. Therefore, in addition to systematic excavations, a complete wall-tracing project was planned for Homol'ovi IV. Not only was the wall tracing beneficial to estimating village size, it was also expected to inform on village growth through tracing abutment and bonding relationships.

### VILLAGE ORGANIZATION AND GROWTH

A natural product of the investigation of time and space at Homol'ovi IV is village growth and organization. Just how large was Homol'ovi IV at the beginning, how did it grow during its occupation, and how large was it at abandonment? Also, what can we learn about social, political, and religious organization at Homol'ovi IV. Investigations at other Homol'ovi villages have revealed the existence of spinal room blocks, which are sets of rooms constructed at the same time and presumably by a work group composed of related individuals (Adams 2001, 2002; LaMotta 2003). If spinal room blocks represent social units at other Homol'ovi villages, how are they manifest at Homol'ovi IV? Is village growth at Homol'ovi IV punctuated or continuous? Does it represent small social groups the size of the family or larger social groups the size of multiple families or lineages? How was village growth "managed" by village leaders? How were the various social groups in-

tegrated to allow village cohesion and cooperation in tasks such as constructing irrigation ditches?

As noted above, an important component of the fieldwork at Homol'ovi IV was tracing as many walls as possible and noting abutment and bonding relationships. This process enabled HRP to determine the nature and pace of village growth during the occupation of Homol'ovi IV. Additionally, the mapping project allowed HRP to determine room size, the location of open or public spaces, and the location and number of kivas and other possible ritual structures. These are important architectural components of village organization.

### ORIGINS AND MIGRATION

Because Homol'ovi IV was considered one of the first, if not the first, village occupied in the Homol'ovi settlement cluster, HRP viewed research there as an opportunity to understand the source of the village population. Survey and excavation of pre-Homol'ovi villages (Adams 1996; Lange 1998; Young 1996) had determined that for all intents and purposes, the landscape where the Homol'ovi villages were established in the later half of the 1200s was devoid of human settlements. This ensured that Homol'ovi IV was settled by immigrants. What was the source or sources of these immigrants?

To address the possible sources of Homol'ovi IV population, the expectation was that architecture and pottery would be the best indicators. The organization of space is a strong cultural expression and differs in regions believed to be most likely sources of immigrants who established Homol'ovi IV (Hillier and Hanson 1984). Numerous ceramic analyses can be used to assess the location of manufacture of pottery found at Homol'ovi IV, including paste and temper analysis and neutron activation analysis (Colton and Hargrave 1937; Lyons 2003). Complementary to chemical and paste analyses are studies of

vessel form and design (Lyons 2003, Rice 1987; Shepard 1955). These analyses are complementary and if all point to a single source area are powerful indicators of the source of immigrant populations.

Related to origins is abandonment of Homol'ovi IV. What were the causes and where did the population move? Did it leave the vicinity, move into another existing Homol'ovi village, or did the occupants establish another later Homol'ovi village? Numerous lines of evidence can be brought to bear on studying abandonment and emigration. At Homol'ovi IV we looked at how rooms were abandoned. The presence and nature of floor assemblages indicate whether or not abandonment was systematic and organized or hasty (Schiffer 1976). The nature of the assemblage also indicates whether the move is short or long distance. If Homol'ovi IV occupants moved a short distance to another village or another location that evolved into another village, the expectation is that most material culture will be removed and taken to the new location. If the move is long distance or rapid, the expectation is that more material will be left behind due to the limited ability to transport large or heavy objects. Items, such as pottery, flaked and ground stone could generally be easily replicated at new homes and would be left behind.

### RELATIONSHIP TO OTHER HOMOL' OVI VILLAGES

Relationship to other Homol'ovi villages is potentially complex. The foremost critical variable is to determine whether or not Homol'ovi IV was contemporary with any other of the Homol'ovi villages. If not, the next important question is did the Homol'ovi IV occupants migrate to another village and, if so, what is the evidence? If Homol'ovi IV's occupation overlaps with other villages, then the nature of those relationships can be evaluated in terms of exchange of material goods.

The original expectations were that Homol'ovi IV predates the other Homol'ovi villages and, therefore, did not have any social or economic relationships with them. The second expectation was that the occupants of Homol'ovi IV did not leave the Homol'ovi area, but instead were incorporated into one of the later large villages, most likely Homol'ovi I or II. Homol'ovi I and II were suspected because they are closest and clearly later than Homol'ovi IV. Homol'ovi III, although closer, was, at 50 rooms, too small to absorb Homol'ovi IV occupants. The only other Homol'ovi cluster village large enough to absorb the Homol'ovi IV population is Chevelon and it is 16 km (10 miles) southeast of Homol'ovi I.

When excavations were conducted in 1989, HRP believed the most likely candidate for absorbing the Homol'ovi IV population was Homol'ovi II. It was known that Homol'ovi II had over 1000 rooms and had been built in a brief period of time, probably less than 10 years. The size and rapid growth of Homol'ovi II supported this possibility. Subsequent research by HRP has proven that Homol'ovi II was founded much later than when Homol'ovi IV was abandoned. This leaves Homol'ovi I as the best local candidate for absorbing the Homol'ovi IV population. Evidence for migration to Homol'ovi I is based primarily on ceramics because Homol'ovi I was occupied for at least 100 years after Homol'ovi IV was abandoned and much of the original village configuration was obscured by subsequent construction to its final size of about 1100 rooms (Adams 2002). Detailed arguments for and against Homol'ovi I as the migration home for Homol'ovi IV will be explored later.

## METHODOLOGY

Homol'ovi IV is a difficult village to excavate because of the extreme relief of the settlement. Most of the village lies along the south and east slopes of a 15 m high butte that average 50% grade. Such

a steep slope has fostered erosion that has been accelerated by persistent vandalism of the site since the late 1880s symbolized by its local name of "Pottery Hill." With the expectation of only one season of fieldwork, it was decided to focus excavations on the lower slopes of the village, but to attempt to map the entire village using a theodolite and EDM. These two approaches promised to give us the variety of data needed to answer the research questions posed above.

## EXCAVATION STRATEGY

The extensive vandalism of Homol'ovi IV enabled HRP to determine the general layout of the village prior to excavations. The village seemed to be laid out in seven arcs of rooms along the slopes of the butte with rooms on top of the butte and scatters of rooms at the base of the butte below the arcs (Figure 4.1). The lower rooms were discontinuous around what seemed to be a large open space, or plaza, that apparently was bounded by rooms on the north, east, and west sides, but was unbounded to the south. Additionally, an isolated structure on the southwest edge of the village appeared to be a kiva, suggesting the limits of plaza space.

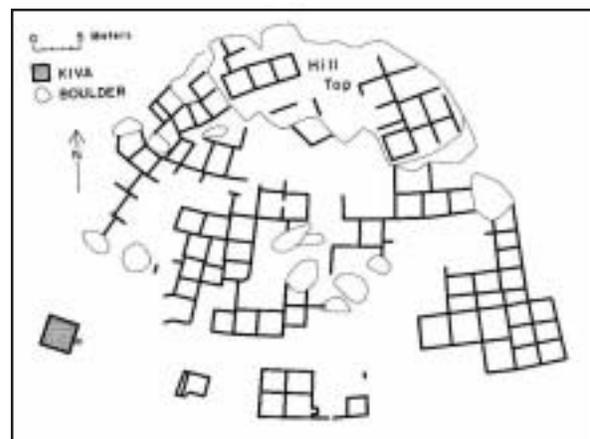


Figure 4.1 Homol'ovi IV

Sampling of this array of architecture and open space was designed to maximize HRP's understanding of spatial and temporal variability of

Homol'ovi IV. To accomplish these goals it was decided that it was not possible to excavate in every part of the village and make meaning of such disparate information. Given the difficulty in accessing the higher parts of the village and the damage that would be done in hauling wheelbarrows and other excavation tools up the slope, it was decided to focus on the lower arcs of rooms while doing detailed mapping of the upper arcs and rooms on top of the butte. The added advantage to working in the lower rooms is their proximity to the plaza and potential ritual structures, perhaps gaining perspectives on spatial organization and village growth.

As a result, excavations began in the isolated kiva, designated structure 1, on the southwest edge of the village, in the lowest three arcs of rooms above the plaza, and in the plaza itself. Excavations in three different arcs would provide a sense of whether they were built at the same or different times. The expectation was that the top or highest arcs of rooms were built first. Secondly, what were social relationships between arcs of rooms? These could be investigated by whether doors or other indications of connections occurred just within arcs

or between arcs as well. Similarly, room use differences between arcs of rooms could be investigated and evaluated as to whether or not there were patterns, such as had been found at Homol'ovi III (Adams 2001).

Initial excavations within the plaza adjacent to the lowest arc of rooms indicated that the lower slopes of the butte had originally been the midden for the upper arcs of rooms. As a result, the lower arcs of rooms were built over considerable depths of trash and in effect sealed these layers from additional disturbance. This discovery led to two additional sampling strategies. First, excavations progressed below floor levels of rooms to bedrock or noncultural soils. Second, excavations in the plaza became much more complex because numerous plaza surfaces were built as the midden raised the level of the surface during the village's occupation. This led to expanded excavations in the plaza and to testing of isolated late structures, such as structures 4 and 5, that were built over plaza surfaces. So, the relationships of rooms to specific plaza surfaces became an important tool to investigate the length and nature of village occupation.

## Chapter Five

# Cultural Setting

E. Charles Adams

The archaeological survey by Lange (1998) determined that there were two periods earlier than the Homol'ovi villages when there was substantial use of the Homol'ovi area. These were labeled the Early Period, which dated from A.D. 620 to 890, and the Middle Period, dating A.D. 1000 to 1225. Dates for these periods are based on radiocarbon dates and tree-ring dated ceramics imported from surrounding areas (Adams 2002; Lange 1998:43-46; Young 1996a). Young has conducted extensive excavations at site 36 (AZ J:14:36 (ASM)), one of the villages occupied during both these periods (Young 1996a, 1999b). She has also tested the Creswell Pueblo (AZJ:14:282 (ASM)) located in the floodplain near Homol'ovi II (Young 1999a). It is clear from these excavations that there is no overlap in terms of ceramics or in terms of stratigraphy between the Middle Period occupation of the Homol'ovi area and the massive Late Period occupation associated with the Homol'ovi pueblo villages (Young 1996a). This startling discovery indicates that the Late Period occupation was a totally immigrant population into the Homol'ovi area. Archaeologically, there are no indications of anyone in the Little Colorado River valley in the vicinity of Homol'ovi prior to this immigration.

The excavations at site 36 by Young (1999b) were designed to evaluate the nature and level of occupation of the Homol'ovi area prior to the settlement of the large villages and the evidence for or against their occupation up to the settlement of the Homol'ovi villages. This evidence was evalu-

ated using ceramic dating, radiocarbon dating, stratigraphic association, context, and continuity of cultural traditions. None of these data sets supported the argument that occupation of this or any of the other Middle Period hamlets continued into the Late Period. The ceramic assemblage of the late phase of the Middle Period is dominated by Walnut Black-on-white, which is variously dated at ending between 1200 and 1250 (Colton 1955; Downum 1988:490; Goetze and Mills 1993:41; Wood 1987:100). However, the virtual absence of mid-1200s types, including Leupp Black-on-white, Tusayan Polychrome, and Tusayan Black-on-white, suggested to Lange (1998:46) that the occupation of the area, which defines the Middle Phase, ended by 1225. Radiocarbon dates, even at two standard deviations, do not suggest occupation beyond the early 1200s (Lange 1998:45; Young 1996a). Nowhere in the village are there deposits of Late Period artifacts that suggest a continuity of use of this site. In fact the only Late Period artifacts in the area are from nearby field areas not directly associated with site 36.

Pit houses characterized site 36 during all occupations. By the 1100s the hamlet had scattered square pit houses 3-4 m on a side and about 1.5 m deep. The hamlet also had a large, circular community structure and a small jacal surface pueblo used for storage and some exterior cooking activities. A small circular kiva was apparently never completed (Young 1996a, 1999b). The plan view of site 36 (Figure 2.8) reveals the structure of this ca. 1150-1200 hamlet, which formed part

of a community of hamlets that occurred on neighboring terraces up and down the east side of the river from Homol'ovi II to south and east of Homol'ovi I (Lange 1998). None of the late features at the site have any suggestion of association with the Late Period, and there are no Late Period ceramics (Young 1999b). Finally, none of the pit house architecture, surface architecture, or ritual architecture at site 36 is represented in any of the Homol'ovi villages. Therefore, the traditions of site 36 end with its abandonment, almost certainly no later than the early 1200s (Young 1999b). The most likely period of intense occupation for site 36 and contemporary hamlets in the Homol'ovi area is during the 1130-1180 drought when the river and associated floodplain would have been most conducive to use by small-scale farmers. As noted previously, the period from 1180-1205 was wet and would have been less likely to be occupied, following Van West's (1996:29) model. This follows the pattern repeated throughout the occupation of the Homol'ovi area into the late 1200s.

A Show Low Black-on-red outlined in white pottery vessel on the floor of the latest structure at site 36 indicates the village may have been sparsely used past 1225. Additionally, excavations in 1999 at the Creswell Pueblo in the floodplain below Homol'ovi II revealed a small pueblo of four rooms and two pit structures, possibly kivas. The kivas were both used as middens and based on the ceramic assemblages from each, were probably used sequentially rather than at the same time. The latest ceramic assemblage at the site clusters around AD 1225 (Young 1999a). As research progresses on the smaller, Middle Period villages, we are realizing that occupation continued into the early 1200s. But, as at site 36, no Late Period ceramics occur in the middens of Creswell indicating no overlap in occupation.

As has been the case throughout the Early and Middle Period occupation of the Homol'ovi area, what we are most likely seeing is a break in occupation, perhaps in the late 1100s, with a smaller reuse of site 36 and the construction of

Creswell Pueblo occurring briefly at about 1225. The much longer occupation span of site 36 makes it difficult to determine the extent of this late Middle Period occupation, but fairly extensive excavations to date suggest it is quite small and short-lived. The extensive midden in the Creswell kivas indicates a larger or longer occupation. The fact that Creswell is located on the floodplain, rather than the terraces, makes it mandatory, as with Homol'ovi III, that occupation be during a dry, low stream flow period. Van West (1996:29-30) identifies the period 1205-1227 as an ideal time for floodplain use, while the periods just before (1183-1204) and just after (1228-1249) were times when the floodplain should be avoided. At present the hiatus between the Middle and Late Periods would appear to be from about 1225 to the 1250s.

## MIGRATION

From the foregoing discussion, it is already clear that the Homol'ovi area was for all intents and purposes, vacant in the mid-1200s. It is also obvious from the discussion on the physical environment that the Homol'ovi area is a prime region to conduct intensive agriculture, that is, agriculture involving the river, but it is not ideally suited for long-term use relying solely on dry farming. The lengthy history of use of the area beginning in the A.D. 600s testifies to the high risk factors in settling in the area. No continuous occupation of more than a decade or two is evident between first intensive use of the area in the 600s through the early 1200s. The large size and rapid growth of the Homol'ovi villages leaves no question that the 13<sup>th</sup> century occupants were immigrants. We also have an understanding of approximately when migration took place based on the reconstruction of stream flow and tree-ring dated pottery traded into the Homol'ovi area.

Following Anthony (1990), Cameron (1995), Haury (1958) and others, the tasks be-

fore us, then are to identify the source area, to determine the size of the migrating population or population segment, to determine the conditions that made migration feasible, and to determine its distance. Additionally, migrating groups would have prior knowledge of the area and previous contact with groups in the area prior to migration. With this information, we will have a full understanding of all facets of the migration into the Homol'ovi area during the late 1200s.

The first question is, what are the conditions that make migration feasible? There are two parts to answering this question. We must look at the conditions at the home of the migrant group and their destination, in this case, Homol'ovi. We have touched on the environmental reasons why groups may have chosen to migrate into the Homol'ovi area in the late 1200s. These include permanent water, a reduced risk of flooding, and possibly abundant driftwood. Van West's (1996:29-30) stream flow reconstruction points to the 1276-1299 period as ideal for settlement of the Homol'ovi area and use of the floodplain for farming. Kolbe (1991) suggests a slightly longer period from 1263-1300. In the late 1200s a massive dislocation of Pueblo people occurred in the Four Corners region (Adler 1996; Cameron 1995; Dean, Doelle, and Orcutt 1994). This has been documented extensively and attributed to warfare, social breakdowns, as well as drought (Adler 1996; Cameron 1995; LeBlanc 1999; Lipe 1989; Varien 1999); although, Van West (1994a) has demonstrated that the Mesa Verde area was still capable of supporting agriculturally based populations. Multiple causes, perhaps in a domino effect, probably created the circumstances that caused the Four Corners abandonment. The impact in the Little Colorado River and neighboring regions has been much discussed and debated. Immigration of groups from northeastern Arizona, primarily the Kayenta Anasazi, into the upper reaches of the Little Colorado and below the Mogollon Rim has been documented (Haury 1958; Lindsay 1992; Mills 1998; Reid and

Whittlesey 1982). It is certainly possible that some of these immigrants, or the results of their immigration, caused settlement of the Homol'ovi area.

Groups continued to occupy three areas around Homol'ovi: the Hopi Mesas, Anderson Mesa, and the Silver Creek/upper Little Colorado River area (Figure 5.1). But the structure of this occupation changed significantly. Just as at Homol'ovi during the Late Period, the occupation of these areas changed from many small villages spread over the landscape to a few discrete clusters of larger villages. Therefore, it is possible that political or social conditions were such that groups could have emigrated from any area surrounding Homol'ovi. There is no evidence that the changing environmental conditions of the late 1200s directly caused the immigration to Homol'ovi from any of the surrounding areas. In fact, evidence suggests just the opposite, the areas were recipients of new populations (Adams 1996a; Adler 1996; Mills 1996; Pilles 1996; Bernardini and Brown 2004; Kaldahl et al. 2004; Duff 2004).



Figure 5.1 Location of Western Pueblo settlement clusters

What are the sources of these immigrants? The first question to be asked is where are large populations located in the late 1200s that would be in contact with or knowledgeable of the Homol'ovi area. The areas would be the Hopi Mesas/Hopi Buttes, the Flagstaff/Anderson Mesa region of the Sinagua, and the upper Little Colorado/Zuni area. Given the long history of use of this area by Early and Middle Period occupants,

knowledge of the middle Little Colorado River valley was extensive by all surrounding groups, but in particular groups living sporadically or seasonally in the Hopi Mesas/Hopi Buttes region 30-80 km north of Homol'ovi. The primary ceramic and architectural traditions at Homol'ovi derive from Hopi Buttes populations (Daifuku 1961; Gumerman and Skinner 1968; Lyons 1998a, 2001; Van West 1994b). When the Hopi Buttes was abandoned in the early 1200s, groups on the Hopi Mesas and Bidahochi Pueblos in the eastern Hopi Buttes absorbed their populations. They brought their extensive knowledge of the resources of the Homol'ovi area with them. Even without these immigrants, the highly mobile populations surrounding the Homol'ovi area would have known the unique riparian resources of the Little Colorado River and major tributaries, such as Chevelon and Clear Creek. This knowledge would have informed any potential immigrants of the resources at Homol'ovi.

The best lines of evidence for the identity of the immigrants are architectural and ceramic technology. As noted with Site 36, an excellent material indicator of a society is how it expresses itself on the landscape in its settlement pattern and site layout. T. Mitchell Prudden (1903) recognized this a century ago in the unit pueblos of Mesa Verde. Studies of settlement patterns and site layouts have occupied the interest of Southwest archaeologists since (Adler 1996; Leonard and Wills 1994; Varien 1999).

Several attributes of fixed material culture have been considered in examining sources of migration. These include room size; construction material; feature location, especially hearths/firepits; layout of the village, including habitation rooms, storage rooms and ceremonial structures, especially kivas; location and organization of space and features within the kivas; and location and use of communal or plaza space. Lyons (1998a, 2001, 2003) has studied the ceremonial architecture of the region and concludes that all the varieties of rectangular kivas in

the Homol'ovi villages occur in the Hopi region at the same time or earlier than at Homol'ovi or the upper Little Colorado. These include simple rectangular kivas, kivas with corner ventilator systems, and kivas with southern benches or platforms. The small room size of most of the villages is also much more typical of the plateau rather than the mountains.

As was described in chapter 1, the architectural layout of Homol'ovi IV in addition to room size, location, and kiva architecture all point to Homol'ovi IV being settled by immigrants from the Hopi Mesas. This, combined with the strong continuity of style and manufacture technology of the Homol'ovi IV ceramics, as discussed in chapter 8, clearly argues for Hopi as the source area. The majority of ceramics at Homol'ovi IV were imported from the Hopi Mesas area and consist of Hopi white wares and Jeddito Black-on-orange and Polychrome (Smith 1971). The locally made ceramics, termed Winslow Orange Ware, are identical in technology and decoration to the Jeddito series, varying only in the use of local clays and local sand tempers (Hays-Gilpin, Bubemyre, and Senior 1996). The dating of Homol'ovi IV will be the subject of the next chapter; however, it is important to note that the accumulation of ceramic and paleo-environmental evidence points to Homol'ovi IV being the first and only village occupied in the Homol'ovi area until the 1280s. As described previously, there is no continuity with previous occupations of the area, which ended about 1225. As argued by Adams (2002), the stimulus for this migration may have been as much to solidify ownership of the area by occupants of the Hopi mesas area, as to exploit resources in the area that are unique in the region, such as the ability to grow cotton reliably.

Other evidence points to Homol'ovi IV being an important trade center by virtue of its location midway between the Hopi Mesas and villages on Anderson Mesa to the south (see Figure 5.1). Evidence of exchange with Anderson Mesa vil-

lages includes abundant ceramics in the form of Alameda Brown Ware, obsidian from the Government Mountain source (Harry 1989), and shell imported from the Hohokam region. Relations with the Hopi Mesas probably involved the exchange of cotton grown locally, but also included many varieties of pottery manufactured at Hopi Mesa villages and points beyond, including the Kayenta Anasazi region. Therefore, the cultural context for Homol'ovi IV was one of isolation with contact with nearest neighbors expressed through long distance exchange. Homol'ovi IV probably served as a middleman in this exchange network, trading obsidian and shell to Hopi and pottery to Anderson Mesa. The demise of Homol'ovi IV coincides with the settlement of nearby Homol'ovi III and more distant, Homol'ovi I, Cottonwood Creek, Chevelon, and Jackrabbit villages. It seems likely that Homol'ovi IV occupants stayed in the area and moved to one of the larger villages, probably Homol'ovi I, simply due to its proximity. This is suggested by the general absence of floor assemblages at Homol'ovi IV, including metates and other heavy items that are not transported long distances.

I (1996b) have used these same arguments for the settlement of Homol'ovi II. The nearly 90 percent frequency of yellow-firing decorated ceramics from the Hopi Mesas, the size and layout of the village, the nature of the kiva architecture all point to source populations from Hopi. Lyons (1998b, 2001, 2003) work on the ceramics at Homol'ovi I clearly tie the earliest ceramics to stylistic traditions from Hopi, especially Jeddito Orange Ware. He has termed this the Jeddito style (Lyons 1998b, 1998c, 2003). The early white wares at Homol'ovi I are also clearly made at Hopi, rather than in the upper Little Colorado River area. This is consistent with the situation at Homol'ovi IV (see Chapter 8) and indicates the strong possibility that the original settlement of Homol'ovi I was principally the relocation of Homol'ovi IV, rather than an immigration of new populations into the area.

## SUMMARY

The criteria marshaled to consider the source populations for immigrants, the nature of the migrant groups, and the push and pull factors encouraging migration have been presented in this chapter. It is clear that the immigrant groups came almost totally from the north, people occupying villages on or near the Hopi Mesas. Pueblo people from north of Homol'ovi had knowledge of the area going back at least to the 600s. The Little Colorado River has always provided a unique habitat and resources for the entire Little Colorado River basin. Analysis of village architecture suggests most groups immigrated in supra-household groupings, almost certainly in related groups, possibly lineage segments or extended families, although household migration is also indicated on a limited basis.

The landscape in the late 1200s was alive with groups migrating to new areas; however, as noted, the primary migrants to Homol'ovi were probably relatively local, Tusayan (Hopi) Anasazi, rather than more northern groups, the Kayenta Anasazi. Three related reasons suggest it was pull rather than push factors that caused the migration to Homol'ovi. The first factor is environmental. Conditions for farming the floodplain were improving and the deposition of building and heating wood from driftwood would have been the missing ingredient to making Homol'ovi a viable area for large, sedentary populations. Dry periods in surrounding areas had attracted immigrants to the Homol'ovi area time and again from the 600s onward. Secondly, the scale of the villages and their organization differed greatly this time. The settlers were not in dispersed, independent farming hamlets. They were organized into labor-rich villages that were able to cope with the extreme circumstances of trying to farm the floodplain of the Little Colorado River. The final factor is the probability that the immigration was politically rather than subsistence motivated. According to Adams (2002), the occupants

of Hopi mesa villages may have been protecting or asserting their rights and control of an economically and ritually important area by settling it in the face of immigrant groups from many areas looking for locations with farming potential. Homol'ovi would have been highly desirable. It is unlikely people already living at Hopi would have left their homeland due to crowding from immigrant groups settling in or near their vil-

lages. Why bother? The immigrant groups would have been encouraged to continue migrating to Homol'ovi to settle on their own rather than at Hopi. They were not. The fact that people already living at Hopi, judging from their material culture, chose instead to move to Homol'ovi supports the political/territorial explanation for expansion into the middle Little Colorado River valley in the late 1200s.

# Chapter Six

## Chronology

E. Charles Adams

The potential for accurately dating Homol'ovi IV is better than for the other villages in the Homol'ovi cluster. This is because it was occupied during a period when most of the other regions adjacent to Homol'ovi were still occupied. Therefore, the potential for cross dating using tree-ring dated pottery is greater than for the other Homol'ovi villages, all of which were occupied later than Homol'ovi IV. In addition to ceramic dating, tree-ring samples and radiocarbon samples were collected and analyzed from Homol'ovi IV. None of the tree-samples were datable (Adams and Hedberg 2002). Only two radiocarbon dates were submitted (Table 6.1). According to ceramic cross dating, the radiocarbon samples should date between 1250 and 1290. The last column indicates that this period falls within the range of probability for the samples. The large confidence interval causes the samples to be relatively useless in refining the Homol'ovi IV chronology, but both samples at least confirm the ceramic dating.

### CERAMIC CROSS-DATING

Several datable types were recovered from Homol'ovi

IV (Table 6.2). Goetze and Mills (1993) recently refined dates for many Southwestern ceramic types by synthesizing previous work and using new data from the Transwestern pipeline project. Some of these types were further refined and others were added in the research conducted by the Silver Creek Archaeological Research Project (Mills and Herr 1998) and at Homol'ovi III (Adams 2001; Lyons and Hays 2001) and at Homol'ovi IV (Lyons 2001). Ceramic production dates are provided in tables and text, and originate from these works unless otherwise noted.

Jeddito Orange Ware (defined by Colton and Hargrave (1937) as part of Tsegi Orange Ware) from Homol'ovi IV contained 1056 datable sherds (Table 6.2). This ware was produced from A.D. 1250 to A.D. 1325 and includes Jeddito Black-on-orange, Jeddito Orange, Jeddito Slipped, and Jeddito Polychrome. Ten sherds, each of Tusayan and Kiet Siel Polychrome are also present, wichi have narrower production dates at 1280-1290 and 1250-1300 respectively (Table 6.2)

A total of 195 Tusayan White Ware sherds from five types with secure production ranges were identified at Homol'ovi IV. Tusayan Black-on-white (A.D. 1200 to A.D. 1300) was twice as

Table 6.1 Dated radiocarbon samples from Homol'ovi IV

| Lab Number | Provenience       | Radiocarbon Age | 13C% Correction | Calibrated Age | 2 Standard Deviations<br>(Probability) |
|------------|-------------------|-----------------|-----------------|----------------|--|
| Beta-62437 | Below Structure 5 | 540 +/- 70      | -11.6           | 1190           | 1050-1330 (1.0)                        |
| Beta-62438 | Below Structure 5 | 440 +/- 70      | -11.6           | 1290           | 1150-1430 (1.0)                        |

Table 6.2 Prevalent Datable Types at Homol'ovi IV (n &gt;9)

| Type                                | Frequency (Percent) | Date (A.D.) | Range |
|-------------------------------------|---------------------|-------------|-------|
| Tusayan Indented Corrugated         | 5600 (33.46)        | 1040-1300+  | 260+  |
| Grapevine Brown                     | 1213 (7.25)         | 1066-1400   | 334   |
| Little Colorado Indented Corrugated | 1133 (6.77)         | 1040-1250+  | 210+  |
| Jeddito Black-on-orange             | 806 (4.82)          | 1250-1325   | 25    |
| Sunset Red/Brown                    | 164 (0.98)          | 1066-1400   | 334   |
| Jeddito Orange                      | 122 (0.73)          | 1250-1325   | 25    |
| Tusayan Black-on-white              | 97 (0.58)           | 1200-1300   | 100   |
| Jeddito Slipped                     | 69 (0.41)           | 1250-1325   | 25    |
| Jeddito Polychrome                  | 59 (0.35)           | 1250-1325   | 25    |
| Snowflake Black-on-white            | 48 (0.29)           | 1100-1275   | 125   |
| Kayenta Black-on-white              | 42 (0.25)           | 1260-1300   | 40    |
| Angell Brown                        | 41 (0.24)           | 1066-1400   | 334   |
| Flagstaff Black-on-white            | 40 (0.24)           | 1150-1220   | 70    |
| Puerco Black-on-white               | 26 (0.16)           | 1030-1200   | 120   |
| Moenkopi corrugated                 | 26 (0.16)           | 1025-1300+  | 125+  |
| Wingate Black-on-red/Polychrome     | 21 (0.13)           | 1050-1200   | 150   |
| Walnut Black-on-white               | 20 (0.12)           | 1100-1250   | 150   |
| Reserve Black-on-white              | 18 (0.11)           | 1100-1200   | 100   |
| Tularosa Black-on-white             | 17 (0.10)           | 1180-1300   | 120   |
| St. Johns Polychrome                | 11 (0.07)           | 1200-1300   | 100   |
| Kiet Siel Polychrome                | 10 (0.06)           | 1250-1300   | 50    |
| Tusayan Polychrome                  | 10 (0.06)           | 1250-1300   | 50    |
| Pinto Polychrome                    | 9 (0.05)            | 1280-1330   | 50    |

common as any other typable Tusayan White Ware. The slightly earlier Flagstaff Black-on-white (A.D. 1150 to A.D. 1220) and the slightly later Kayenta Black-on-white (A.D. 1250 to A.D. 1300) were the next most common types. A small percentage of Dogoszhi Black-on-white (A.D. 1070 to A.D. 1180) was present, and a few other types were represented by a small quantity of sherds.

Little Colorado White Ware included 33 typable, datable sherds. Walnut Black-on-white (A.D. 1100 to A.D. 1250) was by far the most common (20 sherds). Other types are only minimally represented (1 to 7 sherds) and include Padre Black-on-white (A.D. 1100 to A.D. 1250), earlier Holbrook A and B Black-on-white, and later Leupp Black-on-white.

Cibola White Ware at Homol'ovi IV contained six types (122 sherds) with known production dates (Table 6.2). Forty-eight Snowflake (AD 100-1275) and 17 Tularosa Black-on-white

(AD 1180-1300) sherds were recovered. Slightly earlier Puerco (A.D. 1030 to A.D. 1200) and Reserve Black-on-white (A.D. 1100 to A.D. 1200) are also common types. Even earlier types Red Mesa and Escavada Black-on-white are present in very small quantities.

White Mountain Red Ware totaled 33 sherds including 21 Wingate Black-on-red/Polychrome sherds (A.D. 1050 to A.D. 1200), 11 St. Johns Black-on-red/Polychrome (A.D. 1200 to A.D. 1300), and 1 Pinedale Black-on-red/Polychrome (A.D. 1290 to A.D. 1330). Slightly later Roosevelt Red Ware includes nine Pinto Polychrome sherds (A.D. 1280 to A.D. 1330) and six Gila/Tonto Polychrome sherds in styles dating from AD 1300 to 1400.

Indented Corrugated varieties of Tusayan Gray Ware (5600 sherds) and Little Colorado Gray ware (1133 sherds) are common at Homol'ovi IV and have production dates ranging from A.D. 1040 to A.D. 1300+ and A.D. 1040

to A.D. 1250+, respectively. Twenty-six sherds of Tusayan Gray Ware type Moenkopi Corrugated (A.D. 1075 to A.D. 1300) were also present.

Over 14400 sherds of Alameda Brown Ware types Angell Brown, Grapevine Brown, and Sunset Red/Brown were recovered. All have similar production date ranges (A.D. 1064 or 1066 to A.D. 1400). Three sherds of early Rio de Flag Brown were noted. Single sherds of Deadmans Gray (A.D. 775 to A.D. 1200) and a Showlow Black-on-red (A.D. 1030 to A.D. 1200) were also recovered.

Although the broadest possible production range for ceramic types recovered from Homol'ovi IV spans at least 800 years beginning in A.D. 650 with Rio de Flag and ending in A.D. 1400 with Gila/Tonto Polychrome, the ceramic collection suggests that the actual occupation of Homol'ovi IV was more temporally restricted.

Three of the four most common types in the collection (Tusayan and Little Colorado Indented Corrugated and Grapevine Brown) offer production date ranges spanning from 210+ to 334 years beginning in the mid A.D. 1000s and ending at A.D. 1250+ to 1400. Jeddito Black-on-orange is the most prevalent decorated type with a secure production range (A.D. 1250 to A.D. 1325), shared with other Jeddito Orange Ware types – Jeddito Orange, Slipped, and Polychrome (Table 6.2). Several datable Tsegi Orange Ware types, including Tusayan A and B and Kiet Siel Polychrome have a tighter date range ending at 1300. The production dates for a variety of common white ware types overlap with the production of Jeddito and Tsegi Orange wares, excepting Puerco (A.D. 1000 to A.D. 1175) and Flagstaff Black-on-white (A.D. 1150-1220). However, the beginning production dates for these white wares is generally earlier (excepting Kayenta Black-on-white, A.D. 1260) ranging from A.D. 1000 to A.D. 1200.

Ceramic production ranges indicate a population occupying Homol'ovi IV by the mid to late

A.D. 1200's, certainly no broader than 1250-1300. Although there are a dozen sherds having beginning dates for production after 1300, including six sherds of Gila/Tonto Polychrome, one sherd of Bidahochi Polychrome, and five of Jeddito Black-on-yellow. Their presence could easily be explained by the reuse or revisitation of Homol'ovi IV by nearby inhabitants of Homol'ovi II or III, both occupied when these later types were produced. Given that production of all of these types begins after A.D. 1325, this seems to be the most parsimonious explanation. The preponderance of St. Johns Polychrome (1200-1300) over Pinedale Polychrome (1290-1330), represented by one sherd, the presence of Pinto Polychrome (1280-1330), and of various Tsegi Orange wares whose manufacture end date is around 1290-1300, suggests an end date of about A.D. 1290 for the occupation of Homol'ovi IV. Similarly, the preponderance of Jeddito and Tsegi Orange wares in the decorated assemblage of Homol'ovi IV, all of whose beginning date for manufacture begins at 1250, suggests a beginning date for the occupation of Homol'ovi IV at no earlier than 1250. A maximum date range for the occupation of Homol'ovi IV based on tree-ring dated ceramics can be placed at 1250-1300 and a minimum range at 1260-1290.

#### PALEOENVIRONMENTAL RECONSTRUCTION

Reconstruction of the environment around Homol'ovi IV is based on fieldwork by Kolbe (1991) that has been augmented by Van West (1996) and Lange (1998). Their work informs on the most promising periods during which Homol'ovi IV could most profitably be occupied. It is important to note that Homol'ovi IV rests on the edge of the floodplain of the Little Colorado River along a portion of the river that did not have a permanent flow, unlike upstream. This has been discussed in chapter 2. Therefore, for farming purposes, Homol'ovi IV would need to be posi-

tioned to take advantage of high enough stream flows to water fields, because no diversion of water could be assured from average flows, but not severe stream flows that could damage or destroy fields. During wet periods, Little Colorado River stream flow can be substantial, as demonstrated by the frequent floods recording historically (Adams 2002; Adams and Hedberg 2002). It would be to the disadvantage of Homol'ovi IV occupants to settle along a river that flooded frequently and severely.

Fortunately, Kolbe and Van West were able to retrodict stream flow by using a method developed by Graybill (1989) and Graybill and Funkhouser based on tree-rings compared to historic stream flows in the Salt, Tonto, and Verde Rivers. Kolbe (1991) complemented Graybill's work by taking tree-ring samples from cottonwoods in the Homol'ovi area and comparing them to the excellent stream flow record recorded for the Little Colorado River from 1889 through 1986. Using these data, Kolbe was able to retrodict stream flows along the Little Colorado River based on the historic record by using the tree-ring record from the basin to predict stream flow for the Homol'ovi area between 1260 and 1400. He was able to find three broad patterns: 1) the period 1260-1300 was dry, averaging 18% below average stream flow; 2) the period 1301-1337 was wet, averaging 20% above average stream flow; 3) 1338-1400 was variable with two very wet interludes between 1357-1359 and 1380-1384.

Van West, utilizing Graybill and Funkhouser's and Kolbe's data, reconstructed the stream flow and agricultural potential along the Little Colorado River from the period A.D. 572 to 1985. These data informed Van West as to whether or not it was favorable to farm in the floodplain. Her findings complement and expand on Kolbe's. Van West's (1996: tables 2.2 and 2.3) data indicate that the floodplain should have been avoided for farming between 1228-1249 and 1300-1334 and was especially attractive between 1276-1299. These two studies emphasize the attractiveness of the

floodplain for farming in general between 1250-1300, which corresponds exactly to the widest range of dates for Homol'ovi IV occupation based on tree-ring dated pottery. Lyons (2001:156) looked at Van West's data on a decadal basis and determined that three decades in the late 1200s, 1250-1259, 1280-1289, and 1290-1299, were among the five driest between 1230 and 1400. Likewise, the decades from 1240-1249 and 1300-1309 were two of the five wettest. Lyons's research underscores the fact that Homol'ovi IV was occupied during the latter half of the 13<sup>th</sup> century and that a principal reason for establishing the village was to take advantage of favorable farming conditions along the Little Colorado River. Adams (2002) further develops a model that argues Homol'ovi IV was established by groups from the Hopi Mesas not only to take advantage of favorable farming conditions along the river, but also to keep other migrant groups from doing the same thing.

#### SUMMARY

As noted in the discussion on the environment in chapter 2 and the above discussion of stream flow, an enormous amount of research has been conducted in conjunction with the Homol'ovi Research Program to create a strong sense of the history of the Little Colorado River valley in terms of when the floodplain would be most and least favorable to farming. Most importantly, the stream flow retrodictions allow archaeologists to compare, independently, their reconstructions of occupation of the river basin based on ceramic, tree-ring, and other chronologies. The record of occupation of the Homol'ovi area as developed by Lange (1998) and Van West (1996) strongly indicates that it was settled and occupied only during periods of below average precipitation and below average stream flow. The period 1250-1300 is consistently determined to be the longest and most favorable period during the occupation of the Homol'ovi

villages for settlement and aggregation (Van West 1996:29-31). The tree-ring dated ceramics strongly point to this same period for occupation of Homol'ovi IV. The correlation between the occupation and a probably reason for occupation are singularly striking.

In the discussion on ceramics, it was suggested that occupation likely did not extend to 1300. This is based on the tree-ring dated ceramics found at Homol'ovi IV, but is amplified by what is not found at Homol'ovi IV. Detailed analysis of ceramics and the chronology of Homol'ovi III indicate that the village was founded between 1280 and 1290 (Adams 2001: table 7.9). Ceramics from this Founder Phase at Homol'ovi III are dominated (80.5%) by locally produced decorated and utility ware ceramics, especially the slipped series of Winslow Orange Ware, which accounts for nearly 40% of the Winslow Orange Ware and Homolovi Polychrome, which is 6% (Adams 2001; Lyons and Hays 2001). In contrast at Homol'ovi IV, slipped varieties of Winslow

Orange Ware are only 1.05% and Homolovi Polychrome is only 0.30% of Winslow Orange Ware. Similarly, Homol'ovi Gray and Orange wares account for 52.44% of ceramics in the founder phase at Homol'ovi III whereas only 2.81% of ceramics at Homol'ovi IV are either of these wares (Adams 2002: table 7.1; Lyons and Hays 2001: Tables 8.1 and 8.2). Given that Homol'ovi III is only 1 km from Homol'ovi IV, it is unlikely that types produced at Homol'ovi III in abundance would appear in such low numbers at Homol'ovi IV, if it were contemporary with Homol'ovi III. Homol'ovi I and Chevelon Ruin, contemporaries of Homol'ovi III, also have high frequencies of Winslow and Homolovi wares, indicating it is a temporal trend not an ethnic difference between the villages. This indicates that Homol'ovi IV was abandoned just before or at the founding of Homol'ovi III, or between 1280 and 1290. Therefore, it is probable that Homol'ovi IV was first settled in the 1250s and abandoned in the 1280s for an occupation span of about 30 years.



## Chapter Seven

# Architecture

### E. Charles Adams

As described in Chapter 1, Homol'ovi IV is a 200-room pueblo consisting of cluster of 25 mostly two-story rooms on top and nine arcs of 10 to 20 rooms each surrounding the south and east sides of a 15 meter-high butte on the west edge of the Little Colorado River floodplain. As noted in the previous chapter, Homol'ovi IV has been the target of extensive vandalism throughout most of the 20<sup>th</sup> century until acquired and fenced by Homolovi Ruins State Park in 1988.

As noted in Chapter 1, Homol'ovi IV is situated like many of its contemporary settlements in the Hopi Mesa (Tusayan) and Kayenta Anasazi areas of northeastern Arizona, on and along the sides of a butte. The east and south sides were probably chosen to take advantage of the heat of the morning and winter sun. Also, by choosing these sides, the occupants preserved the ancient orientation of Anasazi sites, which face to the south and east. This orientation first appeared in Pueblo I age settlements to the east of Homol'ovi from Zuni to Mesa Verde and southeast Utah about A.D.750 (Brew 1946) and appeared among western Anasazi groups by A.D. 850 (Powell 2002).

Given the intensity of vandalism and the instability of the steep slope of the room blocks, it was decided to concentrate excavations to the lower portions of the room arcs. Each arc was numbered separately from lowest to highest. The lowest scatter of rooms were assigned to the 000 room block, the first clear arc of rooms to the 100 room block, the next arc the 200 room block and

so forth to the top. The goal was to sample the architectural diversity of rooms in the lowest five room arcs, the non-architectural space at the bottom of the hill, and the one known kiva, structure 1, on the southwest edge of the village. The results were the testing of four structures and complete excavation of seven others, two of which were kiva/ritual structures, and extensive sampling of the open, or plaza, space at the base of the south slope of the butte (Figure 7.1).



Figure 7.1 Map of excavated structures at Homol'ovi IV

The excavations revealed that all the lower room arcs, at least from arc 400 and lower, were built over extensive deposits of trash that had accumulated while the rooms on top of the butte and upper arcs were occupied and their occupants discarded their trash on the slopes below. This suggested that the lower rooms were the latest built at Homol'ovi IV and gave us a sense that the vil-

lage grew incrementally from the top down over a fairly brief, but measurable span of time (see Chapter 6). The depth of the fill increased the farther down the side of the butte until it accumulated to over 1 m when the rooms from the 000 room arc were constructed. Additionally, the stratified nature of the deposits gave us hope that quantifiable ceramic change could occur that would help in chronology building. As detailed in the ceramic chapter (also, see Bubemyre et al. 1996), the hope for measurable ceramic change in type frequency or decorative attributes in the stratigraphy in the lower slopes was not realized in the analysis. Nevertheless, the combination of abutment and bonding data and the presence and depth of fill beneath individual rooms enabled HRP to assign relative chronological placement of most of the structures at Homol'ovi IV and the 11 tested or excavated structures.

The abutment and bonding data clearly show that rooms were added to Homol'ovi IV in arcs that spanned the south and east sides of the butte with the upper arcs built first and the lower arcs built last. It is assumed that the rooms on top of the pueblo were built first because stairs and ramps from the top arc of rooms, the 800 arc, lead to the pueblo on top. Thus, the abutment and bonding indicate that the latest rooms at the village were the 000 rooms, which were built at the base of the slopes of the butte and either surround or cover over the plaza. Additionally, structure 2, a ritual structure, was built into the upper plaza deposits. The 11 excavated structures are: 1, 2, 4, 5, 10, 101, 110, 201, 202, 301, and 404, with the room number reflecting the room arc with which the room is associated (see Figure 7.1). In terms of construction sequence, structure 404 is earliest, 301 next, followed by 201 and 202, followed by 2, 4, 5, and 10. The kiva, structure 1, is so remote from the rest of the village and was so badly vandalized that it is impossible to determine its temporal relationship to the rest of the village and the excavated rooms.

Figure 7.2 illustrates the idealized slope and stratigraphy based on the excavated rooms and

underlying deposits. It is a composite of deposits under structures 404, 301, 201, 101, and the plaza south of 101.

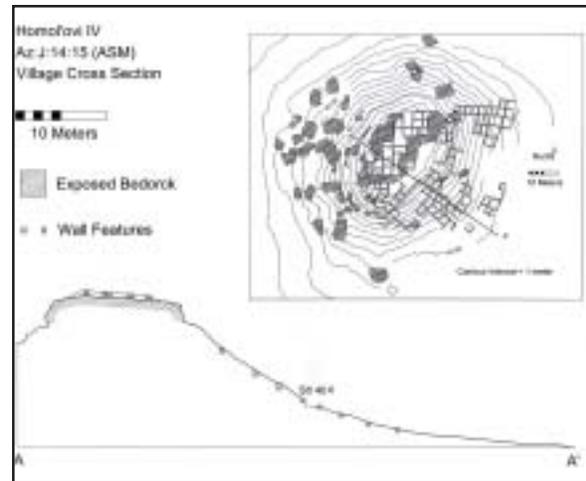


Figure 7.2 Slope and stratigraphy of Homol'ovi IV (Illustration by Doug Gann)

## SUBTERRANEAN STRUCTURES

### Structure 1



Figure 7.3 Structure 1, floor

**Phase, Location and Use:** Tuwiuca Phase, West Side of Plaza, Kiva

**Area and Wall Information:** The area of structure 1 is approximately 8.00 sq. m (Figure 7.3). All four walls are bonded at the corners to one another, built on top of bedrock, which is incorporated into the wall, made of green Moenkopi and in fairly good condition. The northeast wall is

3.08 m long, 78 cm high and 25 cm wide (Figure 7.4). It is a masonry wall constructed of horizontal sandstone slabs ranging from 10 cm to 37 cm long with the average slab measuring 25 cm by 7 cm. Adobe is used to bond the slabs together. The southwest wall is 2.90 m long, 52 cm high and 13 cm wide. It is a masonry wall constructed out of sandstone slabs from 12 cm to 20 cm long, containing adobe mortar. On average the slabs are 24 cm by 5 cm. For the most part they lay horizontally. However, one piece of sandstone is set vertically. The southeast wall is 2.50 m long, 51 cm high and 30 cm wide. It is a masonry wall constructed out of sandstone slabs from 11 cm to 32 cm long with the average slab measuring 17 cm by 6 cm. The slabs lay horizontally except in the south corner where one slab is placed vertically. Adobe is used as mortar. The southeast wall has two features in it. Feature 3 is a bench niche located in the east corner. This feature measured 39 cm by 40 cm. It is surrounded by six sandstone slabs, 2 upright and 4 horizontal. The soil within the feature is very hard, reddish sand. The feature contained very few artifacts. The second feature, feature 5 is a ventilator shaft. Located in the center of the southeast wall the opening to the horizontal portion of the ventilator is 22 cm high and 26 cm wide. It goes 85 cm back where it connects with a vertical shaft outside the wall with an opening of 38 cm by 21 cm. Finally, the northwest wall is 2.75 m long, 87 cm high and 12 cm wide. It is a masonry wall constructed of sandstone slabs from 7 cm to 36 cm long, with the average slab measuring 29 cm by 10 cm. Adobe is used as the mortar between the horizontal slabs.

**Roof:** No evidence on the nature of the roofing material was preserved.

**Floors:** The floors are constructed of red adobe. Feature 2, a charcoal dump, was found on the floor (see Figure 7.4). This feature is situated in a low spot of the bedrock with 2 large sandstone rocks on its north and east sides. Two smaller sandstone rocks are placed on the sides of the bedrock. Undoubtedly, this is the remains of the hearth

that was disturbed when the kiva was vandalized. The feature is 14 cm long by 13 cm wide and filled with charcoal. In addition, feature 4, a possible sipapu, is cut out of the bedrock east of the hearth.

**Fill:** About 1.2 m<sup>3</sup> of rock was excavated from the room. All the fill was disturbed in structure 1. It was homogenous throughout the structure, fairly hard, sandy/silty soil with chunks of adobe and charcoal (see Figure 7.5). In addition the fill had a dense amount of artifacts.

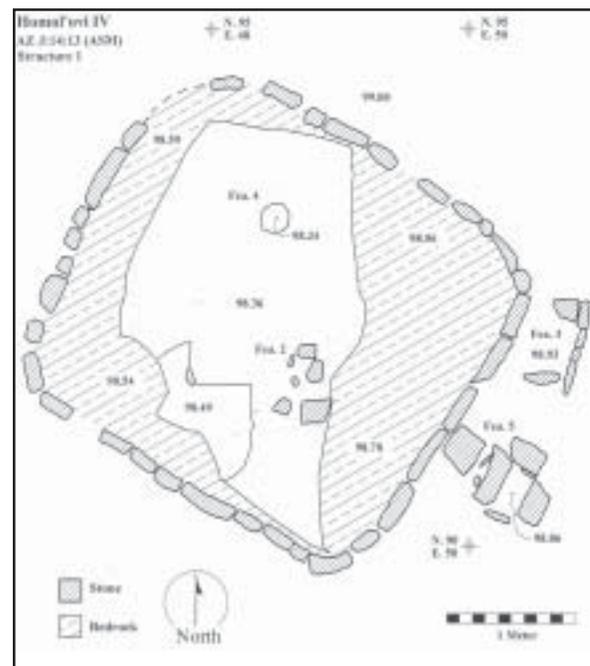


Figure 7.4 Structure 1, plan view (Illustration by Doug Gann)

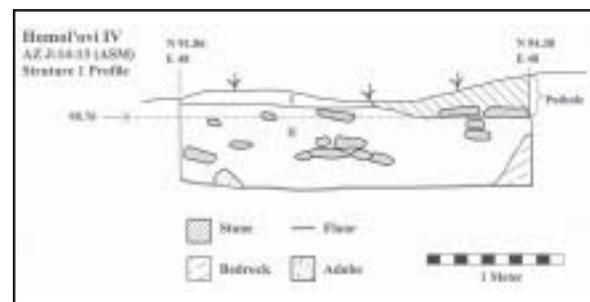


Figure 7.5 Structure 1 profile, view west (Illustration by Doug Gann)

**Discussion:** Due to the nature of the fill the structure was excavated in arbitrary levels-Stratum 1, levels 1 through 6. Bits of red adobe were

found near the bottom of the structure. These are thought to be pieces of prepared floor except that the floor was never found intact. The structure was excavated down to the bedrock, which is approximately 75 cm below present day ground level. The bedrock is incorporated into the masonry walls of the structure. Feature 1 was found in the disturbed strata and is actually probably trash, not a feature. It contained several articulated bones, several vertebrae and rib bones of a juvenile small mammal about the size of a dog. A few sherds and a hammerstone are associated with these bones. Dog remains have been found in several other kivas in Homol'ovi villages and bear a ritual signature (Walker 1995; LaMotta 1996).

The remainder of the features—a corner niche, ventilator, hearth, and sipapu all support the interpretation that this isolated structure was used as a kiva during the occupation of the village. The disturbed nature of its fill precludes knowing whether the kiva was in use to the end of the occupation or abandoned and filled prior to the abandonment of the village.

## Structure 2



Figure 7.6 Structure 2, floor

**Phase, Location and Use:** Tuwiuca Phase, Center of Plaza, Ritual structure.

**Area and Wall Information:** Structure 2 originates at plaza surface 2. It is about 3.40 sq. m (Figure 7.6). Both the south and west walls of the structure are intact but the north and east are not.

The east wall measures 1.70 m long and 48 cm high (Figure 7.7). The bottom of the wall is bedrock capped by trash fill. Upright stone slabs extended above the height of the bedrock, about 48 cm high, to contain the loose trash. The slabs are coped to the floor and held in place by adobe. The north wall measures 1.80 m long and 50 cm high. Its base is also cut from bedrock. The south wall measures 1.93 m long and 65 cm high. The bottom of the wall is bedrock topped by a layer of cultural fill, which is overlain by a four-course high masonry wall. Feature 4, possibly a combination ventilator and box-like entryway, is on the western end of the south wall. It measures 20 cm by 40 cm by 33 cm (deep) and is partly cut into the bedrock. Its bottom is 40 cm above the floor. Similar to the east wall, the west wall is built of slabs and measures 1.95 m long and 72 cm high.

**Roof:** There is evidence of a roof in the fill, which consists of sooted adobe chunks with stick impressions and small burned rocks. However, no burned or unburned wood was recovered.

**Floors:** The floor is constructed of prepared adobe and it was in good condition. The floor has 3 features. Feature 1, a hearth, measured 39 cm by 35 cm. It is located along the center of the south wall. Two strata were visible within the hearth. The upper is a reddish-yellow layer and the lower is a gray ash layer that is hard packed with charcoal. It appears that adobe copes up against the hearth and lines the bottom of the bedrock. Associated with the hearth and between it and the entry box are vertical slabs that probably served as deflectors. Feature 2 is a heart-shaped storage pit, measuring 29 cm by 40 cm and 5 cm deep. It is adjacent to the hearth on the north side and is either an ash pit or simply where the floor had eroded away. The bottom is unlined bedrock. One lithic and a burned slab were found in the pit's fill. Feature 5 is a possible ventilator feature in the south wall of the structure above the hearth. This feature had collapsed and because its walls are the trash fill, it was difficult to discern its true size and use. Feature 3 is 55 cm by 55 cm

and located in the northwest corner of the structure. It consists of two upright flagstones set in adobe surrounding a horizontal slab. Given that the bottom of the feature is bedrock, the slab would not be necessary for a storage bin. This suggests it was a mealing bin.

**Fill:** The structure had about 75 cm of fill (Figure 7.8). Pothunters removed the northern third of the structure's fill. About 0.4 m<sup>3</sup> of rock was removed from the structure indicating the walls extended several courses higher. The stratigraphy of the deposits sloped from the edges to the center of the room. The roof and wall fall are concentrated toward the center and northern end of the structure. An enormous ash deposit was found in the south end of the structure in the vicinity of the hearth and entryway of the southeast wall. This deposit sloped from the south wall into the center of the structure suggesting it was filled with trash and ash from the south side shortly after it was abandoned.

**Discussion:** This is a small, square pit structure excavated through cultural deposits into bedrock. Its shape is square: its size is small. Except for a pothole dug into the northwest corner of the structure, which did not reach the floor, the deposits were undisturbed.

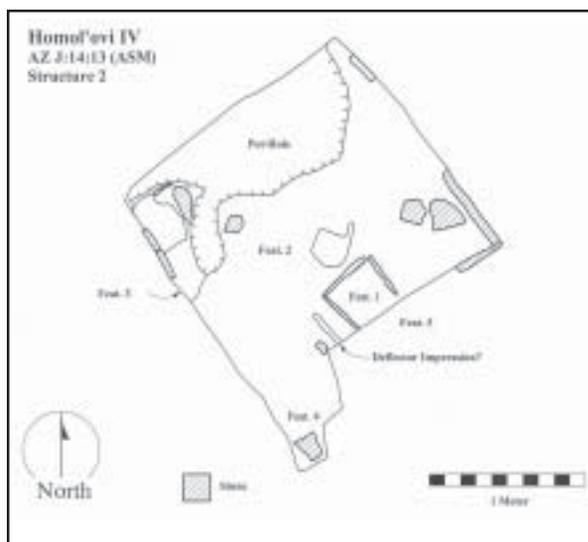


Figure 7.7 Structure 2, plan view (Illustration by Doug Gann)

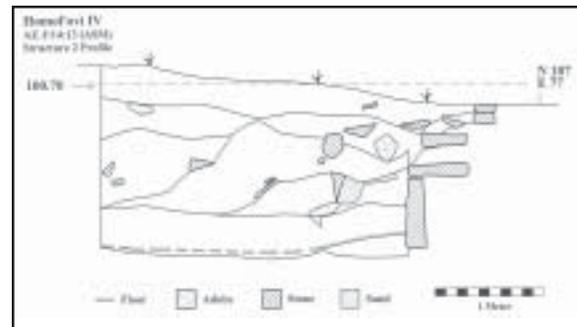


Figure 7.8 Structure 2, profile, view east (Illustration by Doug Gann)

This structure's architecture presents an interesting problem because its traits do not fit one specific type of structure. These traits may represent real variation in form or may simply be misidentified. In comparison to Kayenta structures from the Tsegi phase, which roughly corresponds to the timeline of the site, structure 2 might be a "grinding room" or a "living room." According to Lindsay (1969:122) grinding rooms in the Kayenta area had entry boxes, were excavated partially into the ground, separated from the room block, and had multiple mealing bins. This description fits structure 2 except it has only one possible mealing bin and also has a hearth, which Kayenta Anasazi mealing rooms do not. The presence of the hearth is more similar to living rooms in the Kayenta area, but these typically are not separate from other structures and do not have mealing bins. Its form and semi-subterranean nature are most similar to the kiva, structure 1. The structure appears to have a unique role at Homol'ovi IV. Its location in the plaza suggests a ceremonial role and in the Homol'ovi Research Program's structure use designations it most closely fits that of ritual structure.

## SURFACE STRUCTURES

### Structure 4

**Phase, Location and Use:** Tuwiuca Phase, Room Row 1, Storage.



Figure 7.9 Structure 4, floor and plaza feature 6

**Area and Wall Information:** The area of structure 4 is approximately 4.26 sq. m (Figure 7.9). All four walls are masonry with adobe mortar using unmodified green Moenkopi sandstone ranging from 15 cm to 40 cm long. The north and south walls abut to the east wall. The south wall bonds with the west wall, but the north wall abuts the west wall. Structures 4 and 5 were probably a single structure at one time that was added and abutted to the unnumbered structure to the east (Figure 7.10). The wall separating the two structures, the north wall to structure 4, was added to separate the use of the two structures. The walls have all collapsed to less than 50 cm leaving shallow room fill (Figure 7.11). The north wall is 2.50 m long, 28 cm high and 24 cm thick and is in good condition. It is also the south wall to structure 5. The wall is built on top of a thick stratum of cultural material, which probably served as a leveling layer. Beneath the leveling layer is 58 cm of plaza. The south wall is 2.65 m long, 23 cm high and 25 cm thick. A pothole in the southeast corner of the structure removed a section of the south wall. This wall rests on 36 cm of plaza fill that is also overlain by a thick leveling layer of cultural fill. The east wall is 1.65 m long, 44 cm high and 25 cm thick. The wall is built on a thick layer of leveling cultural fill that overlies 48 cm of plaza fill. In addition this wall has more adobe than actual sandstone slabs. Finally, the west wall is 1.66 m long, 22 cm high and 30 cm thick. As

with the other walls, it is built on a thick layer of cultural fill that rests on 42 cm of plaza fill and, like the east wall, has more adobe than actual sandstone slabs.

**Roof:** Some chunky adobe in the top fill layer of the structure may be remnants of roof, but equally could be mortar from the structure's walls.

**Floors:** The floor is unprepared and built by compacting the natural cultural fill. It is patchy and not well defined. No features are associated with the floor.

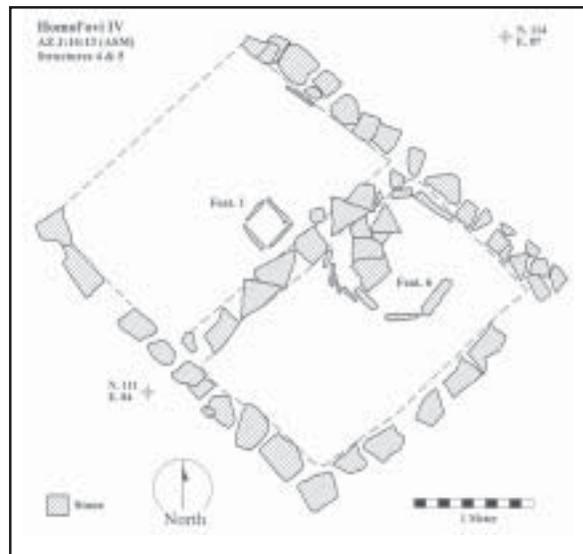


Figure 7.10 Structures 4 and 5, plan view (Illustration by Doug Gann)

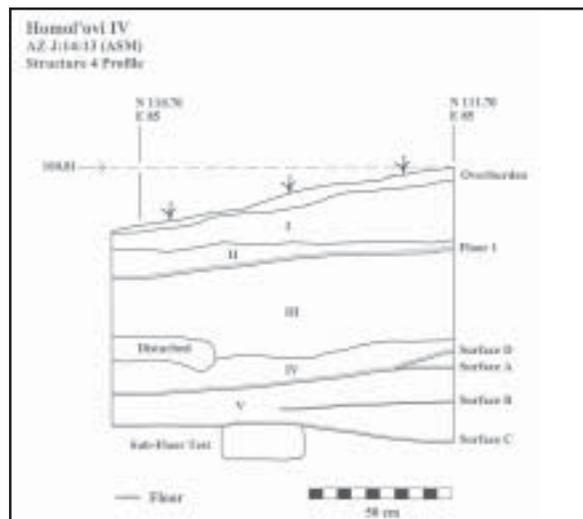


Figure 7.11 Structure 4, profile, view west (Illustration by Doug Gann)

**Fill:** The shallow nature of the fill, ranging from 20 cm to 45 cm, limits the quality and quantity of the fill. However, the 40 cm of fill beneath the structure that was evidently brought in to level the area before construction can be added to the discussion. The plaza surfaces and fill beneath the fill unit will be covered under the discussion of the plaza. The stratigraphy is very simple. The upper stratum is predominantly adobe, either from wall or roof fall, or both. Artifact density and cultural material is scarce indicating this stratum was created after the structure, and probably the village, was abandoned. The next stratum, which also lay on the floor, is a thin ashy, cultural layer that accumulated while Homol'ovi IV was still occupied. Artifact density is low suggesting it is not secondary fill from dumping. The floor is simply the compacted version of the cultural fill added to level the plaza for construction of the rooms in this area of the site. Stratum 3 is the designation for the added fill. It averages about 30 cm thick and is undifferentiated fill. It is mostly sandy with occasional pockets of ash and charcoal and a few artifacts. Its structure suggests it was borrowed from a nearby midden area and used to level the area prior to construction of structures 4 and 5 on the southern edge of the village.

**Discussion:** Structure 4 is a shallow structure with only two strata making the fill of the structure. Stratum 1 is a layer of very hard adobe fall, either wall or roof fall. Under the adobe is a layer of ash, which was lying on top of the floor. The floor is a compacted surface on top of cultural fill that overlies the plaza. Stratigraphy and the condition of the walls show that this room was built off of an already standing room to the east, using the wall of the room as the east wall of structure 4. A 30-cm-thick stratum just below the floor indicates that fill was used to cover the plaza to create a new building surface. The fact that this fill also underlies the structure east of structure 4 indicates it was built at the same time, only before structures 4 and 5. The floor of the structure is on top of this fill and the north, south and west walls

are constructed on the fill. At one point in time, structure 4 and 5 may have been one room, with the structure 4 floor and the structure 5, floor 2 being the shared occupation surface. The absence of features in structure 4 suggests it was used for storage.

### Structure 5



Figure 7.12 Structure 5, floor 2

**Phase, Location and Use:** Tuwiuca Phase, Room Row 1, Habitation

**Area and Wall Information:** The area of the structure is uncertain since the north wall is missing; however, it is approximately 4.13 sq. m (Figure 7.12). The three remaining walls, all in fairly good condition, are masonry made of unmodified green Moenkopi sandstone, using adobe for the mortar. All the existing walls are abutted (see Figure 7.10). The south wall is 2.50 m long, 28 cm high and 24 cm thick. The wall is constructed of horizontal sandstone slabs 15 cm to 38 cm long. The wall is built on top of 30 cm of cultural material, which was probably a leveling layer that overlies 58 cm of plaza fill. The west wall is 1.65 m long, 29 cm high and 25 cm thick. It is constructed of horizontal sandstone slabs measuring from 21 cm to 38 cm long. This wall is also built on top of a leveling layer of cultural material that rests on top of 65 cm of plaza fill (Figure 7.13). The east wall measured 1.65 m long, 53 cm high and 20 cm thick. It is built of horizontal slabs measuring

from 11 cm to 42 cm in length. The average slab is about 15 cm long. This wall is also built on leveling fill overlying 47 cm of plaza fill. The east wall predates the other walls of the structure and has one vertical slab facing the wall near the northeast corner.

**Roof:** No evidence on the nature of the roofing material was preserved.

**Floor:** The structure has two floors. Floor 1 is made of prepared adobe and in excellent condition. Feature 1 is a square hearth measuring 24 cm by 25 cm. It is situated against the south wall. The hearth is capped by a sandstone slab as well as lined with 3 sandstone slabs. The hearth had 2 strata associated with it. Stratum 1 is crumbly brown soil with small pieces of sandstone. Stratum 2 is a powdery, fine ashy layer with a small amount of charcoal. There were no artifacts within the hearth. Floor 2 is 5 cm below floor 1. It is made of packed cultural material that is patchy in areas. It has no features.

**Fill:** The shallow nature of the fill, ranging from 20 cm to 25 cm, limits the quality and quantity of the fill. However, the 30 cm of fill beneath the structure that was evidently brought in to level the area before construction can be added to the discussion. The plaza surfaces and fill beneath the fill unit will be covered under the discussion of the plaza. The stratigraphy is very simple. The upper stratum is overburden, resulting from the accumulation of slope wash from higher portions of the village. The single stratum within the walls is predominantly adobe, either from wall or roof fall, or both. Artifact density and cultural material is scarce indicating this stratum was created after the structure, and probably the village, was abandoned. The original floor is simply the compacted version of the cultural fill added to level the plaza for construction of the rooms in this area of the site. Stratum 3 is the designation for the added fill. It ranges from 20 cm to 30 cm thick and is undifferentiated fill. It is mostly sandy with occasional pockets of ash and charcoal and a few artifacts. Its structure suggests it was borrowed from a nearby midden area and used to level the area prior to construction of structures 4 and 5 on the southern edge of the village.

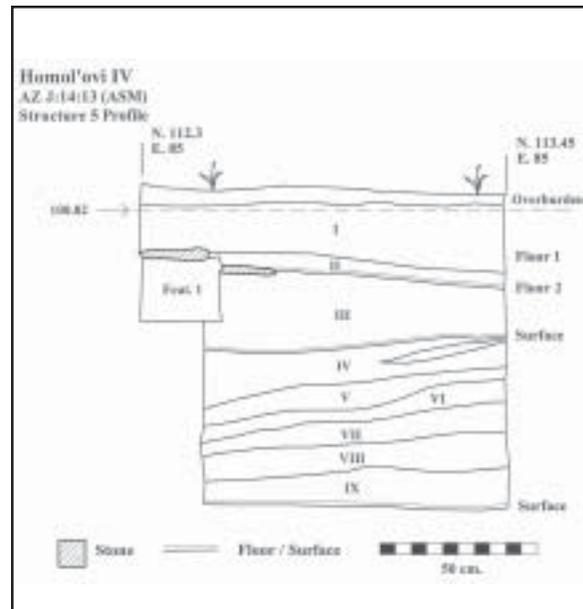


Figure 7.13 Structure 5, profile, view west  
(Illustration by Doug Gann)

**Discussion:** Structure 5, like structure 4, is shallow, but has a more complex life history. Stratum 1 is a layer of hard adobe wall or roof fall and very few artifacts. Floor 1 is directly beneath this adobe fall and is a prepared adobe surface about 5 cm thick. In association with this floor is feature 1, a hearth. Floor 1, the surface and the 5 cm of prepared fill are called Stratum 2. Stratum 2 lies directly on top of floor 2. Floor 2 is a hard packed surface with an ash layer overlying it, just like in structure 4. This floor is not as well defined and found only around the center portion of the room. No features are associated with this floor.

Stratigraphy and the condition of the walls show that this room was built off an already existing room using the wall of the room as the east wall of structure 5. A thick stratum just below floor 2 indicates that 20-30 cm of fill was used to cover the plaza and to create a new building surface. The south and west walls are constructed on this stratum. A pothole from the room to the north removed the entire north wall. At one time structures 4 and 5 were probably one room with the occupation surface consisting of structure 4's floor and the structure 5's floor 2. If this was

indeed the case, then the middle wall was added at one point, the prepared adobe surface of floor 1 was laid in structure 5, and the hearth was constructed. This remodeling created a habitation room changing its use from being part of a large storage structure.

### Structure 10



Figure 7.14 Structure 10, floor 1

**Phase, Location and Use:** Tuwiuca Phase, Room Row 1, Storage

**Area and Wall Information:** The area of structure 10 is 3.12 sq. m (Figure 7.14). All of the walls are made of unshaped sandstone slabs. The mortar used in the walls is reddish-brown silty clay, which is almost non-existent in the south wall. The north wall measures 1.60 m long, 44 cm high and 31 cm wide (Figure 7.15). A pothole destroyed the northwest corner of the wall; however, the rest of the wall is in good shape. The stone size of this wall is fairly consistent ranging from 24 cm by 26 cm to 31 cm by 32 cm. The wall is less than 50% mortar and there is no evidence that the wall was ever repaired. The north wall is bonded with the east wall and abuts the west wall. The south wall measures 1.62 m long, 41 cm high and 21 cm to 38 cm thick. The top courses of the wall tend to slump into the structure (Figure 7.16). The size of the stones in the wall is very variable. About 50% of the wall is mortar. The south wall was apparently built at the same time as the west wall but

after the east and north walls were constructed. This wall abuts with the east wall and bonds to the west wall. The east wall measures 1.90 m long, 56 cm high and 26 cm wide. It is in stable condition. The size of the stone slabs is fairly consistent about 20 cm to 32 cm long. There is less mortar than stone. There may be plaster at the southern end of the east wall. About 1.30 m from the north wall the single course construction ends. Apparently the remainder of the single course wall was dismantled down to a footer and replaced with a double coursed wall that doesn't start until 26 cm above the footer. The footer continues under the south wall. This east wall abuts with the south wall and bonds with the north wall. Finally, the west wall measures 1.97 m long, 46 cm high and 24 cm wide. This wall starts tall and then stair-steps down to the northwest corner, which is obliterated. The stone slabs are variable in size ranging from 2 cm by 29 cm to 22 cm by 70 cm. About 50% of the wall is mortar. As mentioned before, the south wall and the west wall appear to be the result of a single remodel event.

**Roof:** No evidence on the nature of the roofing material was preserved

**Floors:** Floor 1 is constructed of unprepared packed earth and is only about 50% intact due to rodent disturbance and vandalism. No features were present on the existing floor. Its lack of preparation and absence of ash or charcoal suggest structure 10 was a storage room. Floor 2 is located only 2-4 cm below Floor 1 and is probably part of the same floor that has been remodeled numerous times. Two plaza surfaces below structure 10 were also uncovered and will be discussed in the plaza discussion. No features were found on any of the surfaces.

**Fill:** The fill to structure 10 was disturbed by a large vandal hole in the middle of the room. This hole destroyed almost half of the floor and about two-thirds of the fill. The remaining undisturbed fill consisted of natural levels of fill, including probably roof and wall fall near the top floor. Little to no cultural material or strata also suggest the struc-

ture was abandoned and not reused even as a midden. This may indicate it was in use to the end of the occupation of Homol'ovi IV. There is a moderate amount of charcoal and trash between the structure floor and the upper plaza surface, which is 10 cm below the floor.

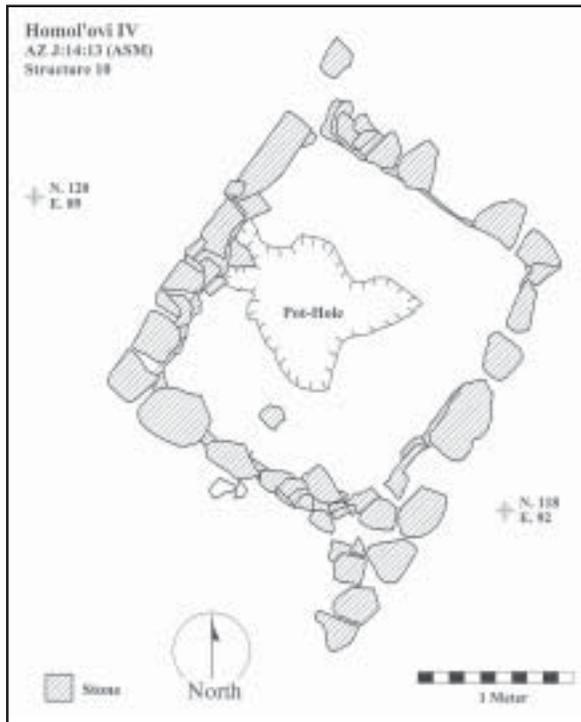


Figure 7.15 Structure 10, plan view (Illustration by Doug Gann)

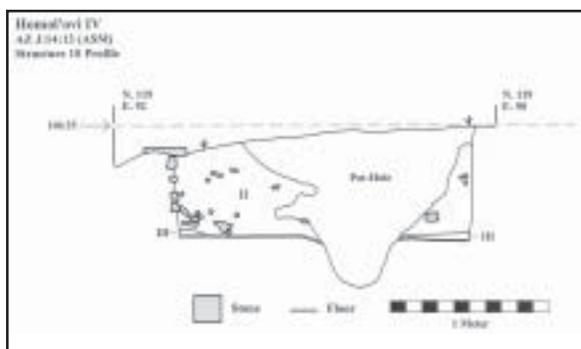


Figure 7.16 Structure 10, profile, view south (Illustration by Doug Gann)

**Discussion:** Structure 10 is a storage room that suffered considerable disturbance through rodent and human activity prior to excavation. It lies on the lowest row of rooms, the same row as structures 4 and 5, and is one of the last rooms built at

Homol'ovi IV. It seems to be in an area formerly used as plaza that was gradually subdivided and modified, with the construction and subsequent remodeling of structure 10 one of the last modifications of this space. The remodeling is suggested by modifications in the east wall. Although partially vandalized, the absence of features, sooting on the walls, and discoloration of the floor point to a nonhabitation, or storage, function. The virtual absence of artifacts and the presence of possible roof fall on the floor and natural fill also point to a probable abandonment of the village at the same time structure 10 stopped use.

### Structure 101



Figure 7.17 Structure 101, SE wall

**Phase, Location and Use:** Tuwiuca Phase, Room Row 2, Unknown Use

**Discussion:** As noted in the introduction to this chapter, the lower four to five rows of rooms are built over a midden created by occupants of higher rows of rooms. This phenomenon has been recorded at every other village excavated by the Homol'ovi Research Program. Often, these structures are ephemeral because their walls were adobe or they were so close to the modern surface they almost completely eroded away. This is the case with structure 101, which lies southwest of structure 202. Only one to two courses of stone from the east wall and the southeast corner of this structure are preserved (Figure 7.17). The other

three walls are not preserved and only patches of the probable floor were preserved. There are no fill or features associated with the structure. The floor sits on or is continuous with the plaza surface 4, discussed below, which is the latest extensive plaza uncovered at the site. The preserved sections of the structure enabled assignment of a number, but its ephemeral nature prevented drawing any other conclusions, even structure size or use.

### Structure 110

Phase, Location and Use: Tuwiuca Phase, Room Row 2, Unknown Use

Area and Wall Information: Structure 110 was tested with only a 50 cm-wide trench along the north wall of the structure exposing a 50 cm-section of the east wall, but not extending to the west wall. The structure lies on the upslope side of structure 10 and was excavated to expose buried walls in the area to complete the map of the village and evaluate the condition and age of archaeological deposits. Only 1.30 m of the north wall was exposed. It is poorly constructed of variable sized tabular sandstone cemented with abundant adobe mortar. It abuts to the east wall, which is similarly constructed and only 50 cm exposed. Patches of 1-2 layers of plaster remain on the east wall.

Roof: The only evidence of the roof recovered during excavation was adobe chunks.

Floor: The floor was packed earth that overlies slope wash and probably ephemeral plaza surfaces, if the strata beneath structure 10 are reliable indicators. No subsurface excavations took place in structure 110. The limited excavations precluded definitive determination of room use or the presence or absence of floor features. The general lack of discoloration of walls and floor and the ephemeral nature of the floor suggest the structure was probably used for storage.

Fill: The structure was covered by 20-40 cm of slope wash. Within the structure was 90 cm of fill, the upper 60 cm of which was generally

disturbed by vandalism. The undisturbed fill was designated stratum 2. Stratum 2 consisted of three levels, all containing mixtures of wall fall and roof fall. The 10 cm of fill above the floor contained light trash consisting of mostly ash and charcoal. The fill suggests abandonment of the structure and site was nearly coincidental, if not contemporary.

Discussion: As with structure 10, structure 110 seems to be a late addition to Homol'ovi IV. It rests on cultural fill, is crudely constructed, and all indications are that it had minimal usage before being abandoned, probably at the end of the occupation of the village. The limited excavations preclude any definitive conclusions about the structure, but its presence indicates little space on the south and east sides at the foot of the Homol'ovi IV butte went undeveloped.

### Structure 201

Phase, Location and Use: Tuwiuca Phase, Room Row 3, Habitation

Area and Wall Information: Structure 201 is not quite square and is 7.35 sq. m (Figure 7.18). The east wall of the structure was first discovered in a trench extending north from the excavated plaza area (N 112-114 E 71-73), and the remaining walls of the structure were then defined. All of the walls were eroded so that they were flush with the ground surface but in fairly good condi-



Figure 7.18 Structure 201, floor 1

tion below the surface. The walls all had hard adobe with caliche flecks for mortar and had very little plaster remaining on the surface.

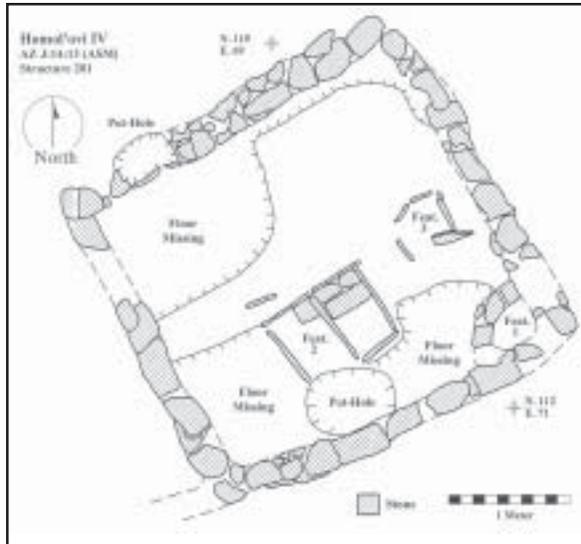


Figure 7.19 Structure 201, plan view (Illustration by Doug Gann)

The north wall is 2.80 m long, 75 cm high and about 30 cm wide (Figures 7.19 and 7.20). The flat sandstone slabs range from 7 cm to 43 cm long and 2 cm to 9 cm thick. The average slab is about 25 cm long and 6 cm thick. The adobe mortar between the stones is an average of 3 cm thick. The wall is built on a pad (usually about 7 cm thick) of adobe and the footer rocks jut out slightly from the face of the wall (Figure 7.21). A maximum of 10 and minimum of 4 courses of rock was preserved. The east and west walls are abutted to the north wall, which is bonded to the east and west walls of structure 301, just upslope from structure 201. This construction is typical at Homol'ovi IV and illustrates the general planning of the village, which is to build the upslope rooms first and add rooms on below them, thus the abutment pattern.

The south wall measures 2.75 m long, 22 cm high and about 25 cm thick. It is built of sandstone slabs averaging 25 cm long by 5 cm thick with about 5 cm of adobe mortar between the slabs. Only three courses of rock were preserved in this wall. The footers are resting on a pad of

adobe. The south wall is bonded to the east and west walls of structure 201. Feature 1, a storage bin, is abutted to the south wall in the southeast corner of the room. The feature is constructed of a curved wall built across the corner of the room enclosing a space about 40 by 30 cm. The bin rises about 10 to 20 cm above the floor of structure 201 and is filled with adobe for the first 10 to 20 cm above floor level topped with one or two courses of rocks. The bottom of the bin is 5 to 10 cm below the floor of the structure and seems to be resting on Plaza Surface 4, which underlies the entire structure. The fill inside the bin looked like the roof fall above the floor in the rest of structure 201, which consisted of a dark yellowish-brown soft sandy material with some ash. At the bottom of the bin were two rodent holes.



Figure 7.20 Structure 201, North wall

The east wall measures 2.80 m long, 71 cm high and around 25 cm thick. It is built of flat sandstone slabs, with a maximum of 7 courses and a minimum of 4. The slabs average 30 cm long and 6 cm thick with the average adobe mortar between the slabs measuring 3 cm thick. The wall is built on a pad of adobe laid on plaza surface 4. The east wall is bonded to the south wall of structure 201 and abutted to the north wall. Feature 1, the storage bin, is also abutted to this wall in the southeast corner of the structure. The west wall measures 2.50 m long, 28 cm high and around 27 cm thick. Most of the wall is built on plaza surface 4 but the central section of the

wall was sunk down all the way to bedrock, with rocks and heavy adobe mortar. The construction is similar to the other walls of the structure with sandstone slabs and about 5 cm of adobe mortar between the slabs. The wall is abutted to the north wall and bonded to the south wall.

**Roof:** Roof evidence was found in the fill of the room, defined as stratum 2 (Figure 7.21), directly on floor 1 and consisted of abundant adobe, some of which had stick impressions in it and many flat-lying sandstone slabs, which may have been roof rocks. These rocks often had sticky red clay deposits underneath them, implying that water had puddled under them at some point. This suggests that the collapsed roof was exposed to the elements before the walls began to fall down.

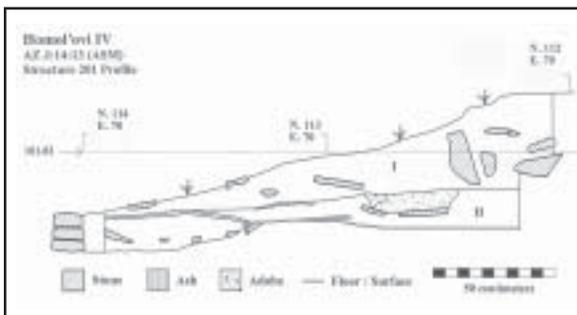


Figure 7.21 Structure 201, profile, view west (Illustration by Doug Gann)

**Floors:** Structure 201 has 2 distinct floors. Floor 1 is an adobe layer about 5 cm thick over trash. It has 3 features associated with it. Feature 1, the storage bin, has already been described. Feature 2 is two adjacent mealing bins, measuring about 40 cm north of the southern wall of structure 201 (Figure 7.22). The bins consist of upright sandstone slabs set into the floor of the structure and are about 70 cm by 40 cm. A pothunter destroyed the southern slab of the western mealing bin. The north end of each bin is flagstone-lined and a thick (5 to 6 cm) clay lining slopes upward from the southern edge of the flagstones to the south edges of the bin. This is the clay on which the metates would have been set. The north-



Figure 7.22 Structure 201, feature 2

ern half of the mealing bin is lined with flat flagstones. The eastern bin has a large section of a black-on-orange bowl plastered into the clay right where the clay and the flagstone meet. The fill inside the bins looks like the roof fall material found elsewhere in the structure. Underneath the clay liner is trash fill, probably intentionally put over floor 2. The flagstones were probably placed directly on floor 2 when the room was remodeled and the side slabs seem to be resting on floor 2 with fill and floor 1 supporting them. On the east and north sides extra adobe was placed against the exterior of the bins over floor 1. Feature 3, a slab-lined hearth, is built of upright sandstone set into the floor along the east, west, north, and half of the south side of the hearth. Along the south side is also a sandstone slab that extends about 15 cm above the floor and may have served as a deflector. The hearth was filled primarily with floor fall and trash fill, including parts of three reconstructible vessels, including an orange ware bowl and a plain jar, a pecking stone, and a bone awl. About 5 cm below the surface was a large flat-lying sandstone slab placed in the center of the hearth. Below this slab was about 2 cm of trash fill lying on top of 1 to 2 cm of ash. Below the ash is the bottom of the hearth consisting of hard-baked earth.

Many artifacts were lying directly on Floor 1. A large plain gray jar was smashed across the hearth and the floor to the west of the hearth. A

decorated orange ware bowl was found in several pieces over and within the hearth. A partially reconstructible corrugated jar was found on the floor and in the hearth. Other sherds were scattered across the floor and two bone awls and a pecking stone were also found on the floor. The positioning of the plain jar and the orange ware bowl implies that they were sitting on the floor next to the hearth when the roof collapsed. The collapse of the roof broke the vessels and sent pieces of them into the empty hearth and across the floor of the room.

Floor 2 is the first floor of the structure and appears to have been built on top of fill put in to level out Plaza Surface 4, upon which the walls of the room were constructed. On top of this fill was prepared, clean adobe. Floor 2 also had three features. Feature 1 consists of remnants of the first hearth in structure 201. It lies under the later hearth of floor 1. This earlier hearth consisted of two upright slabs below the later hearth slabs on the east and south sides of the hearth and a long narrow trench filled with pure ash on the north side where an earlier slab had been removed. There was no evidence for a slab on the west side and no clear bottom to the hearth. Feature 2, is a small pit filled with pure ash, about 30 cm by 30 cm and 10 cm deep. At its southern end was a small upright sandstone slab. The bottom of the pit was slightly reddened, but not burned and the mealing bins, feature 2, floor 1, were built over the top of this ash pit. Feature 3, consisted of an upright slab set in the floor. The purpose of this feature is unknown. There is no evidence of other slabs having been set around it.

Fill: Structure 201 was not intentionally filled in with trash after its abandonment. Two strata were recognized above Floor 1, roof fall and wall fall (see Figure 7.21). Stratum 2, roof fall, was found throughout the structure except along the southern wall, where it had probably been eroded away. Stratum 1 consisted of wall fall. It was especially abundant in the northern half of the room and contained large rocks, hard adobe, and almost no artifacts.

Discussion: Excavation of Structure 201 has provided us with information about the construction of Structures 201 and 301. It is now clear that both structures were built relatively late in the occupation of Homol'ovi IV, when Plaza Surface 4 was in use. The lack of major disturbance in Structure 201 helped us gather good information about the use of the room. The features found associated with both floors of the room imply that the room fulfilled a household habitation function. This is most strongly implied by floor 1, with its hearth, smashed vessels, bone awls, mealing bins, and storage bin. After abandonment, the roof fell in and at some later time the walls collapsed in and filled up the structure.

## Structure 202

Phase, Location and Use: Tuwiuca Phase, Room Row 3, Use Unknown

Area and Wall Information: Structure 202 is a surface structure built of sandstone and adobe that is 5.95 sq. m. It is nearly square with the north wall 2.50 m long, the south wall 2.44 m long, the east wall 2.42 m long and the west wall 2.40 m long. The walls range from 24-29 cm wide. The walls are highly eroded with the north wall standing only 40 cm high, the east and west walls standing from 5-40 cm high, and the south wall missing at the room floor level, but extending 40 cm below the floor. The east and west walls abut to the north wall and bond to the south wall.

Roof: Some adobe with grass and reed impressions was observed near the floor, suggesting the roof was the first to collapse after abandonment.

Floor: There existed only a patchy packed earth floor that was damaged by substantial vandalism. Absence of features suggests structure 202 was a storage room, but the features could have been destroyed by a combination of vandalism and erosion.

Fill: The shallow fill of the structure was significantly damaged by pothunting, including prob-

ably a backhoe. The upper fill was a combination of slope wash and wall fall. The artifacts recovered were likely introduced by slope wash. The next stratum was evidently the roof fall layer, identified through reed and grass impressions in clasts of adobe. The roof fall stratum lay directly on a thin sandy fill that overlay the floor.

Discussion: Little can be said about structure 202. The absence of floor features may be due to the extensive damage to the floor through vandalism. However, the absence of a prepared floor and ash or light trash on the floor suggests it was used for storage rather than habitation. Subfloor plaza surfaces were visible in potholes through the floor, but were not investigated because they could be investigated better through trenching in the plaza itself, which is adjacent to structure 202. The structure sits on the north edge to the latest plaza area for Homol'ovi IV. Unfortunately, vandalism precluded a clearer understanding of the nature of this relationship.

**Structure 301**



Figure 7.23 Structure 301, floor 1

Phase, Location and Use: Tuwiuca Phase, Room Row 4, Habitation

Area and Wall Information: Structure 301 is an aboveground masonry room about 5.93 sq. m in area. The north wall is 2.60 m long, 71 cm high, and around 32 cm thick (Figure 7.23). This wall has fallen down to the present ground surface

and is badly pot hunted in the west corner (Figure 7.24). The wall is more stone than mortar and seems to have larger sandstone slabs than the other 3 walls. It is a double course wall in most places except where a very large stone covers both courses. The mortar is hard, 5 YR4/6, yellowish red. This is the same mortar that is used in the east and south wall but not the west wall. For the most part, the north wall was built on sub-floor surface 1 (Figure 7.25). However, the east corner is on trash fill. The wall is abutted by the east and west walls. The south wall has also fallen down to the level of the present ground surface and is badly pot hunted in the west. It measures 2.75 m long, 66 cm high, and about 32 cm thick. The south

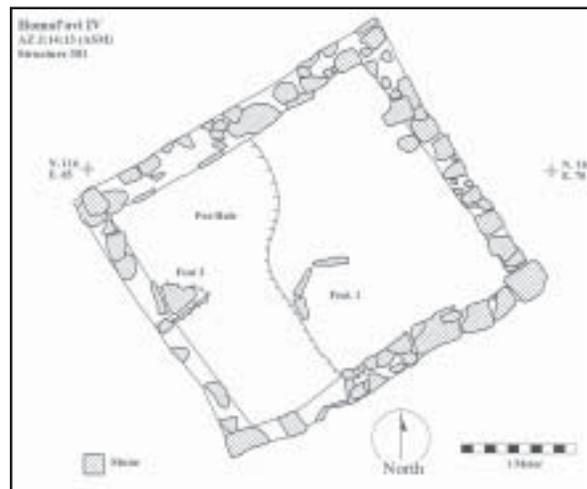


Figure 7.24 Structure 301, plan view (Illustration by Doug Gann)

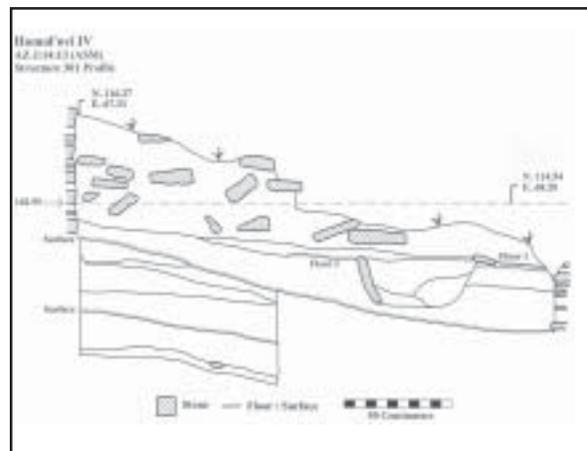


Figure 7.25 Structure 301, profile, view east (Illustration by Doug Gann)

wall is constructed of Moenkopi sandstone slabs that are smaller overall than those used in the north wall; there is as much mortar as rock. Most of the construction is double coursed, like the north wall. The south wall was exposed only in the southeast quadrant. The footers extend beyond the face of the wall and are cut into subfloor surface 1. The wall is abutted to the east and west walls. This south wall was built just like a retaining wall for fill before the east and west walls were built. The east wall has fallen down to the present ground surface. It measures 2.24 m long, 73 cm high, and around 26 cm thick. The east wall is constructed of Moenkopi sandstone slabs about the size of those in the north wall. It is a single course wall. In the north the adobe pad and footers rest on subfloor surface 1 but the south rests on trash fill. This wall abuts both the north and south walls. The west wall has, also, fallen down to the present ground surface. It measures 2.19 m long, 20 cm high, and about 18 cm thick. Only the north half of the west wall was exposed. It is only 3 to 4 courses high. It is constructed of Moenkopi sandstone slabs, but mostly only the footers remain. The footers and adobe pad rest on a charcoal line, visible in the profile, which is probably subfloor surface 1. However, the potholes have destroyed any evidence of this surface.

**Roof:** Some adobe was identified as being from the roof. It is a different color than the wall adobe and has stick and fiber impressions in it. The stratum of roof fall was only found in the northeast quadrant because pothunters destroyed the roof fall in the northwest and southwest and the rest probably eroded away. Most likely the roof collapsed long before the walls. It is possible that the support beams were removed then the center of the roof fell in followed by the walls.

**Floors:** There is only one floor associated with the occupation of the room. The floor is made of adobe, which is thinner in the north and thicker in the south. A thick strat of trash covered the floor. There were lots of artifacts on the surface, including a stone bowl. A slab-lined hearth, fea-

ture 1, is also associated with this floor but the stones on the east and south sides had been removed prehistorically. The hearth was found in an undisturbed context, a pothole stopped on its west edge. Ash spilled out of the hearth and over the floor on the south and east sides. The hearth was half filled with a fine ash, some ashy dirt filled part of it, and natural fill topped it off. The hearth is located away from the south wall, almost central to the room. This does not follow the pattern of other hearths in Homolovi IV, which typically are adjacent to or much closer to a wall.

Feature 2 is a slab-lined bin that uses the west wall as one side. The south side is defined by 2 upright slabs and east and north slabs were removed by pothunters. The east side has an adobe groove to indicate the presence of a slab; however, the north side was totally destroyed by pothunters.

The room was constructed on a steep surface that had to be modified (Figure 7.26). It was modified after the south and north walls had been constructed by filling in with trash. The floor was constructed by depositing 8 cm of trash on the north end and more than 25 cm of trash on the south end of an uncovered surface, subfloor surface 1, to level the area.



Figure 7.26 Structure 301 and adjacent structures

**Fill:** There were three distinct fills. The fill just on top of the floor is 3 to 5 cm deep and seems to have been dirt blown into the structure

prior to the roof collapsing. Next is the roof fall that was found only in the northeast quarter, above the floor fill. It was probably eroded out of the south end and pot hunting removed it from the northwest quarter. Finally, the upper stratum is wall fall and was in all parts of the room but was thickest in the north. This is probably because the north wall collapsed and tumbled toward the south wall, which probably collapsed into structure 201 and thus the east and west wall fall make up most of the fall in the south.

**Discussion:** Structure 301 is a habitation structure: the presence of a single floor, lack of other remodeling, and location suggests Structure 301 was probably used only a few years prior to site abandonment. The argillite stone bowl was intact and could have been carried the short distance to Homol'ovi I, the probable definition of the Homol'ovi IV inhabitants. Together with light trash and other artifacts, the bowl suggests possible ritual abandonment of Structure 301. Ranging from 8-25 cm below the room floor was subfloor surface 1, which was probably in use briefly before the room was built. This surface was created by depositing natural and cultural fill units to create a flatter, but still sloping, surface. Although this surface may have been used for outside workspace, no associated features were discovered that indicate its use. There was a thick layer of burned material on the north part of the surface, which could be part of a ramada structure that was burned in order to remodel the area. Beneath the subfloor is a thick sand layer beneath which are several strata of natural and cultural fill. The depth of sand and the lack of internal natural strata suggest it is intentional leveling fill. Beneath the sand deposit is a stratum of trash over a thinner stratum of sand, which is probably wind deposited, then another lower stratum of trash that has two episodes that result in a mixture of natural sand mixed with trash. Below these strata is a natural surface covered by water-deposited soils mixed with cultural artifacts, probably washed down the slope.

### Structure 404



Figure 7.27 Structure 404, strat 2, roof fall

**Phase, Location and Use:** Tuwiuca Phase, Room Row 5, Habitation

**Area and Wall Information:** The area of the structure is approximately 5.20 sq. m. The walls are sandstone masonry with adobe mortar (Figure 7.27). Most stones are slab-shaped and average 25-35 cm long and 5-15 cm thick. In some places there is a facade of adobe with small rocks covering the wall. Remnants of plaster are present. The north wall is in good condition and measures 2.80 m long. It is abutted to the east and west walls. The south wall is in fair condition and measures 2.90 m long. It is bonded to the east and west walls. The east wall is also in fair condition, measuring 1.70 m long. The west wall is in good condition and measures 1.95 m long. The walls ranged from 25-30 cm thick. The north wall stands 1.10 m, the east and west walls step down from 1.00 m to 45 cm. The south wall ranges from 35-50 cm high.

**Roof:** Abundant adobe with impressions of reed, twigs, and beams were recovered in the room fill. A complete metate and several mano fragments about 30 cm above the floor could have been on the roof, but the relationship cannot be proven.

**Floors:** The floor is constructed of adobe and is in fair condition. Four features are associated with the floor (Figure 7.28). Feature 1 is a slab-lined hearth with a pot support stone at the

bottom of the hearth. Its upper stratum was mixed with materials from the filling of the room. The lower stratum was fine ash. Within the hearth several artifacts were found, including a mano fragment, sherds, and projectile point. Feature 2 is an adobe-lined hearth. About one-third of this hearth was destroyed when the later, slab-lined hearth was built. It was filled with primarily ashy sand having adobe chunks. No artifacts were observed in the hearth. Feature 3 is an oval pit, probably an ash pit for the slab-lined hearth. Feature 4 is a remnant of a small masonry wall built on bedrock that slants up from the floor to the back wall inside the structure. An adobe base was used for leveling the masonry. This feature may have been a storage feature.

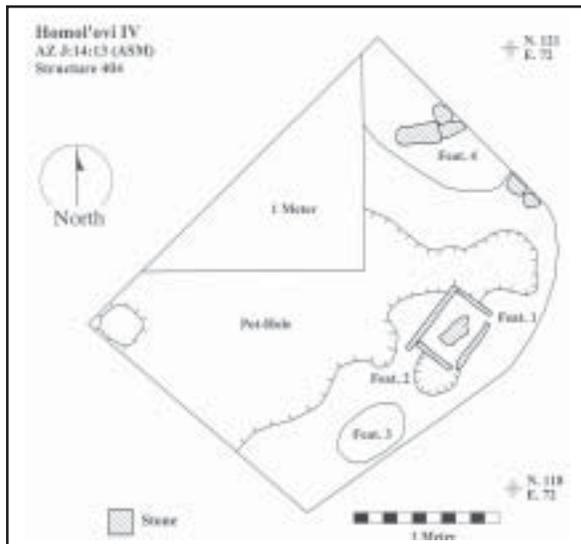


Figure 7.28 Structure 404, plan view (Illustration by Doug Gann)

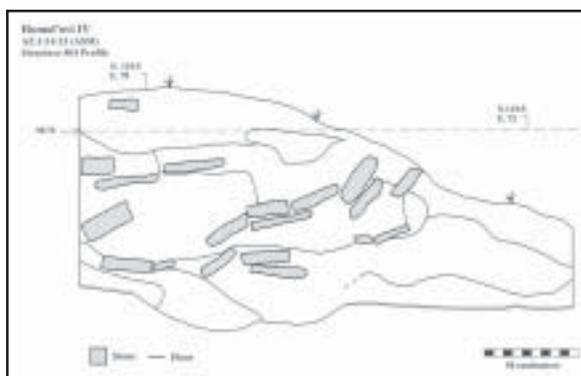


Figure 7.29 Structure 404, profile (Illustration by Doug Gann)

**Fill:** The western and central portions of the structure were destroyed by pothunting down to and through the floor (Figure 7.28). A limited amount of trash was present on existing sections of the floor. Above the floor fill were deposits of roofing material with mixed artifacts, including a metate, parts of several manos, and various other artifacts (Figure 7.29). The location of the artifacts suggests they may have been on the roof when it collapsed. Above the roof adobe was wall fall that in turn was overlain by slope wash.

**Discussion:** Structure 404 is a habitation structure located on the southeast slope of the site in the fifth tier of rooms. The presumed use of the structure is based primarily on features found at the floor level. There is evidence of potting episodes in the fill at various levels, one of which had disturbed a considerable portion of the western and central portions of the structure, including the floor. However, there is an undisturbed section of the floor along the south and east walls. Very near the wall a circular adobe lined hearth was found. About one-fourth of this had been destroyed by the later construction of a rectangular slab-lined hearth. The presence of the hearths indicate that the structure was used for habitation. An oval shaped pit feature was also located along the south wall adjacent to the hearths. Its ashy fill suggests it was used to hold ash from the hearths. In the post occupational fill a few mano fragments were found. Also found in the fill, about thirty centimeters above the floor, was a large slab metate, 95% complete.

In an area where potting had gone below the floor it was observed that the adobe floor had been laid over trash. The trash consisted of ash and sandy soil with abundant artifacts present. It appears that structures higher up the slope were built and occupied prior to the construction of 404. Trash from these structures was thrown out and down the slope. Somewhat later, 404 was constructed.

### Summary

All surface and subterranean structures are con-

-structured of a variable quality of Moenkopi Formation sandstone slabs cemented by adobe manufactures from clay and silt available on the Homol'ovi IV butte. The seven surface structures for whose area could be determined averaged only 5.13 sq. m. Only one exceeded 6.0 sq. m. Mapping of about 70 other structures from wall tracing at Homol'ovi IV increases average size to 5.26 sq. m. Therefore, the excavated sample is representative of the site as a whole. Comparisons to other mapped and excavated structures at Homol'ovi (Adams 2001:Table 6.3) indicates that Homol'ovi IV has the smallest average structure size and is comparable to the adobe brick rooms surrounding the south plaza of Homol'ovi I, which were constructed in the mid-to late 1300s. Masonry components at Homol'ovi I, Homol'ovi II, and Homol'ovi III all averaged greater than 7.00 sq. m.

One possible reason for small room size is roofing material available. Samples of roofing beams collected from Homol'ovi IV during excavations resulted in 22 samples, 13 cottonwood, 8 non-conifer, and one ponderosa pine (Adams and Hedberg 2002:Table 1). Therefore, only ponderosa pine of the 22 samples is probably from driftwood. This suggests that Homol'ovi IV occupants were getting nearly all their building materials from the local environment. The size and availability of these materials may have limited the options for building size. Also, the relative rarity of fuel wood for heating structures may have encouraged a smaller size.

Additionally, contemporary settlements from this period, such as the western mound at Awat'ovi, have comparable-sized rooms (Smith 1971:Figure 4). At Awat'ovi, pinyon and juniper were available for construction and fuel, but small size of pygmy conifers limits room size. The very nature of building on the side of a steep slope may require closer spacing of walls to make them more structurally sound.

Details of the construction of the village can also be gleaned from the excavated rooms. Where

information was recovered, the upper room always preceded the construction of the lower room. Thus, the village was built from the top down. The presence of extensive midden deposits beneath minimally the lowest five rows of rooms is further evidence of the construction and growth of the village from top to bottom.

When a structure was built on the slope, construction began with the construction of a wall foundation parallel to the upslope wall onto the bedrock or a shelf in the original surface of the butte. The two side walls were typically bonded at the corner of the downslope wall and abutted to the existing upslope wall. The new walls were usually cut through existing deposits of midden and plaza surfaces and fill was added behind the lower wall to create a level surface. In this way, lower rooms buttressed the room above them. A lot of pressure could easily have built up from gravity pulling upper level walls built on the steep slope of the butte. Smaller rooms provide more walls and support and would have made the entire construction much stronger. Typically, the largest structures at Homol'ovi IV are either on the flats at the base of the butte or on top of the butte where such buttressing was not necessary (see Figure 7. 1).

The nature of sampling at Homol'ovi IV precluded understanding of any pattern of structures with and without hearths. Structures 5, 201, 301, and 404 all had hearths and were generically classified as habitation structure in contrast to structures 4, 10, 202, and possibly 101, which did not have hearths and were probably used for storage. At Homol'ovi III a pattern of alternating habitation and storage structures was observed in the original, or founder, construction at the village (Adams 2001). If a similar layout were present at Homol'ovi IV, it is expected that alternating room use would occur on the same row of rooms and not between rows. Only additional testing can confirm if such a pattern existed and persisted through time.

## HOMOL' OVI IV PLAZA SURFACES

Excavations in the plaza were conducted at Homol' ovi IV, as they have been at the other three Homol' ovi villages. Just like Homol' ovi I, II, and III, Homol' ovi IV had multiple and complex plaza surfaces and fill sequences. This section of the report synthesizes excavation from 30 sq. m of plaza, some of which were located beneath existing structures, including structures 201, 301, 101, 202, 4, 5, and 10 (Figure 7.30).

Seven surfaces were documented at various points at Homol' ovi IV. They were designated as: 1, 2, 2A, 2B, 3, 4, and 5 starting at the bottom. Therefore, the number corresponds to the age of the surface with 1 being earliest and 5 being latest. Surfaces 1 and 2B are natural surfaces and not associated with cultural activity. Surface 5 was located in only one small section of the plaza area and may be a natural surface, although structures 4 and 5 may be associated with it. Surfaces 2, 2A, 3, 4, and possibly 5 appear to be true plaza surfaces created and used by the inhabitants of Homol' ovi IV. All of these surfaces have features or structures associated with them. As a result, only these surfaces will be treated in detail for this report. A generic description of each plaza surface is provided below indicating its known extent, associated features and structures, and description of the surface. All surfaces belong to the Tuwiuca Phase and could not be distinguished from one another using ceramics or any other chronological indicator. Their relative age is a product of their physical association with one another.

### Surface 1

**Elevation and Surface Characteristics:** The surface ranges in elevation from 100.59 to 100.49, and was traced only in the E68-70 trench from N 103-112. Munsell surface reading results was 5YR 4/4 – reddish brown. Surface 1 is the earliest surface at Homol' ovi IV and represents the original surface encountered by the first inhab-

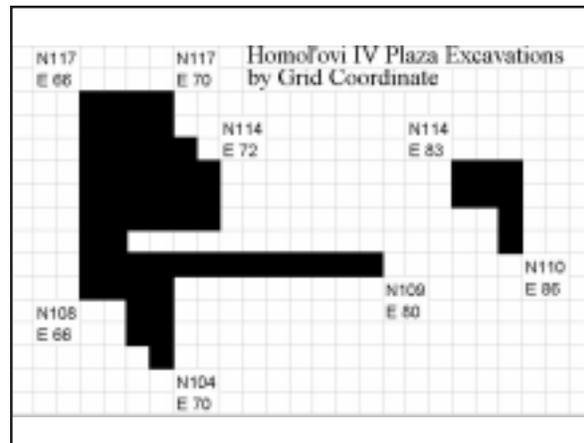


Figure 7.30 Plaza excavations by grid coordinates

itants of the village (Figure 7.31). This is a natural surface that was recognized by a level of mud cracks indicating that the surface had been exposed to the elements for some time.

**Features and Artifacts:** Because this is a natural surface, there were no associated features. Artifacts associated with the surface are generally not flat and are attributed to slope wash, which can be severe at Homol' ovi IV.

**Fill:** The fill between Plaza Surface 1 and Plaza Surface 2 seemed to be natural deposits, generally slope wash, rather than intentional trash fill. Plaza surface 2 was then constructed on top of these natural deposits.

**Discussion:** This is a natural surface including rocks and natural red and gray clay deposits.



Figure 7.31 Plaza, surface 1

## Surface 2

**Elevation and Surface Characteristics:** Plaza surface 2 appears to be a prepared surface and is from the original occupation of the site. It is either built directly over bedrock or on slope wash covering surface 1, the natural surface of the hill. It is highest in the northeast and lowers to the south and west, with elevation between 100.86-100.22, between N103-112 and E68-70. Munsell of the surface ranged from 5YR 3/4 – dark reddish brown, to 5YR 4/4 – reddish brown. The surface was identifiable as being harder than the fill with a denser concentration of caliche flecks. It occurs in every area where plaza excavation took place.



Figure 7.32 Plaza, surface 2 and feature 4

**Features and Artifacts:** In the area of N106-109 and E66-69 was Feature 4, which consisted of some linear grooves in the plaza surface in the shape of a “T” (Figure 7.32). This feature showed up just above plaza surface 2. It had cultural fill in it—soil with charcoal and artifacts. The grooves were small channels dug into plaza surface 2 approximately 10 cm wide and 10 cm deep with the short arm of the T being 2 m long and the long arm measuring approximately 2.5 m long. The feature might have had upright slabs in it to be used as a barrier of sorts. Some of the artifacts found included lithics, bones, sherds, groundstone, a bead, burned corn cobs, a hammerstone, minerals and an antler.



Figure 7.33 Plaza, surface 2 and feature 4

Feature 5 is a firepit in the vicinity of structure 2. It is 20 cm in diameter and 8 cm deep. Its small size suggests it was used by a family unit or may be associated with a surface structure. Structure 2, a ritual structure, was constructed in association with Plaza surface 4, which postdates surface 2.

Two other features are probably associated with Plaza surface 2, but were found exposed on the present surface of the site, 5-6 m from other plaza excavations, with no existing fill or plaza surface visible. Both features rest just above bedrock suggesting their probable association with surface 2 (Figure 7.33).

Feature 1, a roasting pit/fire pit, had six irregularly shaped sandstone slabs laying in an irregularly shaped circle. The slabs are flat on the ground leaning inward slightly, with one slab directly on the bottom. Fire cracked rock and charcoal were found in the feature. This feature may

be associated with plaza surface 2, the feature is in the historic road.

Feature 2, also a roasting pit/fire pit, is built on bedrock which slopes down and is contained with a block of three upright sandstone slabs and two sloping slabs. The feature is filled with fire cracked rock and charcoal and might be associated with plaza surface 2. This feature is also in the road.

Numerous artifacts were found on this surface, but none indicated activity areas. Most to all the artifacts are probably the result of slope wash or secondary trash.

Fill: The fill above this plaza surface is fairly soft with small chunks of red clay in it, caliche flecks scattered through out, and small chunks of charcoal. There seems to be an ashy component to the soil matrix but it is mixed in and not in pockets as in other fill strats. In N110-112 E68-70 the fill between plaza surface 2 and 2A was a silty sandier stratum that felt like a series of plaza surfaces.

Discussion: This is the first or lowest plaza surface identified that was actually formed and leveled by the Homol'ovi IV inhabitants. The surface was prepared by placing an adobe mixture over the natural deposits, filling in small depressions and covering this over with rocks. Thus in places the plaza surface is several cm thick—as much as 5 cm thick—and in other places it is very thin. There were several applications of adobe over the surface which gave it several layers. In some areas the surface may have been patched. This created some confusion during excavation because different layers were followed creating a plaza surface of differing elevations. It is probably accurate to think of plaza surface 2 as a complex of surfaces.

### **Surface 2A**

Elevation and Surface Characteristics: Plaza Surface 2A follows almost the same slope pattern as Plaza surface 2 and is almost as widespread. It is

higher in the north than the south from 101.05 to 100.44, as far as it can be confidently identified. It is 5-10 cm above Plaza surface 2 and between these two distinct surfaces are a series of thin surfaces that may represent successive resurfacing of the plaza.

Features and Artifacts: Feature 4, the T-shaped grooves, may have been the foundation of a thin walled structure associated with plaza surface 2A, although it is more likely associated with surface 2. Because the grooves are still visible in surface 2A, the feature/structure was still present during the use of surface 2A. Numerous artifacts were found on this surface, but none indicated activity areas. Most to all the artifacts are probably the result of slope wash or secondary trash.

Fill: Between Plaza surface 2 and 2A there is ashy fill that may have been intentionally brought in to level out the surface. The fill above 2A is a reddish-brownish soil matrix with ash mixed in. There are caliche flecks and charcoal throughout in denser concentrations than below 2A. There were places in the fill that felt like trash deposits with lots of artifacts and others that felt like slope wash with slightly different sediments but not in an arrangement suggesting stratigraphic relationships.

Discussion: Between plaza surfaces 2A and 2 there are a series a laminated surfaces similar to those found elsewhere at the site. Plaza surface 2A is visible as a thin layer of ash covered by a layer of small rocks, many burned, topped off by a layer of heavy charcoal. The ash, charcoal and rocks may have been dumped up-slope and the rocks stayed in their original spot while the ash and charcoal were washed down-slope.

### **Surface 2B**

Elevation and Surface Characteristics: Plaza surface 2B is probably a natural surface. It was not uncovered anywhere along the N103-112 E69-70 trench but it showed up in profile. Elsewhere on the site plaza surface 2B was uncovered and

found to be very ephemeral and consensus is that this was a natural, not a cultural, level.

Features and Artifacts: No features are associated with surface 2B, which provides additional support to its interpretation as non-cultural. Artifacts appear to be the result of slope wash or secondary trash deposition following the erosion that apparently created the surface.

Fill: Stratum 3, level 1, above plaza surface 2B had alternating lenses of ash and reddish-brown trash fill. The fill is natural and has nothing to do with use of the surface.

Discussion: Above plaza surface 2A is a trash fill within which plaza surface 2B and 3 show up in profile. Plaza surface 2B is an ephemeral surface everywhere at the site and it is usually recognized only in profile. It is about 5 cm above plaza surface 2A and is interpreted as a natural erosional surface instead of a cultural plaza surface.

### Surface 3

Elevation and Surface Characteristics: Where the surface was identifiable in N110-112 E68-69, it is thin and irregular and yellowish red 5YR 4/6 with a scattering of caliche flecks not found in N110-112 E69-70. Plaza surface 3 has a steep slope on the north end, elevation ranged from 101.02 to 100.72. On the south it disappears.

Features and Artifacts: There was a feature, plaza feature 3, and a couple of artifacts that showed up on the surface. Feature 3 is an adobe capped circular pit. The pit is shallow and the fill gave no evidence of its use. There were sherds, lithics, ollivella and snail shell, minerals, and a corn cob in its fill.

Fill: To the west, the fill above plaza surface 3 is a hard, compact adobe stratum, possibly a collapsed adobe wall. The wall fall munsell is 5 YR 4/4, reddish brown. Farther east, a thin layer of ash rests immediately on plaza surface 3.

Discussion: This is a cultural surface but was not an intentionally made surface just like plaza surface 2A. Plaza surface 3 does not extend as

far as plaza surface 2. On the north it terminates in plaza surface 4 at about N108 E70 and N110.55 E69.90.

### Surface 4

Elevation and Surface Characteristics: In the north the elevations range from a high of 101.29 to a low of 101.25 while in the east the high is 101.29 and the low is 101.13. The elevation at the nail on the north profile is 101.26 at N112 E67.63 and at the nail on the east profile 101.17 at N111.41 E68.

Features and Artifacts: Plaza surface 4 contained feature 7, a shallow pit about 10 cm deep filled with clean sand and adobe with stick impressions, like roof fall material. Its function is unknown. Feature 6, a roasting pit, is also associated with plaza surface 4. This feature had nine massive upright sandstone slabs placed in a circle of approximately one-meter diameter. These sandstone slabs were approximately 50 cm long. Sandstone slabs were layered horizontally in the bottom of the pit. Lots of large pieces of charcoal were found towards the bottom of the pit. Many corn-cobs were found just south of the feature on this surface. In general it appears as though the feature was cleaned out. Very few artifacts were found to be in direct association with plaza surface 4.

Structure 2, one of the two subterranean structures excavated at Homol'ovi IV, originated in Plaza surface 4. Additionally, the floor of structure 101, one of the latest surface structures built at Homol'ovi IV, rests on surface 4, suggesting major usage associated with this surface.

Fill: Fill directly above plaza surface 4 consisted of a gray-green ash that extended from N112 E66.15 to N112 E67.92. Directly below the ash layer, was a mottled type soil consisting of reddish clay, charcoal and caliche. In the east profile plaza surface 4 was under a soft sandy soil.

Discussion: Plaza surface 4 is the next largest plaza surface having only a slightly smaller extent than plaza surface 2. In the south end of

N105-112 E69-70, plaza surface 4 disappears into plaza surface 2. Plaza surface 4 was only uncovered in N110-112 E68-70 but it showed up in profile in the rest of the E69-70 trench. Across most of the site plaza surface 4 is identifiable by multiple ash pockets that lie on top of the surface and occasionally within the fill above the surface. The surface is reddish brown to 5YR 4/4 and yellowish red 5YR 4/6. Caliche flecks help identify the surface. Plaza surface 4 has a fairly gentle slope to where it meets plaza surface 2 from 101.25 in the north to 100.48 in the south.

### Surface 5

Elevation and Surface Characteristics: The elevation taken at N111.23 E68 is 101.35 and the elevation taken at N111 E66.15 is 101.34. The surface was of a harder clay consistency, and reddish brown 5YR 4/3 and 2.5YR 4/4.

Features and Artifacts: Point located artifacts include sherds, bones, lithics, mineral (limonite) and pecking stones. No features were associated with plaza surface 5;

Fill: The fill consisted of sand and very tiny gravel.

Discussion: Underneath plaza surface 5 was a sandy soil similar to deposits above the surface, but without gravel. It is possible that structures 4 and 5 were built on surface 5 or a similar plaza surface because the structures overlie plaza surface 4.

### Summary

Only cultural surfaces will be considered in this discussion of the relationship of plaza surfaces to nearby structure or to the occupation of the village as a whole.

Surface 2 is the earliest cultural surface, sometimes resting on bedrock, and is associated with the initial occupation of the village. It was identified in every plaza excavation unit. Except for areas at or near the bottom of the slope of the

butte, where there was 5-10 cm of natural fill, the surface occurred over bedrock. In some areas surface 2 appeared to be a prepared surface consisting of adobe with caliche flecks. In areas where fill occurred and the surface was more eroded, it had the appearance of resulting from extensive use. Features on this surface suggest limited activities, which may be due to the concentration of occupation considerably upslope from the plaza. Feature 4, the series of grooves that probably represent a feature or structure consisting of upright slabs, is difficult to interpret without a better context, including associated structures, features, and artifacts.

Surface 2A for all intents and purposes appears to be the uppermost of a closely spaced series of surfaces that began with surface 2. Its extent in the plaza excavations is almost as extensive as surface 2. No features originated on surface 2A, so it is difficult to differentiate specific activities. The series of surfaces from 2 to 2A are probably associated with the initial expansion of Homol'ovi IV, perhaps down slope from the earliest occupation on the top of the butte. The lack of features suggests the plaza area was still some distance from the village surface structures and intense activities.

Surface 3 had a single feature, a small, adobe-caped pit. In general the surface was spotty and almost impossible to see while excavating. This suggests this surface was not prepared and was not in use for long. The lack of features and its ephemeral nature again suggest the plaza was not yet being extensively used and structures were not yet nearby. The contention that structures were not nearby is supported by the fact that structure 201 was built while plaza surface 4 was in use. That means Structure 301, which is two rows of rooms removed from the final plaza, was the nearest room when plaza surfaces 3 was in use. Surfaces 2 and 2A are visible under structure 301

Surface 4 is the most extensive and intensively used surface at Homol'ovi IV since surface 2 and was probably the only surface associated with extensive and intensive use of the plaza space.

This is because for the first time structures, such as 201, were occupied nearby. Additionally, surface structure 101 and subterranean structure 2 were both constructed on surface 4. For the first time, a large roasting pit occurs on a Homol'ovi IV plaza surface. These features are characteristic of the plazas at Homol'ovi I and III and have been interpreted to indicate communal activities rather than single household activities as indicated by small firepits and postholes. Surface 4 was not the latest surface in use at Homol'ovi IV, because structures 4 and 5 were built over it, but it was evidently in use during the most intensive occupation of the village, near the end of its life.

Surface 5 was ephemeral and only identifiable in the vicinity of structure 201 and associated with structures 4 and 5, which probably rest on surface 5. If Surface 5 is an occupation surface, it was probably the latest occupied surface at Homol'ovi IV and the village was probably abandoned shortly after its use. Given the chronology developed through excavation at all four Homol'ovi villages, this would place use of surfaces 4 and 5 in the 1280s.

## CONCLUSIONS

As with the other Homol'ovi villages, Homol'ovi IV grew over the course of 30 years from a village of perhaps 25 rooms to one closer to 200 rooms in size, most of which were probably occupied given the short occupation span of the village. Although only 10 structures and 57 sq. m of the plaza were excavated in the single season of fieldwork at the village, still some general conclusions about the life history of the village can be made. Details of chronology were covered in the last chapter. This chapter has been devoted to a description of the architecture and plaza area

and to contextualizing the use and association of both.

Homol'ovi IV grew from the top of the butte down its east and south slopes over the course of its occupation. Given the steepness of the slope of the butte, the area at the bottom of the butte, which has been termed the plaza area, seems to have always been a place of activities. As the size of the population of Homol'ovi IV increased and the slopes of the butte became crowded with rooms, use of the plaza intensified. This is probably a result not only of increased village size and population, but also the reduction in space available for outside activities as the village began to cover the flat areas once reserved for plaza activities. Thus, areas to the north of the plaza area, below the east slope of the village, were covered with structures late in the occupation of Homol'ovi IV. The construction of rooms, such as 201, adjacent to the plaza also intensified activities in the plaza area associated with daily household events.

The most significant development in the plaza area occurred in conjunction with surface 4, when structures 201, 101, and 2 were built. Structure 2 is disconnected from other structures in the village and is also subterranean, both traits associated with ritual use as identified at other Homol'ovi villages (Adams 2002). The construction of structure 2 and the creation of such features as the large roasting pit on surface 4 beneath structures 4 and 5, mark a transition in the use of plaza space from an informal area in which to do various daily household activities to a space set aside, at least part of the time, for supra-household activities. This trend is amplified at the other later villages at Homol'ovi II, which culminated in the huge formal plaza filled with kivas at Homol'ovi II. At Homol'ovi IV we can see this process just beginning. Ritual structures, which includes kivas, and large communal roasting pits are just two of the features indicating this shift in function of the village plaza.



# Chapter Eight

## Ceramics

Trixi Bubemyre

### INTRODUCTION

Homol'ovi IV is a 150-room pueblo constructed on the top and sides of a steep hill just north of Winslow, Arizona, and occupied during the late Pueblo III through the early Pueblo IV period.

Although surface appearances suggest that much of the site had been vandalized, excavations resulted in the recovery of a large quantity of ceramic artifacts from an assortment of undisturbed proveniences. These ceramics originate from a variety of plain and decorated wares of local and nonlocal types.

This report first discusses methods of analysis followed by a description of the assemblage. Then, ceramic production dates are used to suggest the overall range of occupation at the site. Production dates and provenience data are used to explore variability within the site, and these dates are used with our understanding of local and nonlocal types to investigate temporal trends in regional interactions between the occupants of Homol'ovi IV and the surrounding region.

Change in regional interactions at a broader scale is also investigated by comparing ceramic assemblages from Homol'ovi IV, Homol'ovi III (early occupation A.D. 1280-1300, middle/late occupation A.D. 1330-1375), and Homol'ovi II (A.D. 1350-1400). It is of interest to probe differences in regional interactions among people who settled in this area during slightly different times, and who probably had diverse origins.

### METHODS OF ANALYSIS

Sherds were fractured, and approximately the first half of the sherds analyzed were examined with a 10-power hand lens. The second half of the analysis was aided by the use of a binocular microscope with magnifications of 20 to 40 power. Sherds were sorted into wares based on paste color, temper, and surface treatments such as paint and slip. Type designations relied on surface treatments (e.g., paint and slip) and stylistic characteristics (e.g., design, corrugation type) as outlined by Colton (1956), Smith (1971), Douglass (1987), Crown (1994), and Hays (1991); in some cases typology was aided by a system of flow charts adopted from Mills and Goetze (1993).

#### The Assemblage

Excavation at Homol'ovi IV resulted in the recovery of a large quantity of sherds, 16,734 of which were analyzed. The sampling strategy focused on undisturbed proveniences, and from these proveniences, contextual variety was sought.

Ceramic artifacts were recovered from a variety of contexts, including the fill, subfloor fill and features of six rooms, a midden area (distinct from deposits below rooms), and several plaza surfaces or extramural activity areas and extramural features. An examination of the ceramic artifacts within these areas is discussed below.

The ceramics at this site encompassed sixteen wares: Tusayan Gray Ware, Tusayan White

Ware, Tsegi Orange Ware (which includes the Jeddito series from the Hopi Mesas area), White Mountain Red Ware, Roosevelt Red Ware, Homol'ovi Orange Ware, Homol'ovi Gray Ware, Winslow Orange Ware, Jeddito Yellow Ware, Alameda Brown Ware, Mogollon Brown Ware, and San Francisco Mountain Gray Ware (Table 8.1). A total of 237 sherds were indeterminate plain ware, and 109 sherds were indeterminate decorated ware. In addition, some fragments of unfired clay were recovered.

Table 8.1 All analyzed ceramics from Homol'ovi IV

| <i>Ware</i>                | <i>Frequency</i> | <i>Percent</i> |
|----------------------------|------------------|----------------|
| Winslow Orange             | 3044             | 18.19          |
| Tsegi Orange               | 1146             | 6.85           |
| Jeddito Yellow             | 80               | 0.48           |
| Hopi White                 | 312              | 1.86           |
| Tusayan White              | 903              | 5.40           |
| Little Colorado White      | 161              | 0.96           |
| Cibola White               | 437              | 2.61           |
| White Mountain Red         | 73               | 0.44           |
| Roosevelt Red (Salado Red) | 38               | 0.23           |
| Unknown Decorated          | 109              | 0.65           |
| <b>Total Decorated</b>     | <b>6303</b>      | <b>37.67</b>   |
| Tusayan Gray               | 6094             | 36.42          |
| Little Colorado Gray       | 1133             | 6.77           |
| Homol'ovi Orange           | 367              | 2.19           |
| Homol'ovi Gray             | 252              | 1.51           |
| Alameda Brown              | 2335             | 13.95          |
| Mogollon Brown             | 12               | 0.07           |
| San Francisco Mtn Gray     | 1                | 0.01           |
| Unknown Plain              | 237              | 1.42           |
| <b>Total Plain</b>         | <b>10431</b>     | <b>62.33</b>   |
| <b>TOTAL</b>               | <b>16734</b>     | <b>100.00</b>  |

Winslow Orange Ware is the predominate decorated ware representing about 18 % of the assemblage, with Tsegi Orange Ware and Tusayan White Ware each comprising around 6 %. The remaining six identifiable decorated wares represented between 0.23 % and 3 % of the ceramic assemblage.

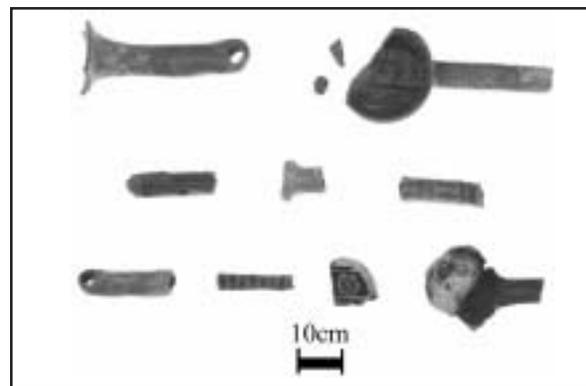
Tusayan Gray Ware comprised over 36% of the assemblage, and Alameda Brown Ware composed nearly 14 % (Table 8.1). The five remaining identifiable plain wares were present in

proportions varying from between less than 0.01% to nearly 7 % of the assemblage.

Around 73 % of the ceramic artifacts recovered were jar sherds. (Table 8.2). Bowl sherds were about 24 % of the assemblage, and ladle sherds were 1 % of the assemblage (Figure 8.1).

Table 8.2 Distribution of vessels by form

| <i>Form</i>   | <i>Frequency</i> | <i>Percent</i> |
|---------------|------------------|----------------|
| Jar           | 12169            | 72.72          |
| Bowl          | 3954             | 23.63          |
| Ladle         | 181              | 1.08           |
| Other         | 9                | 0.05           |
| Indeterminate | 419              | 0.01           |
| Seed Jar      | 2                | 2.51           |
| <b>TOTAL</b>  | <b>16734</b>     | <b>100.00</b>  |

Figure 8.1 Ladles and ladle handles of *Tuwiuca Black-on-Orange* and *Jeddito Black-on-Orange*

The other category includes fragments of effigies, perforated plates, and worked sherds (Figures 8.2 and 8.3).

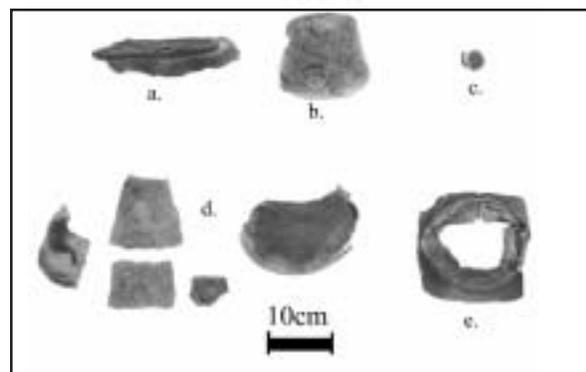


Figure 8.2 A, e- bird effigies; b- knobbed jar; c- appliqué coil; d- small jar with appliqué

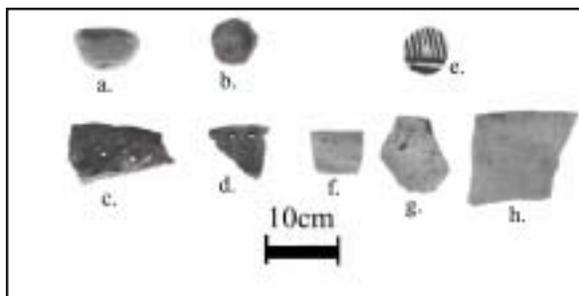


Figure 8.3 A, b- miniature vessels; c,d- perforated plates; e- Bidahochi black-on-white worked sherd; f, g, h- plain plate-Tusayan white ware

Indeterminate sherds comprised over 2.5 % of the assemblage.

## DESCRIPTION OF WARES AND TYPES

### Decorated Wares

Nine decorated wares comprise nearly 38 % of the entire assemblage. The most common ware is Winslow Orange Ware at 48 % of the decorated assemblage. Tsegi Orange and Tusayan White Ware constitute 18% and 14% respectively of the decorated assemblage while Cibola White Ware comprises 7%. Jeddito Yellow Ware, Little Colorado White Ware, White Mountain Red Ware, and Roosevelt Red Ware (Salado Red) each comprise less than 3 % of the assemblage.

As was mentioned, roughly 75 % of the sherds analyzed were from jars, and 25 % were from bowls. Proportions of forms vary among decorated wares. Although the white wares generally have proportions of jars and bowls similar to the overall site pattern, orange and red wares are predominately bowls. A description of each decorated ware follows (Table 8.3).

#### *Winslow Orange Ware*

Hays-Gilpin, Bubemyre, and Senior (1996:55) propose the manufacture and distribution of Winslow Orange Ware throughout the Middle Little Colorado River region “between the Hopi and Salado heartlands.” Colton (1956) classified

Table 8.3 Frequency of decorated wares

| Ware                       | Frequency   | Percent      |
|----------------------------|-------------|--------------|
| Winslow Orange             | 3044        | 48.29        |
| Tsegi Orange               | 1146        | 18.18        |
| Jeddito Yellow             | 157         | 2.49         |
| Hopi White                 | 235         | 3.73         |
| Tusayan White              | 903         | 14.33        |
| Little Colorado White      | 161         | 2.55         |
| Cibola White               | 437         | 6.93         |
| White Mountain Red         | 73          | 1.16         |
| Roosevelt Red (Salado Red) | 38          | 0.60         |
| Unknown Decorated          | 109         | 1.73         |
| <b>TOTAL</b>               | <b>6303</b> | <b>100.0</b> |

Winslow Orange Ware and his system is still used. More recently Hays (1991), Hays-Gilpin et al. (1996) and Lyons and Hays-Gilpin (2001) have provided more detailed descriptions of types within Winslow Orange Ware.

Winslow Orange Ware is often a distinctive orange color, but the series Chavez Pass is red due to the application of a red slip and the Black Ax Series is red due to the use of a red firing clay (Lyons and Hays-Gilpin 2001). Winslow Black-on-white is a purposefully reduced variation of Tuwiuca Black-on-orange based on oxidation studies. Winslow Orange Ware paste is coarse and has a crumbling fracture (Figure 8.4).

Like Tsegi Orange Ware, Winslow Orange Ware often contains sherd temper, however, it is distinguished from Tsegi Orange Ware by colored sand temper (Figure 8.5). Perhaps 10 sherds at Homol’ovi IV also contained black volcanic rock. Petrographic studies indicate that mineral inclusions in the more typical colored sand tempered Winslow Orange Ware are derived from local materials (Hays-Gilpin, Bubemyre, and Senior 1996:57, Lyons and Hays-Gilpin 2001).

Winslow Orange Ware is painted with black mineral paint, and polychrome varieties have a white paint that is often very faint. Surface treatment can include polishing and slipping, however, temper is usually visible on the surface of the sherds. At Homol’ovi IV, 73 % of Winslow Or-

ange Ware sherds are bowls, 20 % are jars, and 3% are ladles (Table 8.4).

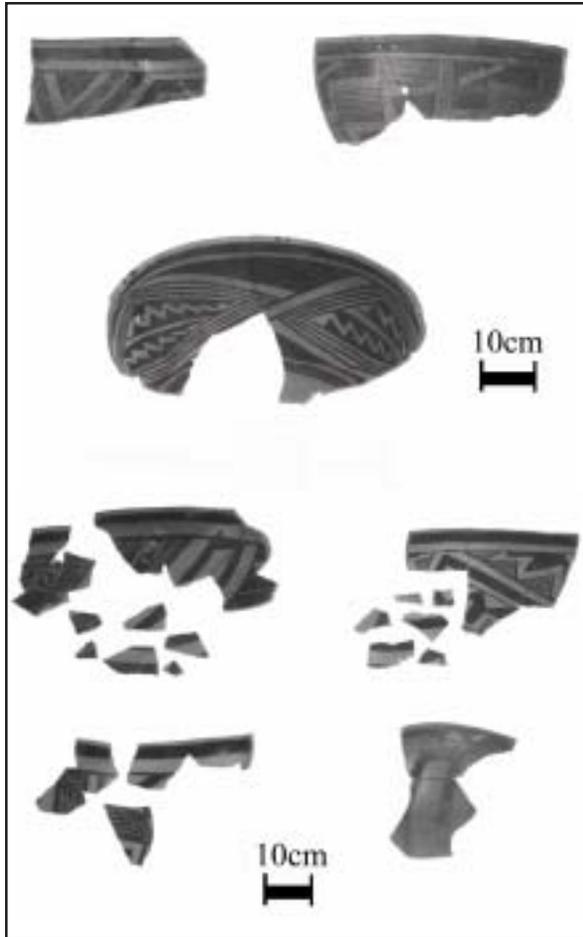


Figure 8.4 Tuwiuca Black-on-Orange, sand temper

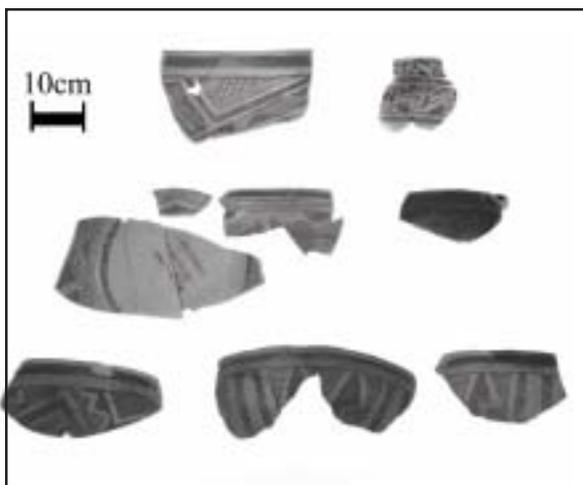


Figure 8.5 Tuwiuca Black-on-Orange, sand and sherd temper

Table 8.4 Decorated Orange and Yellow Ware by form

|                       | <i>Vessel Form</i> | <i>Frequency</i> | <i>Percent</i> |
|-----------------------|--------------------|------------------|----------------|
| <b>Winslow Orange</b> | Jar                | 618              | 20.30          |
|                       | Bowl               | 2231             | 73.29          |
|                       | Ladle              | 95               | 3.12           |
|                       | Other              | 4                | 0.13           |
|                       | Indeterminate      | 96               | 3.15           |
|                       | <b>Subtotal</b>    | <b>3044</b>      | <b>100.00</b>  |
| <b>Tsegi Orange</b>   | Jar                | 191              | 16.67          |
|                       | Bowl               | 901              | 78.62          |
|                       | Ladle              | 20               | 1.75           |
|                       | Indeterminate      | 34               | 2.97           |
|                       | <b>Subtotal</b>    | <b>1146</b>      | <b>100.00</b>  |
| <b>Jeddito Yellow</b> | Jar                | 49               | 31.21          |
|                       | Bowl               | 92               | 58.60          |
|                       | Ladle              | 7                | 4.46           |
|                       | Indeterminate      | 9                | 5.73           |
|                       | <b>Subtotal</b>    | <b>157</b>       | <b>100.00</b>  |

Winslow Orange Ware comprises nearly 18.2 % of the entire assemblage. All Winslow Orange Ware types are present at Homol’ovi IV, although the Black Ax series is represented by exceedingly small numbers (Table 8.5).

Table 8.5 Frequency of Winslow Orange Ware types

| <i>Type</i>              | <i>Frequency</i> | <i>Percent</i> |
|--------------------------|------------------|----------------|
| Indeterminate            | 36               | 1.18           |
| Tuwiuca Orange           | 434              | 14.26          |
| Tuwiuca Black-on-orange  | 2213             | 72.70          |
| Homol’ovi Polychrome     | 67               | 2.20           |
| Chavez Pass Red          | 29               | 0.95           |
| Chavez Pass Black-on-red | 198              | 6.50           |
| Chavez Pass Polychrome   | 26               | 0.85           |
| Black Ax Red             | 7                | 0.23           |
| Homol’ovi Black-on-red   | 9                | 0.30           |
| Black Ax Polychrome      | 1                | 0.03           |
| Winslow White            | 24               | 0.79           |
| <b>TOTAL</b>             | <b>3044</b>      | <b>100.00</b>  |

At 13% of the total assemblage, Tuwiuca Black-on-orange is the most prevalent decorated type at Homol’ovi IV. Winslow Orange Ware is also the most common decorated ware at Homol’ovi III (Lyons and Hays-Gilpin 2001) and

is the second most common decorated ware at Homol'ovi II (Hays 1991:20)

### *Tsegi Orange Ware*

This ware was described by Colton (1956) and more recently by Ambler (1985) and Goetze and Mills (1993). Tsegi Orange Ware originates north of Homol'ovi and is associated with the Kayenta Anasazi (Hays 1991:28). The Jeddito series of Tsegi Orange Ware is more specifically associated with the Hopi Mesas and was manufactured there (Lyons 2001, Lyons and Hays-Gilpin 2001:157).

The paste of Tsegi Orange Ware is distinctively orange and, unlike Winslow Orange Ware paste, color is less variable. In general the paste of Tsegi Orange Ware has a finer texture and a harder fracture than Winslow Orange Ware. Within Tsegi Orange Ware, the Jeddito series is distinct from the Tsegi series as it has an even finer paste and harder fracture; this may relate to coal firing of the Jeddito series (Hays 1991:28). In addition, carbon cores are absent from the Jeddito series.

Tsegi Orange Ware contains crushed sherd temper as the dominant temper type in contrast to Winslow Orange Ware where it is sparse. Tsegi Orange Ware also contains small amounts of fine quartz sand rather than the colored sand.

Paint includes black mineral paint, white paint (polychrome varieties), and red slip. Although surface treatment includes a higher polish than Winslow Orange Wares, temper is often still evident on the surface of the sherd. Similar to Winslow Orange Ware, Tsegi Orange Ware sherds at Homol'ovi IV are composed of approximately 79% bowls and roughly 17% jars (see Table 8.4). Ladles are about 2% of the assemblage.

Although the Tsegi and Jeddito series within the Tsegi Orange Ware can be distinguished based on the fineness of paste and the hardness of fracture, there are stylistic criteria, which distinguish other types within Tsegi Orange Ware.

Kiet Siel Polychrome has a red slip on the jar or bowl exterior, and a black and white design on the bowl interior (Goetze and Mills 1993:73-76). Red slipped Medicine Black-on-red typically has large black solid elements and broad lines. Tusayan Black-on-red is red slipped with black hatched elements. Tusayan Polychrome A has a broad red band outlined in black (no hatchure), with a band of red slip on the exterior surface. Tusayan Polychrome B has black hatchures on broad red bands, and exterior bands of red slip.

The Jeddito series is easily distinguished by always having a black subrim banding line and being rarely slipped. Vessel layouts, therefore, are bounded by an interior framing line which is usually absent from Tsegi series (Lyons 2003) (Figure 8.8).

Tsegi Orange Ware at Homol'ovi IV comprises 6.85% of the entire assemblage (see Table 8.1). Types at Homol'ovi IV include 53 (4.6%) sherds from the Tsegi series, and 1056 (92.2%) from the Jeddito series (Table 8.6).

Table 8.6 Frequency of Tsegi Orange Ware by Type

| <i>Type</i>             | <i>Frequency</i> | <i>Percent</i> |
|-------------------------|------------------|----------------|
| Indeterminate           | 37               | 3.23           |
| Tsegi Orange            | 4                | 0.35           |
| Tsegi Black-on-orange   | 7                | 0.61           |
| Tsegi Polychrome        | 6                | 0.52           |
| Jeddito Orange          | 122              | 10.65          |
| Jeddito Black-on-orange | 806              | 70.33          |
| Jeddito Polychrome      | 59               | 5.15           |
| Jeddito Slipped         | 69               | 6.02           |
| Kiet Siel Polychrome    | 10               | 0.87           |
| Medicine Black-on-red   | 9                | 0.79           |
| Tusayan Black-on-red    | 7                | 0.61           |
| Tusayan Polychrome A    | 7                | 0.61           |
| Tusayan Polychrome B    | 3                | 0.26           |
| <b>TOTAL</b>            | <b>1146</b>      | <b>100.00</b>  |

### *Jeddito Yellow Ware*

Jeddito Yellow Ware was first described by Colton and Hargrave (1932), Colton (1956) and more recently by Smith (1971) and Hays (1991). Hays (1991:24) notes that much of the Jeddito Yellow

Ware at the Homol'ovi sites was produced on the Antelope Mesa, perhaps from the site of Awat'ovi.

Although the ware name suggests that the sherds should be yellow, the predominate types found at Homol'ovi IV are orange pasted, orange/red slip over yellow paste, and white pasted. These Jeddito Yellow Ware sherds can be distinguished from all other orange and white wares by the texture of the paste. Similarly to the yellow types of Jeddito Yellow Ware, these sherds have a fine paste, little to no temper, and a very hard fracture.

Although temper is usually not evident, microscopic examination occasionally reveals fine quartz sand. Black mineral paint is present on all decorated types, and some types have a red slip, while polychrome varieties usually add a white paint. Surface treatment often includes polishing. At Homol'ovi IV, 59 % of the sherds of this ware are bowls, 31 % are jars, and nearly 5 % are ladles (see Table 8.4).

Classification of types within the Jeddito Yellow Ware relies on paste color, surface treatment, and occasionally temper. Huckovi types are orange pasted, and Kokop and Kwaituki types are orange/red slipped with yellow paste with Kwaituki having abundant sand temper. Bidahochi Polychrome is yellow pasted with black and white paint (Figures 8.6, 8.7 and 8.8).

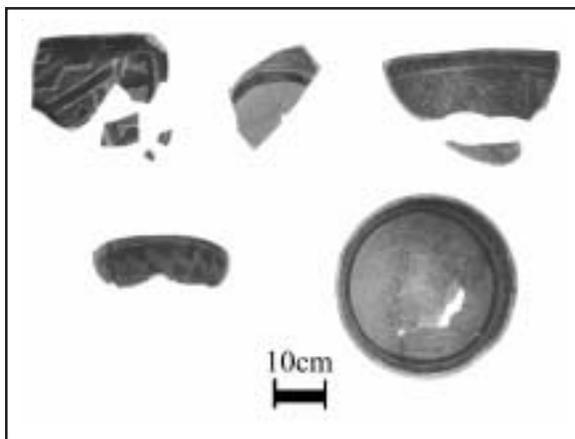


Figure 8.6 *Chavez Pass Black-on-Red and Kokop Black-on-Orange*

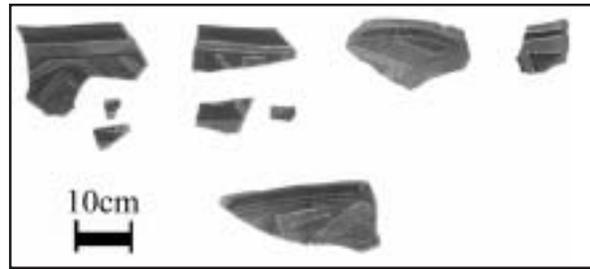


Figure 8.7 *Jeddito Yellow Ware, Black Ax Polychrome, and Huckovi Polychrome*

Jeddito Yellow Ware comprises a mere 0.48% of the entire assemblage (see Table 8.1). Kokop Orange/Black-on-orange, and Huckovi Black-on-orange types are the most common Jeddito Yellow Ware types (Table 8.7).

Table 8.7 Jeddito Yellow Ware type by frequency and by percent

| Type                                | Frequency | Percent       |
|-------------------------------------|-----------|---------------|
| Indeterminate                       | 2         | 2.50          |
| Kokop Orange and Black-on-orange    | 24        | 30.00         |
| Kokop Polychrome                    | 1         | 1.25          |
| Kwaituki Orange and Black-on-orange | 8         | 10.00         |
| Huckovi Orange                      | 9         | 11.25         |
| Huckovi Black-on-orange             | 24        | 30.00         |
| Huckovi Polychrome                  | 6         | 7.50          |
| Bidahochi Polychrome                | 1         | 1.25          |
| Jeddito Black-on-yellow             | 5         | 6.25          |
| <b>TOTAL</b>                        | <b>80</b> | <b>100.00</b> |

### *Hopi White Ware*

Hopi White Ware, which is manufactured at villages on or near the Hopi Mesas, was defined and described by Colton (1955) and more recently in Smith (1971) as the Polacca Series of Tusayan White Ware. Hopi White Ware can be distinguished from other white wares by a finer paste, though perhaps not as fine a paste as Bidahochi Black-on-white, the latest type in this series and also the most common. Although temper is not evident with a hand lens, small amounts of quartz sand temper are evident with a binocular microscope. Black mineral paint is present, and surfaces are often polished. At Homol'ovi IV, 56 % of Hopi White Ware sherds are jars, 34 % are bowls, and 2 % are ladles (Table 8.8).

Table 8.8 Frequency of decorated White Ware by form

| <i>Vessel Form</i>           | <i>Frequency</i> | <i>Percent</i> |
|------------------------------|------------------|----------------|
| <b>Hopi White</b>            |                  |                |
| Jar                          | 131              | 55.74          |
| Bowl                         | 80               | 34.04          |
| Ladle                        | 5                | 2.13           |
| Other                        | 1                | 0.43           |
| Indeterminate                | 18               | 7.66           |
| <b>Subtotal</b>              | <b>235</b>       | <b>100.00</b>  |
| <b>Tusayan White</b>         |                  |                |
| Jar                          | 599              | 66.33          |
| Bowl                         | 224              | 24.81          |
| Ladle                        | 26               | 2.88           |
| Other                        | 2                | 0.22           |
| Indeterminate                | 52               | 5.76           |
| <b>Subtotal</b>              | <b>903</b>       | <b>100.00</b>  |
| <b>Little Colorado White</b> |                  |                |
| Jar                          | 97               | 60.25          |
| Bowl                         | 45               | 27.95          |
| Ladle                        | 4                | 2.48           |
| Indeterminate                | 15               | 9.32           |
| <b>Subtotal</b>              | <b>161</b>       | <b>100.00</b>  |
| <b>Cibola White</b>          |                  |                |
| Jar                          | 339              | 77.57          |
| Bowl                         | 80               | 18.31          |
| Ladle                        | 6                | 1.37           |
| Indeterminate                | 12               | 2.75           |
| <b>Subtotal</b>              | <b>437</b>       | <b>100.00</b>  |
| <b>TOTAL</b>                 | <b>1736</b>      | <b>100.00</b>  |

Types within this ware are distinguished based on stylistic equivalents with the Tusayan White Ware series (discussed below). Kia-ko Black-on-white is thought of as roughly equivalent to Sosi Black-on-white. Polacca Black-on-white is described as similar to Dogoszhi Black-on-white, although Smith (1971) notes that there is more variability in designs attributed to Polacca. Hoyapi Black-on-white is described by Smith (1971) as similar to Tusayan and Kayenta Black-on-white, but less skill is seen in design execution (Figure 8.8).

Hopi White Ware comprises 1.86 % of the assemblage (see Table 8.1) with Polacca and Hoyapi Black-on-white as the prevalent typable sherds of this ware (Table 8.9).

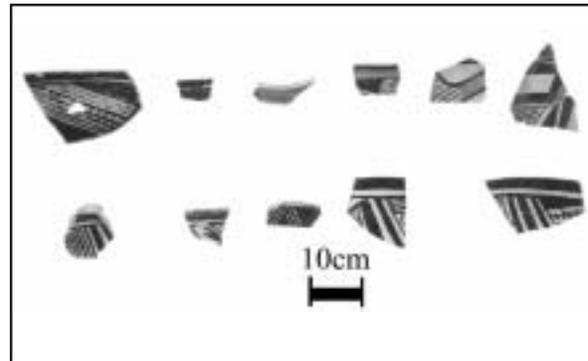


Figure 8.8 Hopi White Ware

Table 8.9 Hopi White Ware type by frequency and by percent

| <i>Type</i>              | <i>Frequency</i> | <i>Percent</i> |
|--------------------------|------------------|----------------|
| Indeterminate            | 193              | 61.86          |
| Kia-ko Black-on-white    | 2                | 0.64           |
| Polacca Black-on-white   | 26               | 8.33           |
| Hoyapi Black-on-white    | 14               | 4.49           |
| Bidahochi Black-on-white | 77               | 24.68          |
| <b>TOTAL</b>             | <b>312</b>       | <b>100.00</b>  |

#### *Tusayan White Ware*

Tusayan White Ware was described by Colton and Hargrave (1937), Colton (1955) and more recently by Smith (1971), Ambler (1985), and Goetze and Mills (1993). The probable production/distribution area for Tusayan White Ware is from the Kayenta region on the Arizona/Utah border to the Hopi Mesas. It is common as far south as Wupatki National Monument

Tusayan White Ware can be distinguished from other white wares by its quartz sand temper and black organic paint. Surface treatment may include slipping and always involves polishing. Form proportions of Tusayan White ware at Homol'ovi IV are similar to those for Hopi White Ware. Jars comprise approximately 66 % of the assemblage, bowls 25 %, and ladles 3 % (see Table 8.8 and Figure 8.9).

Types within Tusayan White Ware are distinguished based on stylistic characteristics. Sosi Black-on-white consists of broad barbed and ser-

rated lines. Hatchure is the diagnostic characteristic of Dogoszhi Black-on-white. Descriptions of Flagstaff Black-on-white suggest a strong similarity to Sosi Black-on-white, however, the barbed and serrated lines of Flagstaff Black-on-white are composed of thin lines elaborated with small, closely spaced triangles, and small interlocking elements can be present. Tusayan and Kayenta Black-on-white designs are predominately negative. Repeated fine lines drawn across thick lines at a perpendicular angle is diagnostic of Kayenta Black-on-white. Betatakin Black-on-white is envisioned as precursor to Kayenta Black-on-white, although many analysts have not recognized this type (Goetze and Mills 1993, Smith 1971). Wupatki Black-on-white is considered very similar to Tusayan Black-on-white, and Goetze and Mills (1993) and Smith (1971) merge the two (Figure 8.9).

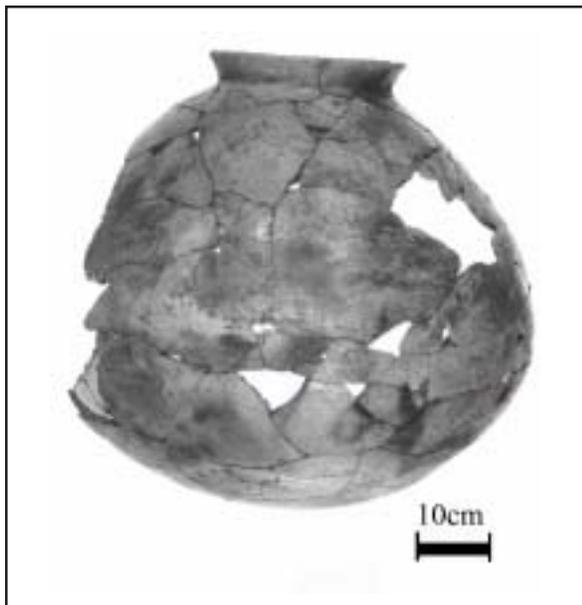


Figure 8.9 Tusayan White Ware Jar

Tusayan White Ware is the most common white ware at Homol'ovi IV comprising over 5 % of the assemblage (Table 8.1). Tusayan Black-on-white is most common with Flagstaff and Kayenta Black-on-white present in smaller amounts (Table 8.10). The remaining three types are represented by only a small number of sherds.

Table 8.10 Frequency of Tusayan White Ware types

| Type                     | Frequency  | Percent       |
|--------------------------|------------|---------------|
| Indeterminate            | 701        | 77.63         |
| Sosi Black-on-white      | 4          | 0.44          |
| Dogoszhi Black-on-white  | 12         | 1.33          |
| Flagstaff Black-on-white | 40         | 4.43          |
| Tusayan Black-on-white   | 97         | 10.74         |
| Kayenta Black-on-white   | 42         | 4.65          |
| Betatakin Black-on-white | 6          | 0.66          |
| Wupatki Black-on-white   | 1          | 0.11          |
| <b>TOTAL</b>             | <b>903</b> | <b>100.00</b> |

#### *Little Colorado White Ware*

Classified by Colton (1956), Little Colorado White Ware was studied extensively by Douglass (1987). Her work suggests a limited production area around the Hopi Buttes area focusing on areas to the north and east of the Homol'ovi sites.

This ware is easily distinguished from other white wares by the characteristic dark gray paste covered by a thick white slip. White sherd temper is easily seen in the paste, although in some later types temper fragments are very small. Black organic paint is used to decorate vessels, and the slip is usually polished. Similar to other white wares at Homol'ovi IV, jars compose roughly 60 % of the assemblage, bowls 28 %, and ladles 3% (Table 8.8).

Within the ware, types are distinguished based on stylistic criteria (Figure 8.10). Because these types have Tusayan White Ware stylistic equivalents that were discussed above, the reader is also referred to those descriptions. Pendant dots on triangles are diagnostic for Holbrook A Black-on-white, and checkerboards are also common. Holbrook B Black-on-white is similar to Sosi Black-on-white with broad serrated lines. Hatchure is diagnostic of Padre Black-on-white (equivalent to Dogoszhi Black-on-white). Walnut Black-on-white (similar to Flagstaff Black-on-white) usually employs closely opposed serrated lines. Leupp Black-on-white uses paint to create negative designs similar to Tusayan and kayenta Black-on-white.

Little Colorado White Wares comprise less than 1 % of the total ceramic assemblage (see Table 8.1). Walnut Black-on-white was the most frequently identified type (Table 8.11).

Table 8.11 Frequency of Little Colorado White Ware types

| Type                      | Frequency  | Percent       |
|---------------------------|------------|---------------|
| Indeterminate             | 128        | 79.50         |
| Holbrook A Black-on-white | 3          | 1.86          |
| Holbrook B Black-on-white | 7          | 4.35          |
| Padre Black-on-white      | 2          | 1.24          |
| Walnut Black-on-white     | 20         | 12.4          |
| Leupp Black-on-white      | 1          | 0.62          |
| <b>TOTAL</b>              | <b>161</b> | <b>100.00</b> |

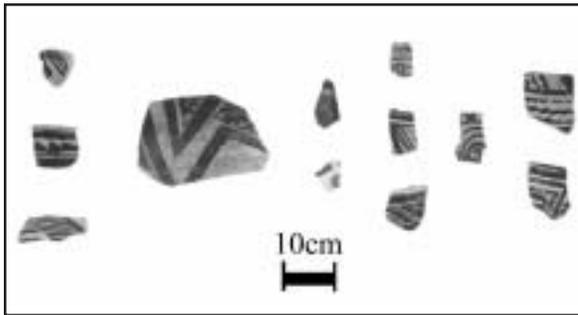


Figure 8.10 Lino Black-on-White, Medecine Black-on-White, Dogozhi Black-on-White, Pinedale, Tularosa Black-on-White, Walnut Black-on-White, Puerco Black-on-White, Kayenta Black-on-White

#### Cibola White Ware

Cibola White Ware was recognized early and, probably because of its wide distribution throughout a good portion of the Southwest, has been extensively studied. Goetze and Mills (1993) and Mills and Herr (1999) provide descriptions of this ware and its types.

Cibola White Ware is distinguished from other white wares based on the combination of white to light gray paste, sherd temper (in later types), and black mineral paint. Surface treatment includes polishing, and a thin white slip is sometimes present. At Homol'ovi IV nearly 78% of the Cibola White Ware sherds were classified as jars, 18 % as bowls and less than 2% as ladles (see Table 8.8).

As is typical of the white wares, types within the sequence are distinguished primarily on stylistic criteria. A diagnostic element of Red Mesa Black-on-white is pendant dots, especially on triangular solids. Puerco Black-on-white consists of solid elements framed by widely spaced lines of parallel hatchure. Escavada Black-on-white consists of broad, bold, often serrated lines (equivalent to Sosi Black-on-white, see above). Snowflake Black-on-white is characterized by stepped elements. Reserve and Tularosa Black-on-white are characterized by circular scrolls which oppose solid and obliquely hatchured elements; Tularosa is distinguished by hatchures that include finer lines closer together.

Cibola White Ware makes up 2.61 % of the total ceramic assemblage (see Table 8.1). Snowflake Black-on-white is the predominate type with Puerco, Reserve, and Tularosa Black-on-white each present at about half the frequency (Table 8.12).

Table 8.12 Frequency of Cibola White Ware types

| Type                     | Frequency  | Percent       |
|--------------------------|------------|---------------|
| Indeterminate            | 315        | 72.08         |
| Red Mesa Black-on-white  | 1          | 0.23          |
| Puerco Black-on-white    | 26         | 5.95          |
| Escavada Black-on-white  | 7          | 1.60          |
| Snowflake Black-on-white | 48         | 10.98         |
| Reserve Black-on-white   | 18         | 4.12          |
| Tularosa Black-on-white  | 17         | 3.89          |
| Pinedale Black-on-white  | 5          | 1.14          |
| <b>TOTAL</b>             | <b>437</b> | <b>100.00</b> |

#### White Mountain Red Ware

Although early descriptions of White Mountain Red Ware were made by Colton (1956), this ware was more extensively studied by Carlson (1970). This ware originates to the south and east of the Homol'ovi sites, in and around the Silver Creek drainage of the upper Little Colorado River.

This ware is easily distinguished from red-slipped Jeddito Yellow Ware types such as Kokop

Black-on-orange, red slipped Winslow Orange Ware, and Tsegi Orange Ware types by the thickness and deep red color of the slip (Figure 8.11). In addition, the paste color is distinctive, varying from white to gray. The temper is primarily sherd, although quartz sand can be present. Black mineral paint distinguishes this from the Roosevelt Red Wares, which use an organic paint. Polishing marks are often visible. At Homol'ovi IV, sherds of this ware are overwhelmingly bowls (Table 8.13).

Table 8.13 Decorated Red Ware and unknown ware by form

|                                   | <i>Vessel Form</i> | <i>Frequency</i> | <i>Percent</i> |
|-----------------------------------|--------------------|------------------|----------------|
| <b>White Mountain Red</b>         | Jar                | 2                | 2.74           |
|                                   | Bowl               | 71               | 97.26          |
|                                   | <b>Subtotal</b>    | 73               | 100.00         |
| <b>Roosevelt Red (Salado Red)</b> | Jar                | 1                | 2.63           |
|                                   | Bowl               | 36               | 94.74          |
|                                   | Indeterminate      | 1                | 2.63           |
| <b>Subtotal</b>                   | 38                 | 100.00           |                |
| <b>Unknown Decorated</b>          | Jar                | 15               | 13.76          |
|                                   | Bowl               | 74               | 67.89          |
|                                   | Ladle              | 4                | 3.67           |
|                                   | Indeterminate      | 16               | 14.68          |
| <b>Subtotal</b>                   | 109                | 100.00           |                |
| <b>Total</b>                      |                    | 220              | 100.00         |

Types within this ware are distinguished both by the way black and white paints are used, and by design styles. St. Johns Black-on-red/Polychrome and Wingate Black-on-red/Polychrome are both typified by the presence of opposed solid and oblique hatched elements. In whole vessels, St. Johns has larger solid than hatched areas and Wingate has larger hatched than solid areas, a criteria that is obviously subjective in the sherd form. The polychrome varieties of these types can be distinguished by the presence of white or red bands on the exterior of Wingate, and the use of thick white lines on the exterior of St. Johns. Pinedale Black-on-red or Polychrome is distinguished by a subglaze paint.

This ware makes up only a small proportion of this assemblage (see Table 8.1) with Wingate Black-on-red/Polychrome and St. Johns Black-on-red/Polychrome being the most prevalent types (Table 8.14). Only a single sherd of Pinedale Polychrome was recovered from Homol'ovi IV. At present, Pinedale Polychrome is dated as beginning about 1290.

Table 8.14 Frequency of White Mountain Red Ware types

| <i>Type</i>                        | <i>Frequency</i> | <i>Percent</i> |
|------------------------------------|------------------|----------------|
| Indeterminate                      | 40               | 54.79          |
| St. Johns Black-on-red, Polychrome | 11               | 15.07          |
| Pinedale, Polychrome               | 1                | 1.37           |
| Wingate Black-on-red, Polychrome   | 21               | 28.77          |
| <b>TOTAL</b>                       | <b>73</b>        | <b>100.00</b>  |

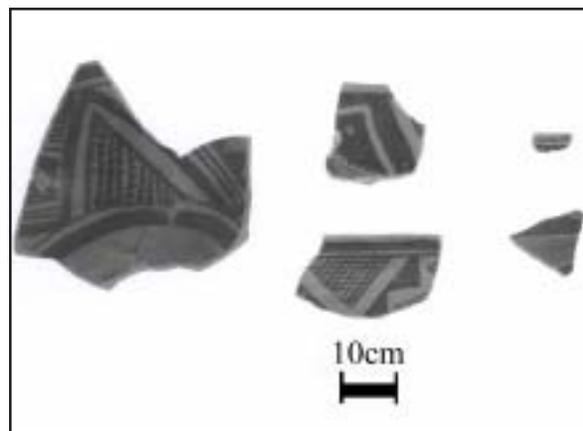


Figure 8.11 Pinedale Polychrome, Pinto Polychrome, Jeddito Black-on-Yellow, and miscellaneous White Mountain Redware

#### *Roosevelt Red Ware*

Roosevelt Red Ware has been the focus of much research by Crown, culminating in a book (1994). Recently, Lyons (2001, 2003) has expanded on Crown's important study. Chemical data suggests that there were a variety of production centers throughout the Southwest.

This ware is distinguished from White Mountain Red Ware and other red-slipped orange wares (Tsegi and Winslow Orange Ware and Jeddito

Yellow Ware types) by the polished brick red to raspberry red slip in addition to the use of a cream salmon colored “white” paint/slip. In addition, Roosevelt Red Ware is distinguished from the other wares through the use of black organic paint. Paste color varies from gray to brown, and temper can include sherd or crushed rock with varying amounts of sand. At Homol’ovi IV, forms of Roosevelt Red Ware are 95 % jars (see Table 8.13).

Types within Roosevelt Red Ware are distinguished by the combination of colors used and by stylistic traits. Pinto Polychrome is usually associated with bowl forms and has a red exterior and white interior with black designs, although red can sometimes be incorporated into interior designs. The use of a framing line below the interior bowl rim is not present in this type. Gila Polychrome is also usually found in the bowl form with a red exterior and a white interior with black paint. Red is not incorporated into the interior of Gila bowls, and a framing line is present. Tonto Polychrome is usually found in jar forms, and red is incorporated into the white and black designs.

At Homol’ovi IV, Roosevelt Red Ware was rare and comprised 0.23 % of the total assemblage (see Table 8.1). Small quantities of Pinto and Gila/Tonto Polychromes were present (Table 8.15).

Table 8.15 Frequency of Roosevelt Red Ware types

| Type                  | Frequency | Percent       |
|-----------------------|-----------|---------------|
| Indeterminate         | 23        | 60.53         |
| Pinto Polychrome      | 9         | 23.68         |
| Gila/Tonto Polychrome | 6         | 15.79         |
| <b>TOTAL</b>          | <b>38</b> | <b>100.00</b> |

#### *Unknown Decorated Ware*

One hundred and nine decorated sherds were not able to be identified to ware. The majority of these sherds were burned and the temper could not be identified (Table 8.16). Forms are 68 % bowls, 14 % jars, and 4 % ladles (see Table 8.13).

Table 8.16 Frequency of unknown decorated by temper

| Type               | Temper             | Frequency  | Percent       |
|--------------------|--------------------|------------|---------------|
| Unkn. Deco.        | Indeterminant      | 4          | 3.67          |
|                    | Fine quartz sand   | 3          | 2.75          |
|                    | Coarse quartz sand | 4          | 3.67          |
|                    | <b>Subtotal</b>    | <b>11</b>  | <b>100.00</b> |
| Unkn. Burned Deco. | Indeterminant      | 97         | 88.99         |
|                    | Sherd dominate     | 1          | 0.92          |
|                    | <b>Subtotal</b>    | <b>98</b>  | <b>100.00</b> |
| <b>TOTAL</b>       |                    | <b>109</b> | <b>100.00</b> |

#### **Plain Ware**

Plain ware sherds comprise roughly 62 % of the assemblage (see Table 8.1). At least seven wares are represent: 58% Tusayan Gray Ware, 22% Alameda Brown Ware, 11% Little Colorado Gray Ware, 6% Homol’ovi Gray and Orange Corrugated Wares (Table 8.17 and Figure 8.12). Plain ware sherds were predominately jars forms (usually well over 90%).

Table 8.17 Frequency of Plain Ware

| Ware                        | Frequency    | Percent       |
|-----------------------------|--------------|---------------|
| Tusayan Gray                | 6094         | 58.42         |
| Little Colorado Gray        | 1133         | 10.86         |
| Homol’ovi Orange            | 367          | 3.52          |
| Homol’ovi Gray              | 252          | 2.42          |
| Alameda Brown               | 2335         | 22.39         |
| Mogollon Brown              | 12           | 0.12          |
| San Francisco Mountain Gray | 1            | 0.01          |
| Unknown Plain               | 237          | 2.27          |
| <b>TOTAL</b>                | <b>10431</b> | <b>100.00</b> |

#### *Tusayan Gray Ware*

This ware was described by Colton (1955) and more recently by Goetze and Mills (1993). They note this ware as having an extensive distribution including much of northeastern Arizona.

This ware is distinguished from other gray wares based on the presence of quartz sand temper. Over 90% of the sherds of this ware from Homol’ovi IV were jars.

Tusayan Gray Ware represents 36 % of the total ceramic assemblage (Table 8.1). Tusayan Indented Corrugated is characterized by finger-pinched coils and is the most predominate type (Table 8.18). Plain Tusayan Gray Ware was the next most common, and a small proportion of Moenkopi Corrugated was recovered. This type is characterized by flatten, clapboard (i.e., unpinched) corrugations.

#### *Little Colorado Gray Ware*

Goetze and Mills (1993) note that Little Colorado Gray Ware remains “poorly described.” At Homol’ovi IV, this ware is characterized by dark gray paste with a white sherd temper, and often some quantity of quartz sand. Most Little Colorado Gray Ware sherds from Homol’-ovi IV were jars. This ware comprises 7 % of the total assemblage (see Table 8.1), all indented corrugated (Table 8.18).

Table 8.18 Frequency of Plain Ware by type

| <i>Ware</i>                   | <i>Type</i>                 | <i>Frequency</i> | <i>Percent</i> | <i>Date (A.D.)</i> |
|-------------------------------|-----------------------------|------------------|----------------|--------------------|
| <b>Tusayan Gray</b>           | Indeterminate Plain         | 468              | 4.49           | -                  |
|                               | Indented Corrugated         | 5600             | 53.69          | 1040-1300+         |
|                               | Moenkopi Corrugated         | 26               | 0.25           | 1075-1300+         |
|                               | <b>Subtotal</b>             | 6094             | 58.42          |                    |
| <b>Little Colorado Gray</b>   | Indented Corrugated         | 1133             | 10.86          | 1040-1250+         |
| <b>Homol’ovi Orange/Gray</b>  | Indented Corrugated         | 493              | 4.73           | -                  |
|                               | Homol’ovi Tooled            | 1                | 0.01           | -                  |
|                               | Homol’ovi Plain             | 116              | 1.11           | -                  |
|                               | Homol’ovi Polished          | 9                | 0.09           | -                  |
|                               | <b>Subtotal</b>             | 619              | 5.93           |                    |
| <b>Alameda Brown</b>          | Indeterminate               | 28               | 0.27           | -                  |
|                               | Indeterminate Decorated     | 3                | 0.03           | -                  |
|                               | Rio de Flag Brown           | 3                | 0.03           | 650-1066           |
|                               | Angell Brown                | 41               | 0.39           | 1066-1400          |
|                               | Grapevine Brown             | 1213             | 11.63          | 1066-1400          |
|                               | Chavez Pass Brown           | 494              | 4.74           | -                  |
|                               | Kinnickinick Brown          | 389              | 3.73           | -                  |
|                               | Sunset Brown                | 164              | 1.57           | 1066-1400          |
|                               | <b>Subtotal</b>             | 2335             | 22.39          |                    |
| <b>San Francisco Mtn Gray</b> | Deadman’s Gray              | 1                | 0.01           | 775-1200           |
| <b>Mogollon Brown</b>         | Indeterminate               | 2                | 0.02           | -                  |
|                               | Brown Corrugated            | 7                | 0.07           | -                  |
|                               | Brown Polished              | 1                | 0.01           | -                  |
|                               | McDonald Painted Corrugated | 1                | 0.01           | -                  |
|                               | Showlow Black-on-red        | 1                | 0.01           | 1030-1200+         |
|                               | <b>Subtotal</b>             | 12               | 0.2            |                    |
| <b>Unknown Plain</b>          | Unknown Plain               | 68               | 0.65           | -                  |
|                               | Unknown Burned Corrugated   | 49               | 0.47           | -                  |
|                               | Unknown Burned Plain        | 87               | 0.83           | -                  |
|                               | Brown Plain                 | 1                | 0.01           | -                  |
|                               | Brown Corrugated            | 2                | 0.02           | -                  |
|                               | <b>Subtotal</b>             | 237              | 2.27           |                    |
| <b>TOTAL</b>                  |                             | <b>10431</b>     | <b>62.33</b>   |                    |

Indentations are not as regular or deep as those typically seen on Tusayan Indented Corrugated sherds.

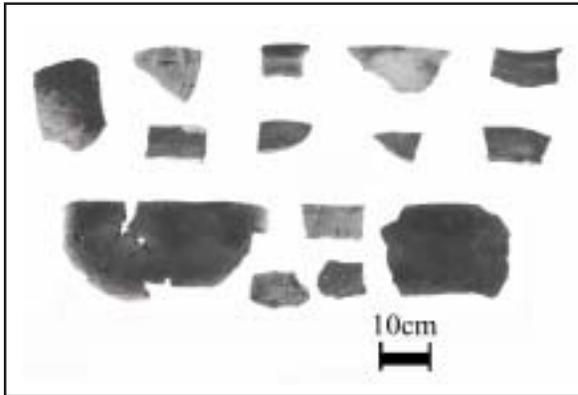


Figure 8.12 Tusayan Gray Ware, Mogollon Brown Ware, Little Colorado, and Homol'ovi Gray Ware

#### *Homol'ovi Orange and Gray Ware*

Homol'ovi Orange Ware was first described by Colton (1956) and has more recently been discussed by Hays (1991). Lyons (2001) and Lyons and Hays-Gilpin (2001) have carefully studied sourcing through refiring and temper analyses that demonstrate these wares were locally produced.

Individual sherds and vessels which have both orange and gray paste and surface color have been observed; therefore, the two wares are combined for discussion. The orange paste color is diagnostic, but for gray colored sherds, colored sand temper distinguishes Homol'ovi Orange and Gray from other gray wares. At Homol'ovi IV, jars are the predominate form.

Homol'ovi Orange and Gray Ware sherds make up roughly 4 % of the entire assemblage (Table 8.1). The most common type is Indented Corrugated, but sherds with uncorrugated surfaces were also present (see Table 8.18).

#### *Alameda Brown Ware*

Colton (1958) provided an early type description for Alameda Brown Ware. More recently Goetze and Mills (1993) described this ware. These sherds originate from the Flagstaff and Anderson Mesa areas southwest and west of Homol'ovi.

Alameda Brown Ware is distinguished from other red and brown ware by the combination of a red/brown to red surface which usually shows polishing marks, brown paste, and unique tempers. During analysis, Alameda Brown Ware sherds were recorded as having an "Alameda Brown Ware temper," however, distinct tempers determine type, and these tempers are presented in Table 8.19. The vast majority of Alameda Brown Ware sherds recovered from Homol'ovi IV were jars.

Table 8.19 Alameda Brown Ware types by temper

| Type         | Temper                          |
|--------------|---------------------------------|
| Rio de Flag  | Sanadine                        |
| Angell       | Tuft                            |
| Grapevine    | Limestone                       |
| Chavez Pass  | Sand and miscellaneous          |
| Kinnickinick | Crushed black and white granite |
| Sunset       | Volcanic rock                   |

Alameda Brown Ware comprises nearly 14% of the entire ceramic assemblage and 22% of the Plain Ware (Tables 8.1 and 8.17). Grapevine is by far the most prevalent type of Alameda Brown Wares representing over 11% of the assemblage (Table 8.18). Chavez Pass Brown and Kinnickinick Brown together account for over 4% of the Plain Ware assemblage.

#### *Indeterminate and Other Plain Wares*

A total of 237 sherds were not able to be assigned a ware category. Most indeterminate sherds were burned, hampering identification of attributes that would allow ware and type determinations (Table 8.20).

One sherd of San Francisco Mountain Gray Ware (Deadmans Gray) was recovered (see Table 8.18). The paste is gray, the temper is sand and mica, and the form is indeterminate. Twelve sherds of Mogollon Brown Ware were identified, most of which are jars, and one of which was a Showlow Black-on-red (Table 8.21).

Table 8.20 Unknown Plain Ware type by temper

| Type               | Temper                 | Freq.         | %      |       |
|--------------------|------------------------|---------------|--------|-------|
| Unknown Plain      | Fine                   | 1             | 0.42   |       |
|                    | Coarse colored sand    | 9             | 3.80   |       |
|                    | Sherd temper scarce    | 2             | 0.84   |       |
|                    | Sherd temper dominant  | 7             | 2.95   |       |
|                    | Mixed                  | 14            | 5.91   |       |
|                    | Indeterminate (burned) | 19            | 8.02   |       |
|                    | Fine quartz sand       | 7             | 2.95   |       |
|                    | Coarse quartz sand     | 9             | 3.80   |       |
|                    | <b>Subtotal</b>        |               | 68     | 28.69 |
|                    | Unkn. Burned Corr.     | Ind. (burned) | 79     | 33.33 |
| Unkn. Burned Plain | Coarse colored sand    | 1             | 0.42   |       |
|                    | Sherd temper dom.      | 2             | 0.84   |       |
|                    | Mixed                  | 3             | 1.27   |       |
|                    | Ind. (burned)          | 81            | 34.18  |       |
|                    | <b>Subtotal</b>        | 87            | 36.71  |       |
| Brown Plain        | Indeterminate (burned) | 1             | 0.42   |       |
| Brown Corrugated   | Coarse colored sand    | 2             | 0.84   |       |
|                    | <b>TOTAL</b>           | 237           | 100.00 |       |

Table 8.21 Mogollon Brown Ware Type by temper

| Type                 | Temper              | Freq. | %      |
|----------------------|---------------------|-------|--------|
| Brown Corr.          | Coarse colored sand | 2     | 16.67  |
|                      | Sherd temper scarce | 1     | 8.33   |
|                      | Mixed temper        | 4     | 33.33  |
|                      | <b>Subtotal</b>     | 7     | 58.33  |
| Brown Polished       | Fine temper         | 1     | 8.33   |
| McDonald Corr.       | Coarse quartz sand  | 1     | 8.33   |
| Showlow Black-on-red | Coarse quartz sand  | 1     | 8.33   |
| Indeterminate        | Fine quartz sand    | 2     | 16.67  |
|                      | <b>TOTAL</b>        | 12    | 100.00 |

### SITE CHRONOLOGY

Several datable types were recovered from Homol'ovi IV. Goetze and Mills (1993) recently refined dates for many Southwestern ceramic types by synthesizing previous work and using new data from the Transwestern pipeline project. These data have been expanded and revised by Adams (2001) and Mills and Herr (1999). Ceramic production

dates are provided in tables and text, and originate from these works unless otherwise noted in the tables.

Tsegi Orange Ware from Homol'ovi IV contained 1102 datable sherds (see Table 8.16). The most common types were produced from A.D. 1250 to A.D. 1325 and include Jeddito Black-on-orange (806 sherds), Jeddito Orange (122 sherds), Jeddito Slipped (69 sherds), and Jeddito Polychrome (59 sherds) (Table 8.22). Small quantities (from 3 to 10 sherds) of other datable types are present.

A total of 195 Tusayan White Ware sherds from five types with secure production ranges were identified at Homol'ovi IV (see Table 8.10). Tusayan Black-on-white (A.D. 1180 to A.D. 1300) was twice as common as any other typable Tusayan White Ware. The slightly earlier Flagstaff Black-on-white (A.D. 1150 to A.D. 1220) and the slightly later Kayenta Black-on-white (A.D. 1260 to A.D. 1300) were the next most common types. A small percentage of Dogoszhi Black-on-white (A.D. 1070 to A.D. 1180) was present, and a few other types were represented by a small quantity of sherds (Table 8.22).

Little Colorado White Ware included 33 typable, datable sherds (see Table 8.11). Walnut Black-on-white (A.D. 1100 to A.D. 1250) was by far the most common (20 sherds) (Table 8.22). Other types are only minimally represented (1 to 7 sherds) and include Padre Black-on-white (A.D. 1100 to A.D. 1250), earlier Holbrook A and B Black-on-white, and later Leupp Black-on-white.

Cibola White Ware at Homol'ovi IV contained six types (122 sherds) with known production dates (see Table 8.12). Forty-eight Snowflake sherds with a production date of 1100 to 1275 were recovered and 17 Tularosa Black-on-white sherds were recovered, having a production range of A.D. 1180 to A.D. 1300. Slightly earlier Puerco (A.D. 1030 to A.D. 1200) and Reserve Black-on-white (A.D. 1100 to A.D. 1200) are the next most common types (Table 8.22). Even earlier types of Red Mesa and

Escavada Black-on-white are present in very small quantities.

White Mountain Red Ware sherds included 21 Wingate Black-on-red/Polychrome sherds (A.D. 1050 to A.D. 1200), 11 St. Johns Black-on-red/Polychrome (A.D. 1200 to A.D. 1300), and 1 Pinedale Black-on-red/Polychrome (A.D. 1290 to A.D. 1330) (see Tables 8.14 and 8.22). Slightly later Roosevelt Red Ware includes nine Pinto Polychrome sherds (A.D. 1280 to A.D. 1330) and six Gila/Tonto Polychrome sherds (A.D. 1350 to A.D. 1400) (see Tables 8.15 and 8.22).

Indented Corrugated varieties of Tusayan Gray Ware (5600 sherds) and Little Colorado Gray ware (1133 sherds) are common at Homol'ovi IV and have production dates ranging from A.D. 1040 to A.D. 1300+ and A.D. 1040 to A.D. 1250+, respectively (see Table 8.18). Twenty-six sherds of Tusayan Gray Ware type Moenkopi Corrugated (A.D. 1075 to A.D. 1300+) were also present (Table 8.22).

Alameda Brown Ware types Angell Brown, Grapevine Brown, and Sunset Red/Brown have similar production date ranges (A.D. 1066 to A.D. 1400), and only three sherds of early Rio de Flag Brown were noted. A single sherd of Deadmans Gray (A.D. 775 to A.D. 1200) and a Showlow Black-on-red (A.D. 1030 to A.D. 1200) was also recovered.

Although the broadest possible production range for ceramic types recovered from Homol'ovi IV spans at least 800 years beginning in A.D. 650 with Rio de Flag Alameda Brown Ware (Table 8.18) and ending in A.D. 1400 with Gila/Tonto Polychrome (see Table 8.15), the ceramic collection suggest that the actual occupation of Homol'ovi IV was more temporally restricted.

Three of the four most common types in the collection (Tusayan and Little Colorado Indented Corrugated and Grapevine Brown) offer production date ranges spanning from 210+ to 334 years beginning in the mid A.D. 1000s and ending at A.D. 1250+ to 1400 (Table 8.22). Jeddito Black-on-orange is the most prevalent decorated type

Table 8.22 Prevalent Datable types at Homol'ovi IV

| <i>Type</i>                         | <i>Frequency (Percent)</i> | <i>Date (A.D.)</i> | <i>Range</i> |
|-------------------------------------|----------------------------|--------------------|--------------|
| Tusayan Indented Corrugated         | 5600 (33.46)               | 1040-1300+         | 260+         |
| Grapevine Brown                     | 1213 (7.25)                | 1066-1400          | 334          |
| Little Colorado Indented Corrugated | 1133 (6.77)                | 1040-1250+         | 210+         |
| Jeddito Black-on-orange             | 806 (4.82)                 | 1250-1325          | 75           |
| Sunset Red/Brown                    | 164 (0.98)                 | 1066-1400          | 334          |
| Jeddito Orange                      | 122 (0.73)                 | 1250-1325          | 75           |
| Tusayan Black-on-white              | 97 (0.58)                  | 1200-1300          | 100          |
| Jeddito Slipped                     | 69 (0.41)                  | 1250-1325          | 75           |
| Jeddito Polychrome                  | 59 (0.35)                  | 1250-1325          | 75           |
| Snowflake Black-on-white            | 48 (0.29)                  | 1100-1275          | 175          |
| Kayenta Black-on-white              | 42 (0.25)                  | 1260-1300          | 40           |
| Angell Brown                        | 41 (0.24)                  | 1066-1400          | 334          |
| Flagstaff Black-on-white            | 40 (0.24)                  | 1150-1220          | 70           |
| Puerco Black-on-white               | 26 (0.16)                  | 1030-1200          | 170          |
| Moenkopi Corrugated                 | 26 (0.16)                  | 1025-1300+         | 175+         |
| Wingate Black-on-red/Polychrome     | 21 (0.13)                  | 1050-1200          | 150          |
| Walnut Black-on-white               | 20 (0.12)                  | 1100-1250          | 150          |
| Reserve Black-on-white              | 18 (0.11)                  | 1100-1200          | 100          |
| Tularosa Black-on-white             | 17 (0.10)                  | 1180-1300          | 120          |
| St. Johns Black-on-red/Polychrom    | 11 (0.07)                  | 1200-1300          | 100          |
| Kiet Siel Polychrome                | 10 (0.06)                  | 1250-1300          | 50           |
| Tusayan Polychrome                  | 10 (0.06)                  | 1250-1300          | 50           |
| Pinto Polychrome                    | 9 (0.05)                   | 1280-1330          | 50           |

with a secure production range (A.D. 1250 to A.D. 1325), a range shared with other Tsegi Orange Ware types Jeddito Orange, Slipped, and Polychrome (Table 8.22). The production dates for a variety of common white ware types overlap with the production of Tsegi Orange Wares, excepting Puerco (A.D. 1030 to A.D. 1200) and Flagstaff Black-on-white (A.D. 1150-1220). However, the beginning production dates for these white wares is generally earlier (excepting Kayenta Black-on-white, A.D. 1260) ranging from A.D. 1000 to A.D. 1200.

As noted in the chronology chapter, ceramic production ranges indicate a population occupying Homol'ovi IV by the A.D. 1250's. A probable end date in the A.D. 1280's is suggested as much by what is absent as what is present.

### CERAMIC DESCRIPTIONS BY STRUCTURES

Only six of the structures – 2, 4, 5, 201, 301, 404 – had enough undisturbed proveniences to pro-

vide large enough sample sizes to allow description (Table 8.23-8.28). Table 8.29 summarizes the ceramics described in the structure summaries. These tables summarize the ceramics by ware with the exception of Tsegi Orange Ware, which is divided into two series – Tsegi and Jeddito. The structure tables are divided into various fill units, including fill, floor fill, floor and features, and subfloor fill. Fill represents ceramics introduced to the structure following its abandonment. Floor fill and floor are most clearly associated with the last use or earliest abandonment of the structure. Subfloor fill predates construction of the structure. The quantity of ceramics from the various fill units suggests the nature of the life history of that structure.

### Structure 2

Structure 2 was probably used as a ritual structure. The density of sherds in its fill suggests that it was used as a midden soon after its abandonment.

Table 8.23 Ceramic Ware inventory for Structure 2

| <i>PD/Ware</i>             | <i>Fill</i> | <i>Fl. Fill</i> | <i>Floor/Feat.</i> | <i>Subfloor</i> | <i>TOTAL</i> | <i>Percent</i> |
|----------------------------|-------------|-----------------|--------------------|-----------------|--------------|----------------|
| Winslow Orange Ware        | 172         | 2               | 4                  |                 | 178          | 14.75          |
| Tsegi Series               |             |                 |                    |                 |              | 0.00           |
| Jeddito Series             | 49          |                 | 2                  |                 | 51           | 4.23           |
| Jeddito Yellow Ware        | 13          |                 |                    |                 | 13           | 1.08           |
| White Mountain Red Ware    |             |                 |                    |                 |              | 0.00           |
| Roosevelt Red Ware         |             |                 |                    |                 |              | 0.00           |
| Hopi White Ware            | 16          |                 |                    |                 | 16           | 1.33           |
| Tusayan White Ware         | 32          | 2               | 3                  |                 | 37           | 3.06           |
| Little Colorado White Ware | 5           |                 |                    |                 | 5            | 0.41           |
| Cibola White Ware          | 23          | 1               |                    |                 | 24           | 1.99           |
| Unknown Decorated          | 10          |                 |                    |                 | 10           | 0.83           |
| <b>Total Decorated</b>     | <b>320</b>  | <b>5</b>        | <b>9</b>           |                 | <b>334</b>   | <b>27.67</b>   |
| Tusayan Gray Ware          | 530         | 13              | 30                 |                 | 573          | 47.47          |
| Little Colorado Gray Ware  | 125         | 4               |                    |                 | 129          | 10.69          |
| Homolovi Orange Ware       | 15          |                 | 11                 |                 | 26           | 2.15           |
| Homolovi Gray Ware         | 11          |                 |                    |                 | 11           | 0.91           |
| Alameda Brown Ware         | 117         |                 | 5                  |                 | 122          | 10.11          |
| Mogollon Brown Ware        |             |                 |                    |                 |              | 0.00           |
| San Francisco Gray Ware    |             |                 |                    |                 |              | 0.00           |
| Unknown Plain              | 12          |                 |                    |                 | 12           | 0.99           |
| <b>Total Plain</b>         | <b>810</b>  | <b>17</b>       | <b>46</b>          |                 | <b>873</b>   | <b>72.33</b>   |
| <b>TOTAL</b>               | <b>1130</b> | <b>22</b>       | <b>55</b>          |                 | <b>1207</b>  | <b>100.00</b>  |

Taken as a whole, structure 2 has an unusually low frequency, 27.7%, of decorated ceramics in comparison to the site average of 35.1% (Table 8.23). This divergence is attributable to a high frequency of Tusayan Gray Ware, 47.5%, probably representing fragments from several partially reconstructible jars. The decorated wares are dominated by Winslow Orange Ware at a frequency typical of the site as a whole. None of the other wares occurs at a frequency significantly different from the site average, except Tusayan White Ware and Jeddito Series, which are lower than the site average.

The floor assemblage has only 55 total sherds, again dominated by Tusayan Gray Ware with plain wares accounting for 83.6% of total ceramics. The only other unusual ware presence on the floor is the high frequency of Homolovi Orange Ware, which accounts for 20.0% of total floor ceramics.

The decorated assemblage cannot differentiate structure 2 from the rest of the site in terms of its time of occupation. The distribution of datable ceramics only places its occupation as relatively the same time as other structures at Homol'ovi IV. The seriation of ceramics also does not differentiate the structure's occupation from the other excavated structures.

#### Structure 4

Sherds probably the product of slope wash (Table 8.24). The 107 sherds attributed to floor fill indicates some trash accumulation immediately following abandonment of the structure. The distribution of sherds by ware from floor fill is consistent with the general patterns found for the entire site assemblage. For example, the decorated ceramics are dominated by Winslow Orange Ware and the plain ware is dominated by Tusayan Gray

Table 8.24 Ceramic Ware inventory for Structure 4

| <i>PD/Ware</i>             | <i>Fill</i> | <i>Fl. Fill</i> | <i>Floor/Feat.</i> | <i>Subfloor</i> | <i>TOTAL</i> | <i>Percent</i> |
|----------------------------|-------------|-----------------|--------------------|-----------------|--------------|----------------|
| Winslow Orange Ware        | 8           | 18              | 2                  | 75              | 103          | 15.33          |
| Tsegi Series               |             |                 |                    |                 |              | 0.00           |
| Jeddito Series             | 2           | 5               |                    | 56              | 63           | 9.38           |
| Jeddito Yellow Ware        | 2           | 1               |                    | 4               | 7            | 1.04           |
| White Mountain Red Ware    |             | 1               |                    | 1               | 2            | 0.29           |
| Roosevelt Red Ware         |             |                 |                    |                 |              | 0.00           |
| Hopi White Ware            | 3           | 6               |                    | 9               | 18           | 2.68           |
| Tusayan White Ware         |             | 6               |                    | 22              | 28           | 4.17           |
| Little Colorado White Ware |             | 1               |                    | 1               | 2            | 0.30           |
| Cibola White Ware          |             |                 |                    | 12              | 12           | 1.79           |
| Unknown Decorated          |             | 2               |                    | 11              | 13           | 1.93           |
| <b>Total Decorated</b>     | <b>15</b>   | <b>40</b>       | <b>2</b>           | <b>191</b>      | <b>248</b>   | <b>36.90</b>   |
| Tusayan Gray Ware          | 16          | 35              |                    | 205             | 256          | 38.09          |
| Little Colorado Gray Ware  | 1           | 1               |                    | 15              | 17           | 2.53           |
| Homolovi Orange Ware       |             | 3               |                    | 4               | 7            | 1.04           |
| Homolovi Gray Ware         |             | 6               |                    | 14              | 20           | 2.98           |
| Alameda Brown Ware         | 7           | 14              |                    | 74              | 95           | 14.14          |
| Mogollon Brown Ware        | 1           | 1               |                    |                 | 2            | 0.29           |
| San Francisco Gray Ware    |             |                 |                    |                 |              | 0.00           |
| Unknown Plain              | 1           | 7               |                    | 19              | 27           | 4.02           |
| <b>Total Plain</b>         | <b>26</b>   | <b>67</b>       |                    | <b>331</b>      | <b>424</b>   | <b>63.10</b>   |
| <b>TOTAL</b>               | <b>41</b>   | <b>107</b>      | <b>2</b>           | <b>522</b>      | <b>672</b>   | <b>100.00</b>  |

Ware, both consistent with general site trends. Considering that structures 4 and 5 were two of the last constructed at Homol'ovi IV, these ceramic trends illustrate the lack of differentiation in the ceramics throughout the occupation life at the village. There is no way to differentiate structures or deposits within or between structures consistently from one another.

This fact is underscored when the ceramic assemblage from the fill below the floor of structure 4 is compared to that of the fill from structure 4. The only significant difference between the two assemblages is that there is twice the frequency of Jeddito Series orange ware in the subfloor assemblage. This, however, is not a chronological effect and, because the subfloor assemblage is five times the size of the fill assemblage, could easily be the product of sample size, as could any of the other slight differences in the two assemblages. Of particular chronological notes is the absence of Homolovi Polychrome from either assemblage of Winslow Orange Ware. This type has been determined to be slightly later in its

production than the other types in this ware (Adams 2002; Lyons and Hays-Gilpin 2001).

### Structure 5

Structure 5 is the companion to structure 4. The two structures are the product of the later division of one structure. The subfloor deposits are continuous beneath the floor of structures 4 and 5. The frequency of sherds in the fill of structure 5 is half of that in structure 4 and there are no floor fill ceramics. These trends suggest the fill of the structure is natural and the sherds probably originate from slope wash. There are only 21 sherds on the floor, too low a frequency to make any statistically relevant conclusions.

In contrast, over 1600 sherds were collected from the subfloor of structure 5 (Table 8.25). The frequency and diversity of ceramics from the subfloor of structure 5 is quite similar to that beneath the floor of structure 4, supporting the depo-

Table 8.25 Ceramic Ware inventory for Structure 5

| <i>PD/Ware</i>             | <i>Fill</i> | <i>Fl. Fill</i> | <i>Floor/Feat.</i> | <i>Subfloor</i> | <i>TOTAL</i> | <i>Percent</i> |
|----------------------------|-------------|-----------------|--------------------|-----------------|--------------|----------------|
| Winslow Orange Ware        | 3           |                 | 5                  | 218             | 226          | 13.45          |
| Tsegi Series               |             |                 |                    | 7               | 7            | 0.42           |
| Jeddito Series             | 3           |                 | 1                  | 129             | 133          | 7.92           |
| Jeddito Yellow Ware        |             |                 |                    | 17              | 17           | 1.01           |
| White Mountain Red Ware    | 3           |                 |                    | 3               | 6            | 0.36           |
| Roosevelt Red Ware         |             |                 |                    | 1               | 1            | 0.06           |
| Hopi White Ware            |             |                 |                    | 24              | 24           | 1.43           |
| Tusayan White Ware         | 5           |                 |                    | 128             | 133          | 7.92           |
| Little Colorado White Ware |             |                 |                    | 4               | 4            | 0.24           |
| Cibola White Ware          |             |                 |                    | 9               | 9            | 0.54           |
| Unknown Decorated          |             |                 | 1                  | 51              | 52           | 3.10           |
| <b>Total Decorated</b>     | <b>14</b>   |                 | <b>7</b>           | <b>591</b>      | <b>612</b>   | <b>36.43</b>   |
| Tusayan Gray Ware          | 3           |                 | 9                  | 615             | 637          | 37.92          |
| Little Colorado Gray Ware  |             |                 |                    | 24              | 24           | 1.43           |
| Homolovi Orange Ware       |             |                 |                    | 13              | 13           | 0.77           |
| Homolovi Gray Ware         |             |                 |                    | 53              | 53           | 3.15           |
| Alameda Brown Ware         | 31          |                 | 2                  | 243             | 276          | 16.43          |
| Mogollon Brown Ware        |             |                 |                    | 3               | 3            | 0.18           |
| San Francisco Gray Ware    |             |                 |                    |                 | 0            | 0.00           |
| Unknown Plain              |             |                 | 3                  | 59              | 62           | 3.69           |
| <b>Total Plain</b>         | <b>44</b>   |                 | <b>14</b>          | <b>1010</b>     | <b>1068</b>  | <b>63.57</b>   |
| <b>TOTAL</b>               | <b>58</b>   |                 | <b>21</b>          | <b>1601</b>     | <b>1680</b>  | <b>100.02</b>  |

sitional evidence learned from excavation of the area. For example, the frequency of decorated ceramics is within 0.5%. The frequency of the most common types, Winslow Orange Ware, Tusayan Gray Ware, and Alameda Brown Ware are all within 1.0% of each other. The assemblages cannot be differentiated statistically. The only differences are within the smaller frequency ceramics where Tusayan White Ware is nearly twice as frequent in the structure 5 subfloor assemblage and the Jeddito Series is nearly 50% more common in the structure 4 subfloor assemblage. As with structure 4, there are no Homolovi Polychrome types within the large assemblage of Winslow Orange Ware within structure 5 or beneath its floor.

### Structure 201

Structure 201 has the largest total ceramic as-

semblage of any excavated structure at Homol'ovi IV, slightly larger than that of structure 5 (Table 8.26). The two structures account for 50% of the total structure assemblage at Homol'ovi IV. The distribution of the assemblage is heavily weighted toward the midden deposits below the floor of the structure, which accounts for 73% of the assemblage. A small assemblage of partially reconstructible vessels of Jeddito Yellow Ware and Tusayan Gray Ware were recovered from the fill and floor fill of the structure. These may represent de facto refuse, or artifacts reused and left when the structure was abandoned. As a total assemblage, the ceramics from structure 201 have fewer Tusayan Gray Ware, which is balanced by slightly higher frequencies of Homolovi Orange and Gray Ware and Little Colorado Gray Ware. The Winslow Orange Ware frequency is slightly below the site average.

Table 8.26 Ceramic Ware inventory for Structure 201

| <i>PD/Ware</i>             | <i>Fill</i> | <i>Fl. Fill</i> | <i>Floor/Feat.</i> | <i>Subfloor</i> | <i>TOTAL</i> | <i>Percent</i> |
|----------------------------|-------------|-----------------|--------------------|-----------------|--------------|----------------|
| Winslow Orange Ware        | 43          |                 | 21                 | 170             | 234          | 13.40          |
| Tsegi Series               |             |                 |                    | 4               | 4            | 0.23           |
| Jeddito Series             | 4           |                 |                    | 110             | 114          | 6.53           |
| Jeddito Yellow Ware        | 17          |                 |                    | 4               | 21           | 1.20           |
| White Mountain Red Ware    |             |                 | 2                  | 3               | 5            | 0.29           |
| Roosevelt Red Ware         |             |                 |                    | 6               | 6            | 0.34           |
| Hopi White Ware            | 4           |                 | 7                  | 25              | 36           | 2.06           |
| Tusayan White Ware         | 18          |                 | 14                 | 95              | 127          | 7.27           |
| Little Colorado White Ware |             |                 |                    | 16              | 16           | 0.92           |
| Cibola White Ware          |             |                 |                    | 51              | 51           | 2.92           |
| Unknown Decorated          |             |                 |                    | 19              | 19           | 1.09           |
| <b>Total Decorated</b>     | <b>86</b>   |                 | <b>44</b>          | <b>503</b>      | <b>633</b>   | <b>36.25</b>   |
| Tusayan Gray Ware          | 137         |                 | 85                 | 332             | 554          | 31.73          |
| Little Colorado Gray Ware  | 5           |                 | 3                  | 150             | 158          | 9.05           |
| Homolovi Orange Ware       | 8           |                 | 10                 | 36              | 54           | 3.09           |
| Homolovi Gray Ware         | 6           |                 | 5                  | 74              | 85           | 4.87           |
| Alameda Brown Ware         | 3           |                 | 27                 | 181             | 251          | 14.38          |
| Mogollon Brown Ware        | 1           |                 |                    |                 | 1            | 0.06           |
| San Francisco Gray Ware    | 1           |                 |                    |                 | 1            | 0.06           |
| Unknown Plain              | 5           |                 | 4                  |                 | 9            | 0.52           |
| <b>Total Plain</b>         | <b>206</b>  |                 | <b>134</b>         | <b>773</b>      | <b>1113</b>  | <b>63.75</b>   |
| <b>TOTAL</b>               | <b>292</b>  |                 | <b>178</b>         | <b>1276</b>     | <b>1746</b>  | <b>100.01</b>  |

For the fill portion of the structure, the frequency of Jeddito Yellow Ware is 5.82%, five times the site average (Table 8.29). These are primarily from varieties of the type, Huckovi, manufactured between 1250 and 1325 at villages on the Hopi Mesas. The Winslow Orange Ware in the fill of the structure contains four Homolovi Polychrome sherds; whereas, the subfloor fill contains another two. These low frequencies of Homolovi Polychrome (6.35% in the fill and floor fill, and 1.18% in the subfloor) are in accord with their low frequency (5.91%) in the Founder Phase at Homol'ovi III, which is dated at 1280-1290 (Adams 2001:table 7.9; Lyons and Hays-Gilpin 2001:table 8.5). There are no typological differences between the assemblages in the fill of the structure and those beneath the floor of the structure and, thus, they cannot be differentiated temporally.

### Structure 301

The ceramic assemblage of structure 301 is distributed much like that of structure 201; that is, predominantly from trash deposits beneath the floor of the structure accounting for 80% of the sherds from structure 301 (Table 8.27). The fill through floor assemblage of the structure is dominated by decorated ceramics, especially Winslow Orange Ware. This results from a similar pattern in structure 201 where a partially reconstructible vessel accounts for the high frequency of sherds.

The subfloor assemblage is a little different from the fill and floor fill in having fewer Winslow Orange Ware than the site average while still having 3% more decorated ceramics. This is due to higher frequencies in almost every other decorated ware than the site average, including Jeddito Series, White Mountain Red Ware, Roosevelt Red

Table 8.27 Ceramic Ware inventory for Structure 301

| <i>PD/Ware</i>             | <i>Fill</i> | <i>Fl. Fill</i> | <i>Floor/Feat.</i> | <i>Subfloor</i> | <i>TOTAL</i> | <i>Percent</i> |
|----------------------------|-------------|-----------------|--------------------|-----------------|--------------|----------------|
| Winslow Orange Ware        | 48          | 14              | 3                  | 101             | 166          | 15.96          |
| Tsegi Series               |             | 1               |                    | 17              | 18           | 1.73           |
| Jeddito Series             | 7           |                 |                    | 65              | 72           | 6.92           |
| Jeddito Yellow Ware        |             |                 |                    | 1               | 1            | 0.10           |
| White Mountain Red Ware    |             |                 |                    | 9               | 9            | 0.87           |
| Roosevelt Red Ware         |             |                 |                    | 8               | 8            | 0.77           |
| Hopi White Ware            | 1           | 2               |                    | 9               | 12           | 1.15           |
| Tusayan White Ware         | 9           | 6               | 1                  | 73              | 89           | 8.56           |
| Little Colorado White Ware |             |                 |                    | 15              | 15           | 1.44           |
| Cibola White Ware          |             |                 |                    | 18              | 18           | 1.73           |
| Unknown Decorated          | 1           | 3               | 1                  | 1               | 6            | 0.58           |
| <b>Total Decorated</b>     | <b>66</b>   | <b>26</b>       | <b>5</b>           | <b>317</b>      | <b>414</b>   | <b>39.81</b>   |
| Tusayan Gray Ware          | 32          | 11              | 11                 | 196             | 250          | 24.04          |
| Little Colorado Gray Ware  | 7           | 2               | 2                  | 37              | 48           | 4.62           |
| Homolovi Orange Ware       | 10          | 1               | 2                  | 45              | 58           | 5.58           |
| Homolovi Gray Ware         | 1           | 1               |                    | 42              | 44           | 4.23           |
| Alameda Brown Ware         | 9           | 9               | 3                  | 154             | 175          | 16.83          |
| Mogollon Brown Ware        | 1           |                 |                    | 5               | 6            | 0.58           |
| San Francisco Gray Ware    |             |                 |                    |                 | 0            | 0.00           |
| Unknown Plain              | 3           | 6               | 3                  | 33              | 45           | 4.33           |
| <b>Total Plain</b>         | <b>63</b>   | <b>30</b>       | <b>21</b>          | <b>512</b>      | <b>626</b>   | <b>60.19</b>   |
| <b>TOTAL</b>               | <b>129</b>  | <b>56</b>       | <b>26</b>          | <b>829</b>      | <b>1040</b>  | <b>100.02</b>  |

Ware, Tsegi Series, and Little Colorado White Ware (Table 8.29). Two sherds of St. Johns Polychrome are among the White Mountain Red Ware along with one Pinto Polychrome in the Roosevelt Red Ware. Overlap of the production of these two types is between 1280 and 1300 (see Table 8.22). For the plain wares, Tusayan Gray Ware is significantly under-represented making up less than a quarter of the assemblage. The combination of Homolovi Gray and Orange wares account for over 10.5%, nearly double their site average. Locally produced plain wares dominate the Homol'ovi III assemblage, accounting for over 95% in structure 34, the earliest excavated structure at Homol'ovi III. In contrast, Tusayan Gray Ware accounted for less than 2% of the gray ware assemblage in this structure Lyons and Hays-Gilpin 2001:table 8.9). In contrast, at Homol'ovi IV, Tusayan Gray Ware accounts for 36% in contrast to the Homolovi plain wares, which account for less than 4% (Table 8.1). Although the differences between Homol'ovi III and IV may not

be all temporal, the higher frequency in the fill and subfloor assemblages of structure 301 suggest that the transition from imported to locally produced gray wares may be taking place during the time structure 301 was built, used, and abandoned. Structure 34 is dated to the 1280s at Homol'ovi III, suggesting the structure 301 assemblage might date to this decade (Adams 2001:93-96).

#### Structure 404

Structure 404 is the highest upslope structure excavated by HRP at Homol'ovi IV. Its fill was considerably disturbed resulting in only 69 sherds attributable to undisturbed deposits (Table 8.28). All the ceramics come from the fill because the structure was built on and around a boulder. Nearly half the assemblage is Tusayan Gray Ware with Little Colorado Gray Ware another 19%. Only 17% of the assemblage is decorated split between 9 sherds of Tuwiuca Orange and 3 of Jeddito Black-on-orange.

Table 8.28 Ceramic Ware inventory for Structure 404

| <i>PD/Ware</i>             | <i>Fill</i> | <i>Fl. Fill</i> | <i>Floor/Feat.</i> | <i>Subfloor</i> | <i>TOTAL</i> | <i>Percent</i> |
|----------------------------|-------------|-----------------|--------------------|-----------------|--------------|----------------|
| Winslow Orange Ware        | 9           |                 |                    |                 | 9            | 13.04          |
| Tsegi Series               |             |                 |                    |                 |              | 0.00           |
| Jeddito Series             | 3           |                 |                    |                 | 3            | 4.35           |
| Jeddito Yellow Ware        |             |                 |                    |                 |              | 0.00           |
| White Mountain Red Ware    |             |                 |                    |                 |              | 0.00           |
| Roosevelt Red Ware         |             |                 |                    |                 |              | 0.00           |
| Hopi White Ware            |             |                 |                    |                 |              | 0.00           |
| Tusayan White Ware         |             |                 |                    |                 |              | 0.00           |
| Little Colorado White Ware |             |                 |                    |                 |              | 0.00           |
| Cibola White Ware          |             |                 |                    |                 |              | 0.00           |
| Unknown Decorated          |             |                 |                    |                 |              | 0.00           |
| <b>Total Decorated</b>     | <b>12</b>   |                 |                    |                 | <b>12</b>    | <b>17.39</b>   |
| Tusayan Gray Ware          | 34          |                 |                    |                 | 34           | 49.28          |
| Little Colorado Gray Ware  | 13          |                 |                    |                 | 13           | 18.84          |
| Homolovi Orange Ware       |             |                 |                    |                 |              | 0.00           |
| Homolovi Gray Ware         |             |                 |                    |                 |              | 0.00           |
| Alameda Brown Ware         | 10          |                 |                    |                 | 10           | 14.49          |
| Mogollon Brown Ware        |             |                 |                    |                 |              | 0.00           |
| San Francisco Gray Ware    |             |                 |                    |                 |              | 0.00           |
| Unknown Plain              |             |                 |                    |                 |              | 0.00           |
| <b>Total Plain</b>         | <b>57</b>   |                 |                    |                 | <b>57</b>    | <b>82.61</b>   |
| <b>TOTAL</b>               | <b>69</b>   |                 |                    |                 | <b>69</b>    | <b>100.00</b>  |

## CONCLUSIONS

The ceramic assemblage recovered during one summer of excavations from Homol'ovi IV reflects a broad cross-section of wares and types produced on the southern Colorado Plateau and through the Little Colorado River Valley during the latter half of the 13<sup>th</sup> century. The assemblage reflects the beginnings of the Winslow Orange Ware tradition that flourished through the mid-1300s in later villages to the east of Homol'ovi IV. As noted by Lyons (2001, 2003) and Hays et al. (1996), the Winslow Orange Ware tradition is the locally produced version of various ceramic traditions being practiced by villages occupying the Hopi Mesas at the same time. This is especially true in the strong stylistic similarity between Jeddito Black-on-orange, produced on and around the Hopi Mesas, and Tuwiuca Black-on-orange, produced at Homol'ovi IV (Lyons 2001; Hays et al. 1996). Tuwiuca Orange and Black-on-orange account for 95% of the types in the Winslow Orange Ware assemblage.

Chronologically, the tree-ring dated ceramics date the occupation of Homol'ovi IV as no earlier than 1250 and no later than 1300, with most likely dates of founding in the 1250s and abandonment in the 1280s. Dating of the founding of Homol'ovi III to the 1280s (Adams 2001, 2003), suggests the one may have been abandoned when the other was founded. Adams (2003) suggests a strong possibility that the occupants of Homol'ovi IV founded or moved to Homol'ovi I.

The ceramic assemblage also clearly indicates the strong trade ties maintained by Homol'ovi IV with its neighbors. The largest percentage of the exchanged assemblage originated to the north, probably villages near the Hopi Mesas, which accounts for 51% of the assemblage (Table 8.1). The next highest frequency at 14% is Alameda

Brown Ware, which was made in a few villages on Anderson Mesa (Bernardini and Brown 2004). Locally produced ceramics account for only 22% of Homol'ovi IV ceramics. A total of 7.7% originated in the Hopi Buttes between Homol'ovi and the Hopi Mesa; whereas, the remainder of the identifiable assemblage (3.35%) originated from the south or southeast in the White Mountains and Mogollon Rim regions. Homol'ovi IV was situated to facilitate exchange between Hopi Mesa villages and those on Anderson Mesa. Winslow Orange Ware and later Jeddito Yellow Ware dominate the decorated assemblages at Anderson Mesa villages (Bernardini and Brown 2004).

Table 8.29 Ceramic Ware inventory for all structures

| <i>PD/Ware</i>             | <i>TOTAL</i> | <i>Percent</i> |
|----------------------------|--------------|----------------|
| Winslow Orange Ware        | 916          | 14.28          |
| Tsegi Series               | 29           | 0.45           |
| Jeddito Series             | 436          | 6.80           |
| Jeddito Yellow Ware        | 59           | 0.92           |
| White Mountain Red Ware    | 22           | 0.34           |
| Roosevelt Red Ware         | 15           | 0.23           |
| Hopi White Ware            | 106          | 1.65           |
| Tusayan White Ware         | 414          | 6.45           |
| Little Colorado White Ware | 42           | 0.65           |
| Cibola White Ware          | 114          | 1.78           |
| Unknown Decorated          | 100          | 1.56           |
| <b>Total Decorated</b>     | <b>2253</b>  | <b>35.13</b>   |
| Tusayan Gray Ware          | 2304         | 35.92          |
| Little Colorado Gray Ware  | 389          | 6.06           |
| Homolovi Orange Ware       | 158          | 2.46           |
| Homolovi Gray Ware         | 213          | 3.32           |
| Alameda Brown Ware         | 929          | 14.48          |
| Mogollon Brown Ware        | 12           | 0.19           |
| San Francisco Gray Ware    | 1            | 0.02           |
| Unknown Plain              | 155          | 2.42           |
| <b>Total Plain</b>         | <b>4161</b>  | <b>64.87</b>   |
| <b>TOTAL</b>               | <b>6414</b>  | <b>99.98</b>   |

# Chapter Nine

## Ground Stone: A Behavioral Perspective

William Walker

### INTRODUCTION

The ground stone assemblage recovered from this site represents a theoretical challenge for ground stone research. By conventional standards this site's ground stone assemblage is a poor one. Most artifacts derive from various kinds of secondary refuse deposits (*sensu* Schiffer 1976). A large number come from plaza strata (143 cases) while a much smaller number (48 cases) derive from the fill and floor contexts of the structures (see Table 9.1). The fragmentary and incomplete nature of these data suggests that ground stone analysts need to begin looking beyond the primary use contexts of their artifacts (e.g., grinding, abrading or chopping activities) to other behaviors and problems.

There are only a few whole artifacts in this assemblage. The majority are fragmentary and

amorphously-shaped stones recognized solely by the presence of worn or shaped surfaces. Many have been burned and more than 50% of these fragments fall within the typological category "miscellaneous," which includes both the hearth refuse and unknown categories.

This Homol'ovi IV assemblage challenges us to consider alternative empirical observations that link behaviors such as reuse, recycling and discard to the study of human activities and the past. Only a handful of published papers have addressed the secondary uses and depositional behaviors associated with ground stone assemblages (Adams 1994; Hayden 1987b; Schlanger 1991). Such data expose the importance of the use and reuse of ground stone artifacts in walls, roasting pits, hearths, and various unknown tasks involving expedient grinding.

Table 9.1 Artifact Frequency and Provenience

| Structure             | 2 | 4 | 5 | 10 | 201 | 301 | 404 | Plaza Fill | N=  |
|-----------------------|---|---|---|----|-----|-----|-----|------------|-----|
| Misc. (Hearth refuse) | 5 | - | - | 1  | 15  | -   | -   | 45         | 66  |
| Misc. Unknown         | 2 | - | - | 2  | 2   | -   | 1   | 45         | 52  |
| Manos                 | - | - | - | 1  | 5   | 2   | 2   | 25         | 35  |
| Abraders              | - | - | - | -  | 2   | -   | -   | 08         | 10  |
| Metates               | 1 | - | - | -  | -   | 1   | -   | 05         | 07  |
| Possible Piki         | - | - | - | -  | 1   | -   | -   | 05         | 06  |
| Polishing Stones      | - | - | - | -  | 1   | -   | -   | 04         | 05  |
| Palettes              | - | - | - | -  | 1   | -   | -   | 03         | 04  |
| Hoes                  | - | - | - | -  | -   | -   | -   | 03         | 03  |
| Axes                  | - | - | - | -  | -   | 1   | -   | -          | 01  |
| Maul                  | 1 | - | - | -  | -   | -   | -   | -          | 01  |
| Stone Bowl            | - | - | - | -  | -   | 1   | -   | -          | 01  |
| Total                 | 9 | - | - | 4  | 27  | 5   | 3   | 143        | 191 |

The reconstruction of an artifact's entire life history highlights the immediate processes forming the archaeological record and frequently the behaviors of individuals and groups that do not occur in the acquisition and primary use-life stages of an object. By focusing on the lesser known behaviors associated with these artifacts, such as reuse and discard, we can explore the ground stone variability in wall and roof fall, middens, and floor fill. These contexts provide clues to the timing of events in the growth and abandonment of the site.

### THE ASSEMBLAGE

The remnants of a range of traditional ground stone artifact types were recovered from this site. These included metates, manos, flat and grooved abraders, axes, mauls, hoes, palettes, polishing stones, griddles, and an argillite stone bowl. The majority of the assemblage is composed of worn out and reused artifacts. The relative richness (*sensu* Kintigh 1984) of the assemblage is heavily skewed towards miscellaneous unidentifiable fragments (50%+). This variability highlights the effects of sample size, differential discard rates, and probably a significant amount of prehistoric reuse and reclamation activities (see Schiffer 1987).

Ninety-four percent of the ground stone artifacts are fragmentary, defined in this case as absence of more than half of the original artifact. Nevertheless, even the whole ( $n=11$ ) artifacts did not necessarily represent good examples of grinding technology. Instead their wholeness may indicate they had specialized secondary uses such as construction materials, ritual offerings, or hearth architecture. Two manos, for example, recovered from wall and roof contexts, may have been reused as wall stones. Whole objects include one worn mano, four polishing stones, one severely battered maul, one argillite bowl, and four abraders. Among the best representatives of artifacts discarded at the end of their primary uses are two pebble polishing stones that, like the worn out

quartzite maul, were not well suited for the specialized secondary uses mentioned above. The uses of the argillite bowl remain largely unknown, but it is argued that its deposition was ceremonial in nature.

Slightly more than half of the artifacts recovered were classified as miscellaneous. This category was subdivided into three classes: piki/griddle remains, hearth feature refuse, and miscellaneous unidentified.

In addition to reuse activities, evidence from the last occupied structures suggests that abandonment and reclamation processes also accounted for the lack of pristine primary tools. These structures appear to have been constructed last, based on their stratigraphic relationship with the plaza fill and the abutment/bonding of their walls with structures higher up the slope (see chapters on architecture and chronology). These data indicate that the oldest structures were constructed on the top of the butte and through time whole tiers of rooms were built across the faces of the hill at lower and lower elevations.

Within the excavated structures there were no deep midden deposits comparable to the ceramic bowl dump found on the northeast edge of the plaza. Instead, the majority of artifacts were found in wall fall and roof collapse deposits as well as deposits washed down from higher on the butte. Grinding features had been prehistorically dismantled at the time of abandonment. Metates had been removed from milling bins, such as structure 301, and even some of the bins themselves appear to have been salvaged for use elsewhere (see structure 2). The presence of two large pueblos, Homol'ovi I, Homol'ovi III, and Chevelon constructed about the time of Homol'ovi IV's abandonment, suggests the possibility that people from Homol'ovi IV moved with their more valuable ground stone implements to Homol'ovi I, the closer of these sites. Alternatively, the occupants of Homol'ovi I and later Homol'ovi II could have salvaged usable materials including ground stone from Homol'ovi IV.

Structure 201 was exceptional for the sheer volume of its artifacts. Most of these objects fall under the miscellaneous category of hearth refuse, including burnt and abraded objects that have been used in fires.

The floor of structure 301 contained a well-fashioned argillite bowl. XRF analysis indicates the bowl came from argillite sources in the Verde or Prescott Valley area. This bowl may have been an abandonment offering as it would have been valuable, easily transported and, though small, not easily lost. The remainder of the floor assemblage was lost due to extensive vandalism of the room.

Many of the artifacts were burned. Eleven of the recovery units contained both unburned and burned pieces. This suggests that the burning occurred before deposition and that artifacts found in association may not have been used together prior to discard.

### MATERIALS

Most of the artifacts were fashioned from local sandstone deposits of the Shinarump and Moenkopi formations (see Mckee 1954; Smith 1957): 66% from Moenkopi sandstone, 24% from Shinarump sandstone and 10% from various basalts and unknown materials sourced at least 15 km from the site.

Homol'ovi IV is situated on a butte composed predominantly of Moenkopi sandstone with remnant Shinarump cobbles around its base. Numerous buttes with combinations of Moenkopi and the overlying Shinarump formation rise above the local landscape and would have provided expedient sources of raw materials. Fratt (1991:62) found a higher percentage of Shinarump than Moenkopi ground stone objects at the site of Homol'ovi II. The opposite relation at Homol'ovi IV may be a function of the abundance of Moenkopi material on and near the site or the preferential salvaging of Shinarump artifacts for reuse elsewhere.

One butte of Shinarump on the east side of the river has been identified as a formal ground stone quarry. Flake debitage and tool blanks have been recovered there. This quarry may have been frequented by people living at Homol'ovi I and II.

Exceptional or exotic artifacts e.g., the axe, two grooved abraders, a shaft smoother, the argillite bowl mentioned before, vesicular cylinder, and two hoes come from at least 15 km away. A few artifacts such as the axe, shaft smoothers, one grooved abraded (a reused mano), and the vesicular cylinder were fashioned from igneous materials that may have come for the San Francisco Peaks or the Mogollon Mountains to the south.

### Manos

The remains of 35 manos were recovered, four of which are whole. These artifacts were used initially along with metates in a stone-on-stone grinding kit. The end of only one mano was worn, indicative of use in a trough metate. Two other mano pieces whose ends were missing could not be identified as used with either trough or slab metates. Apparently none of the manos had been used in basin metates.

Four whole manos were recovered and one of these was an unused blank (See Table 9.2 and Figure 9.1). This blank came from the fill of structure 404, one of the last structures built at the pueblo. Two other whole manos also came from late structures. One worn mano was recovered from the roof fall of structure 301. This artifact was probably reused within the roof or wall architecture.

Table 9.2 Whole Mano Measurements

|            | Length | Width | Thickness | Location   |
|------------|--------|-------|-----------|------------|
| Mano Blank | 28cm   | 11cm  | 4cm       | Str 404    |
| Worn Mano  | 25cm   | 11cm  | 1cm       | Str 201    |
| Worn Mano  | 23cm   | 10cm  | 2cm       | Str 301    |
| Worn Mano  | 19cm   | 8cm   | 3cm       | Plaza Fill |



Figure 9.1 Whole, flat, one-sided, manos.

Another whole but worn mano, exhibiting reuse as a lapstone, was recovered from the fill of structure 201. During its life history it had been worn flat on a slab metate, and when too thin for further grinding was reused as a netherstone for some other grinding task. This task resulted in a concave grinding surface. Pecking marks on this surface also demonstrate that it was periodically roughened up to give it a more abrasive texture (see Adams 1993). Only the mano recovered from plaza fill had been burned.

The mano remains (whole and fragmentary) exhibited cross-sections with one or two opposite surfaces, two adjacent surfaces, or three or four surfaces (see Table 9.3 and Figures 9.2 and 9.3), as well as a range of material textures, and sandstone types. One interesting hand stone was quarried from a sandstone deposit completely infused with limonite. Its powdery yellow appearance prompted the excavator to describe it as a limonite cake. This artifact has a loaf shaped cross-section and had been ground on a flat metate. Its use surface, however, was not worn smooth because grinding tended to pull of pieces off the surface rather than wear it

down smoothly (see Adams 1993 discussion of adhesive wear). This artifact may have been used solely as a source of yellow pigment.



Figure 9.2 Whole and fragmentary two opposite sided manos

The variation in mano morphology as measured by cross-section shape was compared between manos recovered from the sites of Homol'ovi IV and Homol'ovi III (Tables 9.3 and 9.4). The distributions were almost identical in both samples. Although the Homol'ovi III assemblage has a higher percentage of trough manos, they were still relatively low in frequency. The much larger sample from Homol'ovi III, therefore, suggests that the low frequency at Homol'ovi IV is not anomalous. In general the patterns are quite similar.

In both assemblages manos designed for use on flat metates predominate. In both assemblages manos in various states of reduction occur in approximately equal proportions. It is interesting that in both site assemblages and probably in most pueblo assemblages the frequency of mano remains exceeds that of metate remains.

Table 9.3 Mano Cross-Section Configurations Homol'ovi IV

| Metate  | 1 or 2 Opposite Surfaces | 3 or 4 Surfaces | 2 Adjacent Surfaces | Indeterminate | N  |
|---------|--------------------------|-----------------|---------------------|---------------|----|
| Flat    | 10                       | 8               | 9                   | 3             | 30 |
| Trough  | 1                        | -               | -                   | -             | 1  |
| Unknown | -                        | 2               | -                   | 2             | 4  |
| Total   | 11                       | 10              | 9                   | 5             | 35 |

Table 9.4 Mano Cross-Section Configurations Homol'ovi III

| Metate  | 1 or 2 Opposite Surfaces | 3 or 4 Surfaces | 2 Adjacent Surfaces | Indeterminate | N   |
|---------|--------------------------|-----------------|---------------------|---------------|-----|
| Flat    | 63                       | 40              | 43                  | 8             | 154 |
| Trough  | 7                        | 6               | 2                   | 1             | 16  |
| Unknown | 32                       | 54              | 10                  | 27            | 123 |
| Total   | 102                      | 100             | 55                  | 36            | 293 |



Figure 9.3 Adjacent two-sided and three-sided manos

### Metates

Seven metate fragments were recovered. Only three could be classified, and these belonged to flat metates (see Figure 9.4). Flat metates and grinding bins are components of a technology commonly found in post-A.D. 1000 ancestral Pueblo sites. Structure 2, a small subterranean room in the plaza, may have been a ceremonial grinding room comparable to earlier grinding structures found in the Pueblo II sites of Black Mesa (see chapter on Architecture).

Both historically and prehistorically, Pueblo peoples reused and recycled ground stone artifacts (Schlanger 1991:469). Given that the pueblo itself was not occupied for more than 25-30 years, it is important to realize that the use-life of a typical metate may have been longer than the pueblo itself. The long use-lives of such objects, the dismantling of some grinding bins, and the possibility of migration to nearby settlements (Homol'ovi I) suggest that the short occupation of Homol'ovi IV would have mitigated against finding whole metates at the site. Instead the fragments recovered may actually be the residue of artifacts manufactured in the earliest years of the occupation and perhaps earlier.



Figure 9.4 Metates

Five of the fragments were recovered from plaza fill contexts while two others were recovered from the floor and fill contexts of rooms. Two of the plaza fragments had been burned prior to deposition. One unburned piece was recovered from the disturbed fill of structure 301, and another burned fragment was found on the floor of structure 2. The burned pieces were blackened on all sides prompting the hypothesis that they had been reused inside hearth features as either heating stones or pot rests. Because they were all Shinarump sandstone possessing larger grain sizes and opaline-silica cement, these pieces might have been more resistant to thermal shock than other types of stone.

Two other fragmentary artifacts within the miscellaneous category were labeled "mano or metate fragments." One of these had been burned

and was recovered from the secondary refuse on the floor of structure 10. The other was unburned and taken from the fill above plaza surface 4.

### Abraders

Four grooved abraders, and six rectangular flat abraders (*sensu* Woodbury 1954:98) were recovered during excavations (See Figure 9.5). One of the grooved abraders resembles what Woodbury (1954:106) called a shaft smoother. The rectangular abraders were small with the largest less than 8 cm long. One flat abradar and one grooved abradar were recovered from structure 201. The other eight abraders were found in the plaza fill. One flat and two grooved abraders were burned.



Figure 9.5 Grooved and flat abraders

The six flat abraders were manufactured from soft Moenkopi sandstone. Two of the grooved abraders were also fashioned from soft Moenkopi sandstone and can be contrasted with the third and fourth abraders, which were made from a hard quartzite river cobble and from vesicular basalt. The softness of both the grooved and flat abraders indicates that some of these artifacts were used on softer materials such as bone or wood. Previous experimental grinding in similar soft materials (Adams 1989) suggests that such wear would not have taken long to produce and

provide a good example of expedient technology. The quartzite and volcanic abraders could have been used with harder materials. In step with the reused nature of this assemblage, the vesicular basalt grooved abradar was a reused one-sided mano.

The shaft straightener was also made from a hard black volcanic material (Figure 9.6). Its fractured surface, distinctive parent material, as well as rich groove sheen helped to distinguish it from other grooved artifacts in the assemblage. It is a working hypothesis that its particular coloring and fractures were the result of repeated heating during use. When heated the groove would have facilitated the straightening of arrow shafts (see Adams 1979). A Shinarump sandstone cobble had a polish that Adams (1986) associated with hide processing. The soft, oily hides produced a distinctive sheen to the stone used to stiffen the hide (Figure 9.6).

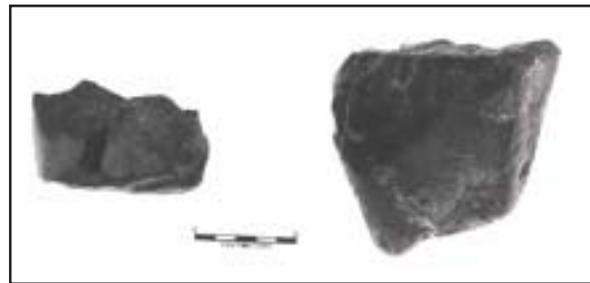


Figure 9.6 Shaft straightener and hide polisher

### Axe and Maul

The nub of a battered, tipless 3/4 grooved axe was recovered from the fill of structure 301 (Figure 9.7). It is made from gray basalt, a material used in 85% of stone axes at Homol'ovi and probably traded from the Point of Pines region (Melaniphy 2000). A larger whole specimen of a comparable material was recovered from a room shrine at the site of Homol'ovi II. The Homol'ovi IV axe, however, due to its extensive use and context of disposal, lacked any recognizable ritual function. Instead it appeared to have functioned as a chopping and pounding tool that was used until it was too short to resharpen.

The 3/4 groove design also links it, at least morphologically, to axes commonly found in the Mogollon Mountains to the south (Melaniphy 2000). The lack of volcanic materials in the immediate area of the site and the ubiquity of axes in the south suggest that some form of exchange may have brought it into the site.

A quartzite cobble maul was removed from the fill of structure 2 (figure 9.7). This artifact was chipped and frosted from use as a battering tool. It was designed with a full groove.

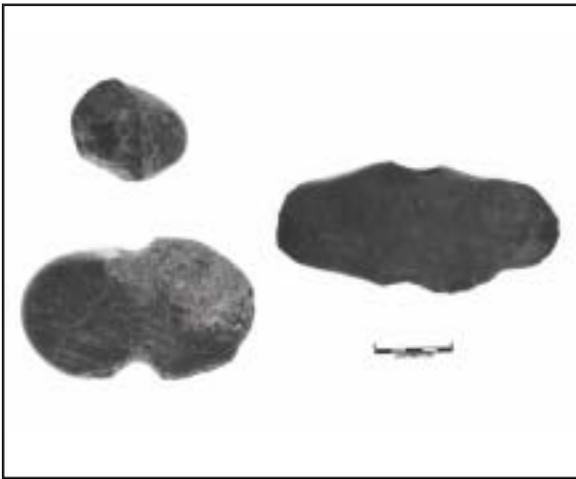


Figure 9.7 Axe, maul, and hoe

### Palettes

Four tabular flat stones possessed ground pigment stains (see Figure 9.8). Three had red hematite staining and one a rich yellow limonite residue. All had been burned. The term palette describes the function of pigment grinding rather than the morphology of these objects. They did not exhibit recognizably formalized attributes. They had neither raised borders defining the grinding areas, nor decorations of any kind. They were flat rocks used in an expedient fashion to grind pigments. It is not clear why they were burned. This may have been the result of ritual behavior or may have been a secondary use unrelated to the grinding. Palettes identified from the sites of Homol'ovi II and III have been equally informal tabular stones (Logan and Fratt 1993).



Figure 9.8 Palette, pestle, comal, and piki stone

### Stone Bowl

A small, circular argillite bowl was recovered from the floor of structure 301 (Figure 9.9). The artifact is whole measuring 4.5 cm high, 6 cm in diameter, and approximately 0.5 cm thick at the rim. The argillite is of a fine quality and a qualitative assessment suggests its origin was the Verde or Prescott Valley to the southwest of the Homol'ovi region. Because it is a rare object of exotic material, recovered whole and still usable, its abandonment appears to be intentional. It may have been left as an offering at the time of the site's abandonment (LaMotta 1996; Karunaratne 1997).



Figure 9.9 Stone bowl, shaped argillite, crystals, shaped stones and siltstone

Numerous objects of unknown use have been grounded (see Figure 9.9). The grinding is to shape the object, not as a result of use. Two quartz crystals (see Figure 9.9) were also recovered, one from Structure 301 and a second in the plaza deposits west of Structure 301. These crystals have been sourced to the Paysan area.

### **Hoes**

Three hoes were recovered from plaza fill (see Figure 9.8). One was a fine-grained Moenkopi sandstone and the other two derived from unidentifiable materials. A fourth artifact classified as a mano also contained a notch that may indicate a final use as a hoe. Hoes were artifacts large enough to use in sod busting, had notches on their sides to facilitate a hafted handle, and resembled artifacts most frequently found on the floodplain of the eastern side of the Little Colorado River (Lange 1989, 1998). The term hoe was chosen as a general descriptor because of their correlation with the best agricultural land. Our notion of hoes as tools used for weeding should not be imposed on these objects as they were probably used to break up the dirt for planting or possibly for digging trenches to divert water among plants.

### **Miscellaneous Hearth Refuse and Griddles**

Miscellaneous ground stone debitage comprised approximately half of the assemblage. Nearly 50% of these artifacts had been burned. In 11 cases both burned and unburned pieces were removed from the same collection unit indicating that they had been burned elsewhere and then deposited with other unburned artifacts in secondary refuse deposits. A subset of artifacts within this category consists of relatively flat, tabular stones that have been variously burned or sooted. These have been described as “hearth refuse” (see Table 9.1) to distinguish them from other unburned and amorphous ground stone objects. My working hypothesis is that these burned pieces were the

remains of either griddles, or hearth architecture, such as fire dogs, or slabs forming the hearth’s walls.

Hearth architecture was distinguished from fire dogs by the presence of burning on one side or end of the artifact indicating it had been in a fixed position in relation to the source of burning. Such architecture had flat sides that were rougher than those of other burned materials, indicating that smoothness was not a significant performance characteristic.

In contrast griddle stones are tabular, more thoroughly sooted, and distinguished by their oily residues and smooth polished surfaces. In some cases these oils appear to have penetrated the sandstone matrices of the stone. Such artifacts have been tentatively classified as early examples of “piki” stones, a cooking stone type utilized in historic pueblos (see Figure 9.8; Adams 1979; Fratt 1991). A unique artifact having characteristics similar to a piki stone, but manufactured of clay has been classified as a comal, a flathead cooking technology developed in Mexico and diffused into the Hohokam region during the Classi Period, ca. A.D. 1250, or the founding of Homol’-ovi IV (see Figure 9.8).

### **Miscellaneous and Unknown**

The majority of objects in this category are amorphous fragments of unknown origin or use. A small number, however, stand out for further description. Although parts of this discussion are speculative, and are offered to stimulate the development and testing of new interpretations of ground stone objects.

A pestle-like cylindrical artifact of vesicular basalt was recovered from the plaza fill (see Figure 9.8). This artifact is whole and measures 10 cm long and 2 cm in diameter. Although it superficially resembles a pestle, its ends are small and lack visible use-wear. Adams (1993) has noted similar objects in the assem-

blage from the Point of Pines sites. Burned fibers, encrusted on one stone from Point of Pines were identified by Lynn Teague (ASM) as Agave fibers. It's possible that this stone was used in processing fibers.

Several faceted stones (Figure 9.10) resemble stones used to polish decorated pottery. Similar stones are still used by Hopi potters (Adams 1979).

Finally, one fragmentary object, which is a quarter of a circular flat stone, 8 cm in diameter, with a depression in the middle, exhibited a pattern of burning that stimulates the hypothesis that it may have functioned as a lamp. The depression was burned black and oily to the touch. The rest of the flat surface was sooted but lacked the rich burning of the depression. De Beaune and White (1993:111) have categorized similar informally burned and sooted stone objects from paleolithic sites as lamps. Their experimental research suggests that oil or fat burning lamps would have provided usable light sources in the dark European caves of the Upper Paleolithic (see also de Beaune 1987, 1993). Lamps have not been recognized in prehistoric puebloan assemblages but their use would seem natural. Most

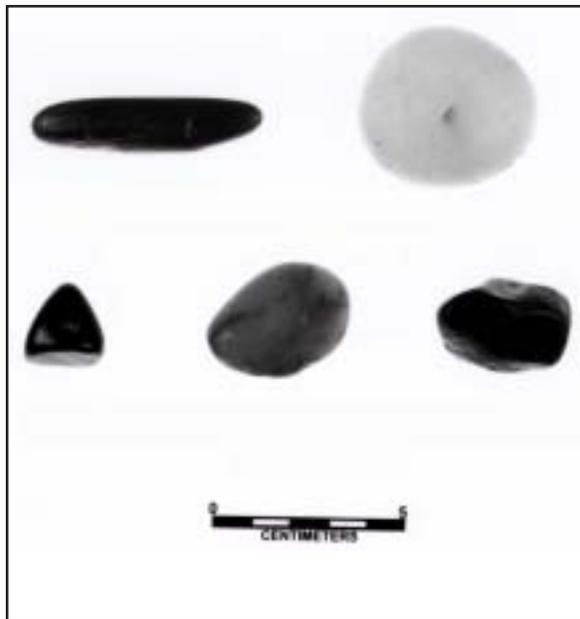


Figure 9.10 Faceted polishing stones and crystals

rooms lack windows and doors and storage rooms lack hearths.

Another curious object is triangular with a worn facet running along one edge (Figure 9.10). Adams (1994) has also found similar objects at Point of Pines and calls them faceted polishing stones. This artifact is made from a hard igneous material that could have withstood a lot of stone-on-stone grinding. Use-wear damage patterns on the stones at Point of Pines indicated contact with another smooth stone surface, prompting Adams (1994) to propose that these artifacts were used to sharpen axes or other hard stone tools. These two objects along with the axe described above suggest some sort of movement of objects, perhaps through informal exchange, with peoples in the Mogollon Rim area.

### Stone Beads

Eleven stone beads (Figure 9.11) were recovered during the Homol'ovi IV excavations. Four are argillite (a-d), four are made of a gray stertite (e-h), and three are turquoise (i-l). One rectangular piece of turquoise 5mm on a side was not drilled (i). The argillite beads are all extremely small ranging from 1-2mm. The stertite beads are larger ranging from 2-4mm. The turquoise beads are largest ranging from 3-5mm. The argillite is probably from the same source as the bowl. The stertite is known to

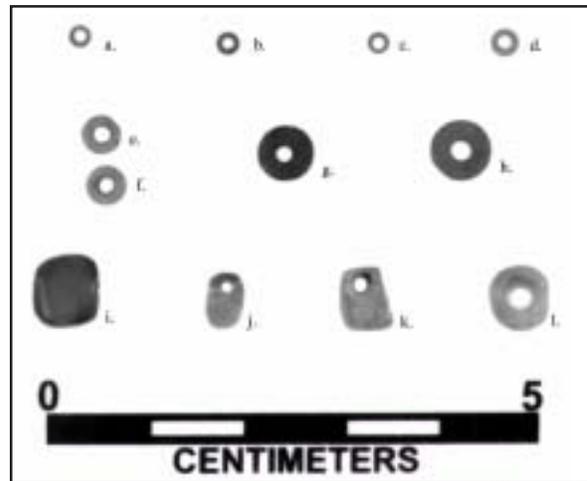


Figure 9.11 Stone beads

also occur in the Verde Valley. Sources of the turquoise were not determined.

Proveniences for the beads are 3 surface, 2 from structure 301 fill, and 7 from the plaza including one from Feature 6, a roasting pit on surface 4. Only 2 proveniences had multiple beads: 2 argillite and 1 turquoise from a plaza fill unit below structures 4 and 5 and 2 stertite beads from the fill of Structure 301. It is possible, especially for Structure 301, that these beads were part of a necklace. The other isolated beads seem unrelated.

The beads reinforce the perspective that Homol'ovi IV occupants had abundant and far-ranging exchange relationships. The diversity in argillite artifacts from the Verde Valley is especially notable.

## DISCUSSION

In recent years there has been a florescence of ground stone research—much of it originating in the U. S. Southwest. The rise of agricultural dependence in the Southwest, for example, has been investigated through the medium of ground stone technology (Adams 1993; Hard 1990; Mauldin 1993; Morris 1990). Central to this new research has been a desire to move beyond the typological descriptions of cultural historical analysis (e.g., Woodbury 1954; Wormington 1959) in order to measure and explain the underlying behaviors creating artifact variation and distribution in the archaeological record.

Guiding much of this work has been Bartlett's mechanical perspective in which the mano-metate tool kit was conceived as the "most important machine in the life of the pueblos" (Bartlett 1933:27). Given that the culture history paradigm dominated theoretical archaeology during the 1920's, 30's and 40's (see Trigger 1989), Bartlett's technological studies were remarkably innovative and exemplified a dynamic approach to archaeological analysis. By linking the formal attributes of manos and metates (e.g., shape, tex-

ture, and size) to the evolution of southwestern grinding technology, Bartlett (1936) defined a course of study that continues to guide contemporary research.

Archaeologists have begun to explore grinding activities and their contribution to prehistory through sourcing and physical composition studies (Bostwick and Burton 1993; Fratt and Biancaniello 1993; Hayden 1987a; Schaller 1989) as well as experiments designed to define the performance characteristics of grinding tools (*sensu* Schiffer and Skibo 1987). Adams and others have made significant progress linking traces of use-wear to grinding activities through experimentation (Adams 1986, 1988, 1989; Horsfall 1987; Logan and Fratt 1993; Mills 1993; Wright 1993).

This experimental research has been informed by ethnoarchaeological studies (e.g., Adams 1979; Hayden 1987a, 1987b) and has at least in one case utilized skilled ethnographic informants in the experimentation (Mauldin and Tomka 1988). This combination has stimulated theory building in ground stone research and other specialties experiencing a comparable synthesis of experimentation and ethnography.

Up to this point in ground stone studies the majority of research has focused on the first half of the ground stone object's life-history (manufacture, distribution, and primary or initial use). As a result, the typological categories of manos, metates, axes, adzes, etc., have been the standard units of analysis. The second half of life-history—including secondary uses, recycling, discard and reclamation, with some notable exceptions (Adams 1994; Schlanger 1993)—have been ignored. These parts of the artifact's life-history may include its reuse in walls, hearth architecture, or even funerary offerings. To document these types of behaviors, use-wear analysis, experimentation, and ethnographic investigation will need refinement. Assemblages comparable to Homol'ovi IV are not well suited to questions framed in terms of primary tool use. They do, however, clearly document a range of activities.

The lack of whole objects in the assemblage as well as the burning and reuse associated with it clearly indicates that the secondary uses and by extension the users of these artifacts provide an interesting point of departure for behavioral studies (see Schiffer 1976, 1992; Reid et al. 1975). Material culture scholars (Appadurai 1986; Kopytoff 1986; McCracken 1990; Weiner and Schneider 1986), as well as archaeologists (Schiffer 1976, 1992), find the life-history approach appealing because it highlights human activities and groups that may be obscured or overlooked when only one stage in the history of an object is considered.

For example, the daily use of ground stone technology in the preparation of foodstuffs, as Bartlett recognized, was a significant aspect of pueblo daily life. Southwestern ethnographers, however, have not documented these activities in detail (see Barber 1878; Beaglehole 1937; Jeancon 1930; Mooney 1893; Mindeleff 1898; Ritzenthaler 1966). Instead they have focused upon specific moments in the life histories of peoples and objects such as ceremonial events. Moreover, they have not given material culture a prominent role in their analyses of social organization, religious beliefs, kinship and other conventional anthropological concerns.

The result has been that accounts of roasting activities and other technologies that reuse ground stone objects, are usually found in ethnographies of nonpuebloan peoples (e.g., Gifford 1932, 1936; Opler 1965; Reagan 1930; Willis and Castetter 1937, 1941). Puebloan ethnographies, however, do indicate that roasting techniques associated with the processing of corn, agave, and mescal were important. *Yucca baccata* was native to the Hopi area and was baked in ovens by both Hopis and Zunis (Bell and Castetter 1941:12; Naquatewa 1943 1943:18; Whiting 1939:18). *Yucca* and

agave were roasted by Apaches with heated stones to avoid charring (Opler 1965:355-358). The Northern and Southern Yavapai also utilized heating stones in their mescal pits, frequently reusing the same stones many times (Gifford 1932:205, 1936:259)

In southwestern archaeological sites it is not uncommon to find the fragmentary remains of ground stone in roasting pits (Fewkes 1801:107-108; 1904:128; Tagg et al. 1984; Windmiller 1972). Therefore, it would seem a reasonable hypothesis that the generalized burning of the Homol'ovi IV assemblage represents the reuse of ground stone objects in hearths and roasting pit features. If roasting pits and hearths were cleaned periodically or dismantled during construction or remodeling episodes, then sooted and burned ground stone materials would have been mixed into refuse deposits and eventually recovered from plaza and structure fill provinces. Homol'ovi IV actually contained a large roasting pit in the eastern end of the plaza that had been cleaned out prior to the site's abandonment. The low frequency of whole artifacts in general also indicates that prior to deposition, the artifacts had been reused as hoes, wall stones, or lap stones.

Although the majority of artifacts are small and fragmentary and were recovered from the oldest plaza fill contexts, this reuse behavior resulted in a pattern of deposition at the site that can be tracked by frequency and size through various strata. Larger and even whole objects, such as the four whole manos, came from the last plaza surface and the structures occupied at the end of the occupation.

To push deeper into the variability of ground stone assemblages archaeologists need only to expand on today's successful program of excavation, experimentation, and ethnographic observation to include the entire life history of ground stone artifacts.

*Acknowledgements*

This report has been inspired by Jenny Adams ground stone research. In her quest to elevate this class of material culture to a fruitful source of prehistoric information she has demonstrated to me that the archaeological record, in general, remains a vast and untapped region worthy of exploration. I also thank Lee Fratt for her helpful

training and guidance in my classification and analysis of Homol'ovi ground stone materials.

(Footnotes)

<sup>1</sup> An issue of *Kiva* 58(3), entitled *New Trends in Ground Stone Research: It's Not the Same Old Grind*, was dedicated in its entirety to ground stone research.

## Chapter Ten

# Flaked Stone

E. Charles Adams

A sample consisting of 1971 flaked stone artifacts from Homol'ovi IV was analyzed in order to understand the development of lithic technology during the site's occupation. This sample is compared to the Homol'ovi III flaked stone analysis by Lisa C. Young (Young 2001) and the Homol'ovi II flaked stone analysis (Lyons and Pitblado 1996) to provide a better context for the analysis of such a small assemblage. It is estimated that the 1971 artifacts represents approximately a 30% sample of the flaked stone collected during the 1989 field season. This compares to over 35,000 artifacts analyzed by Young from Homol'ovi III and nearly 14,000 artifacts from Homol'ovi II (Lyons and Pitblado 1996:table 11.1; Young 2001:table 10.2). In addition, the Homol'ovi IV sample is strongly skewed toward plaza contexts, which account for 79.8% of the analyzed sample (Tables 10.1 and 10.2). Only structure 301 contained more than 100 flaked stone artifacts and structure 201 was the only structure with more than 50 artifacts (Table 10.1). Consequently, discussions of lithic patterns comparing structures will

be kept to a minimum. Given that sampling in the village was done randomly, discussion of village-wide trends can be effectively presented (Tables 10.1-10.3). Additionally, the 22 projectile points will be discussed in terms of local and regional patterns (Table 10.4 and 10.5).

### METHODS OF ANALYSIS

Analysis of the Homol'ovi IV flaked stone assemblage was undertaken in two stages, just as with the analysis of flaked stone from other Homol'ovi sites. The initial stage of analysis is called inventory. Artifact type and raw material type are recorded for all artifacts during this stage. During this stage all artifacts are divided into core, complete flake, split flake, broken flake, flake fragment, debris, burned, and spall. The second stage of analysis is called in-depth analysis and includes recording a much larger suite of attributes for tools and edge-damaged artifacts that were included in the inventory stage of analysis.

Table 10.1 Distribution of material types by structure

| <i>Structure</i> | <i>Chert</i> | <i>Chalcedony</i> | <i>Quartzite</i> | <i>Igneous</i> | <i>Petrified Wood</i> | <i>Obsidian</i> | <i>Other</i> | <i>TOTAL</i> |
|------------------|--------------|-------------------|------------------|----------------|-----------------------|-----------------|--------------|--------------|
| 0                | 768          | 58                | 446              | 13             | 223                   | 7               | 58           | 1573         |
| 2                | 8            | 1                 | 7                |                | 1                     |                 |              | 17           |
| 4                | 24           |                   | 11               | 1              | 3                     |                 | 1            | 40           |
| 5                | 19           | 2                 | 12               | 3              | 6                     |                 | 1            | 43           |
| 201              | 39           | 1                 | 18               | 4              | 6                     |                 |              | 68           |
| 301              | 107          | 9                 | 60               | 8              | 35                    |                 | 3            | 222          |
| 404              | 4            |                   | 3                |                | 1                     |                 |              | 8            |
| <b>TOTAL</b>     | <b>969</b>   | <b>71</b>         | <b>557</b>       | <b>29</b>      | <b>275</b>            | <b>7</b>        | <b>63</b>    | <b>1971</b>  |

Table 10.2 Artifact type by structure

| <i>Structure</i>      | <i>0</i>    | <i>2</i>  | <i>4</i>  | <i>5</i>  | <i>201</i> | <i>301</i> | <i>404</i> | <i>TOTAL</i> |
|-----------------------|-------------|-----------|-----------|-----------|------------|------------|------------|--------------|
| Edge-Damaged Piece    | 102         | 1         | 1         | 1         |            | 2          |            | 107          |
| Scraper               | 11          |           |           |           |            |            |            | 11           |
| Other Retouched Piece | 48          |           | 4         | 1         | 1          | 10         |            | 64           |
| Flake Core            | 21          |           | 1         |           | 1          | 4          |            | 27           |
| Core                  | 284         |           | 3         | 7         | 4          | 32         | 1          | 331          |
| Chopper               | 13          |           |           |           |            |            |            | 13           |
| Projectile Point      | 21          |           |           |           |            | 1          |            | 22           |
| Biface                | 7           | 1         |           |           |            |            |            | 8            |
| Drill                 | 9           |           |           |           |            |            |            | 9            |
| Wedge                 |             |           |           |           |            | 1          |            | 1            |
| Core/Retouched Piece  | 3           |           |           |           |            |            |            | 3            |
| Whole Flake           | 185         | 2         | 3         | 11        | 7          | 31         | 1          | 240          |
| Broken Flake          | 174         | 4         | 6         | 11        | 15         | 36         | 1          | 247          |
| Split Flake           | 124         |           | 4         | 3         | 5          | 22         | 1          | 159          |
| Flake Fragment        | 187         | 1         | 7         | 3         | 12         | 28         | 3          | 241          |
| Other                 | 23          |           | 1         |           | 1          | 6          |            | 31           |
| Pecking Stone         | 46          | 2         | 1         |           | 7          | 7          |            | 63           |
| Hammer Stone          | 41          | 3         |           | 1         | 3          |            |            | 48           |
| Angular Debris        | 175         | 2         | 6         | 4         | 10         | 29         |            | 226          |
| Burned Angular Debris | 55          | 1         | 3         |           | 1          | 5          |            | 65           |
| Hammerstone Spall     | 44          |           |           | 1         | 1          | 8          | 1          | 55           |
| <b>TOTAL</b>          | <b>1573</b> | <b>17</b> | <b>40</b> | <b>43</b> | <b>68</b>  | <b>222</b> | <b>8</b>   | <b>1971</b>  |

### Raw Material Categories

Tables 10.1 and 10.3 differentiate the assemblage by material category within structures and by artifact type. Of the 1971 flaked stone artifacts, almost half (49.1%) are chert. The next highest category at 28.3% is quartzite followed by petrified wood at 14.0%. Chalcedony and petrified wood trail at 3.6% and 0.4% respectively. The other category includes artifacts too burned to identify material type accurately. Chalcedony and petrified wood are subtypes of chert based on color, translucency, and patterning. Much of the chalcedony may have derived from petrified wood, but was too small to determine its origin.

The chert, quartzite, and possibly the petrified wood and chalcedony, were obtained locally. Natural cobbles of chert and quartzite, probably remnants from the Shinarump Formation (Kolbe 1991), cover the landscape in the region. Even today, the foot of the Homol'ovi IV butte is strewn with cobbles perfectly suitable for raw material. Petrified wood occurs naturally within 3 km

of Homol'ovi IV, but much of it is not cryptocrystalline quality, which is typical in the Petrified Forest National Park 50 miles east of Homol'ovi IV. Because so much of the local petrified wood has been removed historically, it is uncertain if raw material sources for the Homol'ovi IV assemblage are local or imported from the east.

The igneous artifacts are probably from the gravels in and around the Little Colorado River derived either from volcanic fields north and south of Homol'ovi IV or from ancient gravels of the Shinarump Formation. The source of the obsidian is probably Government Mountain, south and west of the San Francisco Peaks, about 75 miles west of Homol'ovi IV. Sourcing of obsidian from Homol'ovi III revealed 96% came from Government Mountain (Harry 1989). The black, opaque character of the pieces at Homol'ovi IV are traits of this source. The fact that four of the seven obsidian artifacts are projectile points and a fifth is retouched suggests obsidian was imported to Homol'ovi IV as finished artifacts rather than as

Table 10.3 Artifact type by material type

| ATYP                                       | Chert      | Chalcedony | Quartzite  | Igneous   | Petrified Wood | Obsidian | Other     | TOTAL       |
|--|------------|------------|------------|-----------|----------------|----------|-----------|-------------|
| Edge-Damaged Flake                         | 88         | 3          | 3          |           | 13             |          |           | 107         |
| Scraper                                    | 8          |            | 2          |           | 1              |          |           | 11          |
| Other Retouched Piece                      | 48         | 1          | 8          |           | 6              |          | 1         | 64          |
| Flake Core                                 | 18         | 1          | 6          |           | 2              |          |           | 27          |
| Core                                       | 249        |            | 52         |           | 26             |          | 4         | 331         |
| Chopper                                    | 3          |            | 10         |           |                |          |           | 13          |
| Projectile Point                           | 14         | 2          |            |           | 2              | 4        |           | 22          |
| Biface                                     | 6          |            | 1          |           | 1              |          |           | 8           |
| Drill                                      | 8          |            |            |           | 1              |          |           | 9           |
| Wedge                                      | 1          |            |            |           |                |          |           | 1           |
| Core/Retouched Piece                       | 2          |            |            |           |                | 1        |           | 3           |
| Whole Flake                                | 98         | 12         | 73         | 6         | 41             | 1        | 9         | 240         |
| Broken Flake                               | 96         | 16         | 67         | 7         | 53             | 1        | 7         | 247         |
| Split Flake                                | 75         | 7          | 49         |           | 23             |          | 5         | 159         |
| Flake Fragment                             | 94         | 14         | 69         | 5         | 47             |          | 12        | 241         |
| Other                                      | 11         |            | 12         | 2         | 4              |          | 2         | 31          |
| Peckingstone                               | 12         |            | 48         | 2         |                |          | 1         | 63          |
| Hammerstone                                | 7          |            | 35         | 1         |                |          | 5         | 48          |
| Angular Debris                             | 84         | 15         | 65         | 3         | 47             |          | 12        | 226         |
| Angular Debris<br>with Evidence of Burning | 34         |            | 23         | 1         | 4              |          | 3         | 65          |
| Hammerstone Spall                          | 13         |            | 34         | 2         | 4              |          | 2         | 55          |
| <b>TOTAL</b>                               | <b>969</b> | <b>71</b>  | <b>557</b> | <b>29</b> | <b>276</b>     | <b>7</b> | <b>63</b> | <b>1971</b> |

raw material. This is in contrast to the Homol'ovi III assemblage where 5.6% of the 35,000 artifacts are obsidian and the Homol'ovi II assemblage where 3.9% of 14,000 artifacts are obsidian, including debris and flake fragments. These frequencies and the distribution of obsidian in all the debitage categories suggests obsidian was imported as raw material and worked into tools at the respective sites. Obsidian was probably not obtained directly from the source, but was imported through exchange with Sinagua communities on Anderson Mesa (Bernardini and Brown 2004; Harry 1989).

### THE FLAKED STONE ASSEMBLAGE

#### Reduction Strategies

As already noted in the reports on Homol'ovi III (Young 2001) and Homol'ovi II (Lyons and

Pitblado 1996) flaked stone assemblages, lithic technology during the late prehistoric Pueblo period had become expedient. This is certainly evident in the Homol'ovi IV assemblage as well. The causes of this expediency are abundant local raw materials and a sedentary lifestyle based on farming. One method for measuring the level of expediency employed by Young (2001: 243-244) is the biface to core ratio, which is a method of measuring the shift away from standardized reduction strategies. The lower the ratio, the more expedient the technology. For Homol'ovi III the ratio was 0.29. For Homol'ovi IV the ratio is  $30/358 = 0.08$ . This low number is probably partly a product of raw material at Homol'ovi IV, in contrast to Homol'ovi III where a walk of a kilometer would be required to obtain raw material. Still, there is no question that the Homol'ovi IV assemblage is expedient, especially in light of the fact that four of the bifaces are obsidian, imported from Anderson Mesa communities (Harry 1989).

Table 10.4 Distribution of projectile point types by structure

| Material                        | 0         | 301      | Total     |
|---------------------------------|-----------|----------|-----------|
| Undifferentiated                | 1         | 1        | 1         |
| Triangular Flat                 | 1         |          | 1         |
| Side-notched flat               | 9         |          | 9         |
| Side-notched concave            | 2         |          | 2         |
| Triangular concave              | 5         |          | 6         |
| Undifferentiated Ceramic Period | 3         |          | 3         |
| <b>TOTAL</b>                    | <b>21</b> | <b>1</b> | <b>22</b> |

Table 10.5 Distribution of projectile point types by material type

| Material                        | Chert     | Obsidian | Total     |
|---------------------------------|-----------|----------|-----------|
| Undifferentiated                | 1         |          | 1         |
| Triangular Flat                 | 1         |          | 1         |
| Side-notched flat               | 6         | 3        | 9         |
| Side-notched concave            | 2         | 2        |           |
| Triangular concave              | 6         | 6        |           |
| Undifferentiated Ceramic Period | 2         | 1        | 3         |
| <b>TOTAL</b>                    | <b>18</b> | <b>4</b> | <b>22</b> |

### Tool Assemblage

Another measure of the degree of expedient technology is the frequency of informal tools (wedges, utilized and retouched flakes) versus formal tools (scrapers, projectile points, bifaces, and drills, Figures 10.1, 10.2, and 10.3). At Homol'ovi III, Young (2001:table 10.6) records 1279 informal tools versus 251 formal tools for a ratio of 0.196 or a frequency of 16.4% formal tools (Table 10.6). At Homol'ovi IV the frequencies are 175 and 50 for a ratio of 0.286 and a frequency of 22.2% formal tools. The Homol'ovi IV frequencies are almost identical to those Young (2001:table 10.6) reports for the Pueblo III period in the Homol'ovi area, which are a ratio of .292 and a frequency of 22.6% formal tools (Table 10.6). The dates for occupation of Homol'ovi IV, A.D. 1250s to 1280s fits within the usual definition of Pueblo III in the region. The Pueblo III and Pueblo IV periods are characterized as fully sedentary periods and the formal tool ratio is consistent with that character-

ization. In contrast, Homol'ovi II, which dates A.D. 1350-1400, had 1415 informal tools and only 78 formal tools for a ratio of 0.055 and a frequency of only 5.2% formal tools (Table 10.6).

The later assemblages from Homol'ovi III and Homol'ovi II continue a trajectory toward fewer and fewer formal tools as a component of the flaked stone assemblage as site size and sedentism increase. These temporal changes could also reflect a landscape that is more and more hunted out. Therefore, formal tools, such as projectile points and scrapers, are needed less to process larger animals. The faunal assemblage from Homol'ovi II has only 2.6% artiodactyla (Strand and McKim 1996:table 10.2a) and Homol'ovi III has only 1.6% artiodactyla (Pierce 2001:table 11.1); whereas, Homol'ovi IV has 10.6% artiodactyla (Table 11.2, this volume). The significantly higher frequency of large mammals at Homol'ovi IV signal a greater need for formal tools and may account for their higher frequency in the assemblage than found at Homol'ovi II and III.

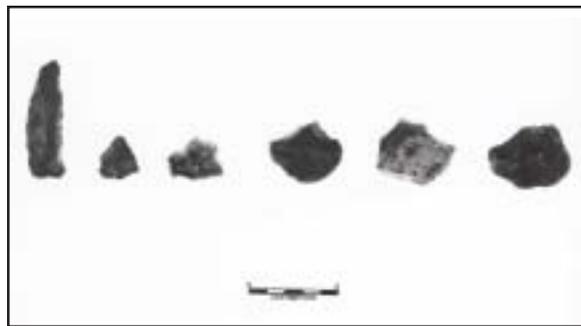


Figure 10.1 Scrapers

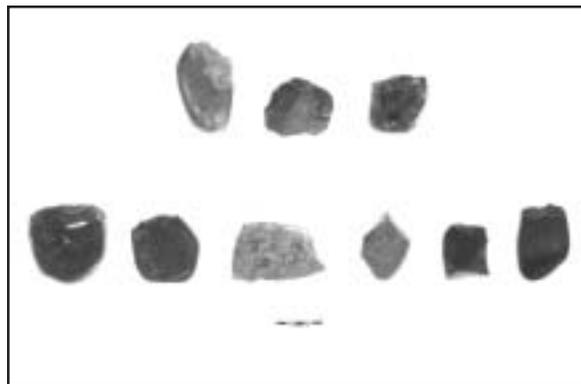


Figure 10.2 Hammerstones

Table 10.6 Temporal changes in retouched tool assemblages from the Homol'ovi area

| Tool Type        | Pueblo III | Homol'ovi IV | Homol'ovi III | Homol'ovi II |
|------------------|------------|--------------|---------------|--------------|
| Utilized         | 1          | 107          | 363           | 1099         |
| Retouched        | 101        | 67           | 839           | 307          |
| Wedge            | 4          | 1            | 77            | 9            |
| Total Informal   | 106        | 175          | 1279          | 1415         |
| Scraper          | 1          | 11           | 13            | 21           |
| Projectile Point | 20         | 22           | 136           | 23           |
| Biface           | 8          | 8            | 94            | 30           |
| Drill            | 2          | 9            | 8             | 4            |
| Total Formal     | 31         | 50           | 251           | 78           |
| Ratio            | .292       | .286         | .196          | 0.55         |
| Formal %         | 22.6%      | 22.2%        | 16.4%         | 5.2%         |

Table 10.7 Distribution of material types from Homol'ovi villages

|               | Chert         | Petrified Wood | Quartzite   | Obsidian    | Igneous   | Other      | Total  |
|---------------|---------------|----------------|-------------|-------------|-----------|------------|--------|
| Homol'ovi III | 22,933 (.654) | 2626 (.075)    | 7242 (.207) | 1962 (.056) | 6 (.000)  | 293 (.008) | 35,062 |
| Homol'ovi II  | 11,334 (.812) | 1264 (.091)    | 774 (.056)  | 539 (.039)  | 2 (.000)  | 38 (.003)  | 13,951 |
| Homol'ovi IV  | 969 (.492)    | 346 (.176)     | 557 (.283)  | 7 (.004)    | 29 (.015) | 63 (.032)  | 1,971  |
| Total         | 35,236 (.691) | 4236 (.083)    | 8573 (.168) | 2508 (.049) | 37 (.001) | 304 (.006) | 50,984 |

**Projectile Points**

Twenty-two projectile points were recovered from Homol'ovi IV. Four are obsidian and the remainder of the points are chert or related local materials (Table 10.5). All, but one, of the points were recovered from plaza contexts with the other from structure 301 (Table 10.4). Projectile points during the late Pueblo III and Pueblo IV periods in the Anasazi or ancestral Pueblo region are typically small, triangular, side-notched, and have flat or slightly concave bases (Burton and Farrell 1993:130-131) (Figure 10.4). Freeman (1989) and Young (2001: 266-267) note that side-notched points are prevalent during this period at Homol'ovi III, but that triangular unnotched points are also common. These descriptions fit the Homol'ovi IV assemblage perfectly. Half of the 22 points are side-notched and 7 are triangular and unnotched. Similarly, 10 of the 22 points have flat bases and 8 are concave (Tables 10.4 and 10.5). Four of the points are too fragmentary to determine attributes.

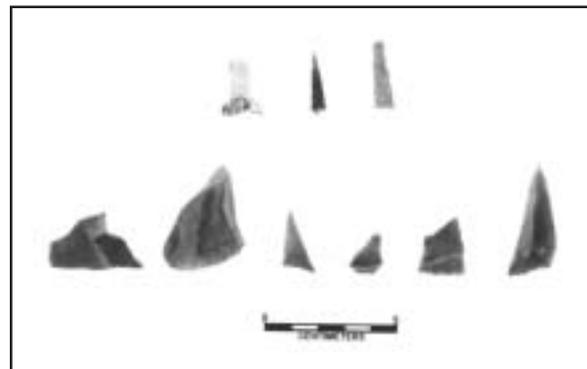


Figure 10.3 Drills

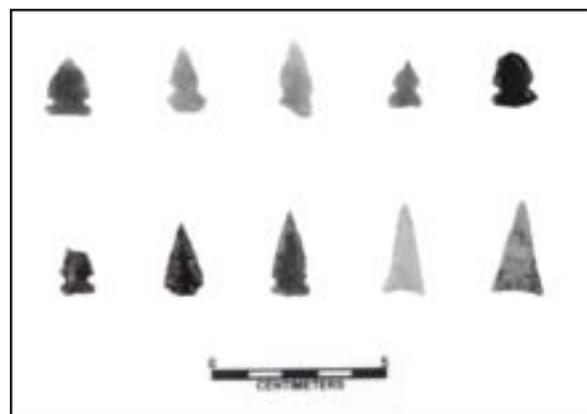


Figure 10.4 Projectile points

## CONCLUSIONS

The flaked stone assemblage from Homol'ovi IV fits within the patterns of material types, reduction strategies, tool types and frequencies, and projectile point morphology that have been described for much larger assemblages from Homol'ovi II and III. The notable differences at Homol'ovi IV from the other analyzed assemblages relate to the low frequency of obsidian and chert, higher frequency of quartzite, and the high ratio of formal tool types to informal tool types at the village (Tables 10.6 and 10.7). The ratio of formal tools types has been discussed in some detail and was related to the possibility of the need for more formal tools as a result of the much higher frequency of large mammals, specifically various species of artiodactyl, at Homol'ovi IV.

Homol'ovi IV has a much lower frequency of chert, at slightly less than half of the assemblage, versus over 65% at Homol'ovi III and over 81% at Homol'ovi II (Table 10.7). The high frequency of natural quartzite cobbles on the surface at Homol'ovi IV probably accounts in part for the higher frequency of quartzite in the Homol'ovi IV assemblage and thus a lower frequency of chert. Nevertheless, the Homol'ovi IV occupants were still deciding to choose quartzite

over chert for some tasks. The need to shape building stones and the large amount of rock art at Homol'ovi IV, both preferring quartzite cobbles for their manufacture, might explain part of the discrepancy. The discrepancy is even more pronounced when one combines fine-grained materials (chert, petrified wood, and obsidian) and contrasts them to quartzite. The total fine-grained material at Homol'ovi IV is only 1302 pieces or 66.1%. For Homol'ovi III the count is 27,521 or 78.5%. Finally, for Homol'ovi II the count of fine-grained material is 13,137 or 94.2% of the assemblage. Activities requiring flaked stone tools at Homol'ovi IV and the access to raw materials clearly vary at Homol'ovi IV from the other later villages. The variation is striking in contrast to Homol'ovi II with Homol'ovi III intermediate. Interestingly, when only the early, year-round occupation of Homol'ovi III is considered, the frequency of fine-grained material is 75.6% with quartzite at 23.7% of the assemblage (Young 2001:table 10.7). This assemblage is even more similar to Homol'ovi IV and suggests that there is a temporal component to the variation in material preference at Homol'ovi villages with quartzite falling out of favor and replaced by a variety of finer-grained materials. Certainly, the relative ubiquity of obsidian at the other sites signals a shift in material preference.

## Chapter Eleven

# Faunal Analysis

Lucia Andronescu and Karin Glinsky  
Worked Bone Analysis by Wendy Jones

The faunal environment around the Homol'ovi Pueblos shows remarkable diversity. The environment in the immediate vicinity of Homol'ovi was excellent for a variety of animals and the Little Colorado River would have served as a magnet or collecting point for many animals. For the most part, the people of Homol'ovi did not have to travel far for animals; the river would have brought the animals to them. Faunal analysts (Pierce 1989, 2001; Strand 1998; Szuter 1991) have observed that the faunal remains indicate the Little Colorado River was an important resource for the inhabitants of the Homol'ovi pueblos. Not only did it directly supply the people with a variety of water animals, its presence served as a collecting point for many land animals who would have been drawn to the river area for water and the habitat the river offered (Pierce 1989).

Faunal analysis of the Homol'ovi collection gives some idea of the fauna of the Homol'ovi area in prehistoric times. Animals inhabiting the Little Colorado River itself include fish, grebes, herons, ducks, teals, cranes, American coots, and the muskrat. Others, not directly inhabiting the river but attracted to the region by its presence include porcupine, carnivores, and artiodactyls. Other animals prevalent in the area include hares, rabbits, and rodents (Pierce 1989). In the 1850s an exploratory survey of the area was performed by the United States Government to determine the best path for a railroad. The survey crew that explored the path of the Little Colorado River reported that they often saw ducks, including mal-

lards and teals, and beavers and porcupines. The latter they claimed enjoyed a bountiful subsistence from the bark and tender twigs and buds in the young cottonwood trees (Whipple 1856).

### METHODS

A total of 1606 faunal remains from Homol'ovi IV were analyzed with 1364 (84.9%) bones identified. The remaining 242 were categorized as undetermined. All worked bone was removed and analyzed separately by Wendy Jones. All animal bone from completely excavated structures was analyzed. None of the bone recovered from the plaza or from partially excavated structures was analyzed.

The identification was performed by using the National Park Service faunal collection, housed in the Arizona State Museum, under the curatorship of Professor Stanley J. Olsen. The analysis was performed analogous to that of previous studies of the Homol'ovi Project faunal material. The data were first recorded on 5X8 inch cards and then transcribed into computer codes, recording the location of the remains within the Homol'ovi structure, the taxon, body part, state of the element, fusion, burning, butchering, pathology, relative size and quantity.

Some bones were identified only to class due to their fragmentary condition. These elements were placed in "mammal" or "bird" size groups, accordingly. When the size or category was not determined the bones were recorded as "uniden-

tified". Non-worked bone consisted of NISP (number of identifiable specimens) and taxonomic indices. A listing of all animal bone identified to the level of genus is listed in Table 11.1.

Table 11.1 A list of the taxonomic representation at Homol'ovi IV

|               |  |
|---------------|--|
| Lagomorphs:   | <i>Sylvilagus</i> sp.<br><i>Lepus californicus</i>   |
| Rodents:      | <i>Dipodomys</i> sp.<br><i>Eutamias</i> sp.<br><i>Geomys</i> sp.<br><i>Neotoma</i> sp.<br><i>Perognathus</i> sp.<br><br><i>Peromyscus</i> sp.<br><i>Sciuridae</i><br><i>Sigmodon</i> sp.<br><i>Spermophilus</i> sp.<br><i>Thomomys</i> sp. |
| Carnivores:   | <i>Canis</i> sp.   |
| Artiodactyls: | <i>Antilocapra americana</i><br><i>Odocoileus</i> sp.<br><i>Ovis canadensis</i>  |
| Aves:         | <i>Aquila chrysaetos</i><br><i>Buteo</i> sp.<br><i>Ciprinidae</i><br><i>Corvus corax</i><br><i>Colaptes</i> sp.<br><i>Falco sparverius</i><br><i>Meleagris gallopavo</i>   |

## DISCUSSION OF TAXA

The total number of bones identified at Homol'ovi IV was divided into five groups (Table 11.2).

Table 11.2 Distribution of identified Homol'ovi IV animal bone by class or order

| Class or Order | NISP | Percentage |
|----------------|------|------------|
| Leporidae      | 1016 | 74.5       |
| Rodentia       | 83   | 6.1        |
| Carnivora      | 87   | 6.4        |
| Artiodactyla   | 142  | 10.4       |
| Aves           | 36   | 2.6        |
| TOTAL          | 1364 | 100.0      |

## Leporidae – Hares and Rabbits

Lagomorphs comprise 74.5% of the total identifiable faunal assemblage. Their remains are associated with all excavated structures – 1, 2, 4, 5, 10, 201, 301 and 404. This is remarkably similar to the 73.9% of the identified faunal assemblage at Homol'ovi II (Szuter 1991) and is slightly less than the 81.0% for Homol'ovi III (Pierce 2001).

Jackrabbits (*Lepus spp.*) and cottontails (*Sylvilagus sp.*) represented the lagomorph population with the proportion of cottontails of total lagomorphs at 57%. The resulting lagomorph index of .57 is identical to the .57 figure for Homol'ovi II (Strand and McKim 1996: 202) and is similar to the .67 figure for Homol'ovi III (Pierce 2001). The higher index figures indicate a greater proportion of cottontails in the assemblage. Cottontails inhabit more highly vegetated landscapes than jackrabbits because their preference is to hide to avoid predators rather than run, which is the preference of the jackrabbit. The high indices suggest a relatively vegetated landscape. Most of the lagomorph assemblage included fragmentary remains. From a total of 1016 lagomorph bones, 246 (24.2%) were complete and 770 (75.8%) were fragmentary elements.

Not surprisingly, lagomorph remains were found in every excavated structure and were the most common in every structure. Structure 2 contained the largest number of lagomorph bones, amounting to 300 fragments, of which 85 were complete. The next highest abundance was recovered from structure 301, totaling 299 bones, of which only 59 were complete skeletal parts. Room 1 is believed to have been a kiva and contained 235 total lagomorph bones. A list of the occurrence of lagomorph bones in each structure is provided in Table 11.3.

## Rodentia – Rodents

The presence of rodents at the site can be the result of intrusive behavior as a consequence of post

abandonment activity. There is also the possibility that they comprised part of the prehistoric diet (Szuter 1984). Rodents represent 6.08% of the total identifiable faunal assemblage. Twenty-eight (33.7%) of the 83 elements were complete skeletal parts. Rodent remains were recovered from six of the eight structures included in this study. No rodents were identified from rooms 4 and 10. The dispersion of the rodent remains at the site is shown in Table 11.4.

Table 11.3 Distribution of Lagomorphs by structure

| Structure | Total # bones | Complete | Fragmentary |
|-----------|---------------|----------|-------------|
| ST 1      | 235           | 57       | 178         |
| ST 2      | 300           | 85       | 215         |
| ST 4      | 7             | 0        | 7           |
| ST 5      | 88            | 27       | 61          |
| ST 10     | 27            | 7        | 20          |
| ST 201    | 46            | 6        | 40          |
| ST 301    | 299           | 59       | 240         |
| ST 404    | 14            | 5        | 9           |
| Total     | 1016          | 246      | 770         |

Table 11.4 Distribution of Rodents by structure

| Structure | Total # of Bones | Complete | Fragmentary |
|-----------|------------------|----------|-------------|
| ST 1      | 35               | 14       | 21          |
| ST 2      | 12               | 5        | 7           |
| ST 4      | 0                | 0        | 0           |
| ST 5      | 14               | 6        | 8           |
| ST 10     | 0                | 0        | 0           |
| ST 201    | 3                | 0        | 3           |
| ST 301    | 14               | 2        | 12          |
| ST 404    | 5                | 1        | 4           |
| Total     | 83               | 28       | 55          |

### Carnivora – Carnivores

Domestic dog or coyote represented all the identifiable carnivores at Homol'ovi IV. They constitute 6.38% of the total skeletal remains identified and occurred in structures 1, 2, 5, 201, and 404. More than half (53%) of the canid remains were complete skeletal parts. The distribution of these faunal assemblages is displayed in Table 11.5.

### Artiodactyla – Deer, Antelope, and Bighorn Sheep

The group of artiodactyls was composed of *Odocoileus sp.* (deer), *Antilocapra americana* (antelope), and *Ovis canadensis* (bighorn sheep). A total of 133 remains in this category belonged to the first two groups listed above representing 94% of the 142 total artiodactyl bones. Five of the eight structures contained artiodactyl bones. Structure 1, which was identified as a kiva, included three long bones and one radius belonging to deer. Also two long artiodactyl bones and one tibia were found in room 2. The small number of artiodactyl bones may suggest that the animals were killed away from the village and only the bones with the most meat were brought back to the pueblo. Table 11.6 displays the distribution of the assemblage by structure.

### Aves – Birds

Bird remains account for 2.64% of the total bone assemblage identified. Twenty of the 36 identified remains were classified as turkey, *Meleagris gallopavo*, with 18 recovered from structure 4 including one long bone and two humeri. Most of these bones belong to a single adult turkey. Two tibiotarsus and one long bone belonging to an eagle were recovered from structure 1 (a kiva). Four bones were attributed to *Falco sparverius*. A breakdown of bird remains is provided in Table 11.7.

Table 11.5 Distribution of Carnivores by structure

| Structure | Total # of Bones | Complete | Fragmentary |
|-----------|------------------|----------|-------------|
| ST 1      | 80               | 44       | 36          |
| ST 2      | 3                | 1        | 2           |
| ST 4      | 0                | 0        | 0           |
| ST 5      | 1                | 1        | 0           |
| ST 10     | 0                | 0        | 0           |
| ST 201    | 2                | 0        | 2           |
| ST 301    | 0                | 0        | 0           |
| ST 404    | 1                | 0        | 1           |
| Total     | 87               | 46       | 41          |

Table 11.6 Distribution of Artiodactyls by structure

| Structure | Total # of Bones | Complete | Fragmentary |
|-----------|------------------|----------|-------------|
| ST 1      | 13               | 5        | 8           |
| ST 2      | 68               | 4        | 64          |
| ST 4      | 0                | 0        | 0           |
| ST 5      | 49               | 3        | 46          |
| ST 10     | 0                | 0        | 0           |
| ST 201    | 0                | 0        | 0           |
| ST 301    | 8                | 1        | 7           |
| ST 404    | 3                | 0        | 3           |
| Total     | 142              | 13       | 129         |

Table 11.7 Distribution of bird remains by structure

| Structure | Total # of Bones | Complete | Fragmentary |
|-----------|------------------|----------|-------------|
| ST 1      | 9                | 3        | 6           |
| ST 2      | 0                | 0        | 0           |
| ST 4      | 18               | 0        | 18          |
| ST 5      | 6                | 3        | 3           |
| ST 10     | 2                | 0        | 2           |
| ST 201    | 0                | 0        | 0           |
| ST 301    | 1                | 1        | 0           |
| ST 404    | 0                | 0        | 0           |
| Total     | 36               | 7        | 29          |

## DISCUSSION

The highest occurrence of burned bone was associated with structure 5 constituting 26.7% (74 bones) of the 277 remains recovered from this room. Otherwise, burning was typically 5% to 10%, which is in line with assemblages from the other Homol'ovi sites (Pierce 2001; Strand and McKim 1996). Burning is usually not associated with cooking but results from discard of bone in to hearths after consumption. Its presence in Homol'ovi IV room assemblages is probably as much to do with the generally trashy fill or subfloor fill of the excavated rooms than to any other explanation.

Although highly disturbed due to vandalism, nevertheless, the kiva, structure 1, had the most diverse assemblage of fauna. This is in keeping with studies done in kivas from Homol'ovi I, II, and III (LaMotta 1996; Karunaratne 1997). Typi-

cal of these other kivas is the high incidence of carnivore and bird remains. Structure 1 contains 92.0% of the carnivores recovered from Homol'ovi IV structures and 25.0% of bird bones while containing 33.0% of total faunal remains. The bird frequency is low because most of a turkey was recovered from the fill and floor of structure 4 accounting for 50.0% of the total identifiable bird assemblage from the site. Discounting the turkey, structure 1 has 50% of the remaining bird remains from Homol'ovi IV. These figures are in keeping with other kivas analyzed at Homol'ovi and support the identification of this structure as a kiva.

As elsewhere at Homol'ovi, the preferred food source was either cottontail or jackrabbit, which make up three-fourths of the total identifiable assemblage, in line with findings at other Homol'ovi sites. The frequency of artiodactyl remains at Homol'ovi IV was much higher when compared to Homol'ovi III or II, using the artiodactyl:lagomorph index (Strand and McKim 1996:216). This suggests artiodactyl was a relatively more important component of the Homol'ovi IV diet than at other Homol'ovi sites. This could be due to greater abundance of deer and antelope along the Little Colorado River during the initial occupation of the region, where they would be more easily taken, than after the number of villages and population size had grown.

As noted by other researchers (Pierce 2001; Strand and McKim 1996; Szuter 1991), the ubiquity of species represented in archaeological assemblages is strongly related to sample size. With over 8,000 remains identified at Homol'ovi III and nearly 11,000 at Homol'ovi II, species diversity at Homol'ovi IV is much less. This lack of diversity is most highly expressed in the bird remains, where only 6 genera were identified at Homol'ovi IV in contrast to more than 20 each at Homol'ovi II and III. Other taxa missing or reduced at Homol'ovi IV included carnivores, rodents, amphibians, and fish. With the exception of the rodents, all the missing taxa are present in small numbers at the other villages.

### SUMMARY

The excavation at Homol'ovi IV yielded 1606 bones, of which 1364 were identifiable (Tables 11.3 to 11.7). Approximately 25% of the total identifiable bone is complete and 75% is fragmentary.

The number of remains of cottontail is 30% more than those identified as jackrabbit. Following the lagomorphs the next most common class is the artiodactyls followed by carnivores, rodents and birds.

Structure 1 represents the area of greatest activity in regards to the abundance of bone recovered in the excavation. This room contains 33% of the total identifiable fauna and as a result has the most diversity. This is in line with its identification as a kiva based on morphology and location of the structure.

### WORKED BONE FROM HOMOL' OVI IV

This paper analyzes the worked bone assemblage from Homol'ovi IV. All worked bone artifacts were intensively studied with special emphasis on wear patterns according to the typology devised by John Gooding (Gooding 1980). Much of the text that follows is taken from Jones's (2001) chapter on worked bone from Homol'ovi III.

Worked bone analyses over the years have placed emphasis or importance on different aspects of the artifact. As emphasized by Olsen (1979), one of the greatest problems in devising typologies for bone artifacts lies in determining the actual function of these objects. Many past analyses have placed emphasis on the form of the artifact and stylistic characteristics. While these are important, function is equally important. In the past function was related to form without adequate testing. In more recent years, an emphasis has been placed on determining function through experimental replication and microwear studies. Special attention to function, using experimental replication

and microwear studies, has increased the understanding of manufacture and use of bone artifacts. Newcomer (1974), J. D. Clark (1977) and others (Camps-Fabrer 1974) have successfully replicated manufacture and use wear on an assortment of bone artifacts (Olsen 1979). Additionally, Olsen has contributed to the literature with several articles on manufacture and use of bone artifacts (Olsen 1979, 1980). Gooding (1980) has recently contributed by providing a functional bone tool typology analysis. No longer does form define function; now the emphasis is based on use wear and function.

Bone tools are often difficult to analyze because the original element is altered by the people manufacturing the artifacts and by taphonomic processes such as erosion, root etching, rodent gnawing or soil acidity. Cultural modification can drastically change the shape of the original element, and natural modification can erase any wear patterns on the artifact (Olsen 1979). Luckily, alkaline desert soil at Homol'ovi III reduces the effects of soil acidity or root etching on the artifacts.

Whereas animal species and bone element are important aspects of the analysis, the wear pattern can offer valuable insights as to how the tool was used. Wear on a bone artifact can identify in what manner that artifact was used, what motion was employed by the user, and what type of material it was used on. After classifying the artifacts as to use, an assessment will be proposed as to some of the major activities being performed at the site.

### Faunal Environment

Among the many species represented in the Homol'ovi worked bone assemblage, carnivores are the least represented. This is mainly because they were not utilized as food very often, if ever. Research (Olsen 1979; Pierce 1989; Strand 1998) shows that carnivore bones were not commonly used for artifact manufacture, but were most likely used for their pelts and in ceremonial contexts.

Artiodactyls are the most common group in the worked bone assemblage and are over represented in comparison to their frequency in the faunal assemblage. Although these animals were scarce in the general faunal remains, they were probably utilized as a food source more than the faunal assemblage indicates (Strand 1998). Due to the large size of the animal, it was probably butchered at the kill site, bringing only the meat back to the pueblo (Speth and Scott 1986). The abundance of bone artifacts made out of artiodactyl bones also suggests elements were selected from kills a considerable distance from the village. These include the reamer, bodkin, punches, awls and hairpins, and the notched rib weaving tool.

Rabbits and hares comprise nearly 75% of the identifiable faunal remains from Homol'ovi IV, but contribute to less than 35% of the worked bone assemblage. This is due in part to the need for bones larger than lagomorphs for some activities.

Birds were the next most common artifact species. Many varieties of birds inhabited the region and were used by the inhabitants. Bone tools made from bird bones include awls and other hide processing tools, but are mainly represented as bone tubes. Bird bones are exceptionally good for this type of artifact as they are light, hollow, not terribly large, and yet amazingly strong.

### **Orientation of Analysis**

The first formalized bone tool categories are attributable to Kidder in his 1932 volume *The Artifacts of Pecos*. Kidder based his classification on morphological attributes: size, form, shape, and type of animal bone. Although this type of classification can be useful, Kidder placed little emphasis on wear patterns preferring to depend upon the shape of the artifact and the skeletal element. Wear patterns are overall a more diagnostic method of categorizing worked bone. Gooding (1980) remarks that the tool category bone awl

was first established by Kidder and is still extremely useful since the classes within the category are based on gross morphological attributes. However, the selection of specific skeletal elements as materials for tools does not necessarily result in predictable wear patterns; nor do some frequently described general morphological attributes, e.g., grinding of the articular head, bear a relationship to the function of the tool (Gooding 1980, Olsen 1979). In short, wear patterns can tell how the tool was utilized, what kind of motion the user employed, and therefore the possible function of the tool. The recycling of artifacts, as seen by resharpening of tips or a reuse in a secondary manner, can occasionally complicate wear patterns (Olsen 1979).

### **Analytical Techniques**

Worked bone artifacts from Homol'ovi IV were analyzed using a 10X hand lens. Special attention was concentrated on examining surfaces that exhibited wear patterns. Following criteria defined by Gooding in his Durango South Project, surfaces where wear was likely to occur include the tip, shaft interior, shaft margin, shaft exterior, and articular head. Gooding (1980) notes that the tip is the worked point of the tool and is usually the most intensely modified. The shaft interior is the surface that was originally the interior of the bone, but has been exposed by splitting the bone for tool manufacture. This surface is concave and receives little or no wear. The shaft margin is the edge on either side of the shaft interior, again exposed by splitting or fracturing the bone. The shaft exterior is the original exterior surface of the bone. The articular head is the point of articulation of either the proximal or distal end of the bone. The wear at this location can range from untouched to drastically modified, to missing. It is not uncommon to find that the articular head is not present, either by manufacture design or broken off by natural causes.

To analyze the assemblage, many characteristics were assessed. The actual bone was as-

sessed according to the animal it was part of, the bone element, the location of the bone (proximal, distal, medial, lateral), the side (left, right), and the general features (split, splinter, spiral fractured, burned). The length and width of each artifact was measured in millimeters and recorded. Six different characteristics were analyzed when considering each artifact: (1) tip alteration (trim, ground, attrition, polish, impact fracture), (2) tip striations (rotational, counter rotational, diagonal, cross hatched, longitudinal, transverse), (3) shaft interior alterations (polish, rotational, counter rotational, diagonal, cross hatched, longitudinal, transverse striations, transverse grooves), (4) shaft margin alterations (incised, ground, polish, rotational, counter rotational, diagonal, cross hatched, longitudinal, transverse striations, transverse grooves), (5) shaft exterior alterations (incised, ground, polish, rotational, counter rotational, diagonal, cross hatched, longitudinal, transverse striations, transverse grooves), and (6) articular head alterations (head absent, split, ground, polish, ligament cuts, unmodified).

Each artifact was identified specifically as a certain type of tool; however, due to sample size some categories were not represented well enough to make interpretations about the assemblage. Artifacts were also grouped according to where the artifact was found, whether structure or plaza; and according to broader classificatory categories based on activities, including hide processing, weaving tools, ornaments, and stone working.

By grouping the bones into larger categories, more interpretations were possible. Grouping the artifacts according to whether found in a structure or on the plaza was helpful in determining what the area might be used for. The broader classificatory categories, according to general utilization techniques included: 1) hide processing tools such as awls, awl spatula, needles, drills, drill punches, pins, punches, reamers, beamer, and fleshers; 2) weaving tools; 3) ornaments, including tubes and pendants and such recreational items as gaming pieces, flutes, and turtle carapaces; 4)

stone working tools, including antler tines and shafts, 5) stock; and 6) miscellaneous. The hide processing tools were presumed to have been used on hides, whether curing, working, or sewing them. Weaving tools were artifacts used in producing textiles. Ornaments were used in everyday or religious life, but were not imperative for survival. Stone working tools included the antler artifacts, which were excellent soft hammers or pressure flakers used in stone tool manufacture. The miscellaneous category was comprised of all unidentifiable artifacts.

### Functional Attributes

Awls most commonly exhibit polished tips and shafts with diagonal and longitudinal striations. These attributes identify the twisting and piercing motion associated with the use of awls on soft material (Figures 11.1 and 11.2).

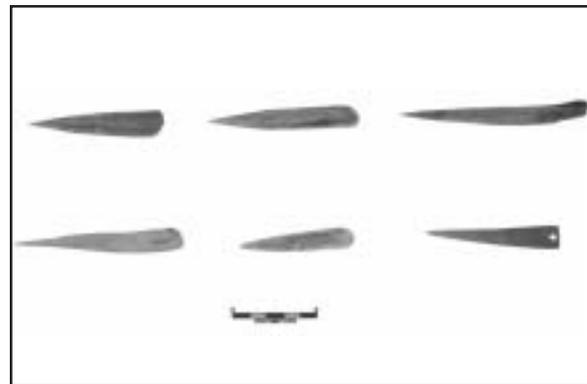


Figure 11.1 Bone Awls

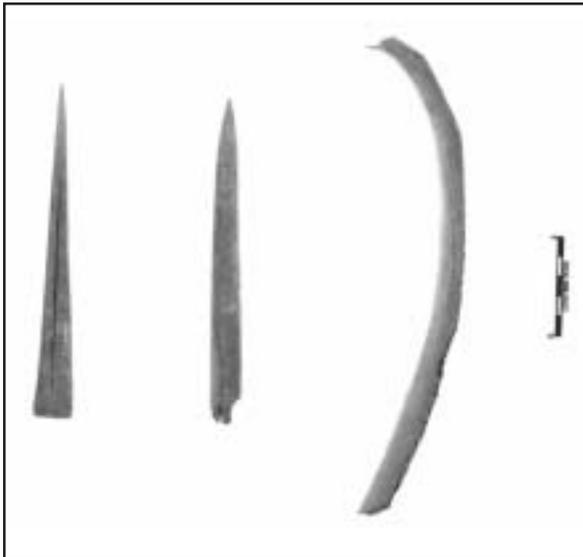
An awl spatula exhibits the same wear patterns as an awl, but the other end is spatula-shaped, perhaps making a multipurpose tool.

Needles exhibit high polish over the entire surface, have an eye, and are rather small. Needles were sewing implements used on soft materials.

Many of the weaving tools were notched artiodactyl ribs; however, some were oval shaped with a high polish and transverse grooves (Figure 11.3). These were probably used for separating and tamping down the threads on a loom.



*Figure 11.2 Bone awls*



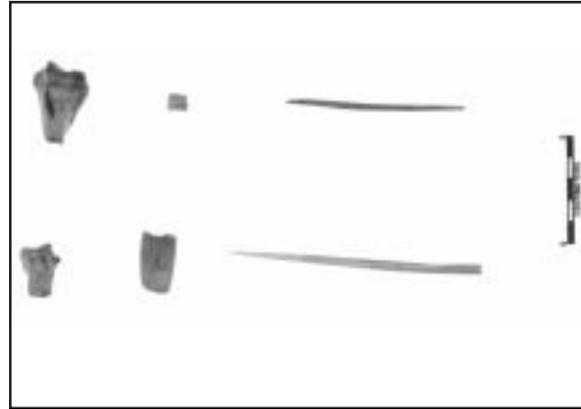
*Figure 11.3 Weaving tools and notched rib*

The gaming piece is a flat piece of bone with incising on the surface, perhaps used as some sort of dice (Figure 11.4).

Drills are shaped similarly to awls, but wear striations on the tip are completely different. Rotational, counter rotational, and cross-hatched striation that tend to be fairly deep and closely spaced are characteristic for drills. Drills are generally stout and round in cross sections. Drills were occasionally hafted and were used in a rotary motion. Their function was to drill a hole in a fairly soft material.

Drill punches exhibit characteristics of both tool types. Shaped like drills, they have rotational wear from being employed in a rotary motion, and longitudinal striations from being employed in a thrusting manner, probably on a soft material.

Pins are identified by a high polish over the entire surface. They are distinguished from a needle by the absence of an eye (Figure 11.4).



*Figure 11.4 Stock, gaming piece, ring fragment, and possible hair pins*

Punches are characterized by tip attrition, high polish at the tip, and longitudinal striation on the shaft. These tools probably served to punch holes in soft material.

Similar to awls and drills, reamers have a tip that expands rapidly to the shaft, and they have a high polish on their tips. The weakly defined striations and high polish indicated that they were probably used on soft materials, possibly for enlarging holes.

Stock is refuse from tube manufacture or tool manufacture. These are often the articular head of a long bone, marked with a deeply incised transverse groove where the bone was snapped in two (see Figure 11.4).

Bodkins are similar to needles in that they exhibit a uniform high polish over the surface. They were probably used as sewing implements, but are longer, more massive, and have larger eyes.

The miscellaneous tool category included tools that were unidentifiable due to erosion or incompleteness. The miscellaneous worked bone category was for bones that had been worked, but did not resemble a tool and had no wear (Gooding 1980, Shelley 1980).

### The Homol'ovi IV Assemblage

Table 11.8 lists the frequency of bone tool types identified at Homol'ovi IV. As in other Homol'ovi assemblages, awls are the most common tool (Jones 2001; Strand and McKim 1996; Szuter 1991). The weaving tool is a notched rib of an artiodactyl, almost identical to those from Homol'ovi III (Jones 2001). A bodkin was also recovered from Homol'ovi IV, which is a tool not found in the larger Homol'ovi III assemblage.

Table 11.8 Summary of bone tool types at Homol'ovi IV

|              |    |        |
|--------------|----|--------|
| Awl          | 10 | 27.1%  |
| weaving tool | 1  | 2.7%   |
| misc. tool   | 3  | 8.1%   |
| Bodkin       | 1  | 2.7%   |
| Drill        | 4  | 10.8%  |
| drill punch  | 2  | 5.4%   |
| Pin          | 3  | 8.1%   |
| Punch        | 2  | 5.4%   |
| Reamer       | 1  | 2.7%   |
| Stock        | 2  | 5.4%   |
| misc. worked | 8  | 21.6%  |
| TOTAL        | 37 | 100.0% |

The average of 3.3 tools per structure is similar to the 3.5 figure for Homol'ovi III (Jones 1991, 2001). Just as with Homol'ovi III, the plaza has the largest and most diverse assem-

blage with 38% of the artifacts (Jones 1991:34). Structure 2, the ritual structure associated with surface 4 in the plaza, had the most tools at six whereas structures 301 and 404 had only one artifact each. The severe disturbance of these structures probably accounts in part for the low frequency of bone tools.

The 37 specimens of worked bone from Homol'ovi IV is too small an assemblage to be able to interpret any meaningful patterns. The most significant observation is the relatively high number of hide processing tools in contrast to other assemblages recovered at Homol'ovi (Table 11.9). This correlates with the proportionately higher number of artiodactyl remains noted in the faunal assemblage and suggests hide processing was a major activity at Homol'ovi IV. This relationship suggests that although the assemblage is small, the high frequency of hide processing tools may not be caused by the small sample size.

Table 11.9 Summary of bone tool types of category of use

|                 |    |        |
|-----------------|----|--------|
| Hide processing | 23 | 62.2%  |
| Weaving tools   | 1  | 2.7%   |
| Stock           | 2  | 5.4%   |
| Misc.           | 11 | 29.7%  |
| TOTAL           | 37 | 100.0% |



# Chapter Twelve

## Charred Plant Remains

Karen R. Adams

### INTRODUCTION

Homol'ovi IV is a 150+ room pueblo along the Little Colorado River near Winslow, AZ. Initially occupied in A.D. 1250-1260, it was abandoned by A.D. 1300, or perhaps as early as A.D. 1280-1285. Situated initially on a butte, Homol'ovi IV occupants routinely tossed household debris down an adjacent slope, accumulating a midden of at least a meter depth at the slope's base. As the pueblo expanded from the butte top down over its slopes, people built additional structures on this midden. Roasting pits and hearths were frequently dug into the midden and utilized. At the base of the slope, a plaza area appears to have been used consistently through time, with occupation layers interfingering with midden debris.

### METHODS

During excavations in 1989, archaeologists routinely acquired flotation samples from Homol'ovi IV structures, the midden, and the plaza. A total of 20 flotation samples, ranging in size from 0.6-8.6 liters, were processed via water to separate and concentrate light fraction organic remains ranging in volume from 10-560 ml. For this study, the light fraction volumes of fifteen samples were examined entirely; for five samples with light fraction volumes over 135 ml, a minimum of 78% of the available material was examined. All items discussed in this report are charred, presumably due to prehistoric activities.

### RESULTS

The plant record of Homol'ovi IV is relatively rich. A total of four domesticates (*Zea mays*, *Cucurbita*, *Phaseolus vulgaris* and *Gossypium*) preserved (Table 12.1). Reproductive parts of 16 wild plants were also recovered, along with charcoal or vegetative parts of an additional 17 taxa. Maize dominated the record of foods in terms of ubiquity. Wild plants commonly utilized included bugseed (*Corispermum*) and ricegrass (*Stipa*) grains, along with other plants of weedy habitats, plus grasses. The most frequently recovered charcoal types, implying common reliance on wood for fires, are all riparian species such as cottonwood/willow (*Populus/Salix*), New Mexican privet (*Forestiera*) and ash (*Fraxinus*). Although many of the additional woods likely grew relatively close in prehistory, some (*Pseudotsuga*, *Juglans*, *Quercus*, *Juniperus* and *Pinus*) probably did not. These were either rare on the landscape, or were picked up as driftwood during flooding of the Little Colorado (Adams and Hedberg 2002). The recovery of a limited amount of *Acer* charcoal represents a new record for this area, as it was not reported in a survey of the archaeobotanical literature of this region (Adams 1996). Three common species of *Acer* (*Acer negundo*, *A. glabrum*, *A. grandidentatum*) all grow above 3500', sometimes along streams (Kearney and Peebles 1960), and apparently on occasion became available to Homol'ovi IV occupants as limited amounts of driftwood.

Table 12.1 Ubiquity of charred reproductive and non-reproductive parts in 20 flotation samples from Homol'ovi IV, organized in order of ubiquity

| Reproductive parts                         | Common Name        | N=20 |
|--|--------------------|------|
| <b>Domesticates</b>                        |                    |      |
| <i>Zea mays</i> cob, cupule embryo, kernel | maize, corn        | 15   |
| <i>Phaseolus vulgaris</i> seed             | common bean        | 2    |
| <i>Cucurbita</i> seed fragment             | squash             | 1    |
| <i>Gossypium</i> seed                      | cotton             | 1    |
| <b>Wild Plants</b>                         |                    |      |
| <i>Corispermum</i> seed                    | bugseed            | 5    |
| <i>Stipa caryopsis</i>                     | ricegrass          | 5    |
| Cheno-am seed                              | cheno-am           | 3    |
| <i>Cycloloma</i> seed                      | winged pigweed     | 3    |
| Gramineae Types 1,2                        | grass              | 3    |
| <i>Portulaca</i> seed                      | purslane           | 3    |
| Gramineae Type 3                           | grass              | 2    |
| <i>Yucca baccata</i> seed                  | broad-leaf yucca   | 2    |
| <i>Cleome</i> seed                         | Beeweed            | 1    |
| <i>Descurainia</i> seed                    | tansy mustard      | 1    |
| <i>Euphorbia</i> seed                      | spurge             | 1    |
| Leguminosae seed, 2 types                  | legume             | 1    |
| Malvaceae seed                             | mallow             | 1    |
| <i>Scirpus</i> achene                      | sedge              | 1    |
| <b>Charcoal, non-reproductive parts</b>    |                    |      |
| <i>Populus/Salix</i> charcoal              | cottonwood/willow  | 18   |
| <i>Forestiera</i> charcoal                 | New Mexican privet | 12   |
| <i>Fraxinus</i> charcoal                   | ash                | 11   |
| <i>Allenrolfea</i> charcoal                | pickelweed         | 6    |
| <i>Chrysothamnus</i> charcoal              | rabbitbrush        | 6    |
| <i>Pseudotsuga</i> charcoal                | douglas fir        | 5    |
| <i>Sarcobatus</i> charcoal                 | greasewood         | 5    |
| <i>Atriplex</i> charcoal                   | saltbush           | 4    |
| Monocotyledon tissue fragment              | monocotyledon      | 4    |
| Monocotyledon stem fragment                | monocotyledon      | 4    |
| <i>Juglans</i> charcoal                    | walnut             | 3    |
| <i>Juniperus</i> charcoal                  | juniper            | 3    |
| <i>Quercus</i> charcoal                    | oak                | 3    |
| <i>Acer</i> charcoal                       | maple              | 2    |
| <i>Pinus</i> charcoal                      | pine               | 2    |
| <i>Artemisia</i> charcoal                  | sagebrush          | 1    |
| <i>Juniperus</i> twig fragment             | juniper            | 1    |
| <i>Phragmites</i> stem fragment            | reedgrass          | 1    |
| <i>Rhus</i> charcoal                       | lemonade berry     | 1    |
| Unknown charcoal                           | unknown            | 1    |

## Structures

Two Homol'ovi IV Structures, 201 and 301, were intact and complex. Both had hearths and multiple floors. Numerous artifacts on the floors of each suggested rather abrupt, non-planned aban-

donment, and no return. Two hearths in Structure 201 preserved charred plant materials suggestive of both foods and fuels. In the earlier hearth associated with Floor 2, a variety of annual seeds preserved, including cheno-am, *Corispermum*, *Cycloloma*, Gramineae Type 2 and *Portulaca*

seeds. These resources are usually ripe in late summer/early fall, suggesting season of hearth use. No identifiable charcoal was recovered. In the later hearth, *Corispermum* seeds and *Zea mays* cupules suggest one food, plus use of maize cobs as fuel. Other fuels used in this hearth included *Fraxinus*, *Populus/Salix*, *Rhus* and *Sarcobatus*.

Plant materials in Structure 301 are equally diverse. Excavators recovered a wide variety of likely foods from the hearth, including cheno-am, *Cleome*, *Euphorbia*, Gramineae, and *Yucca baccata* reproductive parts. They also excavated domesticated maize cob and kernel fragments, plus a common bean (*Phaseolus vulgaris*) seed. Again, the bulk of these remains reflect availability in the late summer/early fall. A diversity of fuel types present included *Chryso-thamnus*, *Fraxinus*, *Populus/Salix*, *Pseudotsuga* and *Sarcobatus* charcoal. Some are local dryland species, others riparian, and the *Pseudotsuga* was likely picked up as driftwood along the Little Colorado river.

A trashy layer in Structure 301 also contained debris of both foods and fuels. Monocotyledon tissue fragments with calcium oxalate crystals may represent a local species of *Yucca*, possibly *Yucca baccata*, also recovered as a seed from this locus. A *Stipa* grain hints that people were in the area in late spring/early summer, when rice grass is ripe. A *Portulaca* seed and charred maize cupules complete the list of reproductive parts. A total of seven charcoal types preserved in this trashy layer, revealing the broad nature of materials that were burned in thermal features.

Structure 2, a pit structure thought to be a ritual structure, was excavated near the top plaza surface, and is considered relatively late in the occupation of Homol'ovi IV. Two flotation samples preserved a moderate record of plant remains. Maize cupules were recovered from an ash deposit along with *Forestiera* and *Populus/Salix* charcoal, all likely fuels. From a pit excavators retrieved *Gossypium* seeds, grass stem fragments, and maize cupule and kernel parts, along with five

charcoal types including *Pinus*. The *Pinus* wood may have been relatively rare in prehistory in the surrounding region, or came down the Little Colorado river during flooding.

Structure 5 was built on the uppermost midden/plaza surface and is also among the latest structures built at Homol'ovi IV, as is structure 10. From a fine, ashy layer in Structure 5, excavators recovered grass grains and maize cob and kernel fragments. Possibly maize kernels were roasted in the final event(s) which produced the ash. Five charcoal types also preserved, including *Pinus* type. An ash lens above the floor in Structure 10 preserved evidence of domesticates (maize, common beans) and wild plant use (*Cycloloma*, Gramineae), along with four charcoal types that were likely available locally.

### Middens

All the structures, plus the plaza, overlay layers of midden or general trash deposited during the occupation of Homol'ovi IV. Samples from four separate midden strata in the Plaza give a good view of regularly discarded plant parts (Table 12.2). The stratum 4 sample labeled "trashy fill" preserved a wide variety of reproductive parts, including resources representing early (*Descurainia*, *Stipa*) and later portions of the growing season. The charcoal types were equally diverse, representing local mesic habitats (*Forestiera*, *Populus/Salix*), and long distance transport (*Pseudotsuga*, *Juglans*, *Acer*). The other strata preserved fewer taxa. A final sample from fill between the floor of structure 201 and Plaza surface 4 preserved only evidence of fuel use.

### The Plaza

Plant remains were examined from four separate Plaza features that were likely areas where fires were built. A circular, slab feature retained no reproductive parts, but did preserve a diverse record of charcoal types of local and possibly distant

Table 12.2 Distribution of charred plant parts preserved in four midden strata in the plaza

|                            | Strat 2 | Strat 3 | Strat 4 | Strat 5 | Fill |
|----------------------------|---------|---------|---------|---------|------|
| <b>Reproductive Parts</b>  |         |         |         |         |      |
| Cheno-am seed              |         |         |         | x       |      |
| <i>Corispermum</i> seed    |         | x       | x       | x       |      |
| <i>Cycloloma</i> seed      |         |         |         | x       |      |
| <i>Descurainia</i> seed    |         | x       | x       |         |      |
| Gramineae grain            |         | x       |         |         |      |
| Leguminosae seeds          |         |         |         | x       |      |
| Malvaceae seed             |         |         |         | x       |      |
| <i>Stipa</i> grain, floret |         |         | x       | x       |      |
| <i>Portulaca</i> seed      |         | x       |         |         |      |
| <i>Scirpus</i> achene      |         |         |         | x       |      |
| <i>Zea mays</i> kernel     |         | x       | x       |         |      |
| <b>Charcoal</b>            |         |         |         |         |      |
| <i>Acer</i>                |         |         | x       |         | x    |
| <i>Allenrolfea</i>         | x       |         |         | x       |      |
| <i>Atriplex</i>            |         |         |         | x       | x    |
| <i>Chrysothamnus</i>       |         |         |         |         | x    |
| <i>Forestiera</i>          |         | x       | x       | x       | x    |
| <i>Fraxinus</i> x          |         | x       |         | x       |      |
| <i>Juglans</i>             |         | x       |         |         |      |
| <i>Juniperus</i> twig      |         |         |         | x       |      |
| Monocotyledon tissue       |         | x       |         | x       | x    |
| <i>Phragmites</i> stem     |         | x       | x       |         |      |
| Populus/Salix              | x       | x       | x       | x       | x    |
| <i>Pseudotsuga</i>         |         | x       | x       |         |      |
| <i>Quercus</i> x           |         |         |         |         |      |
| <i>Sarcobatus</i>          |         |         |         | x       |      |
| <i>Zea mays</i> cupule     | x       | x       | x       |         | x    |

(*Pseudotsuga*) habitats. One roasting/fire pit gave no clue to any preparation of plants there, and only preserved *Populus/Salix* charcoal. A second roasting pit contained maize cob parts and *Populus/Salix* charcoal, both likely fuels, along with grass stem fragments. The only possible food materials preserved there were two charred *Stipa* grains. Finally, another possible roasting pit contained maize cob parts, a few burned kernel fragments, and five different kinds of charred wood. The general record of thermal features in the Plaza suggests fires to keep warm or for light, rather than places where food was routinely processed.

One last location within the Plaza was quite unique, in that it contained a massive deposit of reconstructible vessels and numerous ritual-like objects. A single flotation sample preserved the

only *Cucurbita* evidence reported here, and a small number of charred maize kernels. The fuel record included maize cob parts, grass stems, and six charcoal types. Other than possible processing of domesticated foods, the plant record sheds little light into the activities in this particular specialized area of Homol'ovi IV.

## DISCUSSION

The record of domesticates in Homol'ovi IV deposits slightly alters a recent archaeobotanical summary for the region. Limited recovery of *Cucurbita* and *Gossypium* remains now places these resources in the area prior to A.D. 1280, as previously reported (Adams 1996). The wild

plant record at Homol'ovi IV is generally similar to that of a contemporary site (J:14:36) in the area, though the Homol'ovi IV record emphasizes use of bugseeds, along with other frequently recovered resources such as a variety of grass grains, cheno-am seeds, winged pigweed seeds and purslane seeds. Regarding fuelwood use, the same wide diversity of types occurred in Homol'ovi IV as in another well-sampled late Pueblo III site (J:14:36) from this area (Adams 1996). The Homol'ovi IV study documented use of *Rhus* and *Pseudotsuga* somewhat earlier than previously known (Adams 1996), and added *Acer* and Monocotyledon tissue to the list of charcoal types recovered. The wood types represent local upland environments, riparian habitats, and long-distance transport of upper elevation species as driftwood (Adams 1996).

Seasonality expressed by plant remains suggests people occupied the Homol'ovi IV com-

munity minimally from late spring through the fall harvest and processing of agricultural products. Likely they were in the area in early spring to prepare fields for planting, and then to harvest such cool season resources as ricegrass and tansy mustard. Most of the wild resources recovered mature during summer and fall, when crops would also need attention.

The common presence of weedy plant taxa (bugseed, cheno-ams, winged pigweed, purslane) suggests the occupants of Homol'ovi IV routinely had access to disturbed land. Agricultural fields and frequently used pathways, along with smaller side-canyon drainages, would provide such habitat. The presence of large numbers of people would increase the amount of available disturbed land. The environment surrounding Homolo'vi IV was apparently heavily used, though perennials such as ricegrass and broad-leaf yucca were still available.



# Chapter Thirteen

## Shell

Barbara Harper

A total of 144 pieces of shell, including 83 worked pieces, were recovered during the excavations at Homol'ovi IV. Identification of the shell was done by Barbara Harper with the assistance of Sharon Urban and Arthur Vokes.

### SITE DISTRIBUTION

As indicated in Table 13.1, almost three-fourths of the shell came from the plaza excavations. This is due primarily to the preponderance of excavations occurring in the plaza versus the structures, which accounts for 58% of the surface area and 63.3% of the volume. Factoring in the differential volume, 91 artifacts out of 144 should have been recovered from the plaza based on volume alone. For the structures, by volume structure 301 should have had only 7.6 artifacts. Therefore, the plaza and structure 301 had slightly more artifacts than predicted by volume. A high frequency of beads in both these areas accounts for their higher artifact count versus other structure or provenience categories.

The high frequency of shell in the plaza is due either to its general use as a midden, especially early in its occupation, possible slope wash of this trash covering the plaza area, or the probability, especially with the *Anodonta*, that shell manufacture was taking place outside in the plaza rather than within structures. Very few shells in general were recovered from structures and many of these were beads, which are the most easily lost artifacts of shell. With the exception of *Anodonta*, there is very little indication of shell manufacture at Homol'ovi IV. The limited number and range of tools reflects this situation. Only a couple of the *Glycymeris* bracelet fragments appear to have been reused or reshaped after being broken. Photos of mortuary materials recovered by pothunters at Homol'ovi IV include many shell items, especially bracelets and necklaces. These suggest that shell was common and relatively easily available to the inhabitants. Such ease of access may explain the low frequency of shell manufacture debris in the midden areas excavated within the plaza and beneath several of the rooms.

Table 13.1 Distribution of shell artifact types by structure

| Structure | Misc. shell | Pendant | Bracelet | Bead | Tinkler | Ring | TOTAL |
|-----------|-------------|---------|----------|------|---------|------|-------|
| 0/Plaza   | 41          | 3       | 12       | 46   | 4       |      | 106   |
| 1         | 5           | 2       |          | 1    |         |      | 8     |
| 2         | 5           |         |          | 2    |         |      | 7     |
| 5         | 3           |         |          |      |         |      | 3     |
| 10        | 2           |         |          | 2    |         |      | 4     |
| 201       | 2           |         |          |      |         |      | 2     |
| 301       | 3           |         |          | 10   |         | 1    | 14    |
| TOTAL     | 61          | 5       | 12       | 61   | 4       | 1    | 144   |

### DISTRIBUTION OF SHELL BY GENERA

Table 13.2 lists the distribution of shell genera by structure. More than 30% of the shell from Homol'ovi IV is from the local freshwater clam, *Anodonta*, which lived in the Little Colorado River in the Homol'ovi area at least into the 1950s (Bequaert and Miller 1973:222). This is a lower frequency than the nearly 40% at Homol'ovi III (Urban 2001: Table 13.1). The frequency of *Anodonta* in the plaza is in line with the quantity of material excavated from the plaza versus the structures. *Anodonta* is an edible clam and could have been a food source as well as a source of raw material for shell manufacture. Its local availability rather than the scarcity of access to shell trade is probably why it is found so abundantly at Homol'ovi villages (Urban 2110:301).

Two of the three next most frequent genera at Homol'ovi IV, *Olivella* (Figure 13.1) and *Glycymeris* (Figure 13.2), were second and third at Homol'ovi III, but the relative frequency of *Olivella* at Homol'ovi IV, at 36.8% was nearly double that at Homol'ovi III, whereas the frequency of *Glycymeris* was slightly lower at Homol'ovi IV in comparison to Homol'ovi III (Urban 2001:Table 13.1). The major difference between the two assemblages was in *Sonorella*, at 18, the third most frequent genera at Homol'ovi IV, but only the ninth most frequent at Homol'ovi

III where only 4 were recovered. Given that *Sonorella* is a land snail, it is most likely indigenous to the deposits. Two other land snails, *Helisoma* and *Succinea*, were more common at Homol'ovi III, perhaps indicating that the floodplain environment of Homol'ovi III was less suitable to *Sonorella* than the more colluvial and eolian nature of Homol'ovi IV deposits.

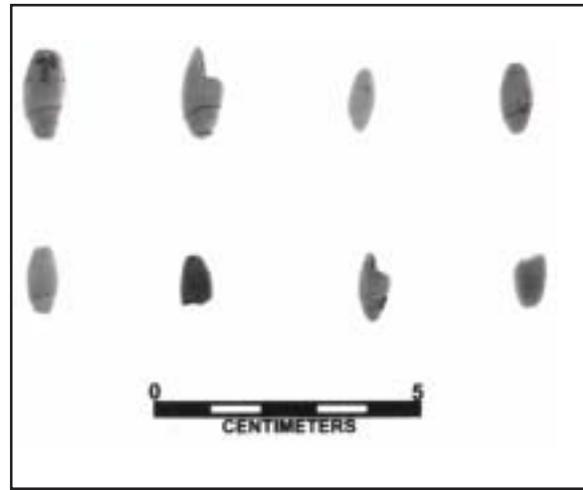


Figure 13.1 *Olivella* beads

Only the two pieces of *Haliotis* came indisputably from the Pacific Ocean (Urban 2001). All other genera could have originated in the Gulf of California and been exchanged through the Hohokam region and probably down-the-line through intermediaries in the Verde Valley and

Table 13.2 Distribution of shell genera by structure

| Structure           | 0/Plaza | 1  | 2 | 5 | 10 | 201 | 301 | TOTAL |
|---------------------|---------|----|---|---|----|-----|-----|-------|
| <i>Anodonta</i>     | 31      | 6  | 1 | 1 |    | 2   | 3   | 44    |
| <i>Cerithidea</i>   | 1       |    |   |   |    |     |     | 1     |
| <i>Conus</i>        | 2       |    |   |   |    |     |     | 2     |
| <i>Turritella</i>   | 1       |    |   |   |    |     |     | 1     |
| <i>Glycymeris</i>   | 15      | 1  |   |   |    |     | 1   | 17    |
| <i>Haliotis</i>     |         | 1  |   |   | 1  |     |     | 2     |
| <i>Laevicardium</i> | 3       |    |   |   | 1  |     |     | 4     |
| <i>Olivella</i>     | 42      |    |   |   | 1  |     | 10  | 53    |
| <i>Pecten</i>       | 2       |    |   |   |    |     |     | 2     |
| <i>Sonorella</i>    | 9       | 2  | 6 |   | 1  |     |     | 18    |
| TOTAL               | 106     | 10 | 7 | 1 | 4  | 2   | 14  | 144   |

possibly on Anderson Mesa (Sinagua) or into the Tonto Basin (Urban 2001:300). All areas have ceramics exchanged from the Homol'ovi area and shell exchanged from the Hohokam area indicating they were in contact with groups from both areas and could have served as intermediaries in the far-reaching exchange of shell in the U.S. Southwest (Urban 2001:300).



Figure 13.2 *Glycymeris* shell bracelet fragments

Only 7 of the 61 in the miscellaneous shell category are marine with the remainder being either *Sonorella* or *Anodonta* (Table 13.3). Four of these seven are *Laevicardium*, a marine shell present along the West Coast as well as the Gulf of California (Urban 2001:300). Three of these were recovered from the plaza. This distribution is repeated at Homol'ovi III where all six

*Laevicardium* shells were recovered from the plaza and five were fragments. This is the marine genera whose condition and location most suggests manufacture, although none of the fragments has attributes that indicate anything other than natural breakage.

The only other noteworthy distributions in Table 13.3 are the beads and *Glycymeris*. Virtually all of the beads are from *Olivella*, a shell that is simply and easily converted into a bead. The seven *Sonorella* shell beads are problematic. Snails have fragile shells and *Sonorella* can easily break giving the physical appearance that they could have been used as beads. None of the *Sonorella* beads clearly shows manufacture, but their possible use as beads has been retained in the table.

The *Glycymeris* genera is easily the most diverse in terms of artifact types appearing in five categories compared to at most two for any other genus (Table 13.3). This diverse use was also true at Homol'ovi III (Urban 2001) and is probably the result of the broad range of sizes in which *Glycymeris* can be recovered naturally or manufactured. It also is the most easily remanufactured into another artifact type when it breaks. As at Homol'ovi II and III (Urban 1991, 2001), the preferred artifact type is the bracelet. The other rare species were primarily used as pendants or tinklers, as is the case with *Conus* (Figure 13.3, Table 13.3).

Table 13.3 Relationship between artifact type and shell genera

| Structure           | Misc. shell | Pendant | Bracelet | Bead | Tinkler | Ring | TOTAL |
|---------------------|-------------|---------|----------|------|---------|------|-------|
| <i>Anodonta</i>     | 43          | 1       |          |      |         |      | 44    |
| <i>Cerithidea</i>   |             | 1       |          |      |         |      | 1     |
| <i>Conus</i>        |             |         |          |      | 2       |      | 2     |
| <i>Turritella</i>   |             | 1       |          |      |         |      | 1     |
| <i>Glycymeris</i>   |             | 1       | 12       | 1    | 2       | 1    | 17    |
| <i>Haliotis</i>     | 1           | 1       |          |      |         |      | 2     |
| <i>Laevicardium</i> | 4           |         |          |      |         |      | 4     |
| <i>Olivella</i>     |             |         |          | 53   |         |      | 53    |
| <i>Pecten</i>       | 2           |         |          |      |         |      | 2     |
| <i>Sonorella</i>    | 11          |         |          | 7    |         |      | 18    |
| TOTAL               | 61          | 5       | 12       | 61   | 4       | 1    | 144   |



Figure 13.3 Worked shell and shell beads

### SUMMARY

The single season of fieldwork at Homol'ovi IV recovered 144 pieces of shell, 62 indigenous clam or snail and 84 marine, almost exclusively imported from the Gulf of California. This importation was probably via down-the-line exchange from the Hohokam of the Phoenix Basin via intermediaries either in the Verde Valley or Tonto Basin and then onto Anderson Mesa (Urban 2001). The eight marine genera are in line with the sample size. In contrast, the 428 shell from Homol'ovi III produced 13 marine genera. The most common shell genera at Homol'ovi III were also recovered from Homol'ovi IV. As with Homol'ovi III, the most frequent genus was the local freshwater clam, *Anodonta*, and the most common context was the plaza. At both sites this frequency is a product of volume of materials excavated from the plaza versus other proveniences or structures at the site.

The only genera showing positive manufacture or reworking at Homol'ovi IV are *Anodonta* and *Glycymeris*. Because *Anodonta* could have been used as a food source, the many fragments of this fragile shell could have resulted from their incorporation into the Homol'ovi IV diet rather than attempts at manufacturing it into an ar-

tifact. *Sonorella* may also have been modified into beads, but its fragile nature makes it equally as likely that shells were selected to be used as beads as a result of natural breakage or were not even used for beads but broke in such a way as to give that appearance.

The diversity and frequency of shell recovered from a single season of excavations at Homol'ovi IV combined with opportunities to view photos of shell artifacts recovered from pothunted burials at the village, indicates the occupants participated in a robust shell trade. The most likely source of shell was the Sinagua of Anderson Mesa. Obsidian artifacts and large amounts of pottery from these villages have also been recovered at Homol'ovi IV. In exchange for these goods from the south, the Homol'ovi IV people are known to have exchanged pottery, which also appears in the Anderson Mesa, Verde Valley and Tonto Basin areas, and possibly cotton. It is possible the Homol'ovi IV people exchanged directly with groups in the Verde Valley, Tonto Basin, or even the Phoenix Basin, for their shell. But the fact that their most intense and persistent trade partners were villages on Anderson Mesa makes them the most likely source of shell.

The shell from Homol'ovi IV fits exactly within the range of shell genera and shell artifacts recovered from other Homol'ovi villages (Urban 1991, 2001). This suggests the source of trade relationships probably persisted over the length of the occupation of the Homol'ovi villages, or to 1400. Tree-ring dates from Chavez Pass villages date as late as the mid-1380s (Bernardini and Brown 2004). The intensity and diversity of shell may have declined after 1385 or even slightly earlier when Homol'ovi II arrived and the Homol'ovi cluster becomes almost totally focused on exchange with Hopi Mesa villages (Adams 2002). But for the people at Homol'ovi IV, they seem to have enjoyed robust exchange relationships in diverse material categories with villages to the north on the Hopi Mesas and with villages to the south on Anderson Mesa.

# Chapter Fourteen

## Conclusions

E. Charles Adams

A single year of excavation in 1989 was conducted at Homol'ovi IV by the Homol'ovi Research Program, Arizona State Museum, University of Arizona. These excavations were designed to collect a sample of undisturbed material remains from the village to be able to interpret its chronological placement with respect to other Homol'ovi villages and to nearby regions, to understand how it grew during its occupation, to determine the origins of its occupants, and identify its relationships with its neighbors in terms of exchange. Another important goal was to determine the extent of vandalism at the site – known locally as Pottery Hill. Additional goals were to conduct minimal stabilization to the walls of the village, complete a detailed map of the existing architecture of the village, and make recommendations to the Homolovi Ruins State Park manager about interpretation, stabilization, and preservation of Homol'ovi IV. These modest goals were mostly achieved, although additional excavations would have been desirable. Excavations in part of 11 structures were conducted, with 8 completely excavated. These structures are concentrated in the lower five of at least nine arcs of rooms that surround the south and east slopes of a butte. Therefore, the excavated sample is biased in not representing any of the earliest constructed rooms at the village. This choice was made due to the extreme slope of the butte and the difficulty in negotiating the slope along with the expectation of serious damage and slope erosion to lower rooms, if upper rooms were selected for excavation.

### EXCAVATION GOALS

#### Dating

Excavations uncovered several thousand sherds and dozens of reconstructible vessels. As a result, tree-ring dated ceramics were plentiful enough to indicate the occupation of Homol'ovi IV spanned a 30-year period dating from the 1250s to the 1280s, thus making the village the earliest occupied of the Homol'ovi settlement cluster (cf. Adams 2002; see chapter 7). Although two radiocarbon dates generally support this period of occupation, no actual tree-ring dates were recovered from the excavations to refine the rather broad absolute dates determined from the radiocarbon.

#### Settlement Growth

Detailed architectural information was gathered for the entire village, headed by Douglas W. Gann. Wall tracing and excavation of wall corners enabled Gann to determine that settlement growth began on the top of the butte with the construction of about 25 one- and two-story rooms. Village growth proceeded on the sides of the butte with the upper rows of rooms built first and lower rooms built later, abutted to the rooms and walls above them. The abutment/bonding data was reinforced by the discovery that the lower four rows of rooms were built over trash either washed down, deposited as a midden, or brought in to level the room foundations. Thus, these rows of rooms postdate

construction up-slope. Because so many lower rooms at the foot of the butte have been buried by slope wash and some sections of the village have been destroyed by vandalism, it is impossible to get an exact room count. Best guess is total room count is 200 plus or minus 25 rooms.

### **Migration**

A number of indications that the occupants of Homol'ovi IV were immigrants from the vicinity of the Hopi Mesas has been described. The argument that they are an immigrant population is based in part on the fact that no traces of occupation of the Homol'ovi area at the time of the establishment of Homol'ovi IV have been found (Adams 2002; Lange 1998; Young 1996). Extensive excavation of a Basketmaker III through Pueblo III village, AZJ:14:36 ASM, has yielded no evidence of ceramics or other material culture that overlaps with that of Homol'ovi IV. The ceramics are derived from Little Colorado white and gray wares with considerable exchanged wares from 12<sup>th</sup> and early 13<sup>th</sup> century Kayenta and Tusayan (Hopi) groups, settlements in the Silver Creek region of the upper Little Colorado River, and Sinagua groups from the Anderson Mesa or Flagstaff area. There are no late Hopi white, orange, or yellow wares, all of which date post-1250. These same wares dominate the Homol'ovi IV assemblage. Additionally, none of the ceramics from site 36 are clearly locally made in contrast to their abundance at Homol'ovi IV. There is no cultural or temporal connection between the two sites. A second small, earlier village, Creswell Pueblo, has ceramics that tree-ring date a little later than AZJ:14:36, but it also has no late Hopi Mesa ceramics nor is there any indication of local manufacture. See Adams (2002) for a more extended discussion.

As alluded to in the preceding paragraph, the ceramic assemblage at Homol'ovi IV is comprised of three primary elements: ceramics imported from the vicinity of the Hopi Mesas (51%), ceramics imported from Sinagua communities on

Anderson Mesa (14%), and locally produced ceramics (22%). Local production has been demonstrated by INAA analysis of ceramics from Homol'ovi IV (Lyons 2001; 2003). Ceramics imported from the Hopi area include both decorated and corrugated varieties, as does the locally produced ceramics. Lyons (2001, 2003) has convincingly demonstrated that the local Winslow Orange Ware tradition is derivative of the decorated traditions developed slightly earlier on the Hopi Mesas. The best example at Homol'ovi IV is the local bichrome type, Tuwiuca Black-on-orange, which is identical to Jeddito Black-on-orange, produced on or near the Hopi Mesas, in every way except paste. On this evidence alone, Homol'ovi IV could be considered a product of immigration from the Hopi area.

Additional traits of Homol'ovi IV that indicate it was built by immigrants from the vicinity of the Hopi Mesas are its location on the top and side of a prominent butte, the size and construction of the village itself, and the size and configuration of the kivas. This has been detailed in the chapter 6, which describes the architecture of Homol'ovi IV.

### **Relations with Neighbors**

Given that 51% of the ceramics at Homol'ovi IV probably derived from the vicinity of the Hopi Mesas and another 14% were exchanged from the Anderson Mesa Sinagua, it is clear that the two primary exchange groups were a village or villages on the Hopi Mesas and on Anderson Mesa. Less than 3.5% of the ceramics were derived from eastern or southern groups and their variability suggests multiple trading partners. It would seem that a primary role for Homol'ovi IV was as an intermediary in an exchange network between Anderson Mesa and Hopi Mesa villages.

### **Subsistence**

The primary chapters devoted to subsistence indicate nothing unusual about the subsistence base

of the Homol'ovi IV occupants with respect to regional patterns or most particularly to patterns found at other Homol'ovi villages. Primary dependence on maize and lagomorphs is supported by the archaeological evidence and is typical of all Homol'ovi cluster villages and large villages in general. The lagomorph index for Homol'ovi IV is similar to those for Homol'ovi II and III, suggesting a dominance of cottontail over jackrabbit through time in the Homol'ovi area (cf. Strand and McKim 1996; Pierce 2001). The most unusual aspect of the faunal remains is the high frequency, over 10%, of artiodactyl remains, which resulted in a high artiodactyl:lagomorph index. This suggests large game was either more available or the occupants were willing to go a longer distance for large game than at Homol'ovi III and II. The bias toward long bones in the identifiable assemblage indicates only the meatiest cuts of the animals were being brought back to the village, which suggests the possibility of distant procurement. Nineteenth century expeditions found abundant deer, antelope, and elk seasonally available in the Homol'ovi area, meaning the occupants of Homol'ovi IV, as the first residents in the Little Colorado River valley, might have had seasonal resources of artiodactyl locally available (Strand 1998).

The plant remains recovered four groups of domesticates – maize, beans, squash, and cotton, with maize dominant. Wild species indicate several environments were exploited including local uplands, riparian habitats, and some long distance species probably brought by periodic floods of the river. K. Adams notes in her chapter that the high frequency of weedy plants in the recovered remains suggests a disturbed habitat consistent with farming. The presence of cotton in only 5% of sampled proveniences indicates it was present but probably a minor part of the agricultural pursuits of the Homol'ovi IV occupants, unlike their later counterparts at Homol'ovi I and II (LaMotta 2004; Miksicek 1991).

### Site Purpose

As presented in chapter 1, there are at least three possible reasons for the location of Homol'ovi IV on top and the sides of a butte. The three that are to be evaluated using the excavated evidence include: for defensive purposes, to maintain ownership or boundaries, and for ritual or monumentality purposes. Given the relatively limited excavations but extensive mapping of Homol'ovi IV, the following implications of the three hypothetical roles can be used to evaluate their explanatory value.

1. The presence, location, and size of perimeter walls or other means to restrict access to all or parts of the site.

- a. Walls around the perimeter suggest conflict was present and explains the layout of Homol'ovi IV.

- b. Walls or restricted access to the top suggests monumentality or ritual was the purpose for Homol'ovi IV

2. The presence of ladder construction, especially numerous long segments of rooms planned and built simultaneously.

- a. Numerous lengthy room blocks displaying ladder construction indicates the need for rapid building and possible warfare according to LeBlanc (1999).

- b. Ladder construction used over the entire occupation of Homol'ovi IV through repeated construction events suggests processes other than conflict could have caused this construction type.

3. Frequency of projectile points, axes, awls, and similar artifacts.

- a. High frequency of these artifact types suggests their use for non-subsistence needs, primarily conflict (LeBlanc 1999). Frequency is difficult to measure, but its context in the archaeological record might be suggestive. If conflict is the explanation, presence of these artifacts predominantly in midden or trash deposits would not be expected due to their constant need. Caches of these artifacts, however, would suggest conflict.

4. The style and details of rock art either with shields, repeated images, or more diverse depictions.

- a. Presence of shields is used by LeBlanc (1999) to argue for conflict
  - b. Presence of repeated images of animals, plants, or similar iconography suggests the rock art represents clan symbols and the site is more likely a boundary marker.
  - c. Presence of ritual objects or location of rock art in potential restricted access areas suggests ritual or monumentality might be the explanation.
5. Extensive burning of structures.
- a. Burning of many structures, domestic and ritual, suggests possible conflict
  - b. Burning of ritual structures suggests ritual abandonment
  - c. Absence of burning may indicate conflict was not present or at least realized, although inferences about conflict must come from several lines of evidence and do not require that burning is present.
6. Aggregation represented through local abandonment of small sites.
- a. Presence of this pattern could suggest concern for safety and possibly presence of conflict.
7. Artifacts from nearby settlements suggest relationships representing alliances, exchange, or migration.
- a. The great distance between Homol'ovi IV and the nearest known contemporary site suggests an effective political alliance would be difficult
  - b. Artifacts from multiple nearby areas would be more suggestive of exchange than alliance or migration
  - c. Increase of exchanged items through time could reflect migration rather than exchange.
8. Inter-visibility with nearby villages is often important during times of conflict.
- a. Because Homol'ovi IV has no visible contemporary sites, this pattern does not apply.
9. Differentiation of site use by elevation or accessibility.
- a. The concept of monumentality and ritual differentiation is supported by ritual precincts, restricted access to certain areas, or preference of ritual or monumental architecture by placement on elevated areas to a site (O'Donovan 2002).

## ANALYSIS OF RESULTS

### Perimeter Walls

Detailed mapping of walls indicated no perimeter walls around the base of Homol'ovi IV. This does not support an expectation of defense as the primary explanation for the configuration of the village. On the other hand, access to the top of the butte is restricted to a narrow passage accessed only by stairs built into the slope of the butte on the south side. At the top of the stairs a double coursed masonry wall restricted access to the remainder of the rooms. It is possible entry to the pueblo on top of the butte was by ladder only. Such restricted access supports a model of monumentality or ritual control vested in the occupants of the top of the butte. O'Donovan (2002) observed a similar pattern and offered the same explanation for Cerro de Trincheras, Sonora, Mexico.

### Ladder Construction

LeBlanc (1999) observed that spinal room blocks provide an efficient mechanism for rapid construction of rooms that might be necessary for individuals feeling immediate threat from enemies. Spinal room blocks have been observed at Homol'ovi IV as parts of all construction episodes lasting over the course of the 25-30 year occupation of the village. Additionally, such construction has been observed at Homol'ovi I where spinal segments of rooms were constructed, but left unconnected to other spinal segments in the early construction of the village (Adams 2002). Such a construction plan would have left Homol'ovi I susceptible to attack. Similarly, the founders of Homol'ovi III also used ladder construction in the first room block built at the village. The small size of Homol'ovi III and its location in the Little Colorado River floodplain suggests conflict was likely not an issue because it would have been vulnerable to attack.

From the persistent use of ladder construction over the occupation span at Homol'ovi IV,

for initial construction at Homol'ovi III and Homol'ovi I, it seems more likely that ladder construction was a technique for rapid construction of a group of rooms for a multiple household group that was simply efficient and has nothing to do with whether or not the group felt threatened. In the cases at Homol'ovi, including Homol'ovi IV, there is no indication the technique was employed for protection purposes.

#### **Frequency of Artifacts that could be used as Weapons**

LeBlanc (1999) cites axes, projectile points, and bone awls as possible offensive weapons used by Pueblo people. Only a single broken axe, 22 projectile points, and 10 bone awls were recovered from Homol'ovi IV. The context of deposition of these artifacts is primarily within midden deposits indicating they were either lost or discarded. The low number of artifacts and their discard context does not suggest their primary purpose was in warfare.

#### **Rock Art**

Cole (1989) recorded the rock art at Homol'ovi IV. Although two possible shield motifs are visible in one panel, no other indications of war-related rock art is present at Homol'ovi IV. Numerous panels bear repeated elements of the same animal, similar to the pattern observed by Michaelis (1981) at the Hopi shrine of Willowsprings or Tutuveni. These symbols represent repeated visits by members of the same clan to the shrine and represented clan symbols. In addition, many animals, some with associated hunters, are depicted in the Homol'ovi IV rock art, suggesting the possibility of hunting magic. The rock art is accessible to the members of the village. The absence of restricted access suggests the rock art is not associated with ritual or power. The most parsimonious explanation of the Homol'ovi IV rock art with respect to the models is that the village

was viewed as a boundary marker for Hopi clans and villages.

#### **Burning**

Although only 11 structures were excavated at Homol'ovi IV, none of them showed any sign of burning nor were any unburied bodies or other indications of violence recovered during the excavations. Chevelon Pueblo has been extensively burned and this is visible on the surface due to burned walls and features and the presence of extensive burned deposits exposed through vandalism of the site. Homol'ovi IV has also been extensively vandalized and no burned rooms or deposits have been exposed. There is no indication that even one room at Homol'ovi IV was burned. The absence of whole artifacts in the site and the lack of artifacts on the floors of excavated structures suggest that when Homol'ovi IV was abandoned it was done peacefully and the occupants removed most of their belongings for a short distance migration, probably to Homol'ovi I (Adams 2002). Additionally, neither ritual structure, structures 1 and 2, excavated at Homol'ovi IV was burned, a pattern present at Homol'ovi II and III, but less so at Homol'ovi I. Such purposeful burning of kivas has been interpreted as associated with ritual abandonment (Walker 1995).

#### **Aggregation through Local Abandonment of Small Sites**

LeBlanc (1999), Wilcox and Haas (1994) predict that site aggregation in the late 1200s is a product of the consolidation of numerous small villages in the area into larger ones due to the fear or threat of conflict. Adams (2002), Lange (1998), and Young (1996) have documented the absence of any habitation sites in the vicinity of Homol'ovi IV when it was settled in the 1250s. Therefore, this pattern does not hold in the Homol'ovi area during the occupation of Homol'ovi IV.

### **Exchanged Artifacts**

Ceramics and obsidian were exchanged from Anderson Mesa villages into Homol'ovi IV. Ceramics were exchanged from Hopi Mesa villages to Homol'ovi IV. Other than cotton and pottery, it is unclear what the Homol'ovi IV occupants exchanged to these communities. Perhaps Homol'ovi IV was simply in the middle of a broad exchange network and its primary purpose was to facilitate exchange between Hopi Mesa villages and communities farther south. The great distance between Homol'ovi IV and the nearest contemporary village or village cluster mitigates against its role as an important member of a political alliance due to conflict. It would take two days to reach Chavez Pass, the closest village on Anderson Mesa and perhaps three days to reach the nearest Hopi Mesa village. Economic alliances seem more likely than political or conflict-based alliances in the case of Homol'ovi IV.

### **Inter-visibility**

LeBlanc (1999) and Haas and Creamer (1993) argue that inter-visibility between villages became critical during times of conflict. This would allow signaling between the villages to ask for support or to warn of threat. Given that Homol'ovi IV is the only village within 35 miles, its location does not seem likely due to the need for inter-visibility with the closest neighbors. Additionally, the location of the village in the Little Colorado River valley totally hides it from the view of Hopi Mesa villages and the same is true for Chavez Pass.

### **Differentiation of Site Use by Elevation**

As noted under the section on perimeter walls, the upper pueblo located on the top of the Homol'ovi IV butte is restricted in its access from rooms below the butte. The walls are built to the very edge of the butte on all sides of the butte

except the south where the mesa top pueblo could be accessed using a stone stairway. However, the top of the stairway ended at a double coursed wall that was probably two stories high. From there the pueblo could only have been accessed by a ladder. This suggests the mesa top pueblo was an elite district, probably containing the founders of the village, since it was the first part of the village constructed. In accordance with Hopi oral tradition, these village leaders would also have controlled the major ceremonies of the village and owned the best land (Levy 1991).

### **SUMMARY**

The evidence presented above supports the construction of Homol'ovi IV on the top and sides of a butte for reasons of power and prestige rather than due to fears of conflict or warfare. None of the expectations of village architecture or material culture supports warfare as an explanation for the Homol'ovi IV village configuration. The limited access to the top of the village suggests these individuals controlled power within the village and it was expressed by limiting access to their rooms on top. It is possible these rooms were used primarily for the performance of rituals or the storage of sacred objects. No excavation was done in the rooms on top of the butte and their extensive vandalism may preclude answering this question.

The possibility that Homol'ovi IV was established as a boundary marker by occupants of villages on the Hopi Mesa to maintain ownership of this section of the Little Colorado River valley could not really be addressed with the excavation data. It therefore cannot be supported or refuted as an explanation for why Homol'ovi IV was established. The specific location of the village seems more strongly associated with the importance of buttes as means to differentiate status within pueblo society than any other reason. The rock art with repeated images of the same element does support Homol'ovi IV as a shrine visited by groups,

probably from the Hopi Mesas. If these visits were made while the village was occupied, this would support the boundary hypothesis. If the visits were made after Homol'ovi IV was abandoned, this would support the village being an important shrine to mark its place as a former home to immigrant groups. Unfortunately, it is not possible to differentiate between these two possible uses because the rock art cannot be dated precisely enough;

however, the style of execution is consistent for the period Homol'ovi IV was occupied. Rock art across the modern road from Homol'ovi IV has katsina images consistent with depiction after Homol'ovi IV was abandoned and also consistent with its continued use as a shrine after abandonment perhaps by descendant groups from Homol'ovi I or from villages still occupied on the Hopi Mesas.



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