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Drawing the Line on the Hohokam: The Continental Site Revisited

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From an anthropological perspective, "culture" can be defined briefly as all of the behavior patterns that people pass along from one generation to the next for obtaining food, clothing, and shelter, and for maintaining their arts, beliefs, customs, institutions, and other products of their work and thought. These essentials in any given group of people can be identified as "a culture." Just a few different cultures that we can easily recognize today include the many Native American groups in the American Southwest (Apache, Navajo, O'odham, Pueblo, Yavapai, and others), the Maori of New Zealand, Islamic groups in the Middle East, Chinese and Japanese, Western Europeans, and the Nacirema. (Look that last one up online – You might find it surprisingly familiar.)



Ancient cultures for which there are few or no written records can be recognized and distinguished from one another by archaeologists: they analyze the sites, artifacts, and other materials that people left behind and interpret how the sites and materials changed through time. In this regard, certain aspects of material culture that are useful for defining ancient southwestern cultures include differences in their ceramics and other artifact types, arts, architecture, treatment of the dead, subsistence and settlement patterns, and ritual practices over space and time.

I had an opportunity to delve into questions about ancient southwestern culture boundaries over the past several years as a result of participating in and re-examining several archaeological excavation projects at an ancient site in the modern town of Green Valley. This contemporary community has grown up around an original townsite named Continental, in southern Arizona's upper Santa Cruz Valley about 25 miles south of Tucson.

The Green Valley-Continental area has been considered by most southern Arizona archaeologists to be within the territory of the ancient Hohokam Indian culture that flourished in this area several centuries ago. I held that view for many years, too, but now I'm not so sure.

Hallmarks of the Hohokam

The Hohokam were a farming society that inhabited southern Arizona from about AD 400-500 till around AD 1450. Archaeologists recognize this culture from particular diagnostic attributes including styles of ceramics and other artifacts, architecture, subsistence and settlement patterns, and evidence of funerary and other ritual practices (see page 3). In most previous Green Valley-area archaeological research it has been assumed that the sites there that

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¹ This issue for the 4th quarter of Old Pueblo Archaeology Center's 2011 membership/subscription year was published in 2014.

Chronology chart showing cultures identified in southern Arizona



date between 400 and 1450 must be Hohokam sites. Close examination of the diagnostics in at least one such site, however – the Continental site described below – suggests its residents (who I'll call **Continentalans**) didn't identify strongly with the Hohokam.

Archaeological Investigations at the Continental Site

The Continental prehistoric² archaeological site, which has been designated AZ EE:1:32(ASM) by the Arizona State Museum (ASM), was first recorded by Paul Frick during a 1953 archaeological survey that he conducted in the Santa Cruz Valley for his University of Arizona Master's thesis project. The ASM site record that Frick completed – a 5-by-8-inch, double-side index card – simply describes it as a 100 by 100 meter "sherd area" situated in an area of cleared fields about ½-mile from the Santa Cruz River.

From 1985-2009, 15 archaeological excavation and monitoring studies were conducted at and adjacent to this site by four cultural resource management organizations³ to assist landowners in planning for construction projects. These studies altogether identified 106 buried archaeological features and excavated 44 of them, including 5 human burials. All of the burials and objects in the graves eventually were repatriated to the Tohono O'odham Nation for reburial elsewhere.

Eleven of the site's 106 identified archaeological features dated to the Historic period and the other 95 were prehistoric. Seven of the features discovered during the C&ES and Tierra excavation projects were outdoor hearths or roasting pits

				Culture phases			
Date	Culture	Cı	ulture period	Tucson Basin	Phoenix Basin		
1700	RECENT (MIXED)		HISTORIC PERIOD	Tohono O'odham, Apachean & Euro-American	O'odham, Yuman, Apachean, & Euro-American		
1600	O'ODHAM (PIMAN), APACHEAN,	FO	PROTO- HISTORIC PERIOD	Tohono O'odham (Papago) Apachean &	Akimel Apachean O'odham Yuman (Pima) &		
1500	& YUMAN	R M A T -		Sobaipuri Oʻodham	Tohono O'odham		
1400		VE	CLASSIC PERIOD	Tucson phase	Polverón phase		
1300		PER			Civano phase Soho phase		
1200		00		Tanque Verde phase			
1100		POTTERY		Late Rincon Rincon Middle Rincon			
1000	НОНОКАМ		SEDENTARY PERIOD	phase Middle Rincon Early Rincon	Sacaton phase		
900			COLONIAL PERIOD	Rillito phase	Santa Cruz phase		
800		MAKI		Cañada del Oro phase	Gila Butte phase		
700		NG	PIONEER PERIOD	Snaketown phase Sweetwater phase Estrella phase	Snaketown phase Sweetwater phase Estrella phase		
600		T - M E	EARLY CERAMIC PERIOD	Tortolita phase	Vahki phase		
500		s		Agua Caliente phase	Red Mountain phase		
400	EARLY CERAMIC						
300							
200							
100							
AD BC	EARLY AGRI- CULTURAL	PRHOHR	EARLY AGRI- CULTURAL . PERIOD	Cienega phase	[Unnamed]		
2000		A M I C		San Pedro phase			
7500	ARCHAIC	T I M E	ARCHAIC PERIOD				
, 500	PALEO- INDIAN	S	PALEOINDIAN PERIOD				
S			PRE-PROJECTILE POINT HORIZON?				

² The term "prehistoric" is used here to refer to times before decipherable written records were made. Use of the term is not meant to suggest that preliterate societies did not have history because they certainly did, in forms such as oral history.

Tierra = Tierra Right of Way Services, Ltd. 1 project each in 1995, 1996, and 1999

³ **C&ES** = Cultural & Environmental Systems, Inc. 1 project in 1985-1986

Hallmarks of the Tucson Basin Hohokam

Hallmarks of the Hohokam culture include pithouses (earth-covered, wood-and-brush houses built in shallow pits) and, later on, adobe-walled buildings arranged in walled compounds; ballcourts (stadium-like structures apparently used for highly ritualized games and other social gatherings) and platform mounds (some of which were adobe- or rock-walled structures in which rooms were intentionally filled with earth to form flat-topped edifices similar to Mexican stepped pyramids); cremation burials; buff or brown colored pottery with red-paint designs, and other artifacts made of stone, seashells, and clay. In the Salt and Gila River valleys they constructed extensive irrigation systems, and canals of more limited extent were used in the Tucson Basin and upstream (southward) along the Santa Cruz River.

Each of the four periods of Hohokam cultural development is recognized by specific patterns of material culture, settlement, and subsistence.

#1: Pioneer Period, ca. AD 450-750: Pottery and other diagnostic attributes of this first Hohokam period did not become prominent in the Tucson Basin till ca. AD 650. Settlements were characterized by small groups of squarish and ovoid pithouses often arranged in clusters of two to four around a central courtyard. Living areas may have been occupied just seasonally, not year-round. Several house groups may have formed a dispersed village, and many Pioneer villages were situated adjacent to the region's major waterways such as the Santa Cruz River.



Two views of a diorama constructed by Old Pueblo volunteer Gail Roper showing a cut-away view of what a Hohokam pithouse may have looked like

#2: Colonial period, AD 750-950: In this period a local ceramic tradition emerged in the Tucson Basin, stylistically similar to that of Phoenix Basin buffware but distinct in some ways. During the Colonial period Hohokam culture expanded and sedentism increased. The first ballcourts were constructed, and pithouses were situated mostly on terraces above the river floodplains. The houses were mostly rectangular but still often were arranged around courtyards. Excavations have shown that produced crops included maize, common beans, squash, cotton, and agave.

#3: Sedentary Period, AD 950-1100: The Hohokam population and culture area continued to grow in this period. Canal systems were further expanded. The dead generally were cremated and their burned remains were buried in ceramic vessels, but a few east-facing, extended inhumations are known. The use of ballcourts ceased around the end of this period.

#4: Classic period, AD 1100-1450: Dramatic shifts in settlement pattern occurred shortly after AD 1100. Ceramic styles, architecture, and settlement pattern of the Late Rincon phase (AD 1100-1150) are more like to those of the subsequent Tanque Verde and Tucson phases than to those of the Sedentary period's Early and Middle Rincon phases), so some Arizona archaeologists (including me) feel that Late Rincon is an early Classic period developmental phase. In contrast to the earlier painted ceramic styles, in which curving lines, life-form designs, and closely-spaced painted lines and motifs were common, Hohokam potters of the Late Rincon phase began painting only straight-line geometric designs on their decorated pots, and often their painted lines and motifs were much more widely spaced than before. New forms of architecture, including platform mounds, semisubterranean houses with heavy adobe walls, and true above-ground, adobelike mud-walled structures (sometimes built within walled compounds) became common in Late Rincon.

During the Tanque Verde phase (AD 1150-1300) the maximum expansion of village farming, including both irrigated and dry farming, occurred in and around the Tucson Basin. Expansion also occurred in the distribution of Tanque Verde Red-on-brown, the most common Tucson Basin painted ceramic type of the Classic period after 1150. Between 1150 and 1300 this ceramic type reached its widest circulation, extending westward all the way past Gila Bend and eastward into the middle San Pedro River Valley, yet it was rarely exported into the Phoenix Basin. Because Tanque Verde Red-on-brown remained so consistent through the Tanque Verde phase and the following Tucson phase (AD 1300-1450), sites and features of the Tucson phase generally can be distinguished from those of the Tanque Verde phase only by the presence of Salado polychrome or specific design motifs on Tanque Verde Red-on-brown pottery. Tanque Verde and Tucson phases both are characterized by large nucleated villages where the architecture was mostly above-ground, contiguous-walled room blocks, sometimes within walled compounds. Platform mounds also are most common during these last two Hohokam phases. Most of the Santa Cruz Valley margins appear to have been abandoned after AD 1150, however, and by AD 1450 the entire Hohokam region was almost completely depopulated.



Several research projects conducted at the Continental site were in existing pecan groves, where tree roots made archaeological excavation conditions less than ideal (Tierra Right of Way Services photo courtesy of Arizona State Museum Archivist Alan Ferg)



Three pithouses found in excavation area alongside Whitehouse Canyon Road in 2009 (EcoPlan Associates photo; Pima County Department of Transportation multi-use path data recovery project)



Pithouse Feature 7 excavated in a pecan grove in 1985-1986 (Photo courtesy of Mary Lou Heuett, from 1987 Cultural & Environmental Systems report by Laurie V. Slawson, David C. Hanna, Peter L. Steere, and Skip Miller)

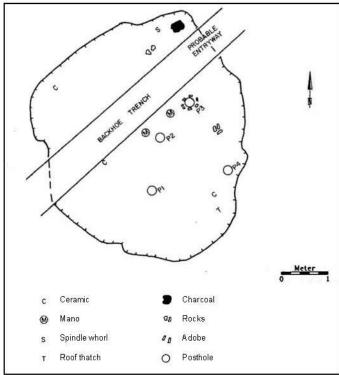
originally thought to date to the Late Archaic period (see time chart on page 2). However, since those features were first discovered and assigned cultural affiliations, reinterpretation of the Tucson Basin archaeological chronology suggests that all seven dated to the Early Agricultural and Early Ceramic periods.

Three or four other features were assigned to the Middle Rincon phase (Sedentary period) and Late Rincon phase (early Classic period). The rest date to the Tanque Verde phase, including all of the human burials that were found and removed from the site. Following are some details about the site's architecture, other archaeological features, burials, and artifacts.

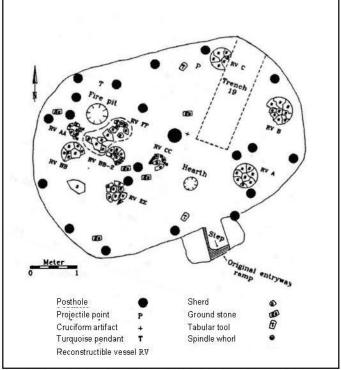
Continental Site Housing. All of the prehistoric houses yet identified at the site were pitstructures. Most were of a house-in-pit type in which a wood-frame structure was built inside a shallow, flat-bottomed, oval or nearly rectangular pit, the frame was covered with brush or mats, and finally the entire house was covered with earth to protect against wind and rain. With the exception of house Feature 42A discussed below, the houses excavated fully enough to determine their sizes ranged from 2.92 to 4.50 meters wide and from 4.50 to 6.75 m long, not counting the entryways that extended outward from the floors. Archaeological preservation of the houses was quite varied – Some were well preserved, but for others it was almost impossible even to identify their outlines either because they were in modern pecan groves where tree roots had damaged their buried walls and floors, or were in narrow-access excavation areas (pages 4-6 photos).

In most of the pithouses a narrow, covered entryway, with a step or ramp to the outdoors at its outer end, extended outward from one of the long sides of the house. Entryways in several of these houses had massive, poured- or packed-mud walls along each side (see illustrations). Some of the houses were built over earlier ones, indicating successive construction episodes through time.

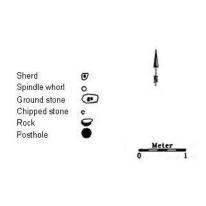
One house much larger than the others was Feature 42A, which measured 4.7 by 7.8 m in its exterior dimensions and 3.2 by 6.4 m inside. Excavation revealed it was a rectangular adobe-walled structure in which the walls were built up as coursed mud layers against the outer edges of the house pit using the "English cob" technique (in which walls are built by hand-piling stiff mud without the aid of



Floor plan of Continental site Feature 7 pithouse excavated in 1985-1986, poorly preserved because of historical cultivation and pecan grove root disturbances (Redrawn from 1987 C&ES report by Laurie V. Slawson, David C. Hanna, Peter L. Steere, and Skip Miller)



Floor plan of relatively well preserved Continental site Feature 38 pithouse with an adobe-lined entryway, found in treeless area, excavated in 1995 (Redrawn from 1997 Old Pueblo Archaeology Center report by Jeffrey T. Jones)

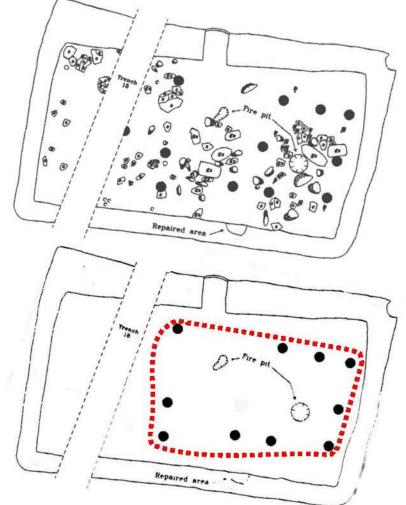


Floor plan of Feature 42A adobe-walled pithouse excavated in 1995

Top: Showing artifacts on floor, and postholes

Bottom: Showing the outer house walls and the in-floor postholes and suggested outline of the later house that is inferred to have been built inside the earlier one

(Redrawn from 1997 Old Pueblo Archaeology Center report by Jeffrey T. Jones)



Photographs of a Few of the Pithouses Excavated at the Continental Site in 1995



Feature 14 pithouse excavated in 1995, view north; note thick adobe walls around its entryway near top of photo, hearth just beyond the 1-meter scale board, and mudplastered floor segment and postholes near center of photo (Old Pueblo Archaeology Center photo)



Detail of the thick adobe-walled and mud-plastered entryway in Feature 14 pithouse after excavation, view west; house floor is at left, outer end of entryway is at right; scale board is 1 meter long (Old Pueblo Archaeology Center photo)



Feature 38 pithouse, overall view west showing smashed pots on floor; dark area is the shadow of a tarp stretched on a pole-frame structure that was erected to shade the excavators from the hot July 1995 sun (Old Pueblo Archaeology Center photo)



Feature 38 pithouse overall view north after excavation showing large central posthole just beyond the scale board, hearth below the board, and thick adobe-walled and mudplastered entryway in foreground (compare previous drawing) (Old Pueblo Archaeology Center photo)



Feature 53 pithouse, overall view south after excavation showing mud-plastered hearth below scale board and, in foreground, mud-plastered, thick adobe-walled entryway that extended part way into the house (Old Pueblo Archaeology Center photo)

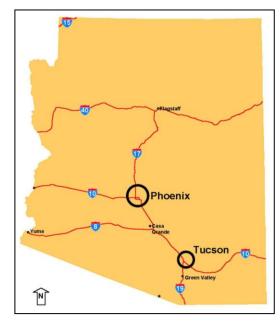


Feature 42A adobe-walled pithouse overall view west after excavation showing artifacts in situ on floor, entryway opening in the wall at right; exploratory trench in which the house was found cuts through west part of house (Old Pueblo Archaeology Center photo)

forms or a structura1skeleton). Its remaining adobe wall remnants still stood up to 78 cm high above the floor and were 98 cm thick at the widest point, although their average thicknesses were around 45 cm. The remaining portions of the walls were quite well preserved, and remnants of a 1 to 2 cm thick layer of whitish caliche plaster were visible in several places on the interior surfaces.

The floor of Feature 42A was constructed of caliche plaster that averaged 3 to 5 cm thick and was poured after the walls were built. Only four postholes, one in each corner of the structure, were positively identified as belonging to Feature 42A. Two larger ones over 50 cm deep, located near the center of the structure, probably were central posts for the roof, and a small posthole near the central portion of the south wall also may have been associated with that structure.

Feature 42A's entryway, located in the approximate center of the northern wall, was a simple break in the wall with a 26 cm step up to the original ground surface outside. An 8 cm high barrier was built at the outer edge of this step, probably to keep water out of the structure when it rained. A small clay-lined



The Continental site is south of Tucson in Green Valley, Arizona

hearth just 18 cm wide and less than 8 cm deep was situated in line with and about 1 m south of the entryway, and had been sealed over with 2 to 3 cm of caliche plaster.

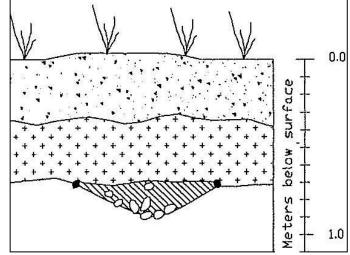
The Feature 42A hearth apparently was filled and sealed to accommodate a smaller, semirectangular pithouse, Feature 42B, that was constructed later, wholly within the larger Feature 42A structure. Feature 42B was approximately 4 m long and 2.5 m wide. There was no sign of a formal entryway associated with it, although two possible locations were suggested by Jeff Jones, the excavation project director. A second clay-lined firepit, 17 cm deep and less than 20 cm east of the earlier, capped firepit presumably was a second hearth for Feature 42A. A third firepit, situated near the east wall of Feature 42B and apparently associated with that later structure, was a 45 cm wide, 15 cm deep depression, heavily burned but without a clay-plaster lining.

Burned plaster from the walls of Feature 42A indicates that after that structure burned it was cleaned out and Feature 42B was built inside it. The western wall of Feature 42A was also lowered to within 20 cm of the floor after it was abandoned.

Although Feature 42A was much more massive than the other houses and was larger than the others because of its thick adobe walls, its floor dimensions actually were smaller than those of some of the

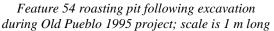
site's other pithouses, so even Feature 42A was not monumental enough to suggest it was a structure used by the entire community, for example, as a meeting house. No Hohokam ballcourts, platform mounds, or other "public" architectural features have been identified at the Continental site, either.

Outdoor Middens, Pits, Activity Areas, and Water-Control Features. Besides the human burials discussed below, and some historical building remnants associated with early twentieth-century use of the site, archaeological features identified outside of the Continental site's prehistoric dwellings included middens, pits used for various purposes, an outdoor storage area, an ancient canal segment, and possibly a prehistoric reservoir.



Drawing of one of the early roasting pits identified in the side of a test trench (From Tierra report on 1996 test excavation project)





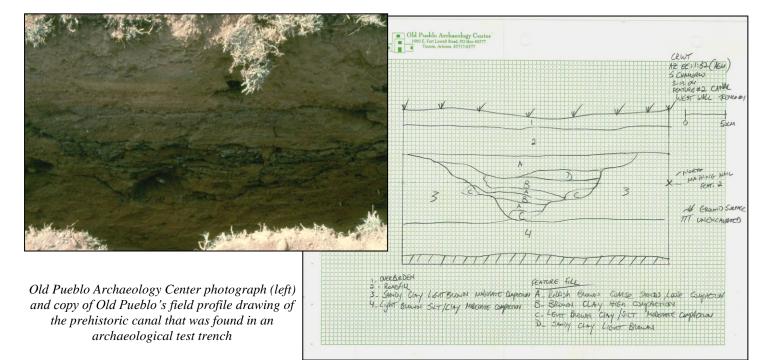


Feature 47 roasting pit following excavation and removal of heating stones during Old Pueblo 1995 project

Middens are heaped and sometimes layered deposits of unconfined refuse, where people intentionally disposed of trash. Several deposits of this kind, 35 to 60 cm thick and up to 6.5 m in diameter, were identified during the Continental site excavations. These accumulations contained artifacts that were mostly broken and worn-out, and sometimes burned, and they often included charcoal, ash, burned rocks, and animal bones. These features indicate that the Continentalans disposed of much of their trash in designated areas.

Pits found in the archaeological excavations are of two basic types, thermal and nonthermal. The more common ones are the thermal pits, which are interpreted as hearths and roasting pits. The seven thermal pits mentioned on page 2 that dated to the Early Agricultural and Early Ceramic periods generally were basin-shaped and still contained charcoal and ash, and some included heating stones. The thermal pits that were contemporary with the site's later, Classic period living structures also were mostly basin-shaped but, in addition to charcoal and ash, several of them also contained fire-cracked and sooted heating stones, which probably were added to facilitate roasting foods for several hours at a time.

Pits that contained no significant ash or charcoal accumulations, no burned artifacts, and no other evidence of burning are classified as nonthermal. Pits of this kind that have been discovered and excavated at the site include at least two used for trash disposal, and a "borrow pit" from which earth was apparently



dug out for use as plaster or other construction material.

The 1985-1986 excavations identified at least two possible outdoor occupation surfaces, each associated with a fire area and prehistoric refuse. Both were interpreted as outdoor areas used for cooking, craftmaking, storage, or some combination of activities. One of these surfaces was buried under a relatively large amount of refuse suggesting that it eventually was used as a trash disposal area. Two other features observed in test trench sides but not fully excavated in the 1985-1986 project also were interpreted as possible outdoor activity surfaces, or as ramadas associated with pithouses.

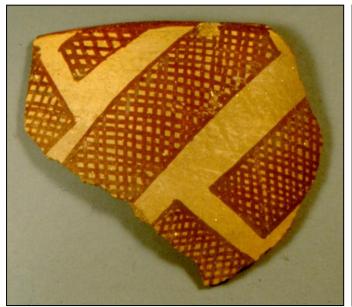
A test trench excavated in 2004 cut through a well defined prehistoric canal that was almost 3 m wide and 1 m deep, and that had filled with alternating layers of coarse sand and compacted clay. The coarse sands obviously were deposited by fast-moving water and the clay lenses by slow-moving or standing water. Multiple layers of these two different kinds of sediment suggest the canal periodically filled with waters and sands coming off of the nearby Santa Rita Mountains pediment rather than from the Santa Cruz River, and that each time the flows slowed the finer, clayey sediments settled out into the canal.

Another prehistoric water control feature is suggested by geoarchaeologist Michael Waters's identification of a 2.35 m thick deposit of laminated, very fine sand, silt, and clay, with some evidence of mudcracks from periodic drying, just west of the Continental site, between it and the river. From this discovery he concluded that a *charco* (a Tohono O'odham term for a reservoir), or at least a still-water pond separate from the main Santa Cruz River channel, was adjacent to the site during its Classic period occupation. His idea was given added support later with the discovery that one of the pithouses excavated during the 2009 EcoPlan Associates project contained abundant pollen of cattail plants, which only thrive in water and in very wet soils.

Human Burials. The five burials identified in excavations included one primary cremation burial that intruded through the fill and floor of a pithouse, and four inhumation burials in which adult bodies were laid in the graves fully extended. However, one of the latter burials included apparently intrusive remains of a late fetus or neonate, therefore, six individuals were represented in these burials.

Artifacts and Other Collected Specimens. The several excavation projects conducted at the site recovered ceramics, ground and flaked stone artifacts, mineral specimens and fire-cracked rocks, artifacts made from marine shell, animal bones, charred wood and seeds, and soil samples that yielded burned plant remains and pollen.

From the ceramic types listed in all the excavation reports one could easily infer that the Continental





Exterior (left) and interior views of a large hemispherical Tanque Verde Red-on-brown bowl recovered in 1985-1986 project (Photos courtesy of Mary Lou Heuett, from 1987 Cultural & Environmental Systems report by Laurie V. Slawson, David C. Hanna, Peter L. Steere, and Skip Miller)





Exterior (left) and interior views of a large hemispherical Tanque Verde Red-on-brown bowl recovered in 1985-1986 project
(Photos courtesy of Mary Lou Heuett, from 1987 Cultural & Environmental Systems report
by Laurie V. Slawson, David C. Hanna, Peter L. Steere, and Skip Miller)



Nine complete and nearly complete Continental site vessels recovered in Old Pueblo Archaeology Center 1995 project



Tanque Verde Red-on-brown bowl in photo above showing painted decoration on interior



Modeled ceramic spindle whorls recovered in EcoPlan 2009 project (middle one broken in halves; photos by Anna Neuzil)

site was inhabited by the Hohokam. About two-thirds of the 14,537 pottery specimens recovered from the excavations were plain brown ware sherds virtually indistinguishable from prehistoric Hohokam brown ware found elsewhere in the Tucson Basin. Painted pottery types that ceramic analysts interpreted as locally made (that is, made at or relatively near to the Continental site) include just 47 red-on-brown sherds of the Cañada del Oro, Rillito, or Rincon types, and 3 Rincon Red or Rincon Polychrome, types that all date prior to AD 1100 (see page 2 chronology chart). In contrast, 3,368 sherds or whole pottery vessels were identified as post-1100 Classic period types including Late Rincon Red-on-brown, Tanque Verde Red-on-brown (including black-on-brown, white-slipped, and black-on-brown-and-white-slipped Tanque Verde style variants), and locally made imitations of Casa Grande Red-on-buff and San Carlos Red.

Just 33 sherds of buff ware, which is Hohokam pottery made in the Phoenix Basin, were recovered from all of the Continental site excavations including 4 Santa Cruz Red-on-buff, 1 Sacaton and 10 possible Sacaton Red-on-buff, 1 Casa Grande and 1 possible Casa Grande Red-on-buff, 4 untypable red-on-buff, and 12 unpainted buff ware sherds. From elsewhere beyond Green Valley and the Hohokam culture area the excavation assemblages include 98 specimens (sherds or reconstructible vessels) that probably were made somewhere to the south or west (72 Sells Red, 21 Ramanote Plain, 4 sherds of a two-colored Santa Cruz Polychrome variant, and 1 Trincheras Purple-on-red); and another 29 sherds that probably came from somewhere to the north, east, or possibly south (11 San Carlos Red, 6 Mogollon Brown, 5 San Francisco Red, 3 Cibola White Ware, 3 San Simon series red-on-brown, and 1 Nogales Polychrome).

Pottery for which it was impossible for the analysts to identify as locally or nonlocally made included indeterminate or unclassified red ware; plain/red ware; white-slipped brown ware; very burned, thick, fiber tempered ware; thick, fiber tempered ware; and thick, fiber tempered, basketry-impressed ware. All of the Phoenix Basin and other "nonlocal" pottery accounts for only about 2 percent of all the pottery recovered from the Continental site excavations.

Some recovered potsherds had been drilled, others worked by chipping or smoothing their edges. Eleven of the recovered worked sherds are disks, mostly ranging from 2.7 to 6.0 cm in diameter but one chipped-edge disk is 18.5 cm in diameter suggesting use as a pot lid or a small plate. Several other worked sherds have straight to convex smoothed edges suggesting use as scrapers or spoons. Perforations

in some sherds that were not disk-shaped have been interpreted as repair holes drilled alongside cracks in former whole vessels, to reinforce the cracks with lacings through the holes, like shoelaces.

Other ceramic artifacts besides pottery that were recovered from the Continental site include 19 large fired clay beads (see lower right photo on page 10) and at least one ceramic figurine fragment. The bead-like artifacts, which range from 2.4 to 4.1 cm in diameter, are interpreted as spindle whorls that functioned as flywheels on sticks used to twist fibers of various material types into yarn or thread, which could then be used to manufacture a variety of perishable items including clothing and containers. The ceramic figurine fragment, recovered in 1995, is the leg and torso fragment of an animal.

Six small ground stone disks, some perforated, some partly so, and some unperforated, also were interpreted by the excavators as either finished or partly finished whorls. These stone disks range from 3.8 to 4.2 cm in



Ground stone whorls and a polishing stone or whorl preform recovered during EcoPlan 2009 project; another similar-sized flat stone disk in which a hole had been started in the center was recovered in the 1985-1986 project

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diameter, and the ones for which thickness measurements were recorded in the excavation reports are from 6 to 8.4 mm thick.

Whorls are not the only artifacts from the site that indicate work with textiles. Other ground stone artifacts recovered include the stone needle illustrated at left, and at least 51 tabular knives, which many southern Arizona archaeologists interpret as tools used for extracting and processing the stringy fibers from long, succulent leaves of agave plants. At least 15 flat-surfaced ground stone artifacts just large enough to be held in the lap or hand are interpreted as lapstones on which something else could be manipulated on their surfaces; some of these also could have been used in textile working, although some may have been manos in their first stage of manufacture.

The most common ground stone tools are the 128 recovered, rectangular, oblong, and round manos, cobble handstones, and other abraders used for grinding and smoothing. There also were 21 slab, basin, and trough-shaped metates and other netherstones recovered, and 1 large slab shaped by grinding. A majority of the manos are the type used in trough

(Left) Ground stone pendant, needle, and hematite pigment stone recovered during EcoPlan 2009 project

metates, but surprisingly just four trough metates and fragments of them were recovered. Six of the manos and abraders exhibit grooves that would have been suitable for straightening and smoothing arrows or other wooden shafts. The seven whole or fragmentary stone ax heads that have been recovered are typically of the three-quarter-grooved type.

One bowl-like ground stone specimen is 21.5 cm long by 15.1 cm wide by 5.0 cm thick with knobby protrusions on its exterior sites; its nearly flat-bottomed interior surface averages 4.0 cm deep below the rim and is highly polished, suggesting this artifact was used for processing small plant seeds, herbs, or roots, or perhaps pigments, paints, or pottery slips, in addition to being suitable as a serving bowl.

Twenty-seven stone pestles have been recovered, as have four stone mortars and one "minimortar" in which the cavity is deeply stained with hematite, indicating use for grinding pigments. The collected ground stone artifacts also include one interpreted as a pottery-making anvil (for the paddle-and-anvil pot construction technique typical of the Hohokam) and a flat, circular stone that possibly served as a jar lid.

Six relatively flat and thin, polished stone tools are interpreted as woodworking planes. One still has a resin-like adhesive material adhering to the end opposite the blade, suggesting it was hafted in a wooden handle. Other small ground or polished



Tabular stone knives recovered in 1985-1986 project (Photos courtesy of Mary Lou Heuett, from 1987 Cultural & Environmental Systems report by Laurie V. Slawson, David C. Hanna, Peter L. Steere, and Skip Miller)

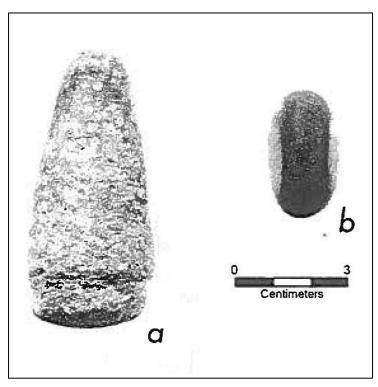
stone artifacts recovered from the Continental site include 1 small polishedstone cruciform object; 16 small polished pebbles, at least some of which are interpreted as potterypolishing stones; 2 stone objects that are rather phallic, leading some researchers to interpret them as fertility fetishes (others believe they are net weights, perhaps for catching birds or small mammals, or stone plummets); 7 pendants and 1 small perforated stone that also could have been a pendant, 350 beads, including 348 small cylindrical ones of black stone, found together with 6 Olivella shell beads in the burial of the child.

Also collected during excavations were three intentionally faceted stone nodules, two of the iron mineral hematite (which ancient southwestern cultures often used for making red pigment for pottery decoration, and possibly body painting and other purposes) and one of brick-red



conglomerate similar to red ocher; plus three unworked hematite nodules; and one small loaf-shaped, glittering mass of galena, an ore of lead.

Over 90 percent of the more than 3,270 recovered flaked stone artifacts are pieces of debitage, that is, stone flakes, flake fragments, and irregular broken pieces (shatter) knocked off of the core rocks during the stone-knapping process. The flaked stone assemblage also includes many rock cores from which debitage flakes had been removed, and a few hammerstones that were used to remove flakes from the cores. (Some of the rock cores also had been used as hammerstones.) The relatively few finished flaked stone



Plummet or phallus (left) and polishing stone recovered in 1995

tools include projectile points, unifaces and bifaces (flakes that had been reflaked across one or both of their flatter surfaces to thin and sharpen them), scrapers, perforators (drills and gravers), choppers, wedges, tabular knives (similar to the ground stone ones but with chipped instead of polished edges), "retouched flakes" that were minimally chipped along their edges, and flakes interpreted as simple tools because they exhibit edge damage from use against other materials. The 19 projectile points are mostly small triangular arrow points, some with and some without side notches, similar to points from Classic period Hohokam sites farther north. However, at least 1 leaf-shaped point, 1 triangular one with a slightly contracting stem, 1 that appears to have been manufactured during the Archaic period between 5000 and 1500 BC, and 2 large Cortaro type triangular points with concave bases are among those recovered. The Cortaro is a type usually associated with the Late Archaic and Early Agricultural cultures, ca. 1500 BC-AD 500.

Other mineral specimens recovered from excavations include whole crystals of quartz and selenite (one of each mineral); one unworked turquoise nugget, and numerous burned and fire-cracked rocks, including ground stone artifacts recycled for use as heating stones.

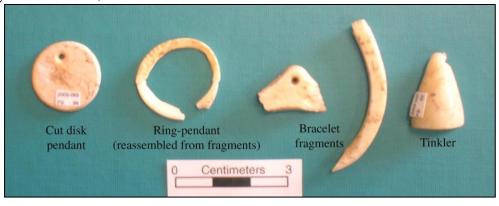
Fifty-two marine shell specimens are included in the collections from the site. Of these, at least 22 (possibly 23) are of *Glycymeris*, 10 are *Laevicardium*, 7 are *Olivella*, 10 are *Conus*, and 2 are *Polinices* shell. Nine of the shell artifacts are whole or fragmentary bracelets (mostly of *Glycymeris*), 5 are rings or fragments thereof, 24 are beads, pendants, or tinklers made from small whole shells (mostly *Conus* and *Olivella*), and 1 is a perforated *Laevicardium* shell represented by 5 reconstructible fragments.

Artifacts made from animal bones, not counting historically sawed and butchered ones, include 7 notched bones (at least 6 of which are deer scapulas, interpreted as rasp-like musical instruments), 26 identified as awls or hairpins; and 2 antler tines with worn tips, probably used for making pressure-flaked stone artifacts (see page 15 photograph). Numerous other pieces of worked bone not identifiable to specific artifact types also have been recovered from the site.

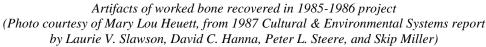
Animal and Plant Remains. Animals that may have been used as food sources by the site's Classic period occupants include Gambel's quail, a hawk-size bird, antelope jackrabbit, black-tailed jackrabbit, cottontail, kangaroo rat, white-throated wood rat, valley pocket gopher, pronghorn, possibly bighorn sheep, mule deer and possibly whitetail deer, and the Sonoran mud turtle. Other animal remains found in

excavations include grasshopper mouse, desert pocket mouse, coyote or dog, possibly tortoise, and rattlesnake, but there is some question whether those

Shell artifacts from the 2009 excavation project (EcoPlan Associates photograph for 2009 Pima County Dept. of Transportation project)



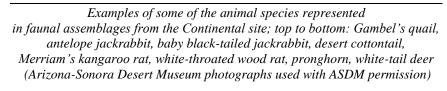




kinds were used as food or for other purposes, or perhaps burrowed into the site's earthen deposits after human occupation ended.

Animal remains recovered from the site, the manner in which animals were processed and their remains discarded, and similarities and differences observed in the faunal assemblages of the various Continental site excavations indicate that the site inhabitants focused most of their energy on capturing jackrabbits and cottontails, deer and other hooved animals, and occasionally rodents, as sources of food and for other needs. But Continentalans diversified their diet to include birds and possibly carnivores.

Despite the location near the Santa Cruz River and associated drainages, there is no evidence that the Continentalans exploited animals typically found only in riparian habitats, and it seems unlikely that they utilized amphibians or reptiles. Birds comprise a very small percentage of the site faunal assemblage, but their presence in the collection is an indication of the type of environment and resources available to the prehistoric inhabitants. I surmise that the Continentalans captured Gambel's quail opportunistically, providing some variety from the usual terrestrial faunal fare.



















"Cheno-Ams" are plants of either the chenopod (goosefoot) or amaranth (pigweed) family. Goosefoot (also called *huauzontle*, *quelite*, and *bledo*) is a leafy chenopod plant that Indians throughout the Americas used for food. Several annual species in the genus *Chenopodium* produce thousands of seed-like fruits on a single flower stalk and the leaves were eaten as greens.

Native Americans throughout most of North and Middle America also ate seeds and greens of several amaranth species. Each amaranth plant has foliage rich in vitamins and nutrients, and can produce hundreds or even thousands of small, seed-like fruits called achenes.

The pollens produced by chenopods and amaranths are hard to distinguish from one another, so pollen resembling that of either type of plant, when found in archaeological contexts, is often identified by botanists as "Cheno-Am" pollen. See these web sites for more information:

www.texasbeyondhistory.net/st-plains/nature/images/chenopod.html www.texasbeyondhistory.net/st-plains/nature/images/amaranth.html.

In all Continental site excavations thus far, recovered pollen, burned plant parts, and charred seeds represent at least 29 plant types that likely were food sources for the site's Classic period occupants. The edible plants that were most likely used extensively include maize, squash, tepary and common beans, and agave, all evidently cultivated locally; as well as Cheno-Ams (see description at left), saguaro and other cactus species, and others that grow wild in the Sonoran Desert.

Other plants identified in excavation samples may have been medicinal, and some undoubtedly were used for construction and tool-making.

When was the Site Occupied? Radiocarbon and other dating techniques suggest the Continental site was first utilized as early as AD 410 but that it was occupied primarily between AD 1150 and 1300. The earliest-dated archaeological features were outdoor pits for which calibrated radiocarbon dates on recovered charcoal fell in the ranges 410-158 BC for one, 160 BC-AD 245 for a second, and AD 78-873 for a third. These time ranges correspond to the Early Agricultural, Early Ceramic, and possibly Hohokam Pioneer-early Colonial periods (see page 2 chronology chart). But if the AD 78-873-dated pit in fact predates the Pioneer period, then the first possible Hohokam presence at the site may have been during the Rillito phase of the Hohokam Colonial period, as suggested by a few Rillito Red-on-brown, Santa Cruz Red-on-buff, and San Francisco Red sherds. With few exceptions, however, these pieces were recovered from pithouses that clearly were inhabited later, during the Tanque Verde phase. A few Sacaton Red-on-buff and Rincon Red sherds also were found in three archaeological features suggesting occupation during Early and Middle Rincon times, ca. AD 950-1100.

Chronological analyses indicate the main Continental site habitation began after AD 1100 during the Late Rincon phase, and that the most intensive occupation was between AD 1150 and 1300 during the Tanque Verde phase. The recovered pottery types and 26 radiocarbon and archaeomagnetic dates from the site's later prehistoric features indicate the prehistoric occupations did not extend later than AD 1300. No traces have been found of residential activity attributable to the Tucson phase (AD 1300-1450), Protohistoric period (AD 1450 to the 1690s), or pre-twentieth century Historic period.

The Ancient Environment. Based on a geomorphological study of the Continental vicinity, geo-archaeologist Michael Waters concluded that the Santa Cruz River segment from Green Valley to San Xavier was a discontinuous arroyo characterized by deep down-cutting and channel-filling from approximately 400 BC until around AD 950. Then between AD 950 and 1150 the river floodplain and the alluvial fans alongside it, he believes, were affected by cutting and filling, which would have reduced or destroyed the agricultural potential of this valley segment.

However, another geoarchaeologist, Bruce Phillips, observed that soil at the juncture of the Santa Cruz floodplain with the toe of the Santa Rita Mountains alluvial fans developed slowly over several centuries, and that erosion of the nearby hills over that long period likely caused continuous sediment deposition into the alluvial fan areas near the southern end of the Continental site. The natural nutrients that came with sediments being deposited from both the alluvial fans and the Santa Cruz River, he thinks, actually may have made the Continental site favorable for agriculture. This may partly explain why a settlement flourished there after 1100.

A surprising discovery was abundant cattail pollen in a soil sample from one of the pithouses excavated during the 2009 PCDOT-sponsored investigation. This find suggests that a riparian zone had

become established along the river at least by the time of Classic period occupation. Also, several of the excavation projects recovered abundant Cheno-Am pollen, which indicates either open floodplain vegetation or land disturbance, or both, during the prehistoric occupation periods.

Identifiable pollen and charcoal types recovered from the site's prehistoric features indicate the Classic period environment was much like today's, so the surrounding vicinity had the same potential for natural resources bounty as it did historically. The river floodplain west of the site would have offered access to arable land, wood, and riparian resources, the stable geological surfaces at the edge of the floodplain were suitable for home construction, and the bajadas and upper slopes of the nearby Santa Rita and Sierrita mountains would have been convenient places to obtain animal, plant, and mineral resources.

In fact, the area around the Continental site probably was more suitable for agriculture and natural resource exploitation during the Classic period than today, considering that post-1900 introductions of cattle grazing and groundwater pumping speeded up erosion of the river floodplain and caused former grasslands of the nearby mountain slopes to be taken over by growths of mesquite, burroweed, and snakeweed. Construction of the railroad and Whitehouse Canyon Road also altered the area's soil-type distributions historically, and much of the natural vegetation was removed in the twentieth century to plant cotton and pecan groves.

Subsistence and Settlement. In all Continental site excavations thus far, at least 29 plant and 15 animal types have been identified as likely food sources used by the site's Classic period occupants. The edible plants most likely used extensively were maize, squash, tepary and common beans, and agave (all of which evidently were cultivated locally), as well as Cheno-Ams, saguaro and other cactus species, and others that grow wild in the Sonoran Desert. Not all of the plant types recovered from soil and charcoal samples are considered edible, however. For example, cotton was important for textile-making, globe-mallow and others could have been used as medicinals, and others may have been used for construction and tool-making. One of the more interesting plants identified in the latest project's pollen samples is cattail, which indicates that a riparian area or perhaps even a reservoir or pond separate from the main Santa Cruz River channel was nearby.

Potentially edible animals whose remains were recovered during all of the Continental site projects are listed on page 15. Small projectile points recovered from the excavations indicate that at least some animals were taken by hunting with bows and arrows, but smaller animals likely were snared or caught by running them down until they were exhausted.

Other fundamental subsistence needs include clothing, shelter, and implements. Undoubtedly some clothing was made from animal hides (leather). Animal hair and feathers also may have been an important source of clothing material, for example for weaving blankets and body wraps. The abundance of fiber-working artifacts (whorls and tabular knives) and remains of agave and cotton suggest,

The Continental Site in History. The earliest manifestation of Historic period (post-1700) activity at the Continental Site is the Tucson and Nogales Railroad, which was constructed approximately through the center of the site in 1909 and is now part of the Union Pacific system. The site's next recognized historical use is associated with the community of Continental, Arizona, which was founded in 1916 when the Intercontinental Rubber Co. (IRC) planted fields of latex-producing guayule shrubs in the area to produce a U.S. source of rubber after imports of real rubber had been curtailed by World War I. The IRC also built a rubber-processing plant, a concrete-pipe plant, an extensive irrigation system, housing, and a plant nursery, general store, post office, railroad siding, railroad station or depot, and a church in the vicinity. Remnants of some of those facilities were identified in some of the excavation projects at the Continental site.

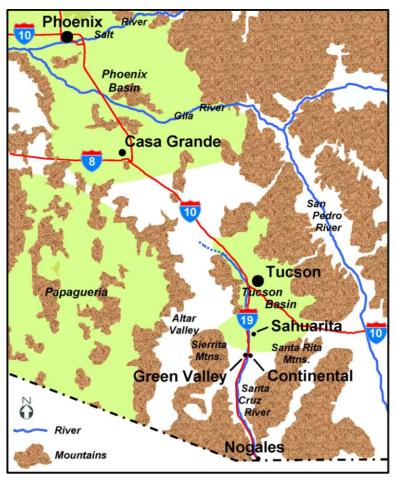
While the rubber enterprise was still on-going, the Tucson to Nogales Highway (a segment of what later became US 89) was constructed in 1918 through Continental, barely missing the prehistoric Continental site. By that time the portion of Whitehouse Canyon Road that passes through the site already was in use. After the IRC operation ceased in 1922, the historical Continental community was essentially abandoned for nearly three decades, yet some of its historic buildings lasted for years and some remain standing today. Archaeologist Paul Frick's original 1953 ASM site record for site AZ EE:1:32 (ASM) notes that this site was 100 meters east of the Continental General Store (which is now a restaurant), and the Continental School plotted on Frick's site card is still a school today.

Farmer's Investment Co. (FICO) purchased the former IRC properties in 1949 and began growing cotton. In 1965 FICO began planting extensive pecan orchards within and well beyond the Continental site, and probably by 1970 had phased out its cotton operations. Today the historic community of Continental is part of the larger, still-unincorporated community of Green Valley, a retirement mecca now home to over 20,000 people.

however, that woven textiles made from plant fibers were the more important clothing materials.

Shelters at the Continental site typically were pithouses of the house-in-pit type common to the Hohokam culture. Most of them were rectangular with rounded corners with an entryway protruding from one of the longer walls and a small hearth inside the entry, support postholes in the interior, and wall postholes inside the house-pit at the edge of the floor. However, at least one prehistoric structure, Feature 42A, was a pithouse constructed with massive mud walls using the "English cob" technique, in which stiff mud is hand-piled to create walls without the aid of any forms or structural framework. (This same method was used to construct the four-story "Great House" now preserved in Casa Grande Ruins National Monument in Coolidge, Arizona.)

The several excavation projects in various parts of the 28-acre Continental site have shown that all seven archaeological features believed to date to the Early Agricultural and Early Ceramic periods are nonhabitation features in the northwestern one-third of the site. In contrast, the majority of the site's Classic period habitation structures occur in two main concentrations: one in the east-central part of the site and the other in the northwestern part. If this distribution does not simply reflect where archaeological excavations have been concentrated so far, it may indicate that two distinct social groups occupied the settlement during the Classic period. Several outdoor hearths and roasting pits were identified in a westcentral portion of the site where no Classic period houses have been found, suggesting that portion of the site was reserved for outdoor cooking activities. The other outdoor features, except for human burials and features that predate the Hohokam era, are closely associated with the Classic period structure concentrations. Five burials that included six human individuals have been discovered in the Continental site excavations. All but one of these burials were inhumations, and the only cremation burial was in one of the isolated houses along the site's western margin. Overall, the two concentrations of Classic period structures and the few isolated houses at the Continental site, and the distribution of rock-pile fields on the river terrace not far away, suggest that many day-to-day activities, including those involving food production and procurement, were organized according to the house groupings.



vation project results hint that the Continentalans interacted with groups outside the Green Valley segment of the Santa Cruz Valley, and that some of this interaction involved subsistence activity. A few ground stone food preparation artifacts (five manos, a pestle, and a mortar) that evidently were of nonlocal materials led one of the project directors to suggest that the Continentalans participated in ground stone trade that extended through the Tucson Basin, Altar-Avra Valley, and Phoenix Basin. The only nonlocal rock type recognized in any of the projects' flaked stone assemblages, however, is one artifact of obsidian, for which the nearest rock sources all are more than 85 miles away from the Continental site. Finally, at least 13 presumably nonlocal pottery types have been identified in ceramic assemblages from the various excavation projects, indicating exchange of goods with people from as close as 12 miles up the valley (Ramanote Plain Ware) to as far away as 140-plus miles (Cibola White Ware). Possi-

Interaction with Other Groups. Exca-

bly some of these nonlocal vessels contained foodstuffs when they were brought into the site.

How Did Continentalans Relate to the Hohokam? A main research objective for the latest (2009) data recovery project was to identify how the occupants of the Continental site were affected by and participated in widespread societal changes that occurred in southern Arizona between AD 1000 and 1200. Two specific questions were posed regarding this topic:

- What items were brought to the site from beyond its immediate vicinity?
- What role did the site play in the regional settlement system?



Volunteer Stan Hall exposing a whole pottery jar that, as it turned out, was on the floor of in a Continental site pithouse; note the broken vessel rim found in situ (From the 1995 Old Pueblo Archaeology Center project)

When addressing these questions the results of all previous excavation projects at the site were considered in addition to the 2009 project findings.

"Exotic" Items. The question about items brought to the site from beyond is a useful guide to research because if the sources of so-called "exotic" artifacts (items brought in from beyond the local area) can be identified, we might be able to suggest populations in faraway areas with whom the Continentalans interacted and traded. If any of the exotic items were extremely rare or hard to procure, they could be interpreted as high-value objects, and if they are found in specific locations within a site (for example, in just one or two of the housing structures), that might suggest that some Continentalans were richer, more powerful, or more highly respected than others.

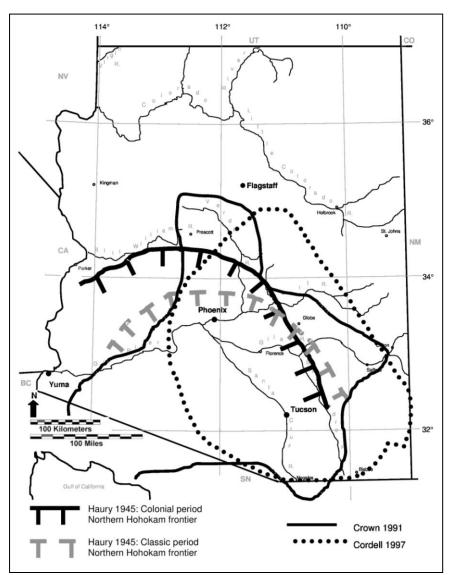
Somewhat surprisingly, in all of the excavations done at the site to date, there have been no discoveries of exotic items that must have come from more than 85 miles away except ornaments made of marine shell (which are relatively rare at the site), a few nonlocal pottery types (also rare), and just one piece of obsidian. No artifacts that could be construed as extremely high value items have been found, suggesting that none of the Continentalans had any remarkable social or economical advantage over the others.

Whence the Tanque Verde ("TV") Red-on-brown? One of the main means of determining the sources of ancient southwestern pottery is petrographic analysis, in which sands that were contained in pottery clay, or intentionally added to the clay to keep it from cracking while drying, are compared to the stone formations in the region to determine the sands' rock sources. Petrographic analysis of Continental site ceramics suggested that over half of the Tanque Verde Red-on-brown (the most common decorated type, called "TV" hereafter), and more than 40 percent of the plain ware ceramics found in the site's main residential precinct were brought in from somewhere outside the local valley segment. This indicates that at least some Continentalans were dependent on exchange for a great deal of their pottery rather than making it themselves. Nonlocal temper types identified in the petrographic study suggest that only some of the nonlocal TV and plain ware pottery was manufactured in the Tucson Basin downriver to the north, whereas a great deal of the sherds contained nonlocal temper from an unrecognized source, presumably farther upriver to the south, or westward in the Altar Valley or beyond, where petrographic specialists still had not identified specific "petrofacies" (geological sources from which specific kinds of sands would be derived from the eroding rocks) by the time the latest Continental site project was completed.

There is also little evidence that much pottery was made locally at the Continental site. Besides the single handstone interpreted as a pottery making anvil, only a dozen other ground stone artifacts recovered are tentatively identified as pottery polishing stones, and just two of those reportedly exhibit faceted surfaces suggesting they were used for finishing pottery surfaces before the pots were fired.

In fact, except for the few exotic materials noted, the only suggestions of economic activities beyond ordinary subsistence production and consumption are the evidence of agave and cotton production and the many textile-processing artifacts (particularly spindle whorls), which support the idea that some specialized agricultural production and craft manufacture occurred at this site. Except for the abundant evidence of textile production, the few specimens of exotic shell and obsidian, and the nonlocal ceramics, however, there are almost no hints that the Continentalans were involved in extensive external exchange. Although petrographic evidence suggests that a substantial portion of the site's TV and plain ware pottery are nonlocal, the petrofacies with which those nonlocal ceramics is as-yet unidentified, therefore its distance from the site is still unknown.

The Sahuarita District and the Hohokam Regional Settlement System. As mentioned above, authors of all the earlier archaeological excavation reports about the Continental prehistoric site have suggested that after AD 1100 it was a Tucson Basin Hohokam site. The Tucson Basin (see page 18 map) is bounded by the Sierrita, Santa Rita, Rincon, Tanque Verde, Santa Catalina, and Tucson mountains, and roughly coincides with the segment of the Santa Cruz Valley from Continental/Green Valley northward almost to Marana. The Tucson Basin often is considered a major subarea of the larger Hohokam social



How far did Hohokam culture extend? Earlier interpretations by archaeologists Emil W. Haury (1945, in <u>The Excavation of Los Muertos and Neighboring Ruins in the Salt River Valley, Southern Arizona</u>); Patricia L. Crown (1991, in <u>Chaco and Hohokam: Prehistoric Regional Systems in the American Southwest</u>), and Linda S. Cordell (1997,in <u>Archaeology of the Southwest.</u> 2nd edition)

system, which was centered about 70 to 150 miles northwest of the Continental site, around the Gila and Salt rivers in the Phoenix Basin.

In the 1980s, archaeological researchers Henry Wallace, James Holmlund, and William Doelle suggested that the Classic period (AD 1100-1450) people who lived in the "Sahuarita district" of the Santa Cruz Valley – from the Continental site northward about 10 miles (beyond Sahuarita, to the southern end of the San Xavier Indian Reservation) – were not strongly affiliated with the Tucson Basin Hohokam and that their society was less socially complex. They based this interpretation on detailed ceramic and settlement distribution data, and on the absence of Hohokam ballcourts and platform mounds (see Hallmarks of the Tucson Basin Hohokam, page 3), which they viewed as key components representing Hohokam ideology and social cohesion.

Then, in 2001 and 2003, archaeologists Patricia Crown and Stephanie Whittlesey, respectively, noted that the Sahuarita district (which Crown called the Upper Santa Cruz Hohokam subarea and Whittlesey called the middle Santa Cruz River valley) was a bit different from the main Hohokam culture area.

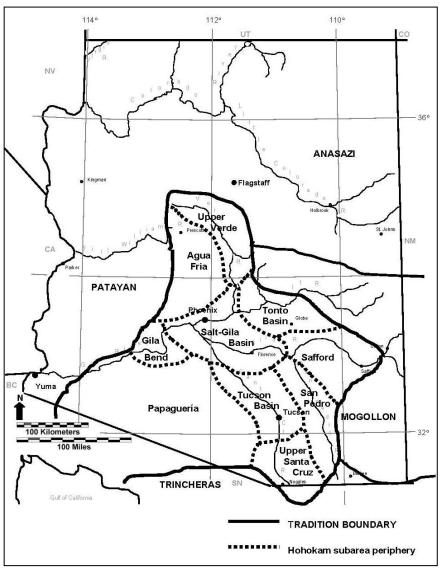
Whittlesey suggested this part of the valley represents a prehistoric contact zone bordering the frontiers of three archaeological culture areas: the Tucson Basin Hohokam to the north, the Papaguería to the west, and the Trincheras culture area to the south. When I was analyzing the site data after the most recent excavation project at the Continental site, I examined evidence for the degree to which the site's post-AD 1100 residents participated in the Hohokam or other neighboring cultural systems, and have come to agree with the other researchers cited here.

The graphic on page 3 summarizes the major cultural characteristics by which archaeologists identify the Tucson Basin variant of Hohokam culture. The abandonment of many Tucson Basin settlements at the end of the Sedentary period around AD 1100 is especially evident along the upper Santa Cruz River. Specifically, Wallace and Holmlund, in a 1984 article in *The Kiva*, observed that "In the Sahuarita district and the Sierrita Mountains area a pattern of general depopulation is evident, with at least 22 of the 38 known Rincon phase settlements abandoned and only three new villages established" (based on data available to them in the early 1980s). They also noted that in the southern Tucson Basin, the Valencia site – a major ballcourt village about 20 miles north of Continental – was abandoned during the Sedentary period and suggested that people who had occupied Valencia and other major southern Tucson Basin Sedentary period sites moved to new locations near three older villages: the St. Mary's Hospital site at the

base of Tucson's "A" Mountain, about 23 miles north of Continental; an archaeological site designated AZ BB:13:7(ASM), approximately 18 miles north of Continental; and one of the "Punta de Agua" archaeological sites, AZ BB:13:16(ASM), about 15 miles north of Continental. In contrast, early Classic period Hohokam populations remained stable or grew in the northern and eastern portions of the Tucson Basin.

Doelle in turn noted that the southernmost Santa Cruz Valley sites with Hohokam ballcourts or platform mounds were Boundary Village, about 10 miles north of Continental (during Early Rincon times, AD 950-1000); one of the Punta de Agua sites, about 15 miles north of Continental (during the Middle Rincon phase, AD 1000-1100); and the Zanardelli site about 13 miles north of Continental (during the Late Rincon and Tanque Verde phases, AD 1100-1350). Also by 1100, Tucson Basin Hohokam had abandoned the Tucson Mountains' western flank and the northern slope of the Sierrita range, and had established several new, dispersed communities farther north in the westcentral parts of the Avra Valley.

It was not until the early Classic period, after the southern parts of the



Archaeologist Patricia L. Crown's interpretation of Hohokam subareas (from <u>Chaco and Hohokam:</u> Prehistoric Regional Systems in the American Southwest)



Stone ax head recovered during the 2009 excavations (EcoPlan Associates photograph for 2009 Pima County Department of Transportation project)

Tucson Basin and Avra Valley had been largely abandoned, that the Sahuarita district population flourished. New, large settlements were established not only at the Continental site and others in this district, but also about $2\frac{1}{2}$ to 5 miles farther upriver (south) from Continental in the Canoa Ranch area.

The retraction of the Tucson Basin Hohokam population northward and the simultaneous significant population growth in the upper Santa Cruz Valley left a largely abandoned area between the Sahuarita district and the Tucson Basin, suggesting that a fairly substantial "social distance" developed between the two populations during the early Classic period. This apparent distancing of major population concentrations from each other

makes it interesting to examine whether the Sahuarita district folk were more closely tied in socially with populations farther south, east, or west than with the Tucson Basin Hohokam social system.

If it is correct that platform mounds are key components of Hohokam Classic period ideology and social cohesion, it is telling that no such features have been found at the Continental site or any other prehistoric settlements south of the Zanardelli site. Archaeologist William Deaver has suggested that after the collapse of the Hohokam way of life in the Tucson Basin after AD 950, authority became decentralized and vested in the heads of individual households. His view appears to be supported at the Continental site because there is no evidence of an elite class or persons there, or that its population had any social influence on the broader Hohokam culture.

Attributes Suggesting Social Affiliations with Non-Hohokam Populations. Although one cremation burial, a few shell ornaments and projectile points, extensive evidence of agave cultivation and processing, and a relative abundance of TV pottery indicate that the Classic period Continentalans had social relationships with the Hohokam, there is not strong evidence that they participated in Hohokam ritual or communal or integrative observances. In fact, there are indications that the cultural bonds of the Sahuarita district's early Classic period residents were at least as strong with populations farther south, and perhaps eastward, as they were with the Tucson Basin Hohokam to the north. Several attributes of the Continental site appear to vary significantly from the general Classic period Hohokam patterns of both the Phoenix and Tucson basins, suggesting that twelfth century Continentalans did not participate in the Hohokam social system to the same degree as people did farther north in the Tucson Basin.

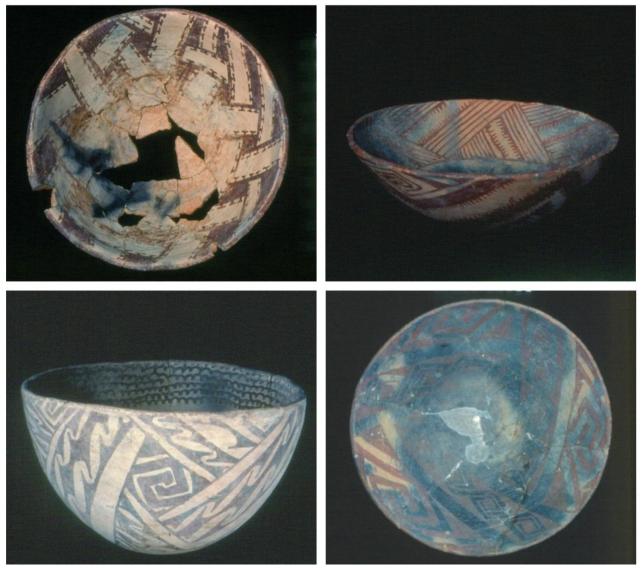
A strong cultural affiliation with people farther south is suggested by an unusual entryway construction technique seen in six of the Continental site's pithouses. Massive mud walls 38 to 55 cm wide were found lining both sides of the entryways in house Features 14, 29, 38, 41, 44, and 53 excavated during the 1995 project. Comparable walled entryways, in which the puddled adobe walls were 20 to 35 cm thick, were common in Classic period pithouses excavated by the Amerind Foundation under the direction of archaeologist Charles Di Peso at the Paloparado site approximately 25 miles south of Continental, and the Amerind discovered two similar houses with puddled adobe entryway walls approximately 48 cm thick at the Classic period Babocomari Village site southeast of the Santa Rita mountains approximately 36 miles from Continental. In contrast, pithouses with wide, built-up entryway walls are virtually never seen in Tucson Basin Hohokam Classic period sites.

At least two attributes of the Continental site burial population look distinctly non-Hohokam. For one, five of the six prehistoric individuals buried (in five graves) at the Continental site were inhumed after death whereas only one was cremated. While this ratio is not unusual for post-AD 1300 (late Classic period) archaeological sites south of the Phoenix Basin, it is extremely unusual for early Classic period Tucson Basin and Avra Valley sites, where cremation was still the rule for funerary treatment during the early Classic. In contrast to the Hohokam standard practice of cremation, inhumation also was the

preferred burial practice of Mogollon/Western Pueblo and Anasazi populations throughout prehistory, and it also was more common than cremation at the Paloparado site south of Continental.

A second non-Hohokam-looking aspect of the site's burial population is an unusual form of cranial deformation seen in one of the five inhumed individuals. The only inhumed skeleton intact enough to assess cranial shape, the one from the Feature 9 burial excavated by Old Pueblo, was of an adult male who exhibited extreme artificial cranial deformation, likely from being bound to a cradleboard during infancy, causing the back of the skull to take the flattened shape of the cradleboard. His unusual skull shape might indicate that this man was an outsider who married in to the Continental community or was a member of an immigrant household who took up residence there. The original assessment of this skeleton found that the occipital flattening type of the skull resembles that seen in Mogollon/Western Pueblo populations represented at Point of Pines and Grasshopper Pueblo, rather than the lambdoidal deformation that is more common among the Anasazi of the Four Corners area. However, archaeologist Di Peso found multiple inhumation burials at the Paloparado site in which the skulls exhibited this same kind of occipital flattening, so this flat-skulled Continentalan may actually have been a typical individual of the Sahuarita district and the upper (southern) Santa Cruz River valley.

Tanque Verde Red-on-brown (TV) pottery is the one attribute that most clearly seems to link the Continentalans to the Tucson Basin Hohokam. The context of that linkage needs to be critically examined, however. The petrographic evidence (see page 19) that much of the Continental site's TV pottery and a lot of its plain ware were imported, rather than being made there, calls into question how and why



Tanque Verde Red-on-brown bowls from Tucson Basin archaeological sites showing broad-band interior decoration (Photo courtesy of William L. Deaver; bowls are shown at different scales)

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Allen Dart, RPA

Editor of this Issue of Old Pueblo Archaeology: Allen Dart the Continentalans acquired this Tucson Basin-style pottery.

A curious thing I've noted about the Continental site's TV pottery bowls is that the design band painted on the interior almost never extends very far down from the rim toward the deepest part of the bowl. As can be seen in many of this article's illustrations of TV bowls from the Continental site, the decoration on the inside below the rim usually is just a simple motif forming a zigzag or irregular band 2 to 5 cm wide. In contrast, interiors of TV bowls recovered from archaeological sites in the Tucson Basin often have a much broader band of painted design that extends about one-fourth to one-third of the way down from the rim toward the bottom, as shown in the previous page's photographs of TV bowls from Tucson Basin sites, courtesy of Bill Deaver. This suggests to me that the Continentalans either preferred TV-style bowls in which the interior design style was somewhat different from that of many Tucson Basin Hohokam painted TV bowls, or that they were imitating the Hohokam Tucson Basin style but not in every detail. Or perhaps the Tucson Basin was just the most convenient source for obtaining large quantities of ceramics that were needed for everyday life at Continental.

Archaeologist William "Byl" Bryce, who analyzed the 2009 EcoPlan project's flaked stone assemblage, suggested that one form of projectile point found at the Continental site is only sporadically seen in Hohokam Classic period sites elsewhere, but is more common in Puebloan and Mo-

gollon projectile point assemblages. This point style and the Puebloan or Mogollon ceramics (Cibola White Ware and others) recovered in some of the excavation projects could indicate either that some of the Continentalans' stone artifacts were acquired from the northern or eastern parts of the Southwest, or that Mogollon/Western Pueblo or Ancestral Pueblo (Anasazi) populations actually lived at the Continental site. To me it's odd, though, that the rock materials used for flaked stone artifacts all seem to have been collected in the immediate vicinity of the Sahuarita district.

One other Continental site attribute that doesn't look very "Hohokam" is its shell ornament assemblage. Shell artifact analyst Arthur Vokes and I noted that *Glycymeris* shell bracelet fragments from this site had been ground flat, eradicating the beak and umbo area of the bivalve shell during manufacture. Vokes has observed this same treatment in Early Ceramic period occupations along the Santa Cruz River but believes it is not common in later Hohokam occupations of the valley. The technique also has been observed, however, among plain *Glycymeris* bracelets at the Torres Blancas Village site approximately two miles south (upriver) from the Continental site, and other examples, he says, have been collected from prehistoric sites in northern Mexico's Río Balsas region in Guerrero and Michoacán, and from the La Playa site in northern Sonora. This jewelry manufacturing technique therefore could indicate that Continentalans obtained at least some of their shell from communities in northern Mexico, rather than from the Hohokam or the sources on which the Hohokam depended.

Conclusion

In the most recent excavation project at the Continental prehistoric site, which I directed for the EcoPlan Associates consulting firm in 2009 and which was funded by the Pima County Department of Transportation (PCDOT), our research focused on themes of chronological refinement, the environment of the site during its occupation, subsistence and settlement systems, and roles of the site in a larger social context. Importantly, this latest project's findings were integrated with data and interpretation from all of the previous studies at the Continental site to bring into better focus some patterns that were becoming apparent previously. This integrative approach called into question the extent to which the site's late prehistoric period residents participated in the Hohokam social system.

In a 1998 article in the southwestern journal Kiva, archaeologist Jeffrey Jones, who directed several of

Old Pueblo Archaeology Center's excavation projects at the Continental site between 1994 and 2004, interpreted the site's residents as "Hohokam of the Southern Frontier." Based on the excavations since then, and the reanalysis of the site data during the most recent excavation project, it seems to me that during the Classic period the Continentalans were not so much Hohokam of the Southern Frontier, but a small community that was not well integrated into the larger Hohokam social-ideological system, or into the Papaguerían or Trincheras ones, for that matter.

The archaeological attributes of the Continental site and vicinity suggest to me that the early Classic period residents of the Sahuarita district did not participate in Hohokam exchange and ideology to a significant degree, and may have been more aligned socially with upper Santa Cruz Valley and Sonoran peoples. For this reason, I now avoid calling the site's late prehistoric residents Hohokam. Better terms with which to identify them, perhaps, might be the "Classic period residents" or "Hohokam-era residents" of the Continental site; the "Sahuarita district people"; or simply the "Continentalans."

Certainly further research is needed on where to draw the line between the Hohokam and the surrounding archaeological cultures of ancient Arizona.

Acknowledgments: Archaeological studies at the Continental prehistoric site were supported by the Pima County Department of Transportation, Tucson Electric Power Co., Burwell Newton, Old Pueblo Archaeology Center's members, La Posada at Park Centre, Inc., United Community Health Center, Inc., Elida Perez, Farmers Water Co., Diamond Ventures, Inc., Paul Frick, and the University of Arizona. I gratefully acknowledge the planning, labor, research, and interpretations of the many archaeologists, field crews, and support staffs of Cultural & Environmental Systems (C&ES), Tierra Right of Way Services, Old Pueblo Archaeology Center, and EcoPlan Associates who participated in the Continental site research projects.

I especially would like to thank Mary Lou Heuett, William Deaver, and Barbara Montgomery for providing illustrations and original reports from the C&ES and Tierra excavation projects, and Dr. J. Simon Bruder and the folks at EcoPlan for giving me the opportunity to direct EcoPlan's most recent excavations at the Continental site and to take the time during that project to synthesize all of the information from the previous excavations.

The train photograph on page 17 is from Jim Foster's PRSLHS Page http://www.prslhs.com/Jim Foster%27s PRSLHS Page.htm (not one of the trains that ran on the historic Tucson and Nogales Railroad.

Except where stated otherwise, all interpretations in this article are my own and may differ from interpretations of everyone who assisted me in preparing it.

Did You Know?

Allen Dart, RPA

Would you like to subscribe to **Old Pueblo Archaeology**?

If you are not currently an Old Pueblo Archaeology Center member, please consider becoming one so that you can receive future issues of the *Old Pueblo Archaeology* bulletin. See membership information elsewhere in this issue.

The first United States government reservation officially set aside for the Tohono O'odham was the San Xavier Indian Reservation, containing more than 71,000 acres, created in 1874. West of the Santa Cruz river, though, the O'odham lands were increasingly subjected to settlement and exploitation by non-Indians because a reservation had not yet been established. Much of the Tohono O'odham traditional homeland became the focus of interest by cattlemen, and especially by miners in the areas around Ajo (one of the most productive copper mines in the world) and at Quijotoa in the 1870s through 1890s. Some of the Tohono O'odham went to work for the Americans. Others began raising cattle (livestock had been introduced by the Spanish) and thus joining the cash economy of the larger region.

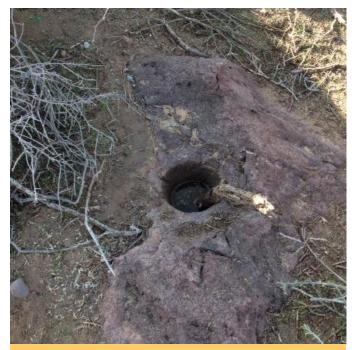
The main Tohono O'odham Reservation, which includes nearly 2.7 million acres, was established in 1916 and 1917 as the Papago and Sells Indian reservations, respectively. After 1918 U.S. government actions such as well-drilling, water conservation, and farming and ranching programs, as well as formation of the Papago Tribal Council, began influencing the lives of the western Tohono O'odham. A third reservation for the Tohono O'odham, the Gila Bend Indian Reservation that contains 10,377 acres, was established by a Presidential Executive Order in 1882.

Photo Essay

Winter Solstice Tour of Los Morteros and Picture Rocks – December 21, 2013

Beth Ann Krueger, Ph.D.

On a sunny winter solstice morning, a group of about 24 were treated to a tour of Los Morteros, an ancient Hohokam village site (ca. AD 750 to 1300) on the west side of the Santa Cruz River in Tucson. Al Dart led the tour. Highlights included bedrock mortars (for which the location is named), locations of former pithouses, garbage mounds, and a ball court.



One of the several *morteros* – bedrock mortars – at Los Morteros



Hohokam plain brown pottery sherd next to Al Dart's shoe at Los Morteros



A Hohokam Rincon Red-on-brown type potsherd found on a trash mound at Los Morteros



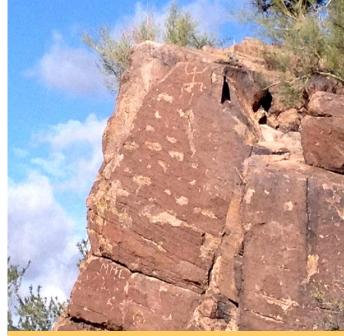
Al pointing out some "cupules" on a Los Morteros bedrock outcrop that also contains mortars

Al described how the main area of the village changed over time, with some areas being occupied earlier and some later. When asked how many Hohokam people lived here at the "peak" population time, Al described how it is almost impossible to estimate that figure, one reason being that it is unknown how many people lived in each pithouse, for example. Another important aspect of this site is that it was used by Juan Bautista de Anza on his historic journey to San Francisco Bay area (1775-1776). The Llano del Azotado campsite has been identified as being in the area of Los Morteros.

Next, the group caravanned to Picture Rocks archaeological site. This site is located on private property. Numerous human-like, animal, and abstract designed petroglyphs cover a large rock outcropping near a wash. The petroglyphs are thought to be mostly Hohokam.

The most amazing feature of the site is that there is an arrangement of rocks and carvings in the rocks that appear to have been used to indicate summer solstice and autumn and spring equinoxes. Al showed detailed photographs of this phenomenon after he had described the site.

My favorite petroglyphs were the ram-like figures and the abstract swirls, both of which were clearly visible in various locations on the rock.



The greater amount of reweathering on the Hohokam anthropomorph (human-form) petroglyph at the top of this rock face indicates that this symbol is substantially older than the graffiti (lower left) and a circular glyph (below and to the right of the graffiti).



In this photo an animal petroglyph is visible just below a large wooden cross that stands atop the Picture Rocks petroglyphs hill. This archaeological site is on property owned by the Redemptorist Society, which has established facilities for religious retreats and meditation near the petroglyphs.

This tour provided excellent and accurate information about the Hohokam in the Tucson area. In addition, with Al's detailed descriptions and his patience with pointing out various land features, many of us envisioned what Los Morteros may have looked like as a Hohokam Village.

Al also provided us with a better understanding of the importance of the petroglyphs at Picture Rocks and why it is so important to preserve these ancient archaeological sites.

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Several animal petroglyphs and a few anthropomorphs are visible in this view of the west side of the Picture Rocks hill.



Beth Ann Krueger and Jaimison Slyter provided the photographs for this article. The photo captions are by Allen Dart.

Mesa Verde Fourth Grade Students' OPEN3 Archaeological Dig Experience

by Students of Mesa Verde Elementary School (Tucson) Teachers Jayne Villasenor and Theresa Merrill

In May 2014 Mrs. Jayne Villasenor and Mrs. Theresa Merrill, teachers at Tucson's Mesa Verde Elementary School, brought their fourth grade classes to Old Pueblo Archaeology Center on two different days to learn about archaeology and the importance of learning about science and mathematics in addition to social studies, by participating in the **OPEN3** (**Old Pueblo Educational Neighborhood Site 3**) simulated archaeological site excavation.

As a follow-up assignment for their visit, each class wrote a report on their experience and what they had learned, which qualifies each teacher for a discount on their OPEN3 program fees next year (provided that Old Pueblo will have funding available for discounts at that time). For additional

information see the information box on page 32.

To: Old Pueblo Archaeology Center From: Mrs. Villasenor's 4th grade class

Date: Field Trip held on Monday, May 5, 2014

Research Question: We had a variety of questions. To sum them up, our question was: What was life like for the Hohokam at this site?

Hypothesis: We think we will find evidence of what they ate (corn, beans, and squash), what they use to paint with (plants), tools they made (spears, hammers), and how they prepared their food (mano and metate).

Mesa Verde Elementary student discovering pottery vessel in Old Pueblo Archaeology Center's OPEN3 dig in 2014

While excavating the site AZ ZZ: 01:08 on

May 5, 2014, our class was trying to determine what life was like for the Hohokam at this site. We excavated units A, B, C, D, E, F, and G. They were located within pithouses and a ramada. While excavating, our class found evidence of what life might have been like for the Hohokam people.

In the fill dirt for Group A, we located 2 shells, 3 bones, a pot, a figurine shaped like a dog, a piece of wood, charcoal, and an antler. One of the items was a figurine shaped like a dog. We think the Hohokam children used the item as a toy. They would play with it while their parents were doing their chores. In addition, we found a shell. We think that it was used for a cup because we found it next to a pot that looked like it was used to store water. From what we discovered, we can conclude that the behavior that was happening in our unit was either cooking food or eating food.

In the fill dirt for Group B, we located a pot, water jug, charcoal, 3 medium-sized rocks, and a mini pot. One of the items was a pot. We think the Hohokam used the item for cooking their food. In addition, we found 3 rocks. We think that they were used as a tripod to hold the pot when it came off of the fire. From what we discovered, we can conclude the behavior that was happening in our unit was cooking and food preparation. Because of that we felt we were in the kitchen of a pithouse.

In the fill dirt for Group C, we located a pot full of clay, a seed pot, obsidian, chipped stone, dog figurines, and a bowl. One of the items was chipped stone. We think the Hohokam used the item for a good luck pendant or as jewelry. In addition, we found real pottery. We think it was used for making eating utensils like pots, plates, and bowls. From what we discovered, we can conclude the behavior that was happening in our unit was pot making, crafting, and child's play.

In the fill dirt for Group D, we located a shell cache, antler, fossil, and 3 pieces of pottery. One of the items was a shell cache. We think the Hohokam used the item for jewelry. We also think they might of stored shells for trading. In addition, we found pottery. We think the pots were used for storing water and

seeds. From what we discovered, we can conclude the behavior that was happening in our unit was securing precious pieces of jewelry and other prized possessions. Also, water and seeds were being stored in this area as well.

In the fill dirt for Group E, we located a water jug, a mano and a metate, jaw bones, antler, leg bone, mortar and pestle, and shells. One of the items was a jaw bone. We think the Hohokam used the item for cutting of meat or hides from the skeleton. They could have also used it to stab animals with it. In addition, we found a shell. We think it could be used to dig with or it could have been used as a cup. From what we discovered, we can conclude the behavior that was happening in our unit was cooking, eating, or food preparation.

In the fill dirt for Group F, we located a cache, charcoal, top of a water jug, and a mano and metate. One of the items was a cache. We think the Hohokam used the item for storing stuff like seeds, shells, and devils claws. In addition, we found charcoal. We think that it there had fire in their home. We think that in our unit they cooked. At first we wondered if they drew with the charcoal. We have no evidence of that. We did learn that the Hohokam had no written communication. From what we discovered, we can conclude the behavior that was happening in our unit was that they were storing important things that would be used later. We also believe they were preparing or cooking food in this area.

In the fill dirt for Group G, we located an antler, mortar and pestle, shell pieces, pottery shards, another bigger pestle, obsidian pieces, and charcoal. One of the items was a mortar and pestle. We think the Hohokam used the item for grinding things. In addition we found obsidian. We think that it was used for cutting hides and meat off the bone. From what we discovered, we can conclude the behavior that was happening in our unit was food preparation under the ramada.





Mesa Verde student uncovering the hearth in a simulated Hohokam pithouse at OPEN3 site

To: Old Pueblo Archaeology Center From: Mrs. Merrill's 4th grade class Date: Field Trip held on Friday, May 9, 2014

Research Question: We had a variety of questions. The class decided that most of their questions fell under one main category: What could we discover about how life was like for the Hohokam at this site?

Hypothesis: We think we will find artifacts and evidence of what they ate (corn, beans, and squash), what they use to paint pots with (plants), the kind of tools they made (spears, hammers), and how they prepared their food (mano and metate).

While excavating the site AZ ZZ: 01:08 on May 9, 2014, our class was trying to determine what life was like for the Hohokam at this site. We excavated units C, D, G, H, I, J, K and L. They were located within 2 pithouses that faced 1 ramada. While excavating, our class found evidence of what life might have been like for the Hohokam people.

In the fill dirt for Group C, we located 9 shells, 7 bone fragments, a pot, a figurine shaped like a dog, charcoal, and a seed pot. One of the items was a figurine shaped like a dog. We think the Hohokam children used the item as a toy. They probably played with it while their parents were doing their chores. We found some shells, mostly the size of our fist. We think that the biggest one was used for a cup because we found it next to a pot that looked like it was used to store water. From what we discovered, we can conclude that the behavior that was happening in our unit was either storing food or eating food.

In the fill dirt for Group D, we located a pot with a flat, large clay cover or lid, a medium-sized antler, 2 bits of corn and 186 pieces of pottery shards. One of the items was a shell cache. We think the Hohokam used the item for jewelry. We also think they might of stored shells for trading. In addition, we found pottery shards. We think they were probably pots used for storing water and seeds. From what we discovered, we can conclude the behavior that was happening in our unit was storing and maybe hiding shells because they were valuable to the Hohokom.

In the fill dirt for Group G, we located about 150 pot shards, water jug, charcoal, 3 medium-sized rocks, and a mini pot. We think the Hohokam used that item for cooking their food. In addition, we found 3 rocks. We think that they were used as a tripod to hold the pot when it came off of the fire. From what we discovered, we can conclude the behavior that was happening in our unit was cooking and food preparation. Because of that we felt we were in the kitchen of a pithouse.

In the fill dirt for Group H, we located a water jug, a mano and a metate, jaw bones, antler, leg bone, mortar and pestle, and shells. One of the items was a jaw bone. We think the Hohokam used the item for cutting of meat or hides from the skeleton. They could have also used it to stab animals with it. In addition, we found a shell. We think it could be used to dig with or it could have been used as a cup. We

think it might have been used to scoop seeds from a pot. From what we discovered, we can conclude the behavior that was happening in our unit was cooking, eating, or food preparation.

In the fill dirt for Group I, we located an antler, mortar and pestle, shell pieces, pottery shards, another bigger pestle, obsidian pieces, and charcoal. One of the items was a mortar and pestle. We think the Hohokam used the item for grinding things. In addition we found obsidian. We think that it was used for cutting hides and meat off the bone. From what we discovered, we can conclude the behavior that was happening in our unit was food preparation under the ramada.

In the fill dirt of Group J, we located 173 shards, 7 bone pieces, the top of a jar, at least 40 shells, rocks, and an animal jaw and a mortar and pestle. We decided to study four items more closely. One of those items was an animal bone fragment. We believe that the Hohokam used the skin of this animal for clothing and the meat for food. Another item that we found in our unit was a bowl. The next item we decided to study was the antler piece. We believe that the Hohokam used this item for mixing, preparing and making tools. If we look at all the items in context, we would conclude that this was an area for cooking.

In the fill dirt for Group K, we located a cache, charcoal, top of a water jug, and a mano and metate. One of the items was a cache. We think the Hohokam used the item for storing



Mesa Verde students recovering artifacts from sifting screen used to sift the excavation dirt (The reddish tint in this article's photos is caused by the red fabric ramada that Old Pueblo Archaeology Center uses to shade the OPEN3 site participants.)

stuff like seeds, shells, and devils claws. In addition, we found charcoal. We think that it there had fire in their home. We think that in our unit they cooked. At first we wondered if they drew with the charcoal. We have no evidence of that. We did learn that the Hohokam had no written communication. From what we discovered, we can conclude the behavior that was happening in our unit was that they were storing important things that would be used later. We also believe they were preparing or cooking food in this area.

hohokam/

Old Pueblo Archaeology Center offers a hands-on simulated archaeological excavation program field trip (the OPEN3 program) in which students apply social studies, science, and math skills in a practical, real-life situation.

Old Pueblo often has funding available to provide classroom scholarships to classes whose students would not otherwise be able to participate in the OPEN3 experience, as indicated by the percentage of the school's students who qualify for free and reduced cost meals from the State of Arizona, as verified by the Arizona Department of Education. To further assist teachers, Old Pueblo offers two additional incentives for program fee discounts:

- ➤ When we have funds available, Old Pueblo Archaeology Center offers an additional 15% toward a teacher's next OPEN3 program expenses if that teacher has had his or her students complete a research paper about their OPEN3 dig.
- ➤ A teacher who is a member of Old Pueblo Archaeology Center at the Friend (\$25/year) level or higher is offered a \$25 discount on one OPEN3 simulated archaeological dig program for his or her classes during each membership year.

RESERVE NOW FOR THIS YEAR'S PROGRAMS – Dates are filled on a first-reserved/first-served basis. For more information on the various programs offered please visit the following web pages:

OPEN3 Simulated Archaeological Excavation Program:

https://www.oldpueblo.org/programs/educational-programs/childrens-programs/open3-simulated-excavation-classrooms/ Ancient People of Arizona Outreach Presentation:

https://www.oldpueblo.org/programs/educational-programs/childrens-programs/classroom-outreach-ancient-people-arizona/Lifestyle of the Hohokam Outreach Presentation:

https://www.oldpueblo.org/programs/educational-programs/childrens-programs/classroom-outreach-lifesyle-

What is an Archaeologist? Outreach Presentation:

 $\underline{https://www.oldpueblo.org/programs/educational-programs/childrens-programs/classroom-outreach-archaeologist/}$

... or contact Old Pueblo Archaeology Center in Tucson at 520-798-1201 or info@oldpueblo.org.

Upcoming Activities

LOOKING AHEAD: "Fundraising Raffle of a 2014 Jeep Cherokee" by Tucson's Jim Click Automotive Team. Friday October 24, 2014, is the deadline to purchase tickets for the November 13 "Fundraising Raffle of a 2014 Jeep Cherokee" by Tucson's Jim Click Automotive Team to benefit Old



Photo of the Jeep Cherokee that will be given away on November 13, courtesy of the Jim Click Automotive Team

Pueblo Archaeology Center and other charities. Old Pueblo gets to keep 100% of the proceeds from all raffle tickets that we sell!

The Jim Click Automotive Team is presenting a new 2014 Jeep Cherokee to be used as the featured prize in a raffle to raise one million dollars for Tucson-area nonprofit organizations. With your \$25 contribution (or 5 raffle tickets for \$100) you could win the 2014 Jeep Cherokee. The best part is that 100% of your contribution will support Tucson charities, including Old Pueblo Archaeology Center, which gets to keep all the proceeds from the tickets that Old Pueblo sells.

Your donation to purchase one or more raffle tickets will help Old Pueblo Archaeology

Center provide more archaeology and culture education programs for children who would not be able to afford our programs without your help.

A maximum of 50,000 tickets will be sold. To be entered in the drawing tickets must be received by Old Pueblo by October 24 so that we can turn them in to the Jim Click Automotive Team's raffle coordinator by October 31. The drawing will be held on November 13.

The rules of the raffle require that Old Pueblo account for all tickets issued to us and that we return all unsold tickets, therefore payment in advance is required in order to obtain tickets. The ticket price is \$25 apiece or five tickets for \$100. Tickets may be purchased by check sent to our PO Box 40577 address listed on page 40, by calling Al Dart at 520-603-6181 to provide your Visa, MasterCard, Discover, or Diners Club credit card payment information, or through the PayPal portal on Old Pueblo's www.oldpueblo.org home page. Once you have provided payment, Old Pueblo will enter your ticket(s) into the drawing for you and will mail you the correspondingly numbered ticket stub(s) with a letter acknowledging your contribution.

For tickets or more information contact Old Pueblo at 520-798-1201 or info@oldpueblo.org. For more information about the Jim Click Automotive Team's 2014 Jeep Cherokee raffle visit the Raffle Facebook page at https://www.facebook.com/JeepCherokeeRaffle.

Friday-Tuesday June 20-24, 2014

"Mimbres Ruins, Rock Art, and Museums of Southern New Mexico" archaeology education tour with archaeologist Allen Dart, sponsored by Old Pueblo Archaeology Center. Drive your own vehicle and meet tour in Silver City, NM. Actual touring begins Saturday and continues through Tuesday.

Fee \$250 for the full four-day tour (\$230 for Old Pueblo Archaeology Center and Pueblo Grande Museum Auxiliary members), or \$70 per day to attend tour on individual days (\$60/day for Old Pueblo and PGMA members). Participants are responsible for their own transportation, meals, and lodging.

Registered Professional Archaeologist Allen Dart leads this tour to Classic Mimbres and Early Mogollon village archaeological sites, spectacular



Mimbres pottery sherds at one of the sites to be visited during the June "Mimbres Ruins, Rock Art, and Museums of Southern New Mexico" tour (Photo by Jim Diers)

petroglyph and pictograph sites, and museums with probably the finest Mimbres Puebloan pottery collections in the world, all in southwestern New Mexico's Silver City, Mimbres, Cliff, Glenwood, and Deming areas. Places tentatively to be visited include the original Mogollon Village site excavated by archaeologist Emil W. Haury; sites in the Gila Cliff Dwellings National Monument and vicinity; Classic Mimbres sites (Beauregard-Montezuma, Cottonwood, Gattons Park, Lake Roberts Vista, Mattocks, Old Town, TJ, and Woodrow); the Frying Pan Canyon and Pony Hills petroglyph sites; and the Western New Mexico University Museum and Deming-Luna Mimbres Museum. The tour will be based in Silver City and depart from a hotel there each morning. Hotels, camping, and other accommodations for those who wish to arrange their own lodging and transport are available in and near Silver City.

Minimum enrollment 10, maximum 32. Reservations required: 520-798-1201 or info@oldpueblo.org.

Mondays September 8-November 17, 2014

"Prehistory of the Southwest" class with archaeologist Allen Dart at Old Pueblo Archaeology Center, 2201 W. 44th Street, Tucson (at Tucson Unified School District's Ajo Service Center, just west of La Cholla Blvd., ½-mile north of John F. Kennedy Park)



Kiet Siel Pueblo, one of the sites discussed in the "Prehistory of the Southwest" class (Photo by Jeffrey S. Dean)

6:30 to 8:30 p.m. each Monday September 8 through November 17, 2014 (except no class on Veterans Day November 10). Fee \$50 (\$40 for Old Pueblo Archaeology Center and Pueblo Grande Museum Auxiliary members), not counting cost of the recommended text or of optional Arizona Archaeological Society membership. Minimum enrollment 8, maximum 32.

"Prehistory of the Southwest" is an introductory course in the study of the American Southwest, developed by the Arizona Archaeological Society to provide a basic overview of this region's archaeology and cultures. Ten weekly evening class sessions will cover cultural sequences, dating systems, subsistence strategies, development of urbanization, abandonments of different areas at different times, and the general characteristics of major cultural groups that have lived in the Southwest over the past 13,000-plus years. Besides offering an up-to-date synthesis of southwestern prehistory for anyone interested in the archaeology of the Southwest, the class can be used as prerequisite for all other courses offered to members of the Arizona Archaeological Society (AAS) enrolled in or interested in enrolling in the AAS Certification Program. Instructor Allen Dart is a registered professional archaeologist employed by the U.S. Department of Agriculture and is volunteer executive director of Old Pueblo Archaeology Center.

Reservations required, registration deadline Wednesday September 4: 520-798-1201 or info@oldpueblo.org to register or for more information.

Thursday September 18, 2014

Old Pueblo Archaeology Center's "Third Thursday Food for Thought" dinner featuring the presentation "Chiricahua Apaches in Myth and History" with Cochise College-Douglas History and Anthropology Instructor Rebecca Orozco at a Tucson restaurant to be announced

6 to 8:30 p.m. Free (Order your own dinner off of the restaurant's menu)

As the last Native American group to reach a peace accord with the U.S. government, the Chiricahua

Apache were often featured in the press. Famous warriors Geronimo and Naiche were photographed many times. Their story has been the basis of numerous feature films. The story of their conflict first with the Spaniards and Mexicans who claimed their homeland, and later with the Americans expanding into the region in a policy of Manifest Destiny, has become a mix of history and heresy. The full story never will be completely known. This presentation contains a collection of historic photos from the end of an era – the late 1800s – that tell the story of the clash of the people trying save their lifeway and homeland and the



Chiricahua Apaches in Mexico, March 1886 (Photo by C.S. Fly, from Arizona Historical Society)

people who believed the land was empty and open for settlement.

Those wishing to attend must call 520-798-1201 and must have their reservations confirmed before 5 p.m. Wednesday September 17 because the fire-safety ordinance limits attendance. There is no entry fee but guests are asked to purchase their own dinners so that the restaurant won't charge Old Pueblo for their seats, and donations will be requested to benefit Old Pueblo's educational efforts.

Monday September 22, 2014

Old Pueblo Archaeology Center's "Autumnal Equinox Tour of Los Morteros and Picture Rocks Petroglyphs Archaeological Sites" with archaeologist Allen Dart, departing from northeast corner of Silverbell Road & Linda Vista Blvd. in Marana, Arizona

8 a.m. to noon. \$20 (\$16 for Old Pueblo Archaeology Center and Pueblo Grande Museum Auxiliary members)

To celebrate the autumnal equinox, archaeologist Allen Dart (Old Pueblo Archaeology Center's executive director) leads this tour to Los Morteros, an ancient village site that includes a Hohokam ballcourt and bedrock mortars, and to Picture



Equinox "sun dagger" on spiral petroglyph at Picture Rocks site, Pima County, Arizona (Photo by Tom Herrick)

Rocks, where ancient petroglyphs include a solstice and equinox marker, dancing human-like figures, whimsical animals, and other rock symbols made by Hohokam Indians between A.D. 650 and 1450.

LIMITED TO 32 PEOPLE. RESERVATIONS REQUIRED by 5 p.m. Friday September 19: 520-798-1201 or info@oldpueblo.org.

Thursday-Monday September 25-29, 2014

"Chaco Canyon, Aztec, and Salmon Great Pueblos and Other Archaeological Sites" Old Pueblo Archaeology Center educational tour with archaeologist Marc Severson. Drive your own vehicle and meet tour in Gallup, NM, on Thursday; actual touring begins Friday and continues through Sunday, with optional (extra-cost) Monday visit to sites on the Zuni Indian Reservation.

Fee for Friday-Sunday touring: \$195 (\$175 for Old Pueblo Archaeology Center and Pueblo Grande Museum Auxiliary members); fee for individual days including optional Monday trip to Zuni area: \$70 per day (\$60/day for Old Pueblo and PGMA members). Participants are responsible for their own transportation, meals, and lodging. Tour leader will stay at Red Lion Hotels in Gallup and Farmington.



Pueblo Bonito in Chaco Canyon, New Mexico (Photo by Ron Towner)

Hotels, camping, and other accommodations for those who wish to arrange their own lodging are available in and near Gallup and Farmington; camping spaces in the Chaco Canyon campground are limited so reservations there are highly recommended.

The archaeological sites in Chaco Canyon are some of the most famous, yet enigmatic, sites in the Southwest. A World Heritage Site, Chaco attracts thousands of visitors each year, yet most people see only sand, mud, rock walls, and a treeless desolate landscape. Old Pueblo's tour will take you beyond the simple brochures and photo-ops to explore the multiple contexts of the people who created these magnificent structures. We not only examine sites within Chaco Canyon, but also outlier sites north

and south of the canyon proper. The tour is guided by Marc Severson, who has worked as a professional archaeologist and educator since 1972 and is a 20-year-veteran leader of southwestern tours for Pima Community College and Old Pueblo. Tentative itinerary:

Thursday: Travel day to meet at Red Lion Hotel, Gallup, NM, check in with Marc or in the Red Lion lobby by 7 p.m. Mountain Daylight Time and stay overnight in Gallup. Friday: Drive from Gallup to Chaco Canyon to tour Great House sites on its north side. Afterward drive to Farmington, NM, to stay overnight. Saturday: Tour Aztec Ruins in morning, Salmon Ruins in afternoon. Stay in Farmington overnight. Sunday: Drive from Farmington to Chaco Canyon to tour "Small House sites" and Casa Rinconada Great Kiva on its south side. If time permits on the way back to Gallup we will visit the Pueblo Pintado Chacoan Outlier archaeological site. Stay overnight in Gallup. Monday option: Drive from Gallup to Zuni Pueblo to visit Our Lady of Guadalupe historic mission church built in 1629; its interior walls feature murals illustrating traditional Zuni ceremonial life (the life's work of Alex Seowtewa and his sons). Also we will visit the Village of the Great Kivas Chacoan Outlier site, the Zuni Eagle Rehabilitation center, and the home of the Lalios to see their native pottery and jewelry.

Deadline for the required reservations is Friday September 12: 520-798-1201 or info@oldpueblo.org.

Friday October 3, 2014

"Antiquity of Irrigation in the Southwest" adult education class with archaeologist Allen Dart, RPA, for OLLI-UA Green Valley members at First American Title, 101 S. La Canada Dr. #24 (in Green Valley

Hohokam canals in the Salt River Valley, Arizona (1929 map by Omar Turney)

Mall), Green Valley, Arizona*

3:30 to 5 p.m. Open only to Osher Lifelong Learning Institute (OLLI) members who reside in Green Valley; OLLI-UA Green Valley membership fee of \$95 for Fall session or \$130 for entire year covers this course

Preliterate cultures in the American Southwest took advantage of southern Arizona's long growing season and tackled its challenge of limited precipitation by developing the most extensive irrigation works in all of North America. Agriculture was introduced into southern

Arizona more than 4,000 years ago, and irrigation systems were developed here by at least 3,500 years before present – several hundred years before irrigation was established in ancient Mexico. This study session provides an overview of ancient Native American irrigation systems identified by archaeologists in the southern Southwest and discusses their implications for understanding social complexity.

* This is not an Old Pueblo Archaeology Center-sponsored event. To join Green Valley OLLI visit www.olli.arizona.edu/olli to download a registration and payment form or pay and register online; for information about this course contact Paula Kulina at 602-317-1488 or garlina@cox.net, or Allen Dart at 520-798-1201 or garlina@cox.net, or Allen Dart at

Sundays October 12-November 23, 2014

"Traditional Pottery Making Workshop" with Andy Ward at Old Pueblo Archaeology Center, 2201 W. 44th Street, just west of La Cholla Blvd., ½-mile north of John F. Kennedy Park, Tucson.

2 to 5 p.m. each Sunday. Fee \$79 (\$63.20 for Old Pueblo Archaeology Center and Pueblo Grande Museum Auxiliary members) includes all materials except clay, which participants will collect during class field trip.

A series of seven pottery-making class sessions will be offered by artist Andy Ward on seven Sunday afternoons October 12 through November 23, 2014, including a clay-gathering field trip on October 19. The class is designed to help modern people understand how prehistoric Native Americans made and used pottery, and is not intended to train students how to make artwork for sale. The Level 1 class demonstrates traditional hand-building pottery techniques using gourd scrapers, mineral paints, and yucca brushes instead of modern potters' wheels and paint. The course introduces some history of southwestern Ancestral



Pots made by students in Old Pueblo Archaeology Center's April-May 2014 pottery making class (Photo by Andy Ward)

and Modern Pueblo, Mogollon, and Hohokam pottery-making, includes a field trip in which participants dig their own clay, and demonstrates initial steps in forming, shaping and smoothing, and completion of bowls and jars of both smooth and corrugated pottery, by scraping, polishing, slipping and painting. The paddle-and-anvil hand-building method is also demonstrated.

Reservations required: 520-798-1201 or info@oldpueblo.org.

Thursday October 16, 2014

Old Pueblo Archaeology Center's "Third Thursday Food for Thought" dinner featuring the presentation "The Eagle and the Archaeologists: The Lindberghs' 1929 Southwest Aerial Survey" with historian Erik Berg at a Tucson restaurant to be announced; cosponsored by Arizona Humanities

6 to 8:30 p.m. Free (Order your own dinner off of the restaurant's menu)

Charles Lindbergh is best known for his famous 1927 flight across the Atlantic Ocean. But few realize that Lindbergh and his wife, Anne, played a brief but important role in archaeology. In 1929 they teamed up with noted archaeologist Alfred Kidder to conduct an unprecedented aerial photographic survey of southwestern prehistoric sites and geologic features including Chaco Canyon, the Grand Canyon, and Canyon de Chelly. Featuring Lindbergh's historic photographs, this presentation describes this adventurous pioneering collaboration of aviation and archaeology.

Raised in Flagstaff, Arizona, Erik Berg is an award-winning historian and writer with a special interest in the early twentieth century Southwest and the impact of science and technology. In addition to contributing to several books, his work has appeared in the Journal of Arizona History, Arizona Highways, and Sedona Magazine. A past president of the Grand Canyon Historical Society, Berg currently lives in Phoenix.

Guests may select and purchase their own dinners from the restaurant's menu. There is no entry fee but donations will be requested to benefit Old Pueblo's educational efforts. Because seating is limited in order for the program to be in compliance with the Fire Code, those wishing to attend must call 520-798-1201 and must have their reservations confirmed before 5 p.m. Wednesday October 15.

Thursday November 13, 2014

"Fundraising Raffle of a 2014 Jeep Cherokee" by Tucson's Jim Click Automotive Team. Old Pueblo Archaeology Center gets to keep 100% of the proceeds from all raffle tickets that it sells (see page 32).

Thursday November 20, 2014

Old Pueblo Archaeology Center's "Third Thursday Food for Thought" dinner featuring the presentation "Landscape of the Spirits: Hohokam Rock Art of South Mountain Park" with archaeologist Dr. Todd Bostwick at Dragon's View Asian Cuisine, 400 N. Bonita Ave., Tucson; cosponsored by Arizona Humanities

6 to 8:30 p.m. Free (Order your own dinner off of the restaurant's menu)

The South Mountains in Phoenix contain more than 8,000 Hohokam petroglyphs. This program discusses Dr. Bostwick's long-term study of these ancient glyphs and describes the various types of designs, their general distribution, and their possible meanings. Interpretations of the petroglyphs include the marking of trails, territories, and astronomical events, as well as dream or trance imagery based on O'odham (Pima) oral traditions. Most of the trails currently used by hikers in the South Mountains contain Hohokam rock art, indicating that these trails date back at least 800 years.

Todd Bostwick has conducted archaeological research in the Southwest for 35 years, was the Phoenix City Archaeologist at Pueblo Grande Museum for 21 years, and is now the Senior Research Archaeologist for PaleoWest Archaeology in Phoenix and Director of Archaeology for the Verde Valley Archaeology Center in Camp Verde. Dr. Bostwick has published numerous articles and books on Southwest history and prehistory and has received several awards, including the Governor's Award in Public Archaeology in 2005.

Guests may select and purchase their own dinners from the restaurant's menu. There is no entry fee but donations will be requested to benefit Old Pueblo's educational efforts. Because seating is limited in order for the program to be in compliance with the Fire Code, those wishing to attend must call 520-798-1201 and must have their reservations confirmed before 5 p.m. Wednesday November 19.



Ancient Paintings Inside Ventana Cave

Saturday November 29, 2014

"Rock Art and Archaeology of Ventana Cave" Old Pueblo Archaeology Center carpooling educational tour with archaeologist Allen Dart departing from Pima Community College, 401 N. Bonita Ave., Tucson

6:30 a.m. to 3:30 p.m. Fee \$35 (\$28 for Old Pueblo Archaeology Center and Pueblo Grande Museum Auxiliary members; no charge for members or employees of the Tohono O'odham Nation)

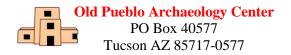
Old Pueblo Archaeology Center offers this early-morning carpool tour onto the Tohono O'odham Nation to visit the Ventana Cave National Historic Landmark site. During the Arizona State

Museum's 1940s excavations in the cave, led by archaeologists Emil W. Haury and Julian Hayden, evidence was found for human occupation going back from historic times to around 10,000 years ago. The cave, which actually is a very large rockshelter, also contains pictographs, petroglyphs, and other archaeological features used by Native Americans for thousands of years. Tour leaves Tucson at 6:30 a.m. to ensure the pictographs can be seen in the best morning light. Fees will benefit the Tohono O'odham Hickiwan District's efforts to develop a caretaker-interpretive center at Ventana Cave, and the nonprofit Old Pueblo Archaeology Center's education programs.

Reservations required by Wednesday January 29: 520-798-1201 or info@oldpueblo.org.

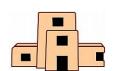
IF YOU WOULD LIKE US TO EMAIL YOU A FLYER with color photos about any of the above-listed activities please call Old Pueblo Archaeology Center at 520-798-1201 or email us at info@oldpueblo.org with "Send flyer" and INCLUDE THE EVENT'S DATE in your email subject line.

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Bulletin of Old Pueblo Archaeology Center

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Old Pueblo Archaeology Center's Archaeology Opportunities Membership and Discounts Program

Archaeology Opportunities is a membership program for persons who wish to support Old Pueblo Archaeology Center's education efforts and perhaps even to experience for themselves the thrill of discovery by participating in research. Membership is also a means of getting discounts on the fees Old Pueblo normally charges for publications, education programs, and tours. Members of Archaeology Opportunities at the Individual membership level and above are allowed to participate in certain of Old Pueblo's archaeological excavation, survey, and other field research projects, and can assist with studies and reconstruction of pottery and other artifacts in the archaeology laboratory. Membership benefits include a 1-year subscription to the Old Pueblo Archaeology electronic quarterly bulletin, opportunities to participate in Old Pueblo's member-assisted field research programs, discounts on publications and archaeology-related items, and invitations and discounts for field trips and other events.