



MEMORANDUM

Date: August 1, 2000

To: The Honorable Chair and Members
Pima County Board of Supervisors

From: C.H. Huckelberry
County Administrator 

Re: ***The Classic Period Landscape -- Ancient Cultural Landscapes of Southern Arizona***

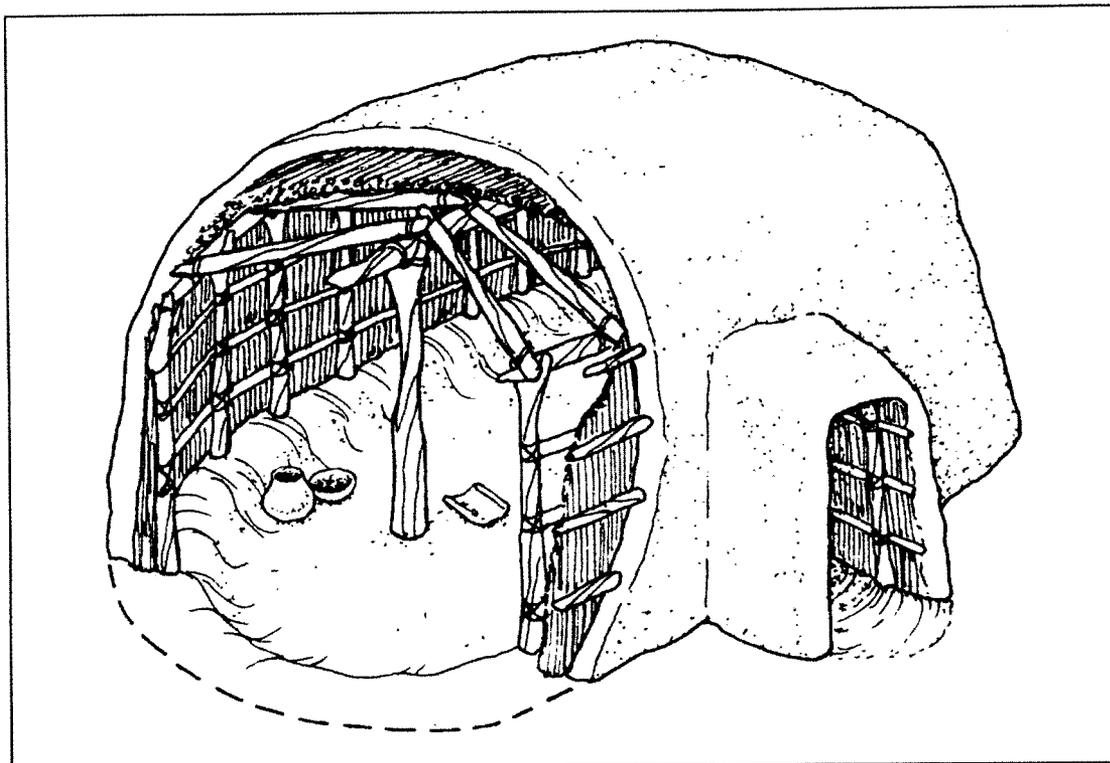
Background

Last month a report was produced to contribute to the Cultural and Historic Resources Element of the Sonoran Desert Conservation Plan entitled *Cultural Landscapes of Prehistory in Southern Arizona*. Written by Statistical Research Incorporated (SRI), the study discussed the period of Hohokam culture between 800 and 1200 A.D. in terms of the domestic landscape, the agricultural landscape, and the social landscape of the residents of Southern Arizona 1000 years ago. The attached study covers the time period immediately following this era. Entitled *The Classic Period Landscape*, these same categories of landscape are reviewed as the residents adjust to upheaval and change in environmental and social conditions. This memorandum summarizes the study about the *Classic Period* and provides a comparison of findings and theories about area residents from both before and after 1200 A.D. -- which is the approximate time frame of the collapse and restructuring of cultural landscapes.

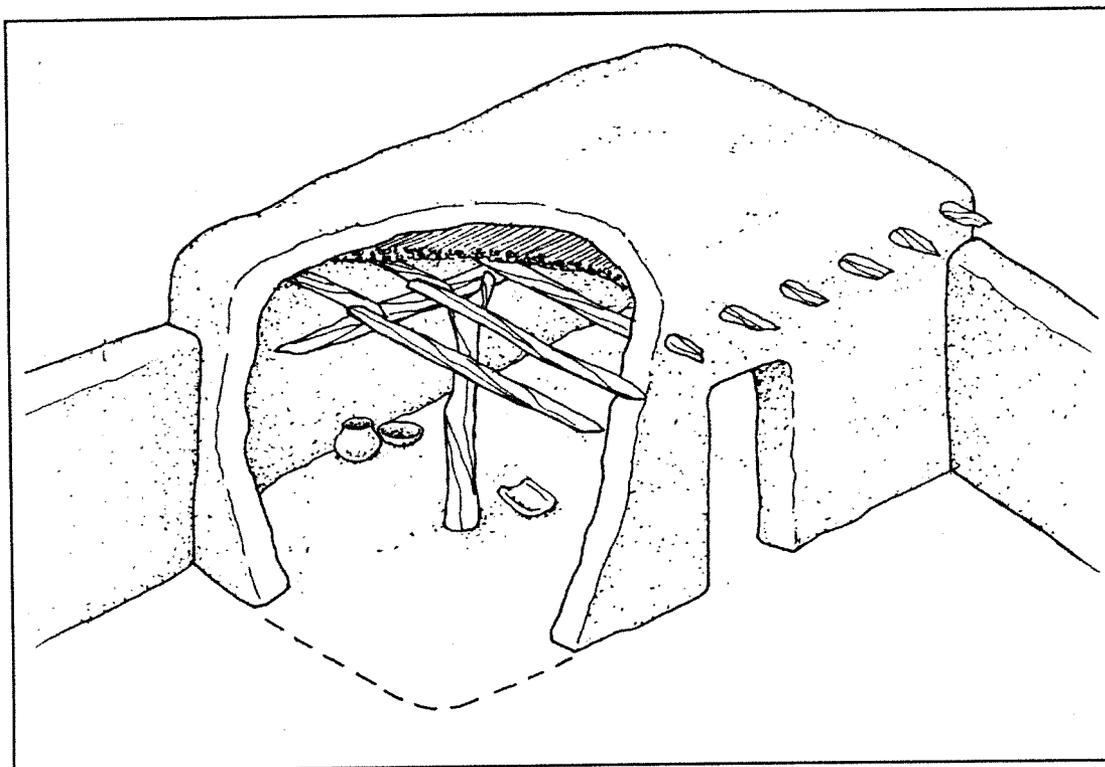
Dwelling Space: The Built Environment of Home

Pages 2 through 7 of the attached report describe findings and theories about Classic Period dwellings. A few highlights are reproduced below:

- “[T]he most visible indication of change was in the forms and construction materials of domestic architecture. The partially subterranean pit house built of poles and brush -- the quintessential Hohokam dwelling -- was replaced by a variety of rectangular, semisubterranean and aboveground structures built partially or entirely of adobe. Compound walls often encircled groups of houses. As settlements grew, new rooms were built next to formerly isolated rooms, creating groups of contiguous rooms that resembled the masonry pueblos of the north.” [p.2]
- “The adobe compound village changed the appearance of the desert landscape markedly.” [p. 2]
- “The traditional courtyard group of the pre-Classic period, with its cluster of houses facing a common courtyard and associated outdoor facilities were no longer built. Instead, there was a more dispersed pattern of single structures, each representing most if not all domestic habitation functions.” [p. 5]



A Hohokam pithouse. Throughout much of their history, Hohokam houses were built in shallow pits about 1½ feet deep. These pithouses, with their thick mud walls over a wooden superstructure, offered the Hohokam protection against the wide range of desert temperatures.



A Classic period Hohokam coursed-adobe house with compound wall. These types of houses were built by the Hohokam after A.D. 1150 during the Classic period. The walls of these above-ground houses were built of adobe mud stacked in layers. The roofs were made of wood in much the same way as the earlier pithouse and were also covered with adobe. Houses during the Classic period were built adjacent to each other in clusters and were surrounded by a compound wall.

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- "Compounds represent a unique and different kind of organization. This architectural form certainly demarcates groups and defines their territory symbolically; it may have maintained more concrete functions as well. Although the compound was an organizational form that probably represented a higher order of integration than the courtyard, the size and organization of the groups that were represented are poorly known." [p. 5]
- "[A]rchitecture of the Classic period changed rapidly in response to shifting social, political, and economic conditions. These conditions, however, did not destroy local tradition or overwhelm it. Rather, 'they permitted the evolution of an architectural idiom of independent qualities, one that was neither new or old.'" [p. 7, citation omitted]

The Agricultural Landscape

Pages 7 through 12 describe the agriculture of the Classic Period. Highlights include:

- "The Classic period was, in general, a time of marked variability in rainfall. ... One of the worst dry episodes of the A.D. 1200s was the so-called 'Great Drought' of 1276 to 1299, which has been implicated in widespread abandonments and regional population shifts on the Colorado Plateau and the Arizona mountains. ... Floods in the late A.D. 1300s have been identified as contributing to the collapse of Classic period culture in the Phoenix Basin." [p. 8]
- "In addition to this marked unpredictability that affected the entire region, there may have been changes to local riverine and floodplain environments that influenced farming strategies. ... Uncertainty and unpredictability would have markedly influenced people's ability to carry out traditional farming strategies successfully." [p. 8]
- "Farmers may have responded to these conditions by stressing dry farming, particularly agave cultivation, focusing less intensively on growing water-needy plants such as corn and cotton, and relying on floodwater farming techniques. Many of the extensive rock-pile fields in the Tucson area that were used for agave cultivation apparently date to the Classic period. Fields were located in southwestern Tucson near the San Xavier Reservation, in the Marana community, and near the Picacho Mountains northwest of Tucson. Floodwater farming was used for cultigens requiring more water, and the intensification of upland ak-chin farming generally characterized the Classic period in the Tucson Basin and its adjacent margins." [p. 8]
- "Another kind of farming technology may have involved *cerros de trincheras*. Most *cerros de trincheras* in southern Arizona date to the Classic period, or were used most intensively at that time. " [pp. 9-10]
- "Evidently there was little irrigated farming during the Classic period. To date, no archaeological evidence for irrigation canals along the Santa Cruz River has been unearthed. Dr. Fish et al have suggested that irrigation canals were used in the Classic

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period Marana community based on nineteenth-century historical maps that show alignments heading at the terminus of the Tucson Mountains. Some large Classic period communities such as Martinez Hill-San Xavier, were located near stretches of the river that would have had permanent surface water, however, or adjacent to extensive cienegas or marsh areas. Certainly these resources would have been used for farming." [p. 10]

The Sacred, Social and Political Landscape

Pages 10 through 31 describe the society of the Classic Period. Highlights include:

- "One of the most radical changes to the ancient landscape was in its spiritual geography -- the ceremonial structures used in ritual activities were altered, from which we can infer equally dramatic shifts in ideology and belief. The ball court system that had dominated Hohokam ritualism in the pre-Classic period collapsed in the Sedentary period and was replaced by a new ritual system focusing on artificial platform mounds. ... Changes in ritual organization represent the strongest piece of evidence for cultural disintegration and replacement during the Classic period." [p. 12]
- Platform mounds were "rectangular constructions built with deliberately filled cells, some of which may originally have been occupied rooms that were subsequently incorporated into the mound, the whole creating an artificial, elevated platform." [p. 13]
- "In the Tucson area, platform mounds were located at the Martinez Hill complex in the southwestern Tucson Basin, at University Indian Ruin in the eastern basin, and at Marana." [p. 13]
- "The iconography, ritual paraphernalia, and ... symbolism associated with the ball court complex was replaced by a new set of symbols and practices. The pervasive water symbolism of the pre-Classic period and the use of fire in ritual performances disappeared. ... Life forms symbolizing water, such as water birds, frogs, and turtles, were no longer painted on pottery. ... There was an increasing emphasis on animal symbolism." [pp. 14-15]
- "The sacred landscape of the thirteenth and fourteenth centuries in southern Arizona was altered radically, to the extent that the pre-Classic period occupants of the Tucson area would scarcely have recognized the new spiritual geography. Where once ball courts hosted noisy games perhaps designed to bring rain, control irrigation water, and center the pre-Classic world, two new edifices rose from the desert floor. Platform mounds focused the sacred activities of the rapidly emerged and dispersed communities. Cerros de trincheras were sacred mountains altered by their human users to reflect dual divisions of the cosmos and the secular world. Neither system used the old iconography and ideology, but practitioners incorporated new systems of symbol and belief to anchor their ritual activities." [pp. 20-21]

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- "It is highly probable that desert Arizona was profoundly affected by demographic shifts and subsistence and social stresses engendered by unpredictable and deteriorating environmental conditions in the late A.D. 1200s. A variety of archaeological data indicates population movement from the Colorado Plateau southward Excellent data also exist for the extremely poor health and impoverished nutrition of late Classic period populations. ... There was evidently extremely poor nutrition caused by dependence on maize in the diet, exacerbated by a decrease through time in consumption of animal protein and wild plant resources." [p. 31]

Conclusion

The report on the *Classic Period* reflects evidence of dramatic changes in the environmental and social conditions of residents in Southern Arizona in the years following 1200 A.D. The report also conveys a sense of how for the last 60 years, explanations have eluded researchers who seek information about the degree of success groups of people have had in adopting strategies to meet changing resource conditions in Southern Arizona. A theory will arise, only to be contradicted by the next set of findings from cultural resource field work. This is due in part to the haphazard opportunities presented to "study" cultural resources in advance of development projects. Under a rational and proactive cultural resource protection policy, we will obtain better information about how people in Southern Arizona have failed and succeeded in attempts to balance and integrate land use and natural resource utilization. The Cultural Resources Element will help make this and other major contributions to the Sonoran Desert Conservation Plan.



Regional Synthesis of Cultural and Historical Resources

Pima County Sonoran Desert Conservation Plan

Ancient Cultural Landscapes of Southern Arizona:

The Classic Period Landscape

Submitted by

Statistical Research, Inc.

P.O. Box 31865

Tucson, AZ 85751

July 2000

ANCIENT CULTURAL LANDSCAPES OF SOUTHERN ARIZONA: THE CLASSIC PERIOD LANDSCAPE

Stephanie M. Whittlesey

Across the landscape of time, we see the ebb and flow, adjustment and readjustment, of populations on small and grand scales.

—Lange 1992:333

Salado stands as a testament to the intractability of the often mute past and the difficulties encountered when we attempt to make it speak.

—Reid and Whittlesey 1997:230

Sometime around A.D. 1150 or 1200 there were sweeping changes to lifeways and landscapes in the Tucson Basin as elsewhere in southern Arizona. These profound shifts of the Classic period have been the topic of controversy and dissent for about 60 years, and archaeologists have yet to come to consensus. The history of archaeological study of Classic period peoples, landscapes, and cultures is extraordinarily complex, and we have come full circle in our thinking (Reid and Whittlesey 1997:230). An older view referred to the Classic period culture of the Tucson Basin, the Phoenix Basin, and other areas in southern Arizona as "Salado"—a culture thought to represent a migration of Puebloan peoples from the north into the southern Arizona deserts. A revision of Salado in the late 1970s viewed it as simply a continuation of the Hohokam, and the label "Classic period Hohokam" became de rigueur. With recent work in the Tonto Basin, archaeologists have once more returned to the older notion. Salado is now viewed by many archaeologists as a polythetic amalgam of many different cultures and ethnicities—some of which came from the Colorado Plateau—who embraced a new ceremonial system that emerged in the environmental uncertainties of the late A.D. 1200s. The Classic period was "a palimpsest landscape, an eclectic archaeology, a thing of shreds and patches" (Lekson 1992:336).

It is important to recognize, therefore, that the Tucson Basin was not an isolated region separated from the larger events and processes affecting southern Arizona and the Southwest as a whole. Changes that took place on the regional and even broader scales affected the Tucson Basin profoundly, and this is no more apparent than during the Classic period. Whatever we choose to call the pre-Classic period Hohokam—a culture, a regional system, a ritual cult, an interaction sphere, or any other label—it collapsed and was reorganized in the Classic period during a time of upheaval, conflict, and reorganization that swept the entire Southwest. To explain what happened during the Classic period, we need to think on a grand scale. Drainages, basins, even regions are "simply too small to encompass the social and ecological forces so clearly at work in the fourteenth- and fifteenth-century Southwest" (Lekson 1992:336).

This section summarizes the shifts that took place in lifeways, material culture, settlement pattern, and landscapes; reviews the prevailing and sometimes contradictory theories for these changes; and offers some new ideas about the reorganization of the Classic period in southern Arizona.

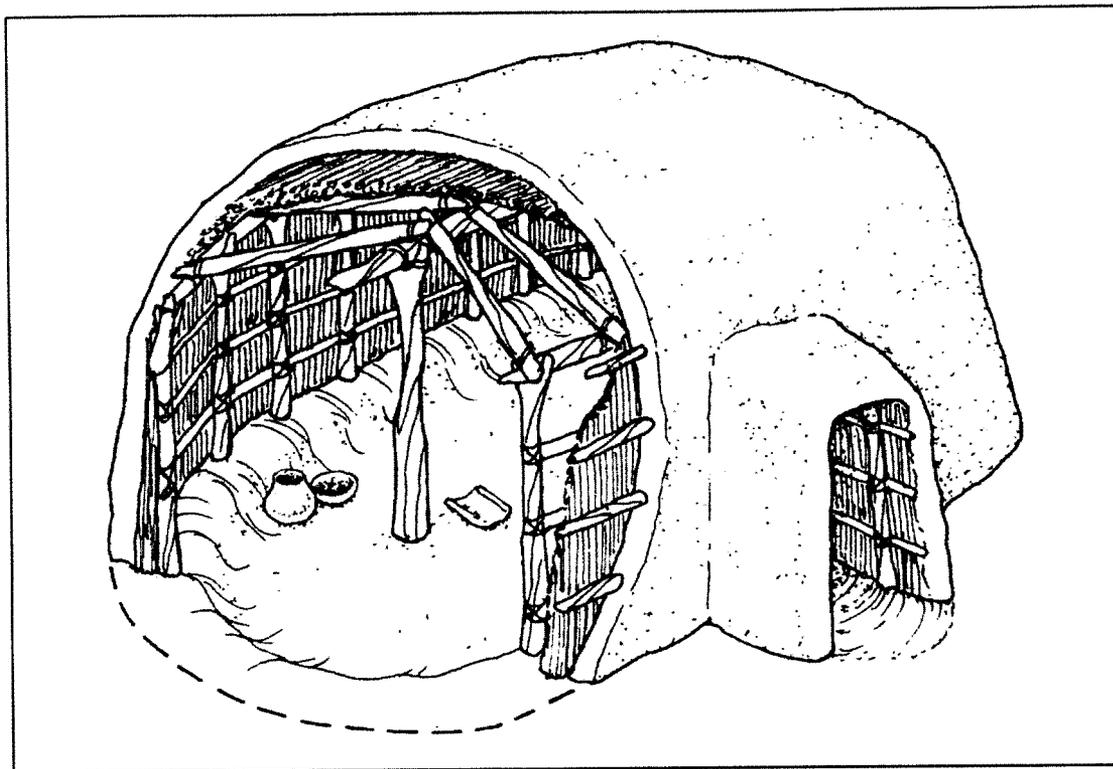
Dwelling Space: The Built Environment of Home

Perhaps the most visible indication of change, particularly evident to the nonprofessional archaeologist, was in the forms and construction materials of domestic architecture. The partially subterranean pit house built of poles and brush—the quintessential Hohokam dwelling—was replaced by a variety of rectangular, semisubterranean and aboveground structures built partially or entirely of adobe. Compound walls often encircled groups of houses. As settlements grew, new rooms were built next to formerly isolated rooms, creating groups of contiguous rooms that resembled the masonry pueblos of the north. These characteristics of Classic period domestic architecture—aboveground rooms built of adobe, compacted together in contiguous units encircled by walls—were important features that led Gladwin, Haury, and other archaeologists of the 1930s and 1940s to attribute the Classic period to puebloan immigrants they called the Salado.

The adobe compound village changed the appearance of the desert landscape markedly. As Fuchs and Meyer-Brodnitz (1989:404) have observed, it is not always easy to understand the evolution of a particular type of house. Nonetheless, “architecture is not the arbitrary whim of individuals but the selective outcome of a diffused, intricate, social preoccupation with construction.” Thus, changes in architecture signal changes to the fabric of life that should not go unremarked, for the types and forms of houses “best suit the purposes they serve, the meanings they carry, and the means used to carry them,” becoming “accepted as norms and become the vernacular of their times” (Fuchs and Meyer-Brodnitz 1989:404–405). Domestic group and household cycling, shifts in agriculture, the dynamics of political power, and changes in social relations are among the historical factors that may influence shifting domestic architecture (Shami 1989). We do not know exactly how those processes may have influenced the changing architecture of the Classic period, but we can certainly assume that these changes were neither random nor unimportant.

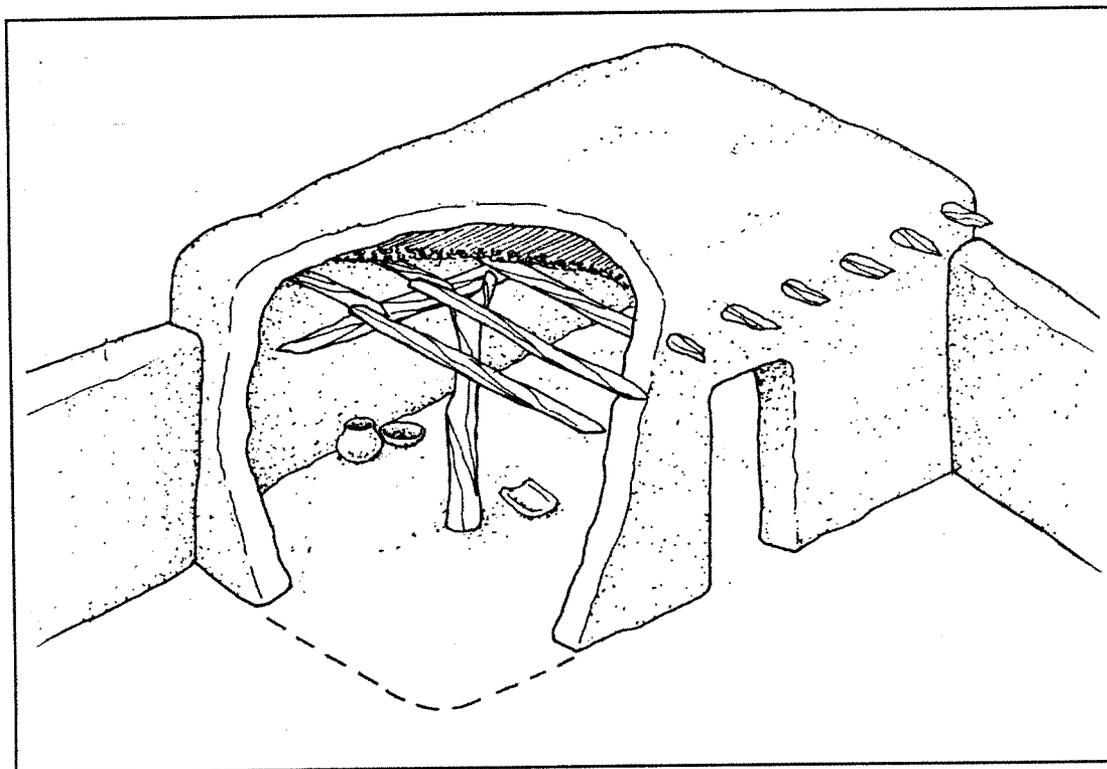
Tanque Verde Phase

As first recognized by Haury (1928) based on excavations at the Tanque Verde Ruin, there were two general house types during the Tanque Verde phase that encompassed much variation in domestic architecture. Later, Kelly et al. (1978:11–12) and Zahniser (1966) described the same variability in house types of the Tanque Verde phase at the Hodges Ruin and at AZ BB:14:24 (ASM) in the eastern Tucson Basin. One was a rectangular, aboveground structure built of adobe, with access either through doorways or attached entries. Kelly et al. (1978) called this the “standing wall” type, and Zahniser (1966) and Haury (1928) labeled it the Type 2 house. There was variability in construction of the walls, which might be solid adobe (coursed, puddled adobe or adobe blocks), reinforced with posts or cobbles and slabs, or contain mixed charcoal-and-trash fill.



A Hohokam pithouse. Throughout much of their history, Hohokam houses were built in shallow pits about 1½ feet deep. These pithouses, with their thick mud walls over a wooden superstructure, offered the Hohokam protection against the wide range of desert temperatures.

(From: *Desert Farmers at the River's Edge: The Hohokam and Pueblo Grande*, By John P. Andrews and Todd Bostwick, 1997. Pueblo Grande Museum and Cultural Park, City of Phoenix.)



A Classic period Hohokam coursed-adobe house with compound wall. These types of houses were built by the Hohokam after A.D. 1150 during the Classic period. The walls of these above-ground houses were built of adobe mud stacked in layers. The roofs were made of wood in much the same way as the earlier pithouse and were also covered with adobe. Houses during the Classic period were built adjacent to each other in clusters and were surrounded by a compound wall.

(From: *Desert Farmers at the River's Edge: The Hohokam and Pueblo Grande*, By John P. Andrews and Todd Bostwick, 1997. Pueblo Grande Museum and Cultural Park, City of Phoenix.)

The second type was a semisubterranean structure that was rectangular in shape with rounded corners. Kelly et al. (1978) called this the "slant wall" type and Haury (1928) and Zahniser (1966) labeled it the Type 1 house. The walls were sloping, hence the name, and typically were well plastered with adobe. Entries were attached and lacked steps as in many earlier pit houses. Some pit structures were not lined with adobe, however. Kelly et al. (1978:78) also discuss what they label "wall less" houses, which were built on the surface without excavating a pit to support the superstructure. Because these houses were also built throughout the pre-Classic period as well as the Classic period, they may have served a particular function or have been necessitated by certain sediment conditions at the construction site.

The surface adobe rooms generally appear to be later than the unlined pit houses and adobe-lined pit rooms, although there was considerable variability, and intrasite chronology is often too poor to reconstruct the architectural sequence with certainty (Ciolek-Torrello 1988a; Halbirt et al. 1990; Herron et al. 1988:250; Whittlesey et al. 1994:150-157; Zahniser 1966). Both house types occur together at most sites. Where there was superpositioning, as at the Badger Hole Ranch site recently excavated by Statistical Research, Inc. (SRI), the surface adobe rooms overlie the pit structures. There was also functional differentiation among structures, with some serving as habitations and others as specialized storage structures, but there was apparently no correlation between type of construction and structure function.

It is possible that coresidence of different ethnic or cultural groups was responsible for some of the architectural variability seen at Classic period settlements. In the absence of clear temporal, functional, and social reasons for different house types, this seems like a plausible alternative that should be investigated.

The compound wall—a rectangular wall enclosing houses, to which some may be attached—is an architectural form that was extremely common in the mountains of east-central and central Arizona during the A.D. 1200s, where it was built of masonry rather than cobble-reinforced adobe. In the Tucson Basin and elsewhere, the compound wall also appeared at that time. Not all settlements had compound walls, however, and the compound wall persisted into the late Classic period (Whittlesey et al. 1994:155). The compound wall was an architectural innovation that evidently appeared rapidly at the beginning of the Tanque Verde phase (e.g., the compound at Los Morteros [Wallace 1995a:238]).

We can use the Gibbon Springs site (AZ BB:9:50 ASM) in the eastern Tucson Basin (Slaughter and Roberts, eds. 1996) to look more closely at Tanque Verde phase architectural variability. The two basic architectural types—semisubterranean adobe-walled structures and adobe-lined pit structures—were found there. The adobe-walled rooms were rectangular with plastered entries, some of which had steps faced with stone slabs or risers. Walls were constructed of adobe courses bonded together with stones. The pit structures were less formally constructed, and as originally noted by Haury (1928) at the Tanque Verde Ruin, most were true pit houses, in which the edge of the house pit formed the lower portions of the

walls. This contrasted with the typical Hohokam house, which was a house built inside a pit. Some of the pit structures had unusual antechamber entries, which have been found at other Tanque Verde phase sites as well (Slaughter 1996:132).

The compound wall at Gibbon Springs was formed of adobe and large, vertically placed stone slabs set into a shallow trench (Slaughter 1996:112). The compound was rectangular and enclosed one semisubterranean, adobe-walled structure; three pit structures and a possible fourth; and a number of nonarchitectural features, including adobe-mixing pits, cremations, pits, and a roasting pit (Slaughter and Roberts 1996:Figure 17.2 and Table 17.1). Many other structures and nonarchitectural features were located outside the compound. Farthest from the compound were agricultural field areas where habitation structures were also built. Only two of the excavated structures, located outside the compound, were contiguous, and their entries faced in opposite directions.

The two types of houses appear to have been contemporaneous at Gibbon Springs, as were the houses within the compound and those outside of it, although the intrasite chronology (Ahlstrom and Slaughter 1996) is insufficiently detailed to determine this with certainty. Ceramic and chronometric dates indicate that occupation of the site fell entirely within the Tanque Verde phase.

Pit structures were also built at some of the *cerros de trincheras* (terraced hillsides) in the Tucson area. These structures seem similar to other Tanque Verde phase pit structures, with certain differences based on location and geological constraints (Downum 1986, 1995; Fish et al. 1992b). For example, they were typically outlined by cobbles that were removed from the subsoil when the foundation of the structure was excavated.

Less well known but pervasive, at least in some parts of the Tucson Basin, are a variety of masonry structures. Dry-laid masonry structures in groups of one to three, of circular or rectangular shape, were found during survey of the eastern portion of Saguaro National Monument (Simpson and Wells 1984:45–54), in Sabino Canyon (Whittlesey and Harry 1990), on the *bajada* of the Tortolita Mountains (Fish et al. 1992b:31, 38), and in the Tucson Mountains (Hartmann 1981). They were probably widespread wherever stone building materials were available. Simpson and Wells (1984:51–53) describe several room blocks that appear to represent compact groups of masonry structures not unlike the pueblos of the north. One was described as having 11 contiguous and 4 detached rooms and a compound wall.

The masonry structures in the Tucson Mountains appear to be part of *cerros de trincheras* constructions. Several such masonry structures were excavated at the Linda Vista Hill *trincheras* site located near Los Morteros at the northern end of the Tucson Mountains (Downum 1995). These varied in shape from oval to circular; they were built of loosely stacked cobbles and were either built on the surface or excavated partially into the soil of the hillslopes. Some informally constructed features may have served as open-air windbreaks for outdoor activities (Downum 1995).

Tucson Phase

Tucson phase architecture is less well known than that of the Tanque Verde phase, because far fewer sites have been excavated. Moreover, most of our information comes from sites that were excavated some 60 years ago without benefit of modern techniques. The available information suggests that compounds and adobe-walled surface structures were dominant architectural forms, although pit structures persisted and some settlements lacked compound walls.

One component of the Dairy site excavated by SRI provides recent information (Deaver 1996). Excavations exposed adobe walls defining at least 8 courtyards, 10 adobe-walled rooms, 1 adobe-walled pit room, and numerous outdoor features. Most of the rooms were contiguous and located adjacent to the compound wall (or more properly, one of the compound walls, as the Tucson phase component evidently had multiple compounds). Hearths and other outdoor features were located along the courtyard walls. These patterns were repeated at University Indian Ruin (Hayden 1957). An unusual feature found in one room at this site was a pueblo-style, adobe-and-slab mealing bin containing a metate (Hayden 1957:28–29).

Surface or shallow pit structures of jacal were also built during the Tucson phase (Ciolek-Torrello and Greenwald 1988:141–142). These may be equivalent to those of the Polvorón phase of the Phoenix area, which was marked by a return to pit house construction and an overall simpler lifestyle. At the San Xavier Bridge site in the southwestern Tucson Basin, several informal pit structures were found that may also date to this time. These were irregular, oval houses with insubstantial superstructures, little or no plaster, and no entryways (Ravesloot 1987).

Structure, Organization, and Meaning

Although there have been attempts to identify courtyard groups at Classic period sites (e.g., Slaughter 1996), these have generally proved fruitless. The traditional courtyard group of the pre-Classic period, with its cluster of houses facing a common courtyard and associated outdoor facilities were no longer built. Instead, there was a more dispersed pattern of single structures, each representing most if not all domestic habitation functions; in the courtyard groups of preceding times, some houses served specific functional purposes. In settlements without compounds, the placement of these isolated structures appears to have been random, or at least unplanned. This suggests a significant shift in household and domestic group organization, possibly from large, extended families sharing storage space and communal facilities to much smaller, single-family households. It is possible that pairs of houses—one large, one small—were used, with each focused on different activities. More work is needed to determine if this was a widespread pattern.

Compounds represent a unique and different kind of organization. This architectural form certainly demarcates groups and defines their territory symbolically; it may have maintained more concrete functions as well. Although the compound was an organizational form that probably represented a higher order of integration than the courtyard (Ciolek-Torrello 1988c:205), the size and organization of the groups that were represented are poorly known. The linear organization of many compounds, in which rooms were aligned against one or more enclosing walls without an obvious focus, contrasts strongly with the inward, central focus of pre-Classic period courtyard groups. Compounds appear to represent large household groups, however, much like pre-Classic courtyards.

At Gibbon Springs, there was functional specialization of structures inside the compound. One structure set against the compound wall and incorporating it in construction contained 25 reconstructible vessels, abundant plant remains, and no hearth, indicating specialized and capacious storage (Slaughter and Roberts 1996:504–507). Two pit structures with hearths served habitation and storage purposes. A fourth, large structure contained a possible bench and two hearths. A cemetery area and communal outdoor cooking facilities were present within the compound. Although Slaughter and Roberts (1996:521) suggest that the compound was a communal feature used by all members of the Gibbon Springs settlement—not simply those living inside the compound—for storage, mortuary activities, and other communal purposes, much more excavation is needed before we can ascertain if this pattern occurred elsewhere with regularity.

There seems to have been several trends in social and domestic organization that were reflected in architecture. The domestic group seems to have been reduced in size, but these smaller domestic groups tended to aggregate together in larger clusters within compounds. At some sites, there is evidence that groups of rooms were built at the same time, indicating a large social unit establishing residence. At University Indian Ruin, for example, Hayden (1957:22) described a chain of rooms built in one continuous operation with similar materials and techniques, suggesting construction by the same group of workers. This contrasts with the pre-Classic pattern of establishing courtyard groups with one or two pit houses and subsequent, gradual growth and accumulation of additional facilities through time. Compounds and noncompound settlements alike fail to show the long-term tenure seen in many large pre-Classic period settlements; they tended to be founded and abandoned within relatively brief spans of time. We do not know if this can be taken to mean that the persistence of kinship units and the associated concern with land tenure and ancestors, which was so important in preceding times, was attenuated during the Classic period. It may simply reflect the much shorter occupation spans of these settlements.

There was apparently an increased concern for privacy and privatization of space (Whittlesey 1998b). This may be directly correlated with the aggregated character of many Classic period settlements. That is, more people were living together in closer proximity than in previous times. The linear nature rather than inward focus of most habitations meant that the residents of individual structures did not constantly face their neighbors and relatives; their daily activities and their comings and goings were shielded to some extent from neighbors' eyes.

The number of walled courtyards within compounds also indicates this concern with private space, and the whole was surrounded by a compound wall that protected the residents. As Wilcox (1991:256) has described it, compounds may have served to restrict "access to information about matters internal to these groups." If Slaughter and Roberts (1996) are correct in their interpretation of compounds as communal facilities, however, the entire community would have had access to compounds and their facilities. This clearly is a direction where additional study is needed.

Shami's (1989) analysis of changing domestic architecture in a Jordanian village between 1880 and 1930 provides some interesting similarities and suggests potential explanations for variability in Classic period architecture. The Ottoman village at Umm Qeis was divided into two portions with clear differences in spatial organization. The upper quarter contained the large dwelling complexes of the major landowning families (*mellahin*); the lower quarter was where the poorer peasants, laborers, herders, and craftspeople (*fellahin*) lived. The major landowners lived in tightly clustered compounds not unlike Classic period compounds, with few streets and outward-opening doorways. This arrangement developed from the attempts of families related by kinship to stay together and because of a concern with defense against theft of food stores (Shami 1989:465). The smaller landowners in the upper quarter lived in smaller courtyards that were subdivided into increasingly smaller units through time. The lower-quarter dwellings of the poorer people were not built in the walled courtyard style; they were smaller and more poorly constructed. Most were scattered and stood alone in the open or with only rudimentary enclosures; there evidently was little that they needed to protect. Thus, Shami (1989:466) concludes, "The differences in the dwellings of the *mellahin* and *fellahin* are directly related to the place of their inhabitants in the system of production."

Courtyards of the *mellahin* contained individual living space, usually one room, for each married couple, along with stables and storehouses. New rooms were added when adult children married. Dividing walls within courtyards defined boundaries between families and activity areas such as kitchens. As a household grew, low dividing walls were built to designate the private space of each family within the commonly shared courtyard. The baking oven or *tabun* and the kitchen defined groups that pooled their resources and cooked and ate together. If a family unit split off completely and no longer shared resources, a high dividing wall was built, and each family would have its own *tabun* and kitchen (Shami 1989:470-473).

Similar principles no doubt structured the architecture and organization of Classic period compounds. The clustering of families related by kinship, the need to protect against theft, the subdivision of courtyards through time as families grew, and the sharing of certain facilities all seem to be potentially applicable to Classic period architecture. As in so many parts of the world, architecture of the Classic period changed rapidly in response to shifting social, political, and economic conditions. These conditions, however, did not destroy local tradition or overwhelm it. Rather, "they permitted the evolution of an architectural idiom of independent qualities, one that was neither new nor old" (Fuchs and Meyer-Brodnitz 1989:419).

The Agricultural Landscape

The mutual relationship between people and their land is demonstrated most vividly in agricultural practices. As Hunn (1999:30) has astutely commented, "subsistence should be understood as a long-term relationship between a community and its land and resource base, rather than as a strictly economic activity. . . . subsistence activities are integral to the life of families and communities, an aspect of their identity and continuity expressed in subsistence work." Farmers of the Classic period were faced with the same general environmental conditions and constraints as the Hohokam agriculturists of pre-Classic times. Southern Arizona was a hot and arid land then as now, and farming this land required ingenuity and persistence. We must also recognize the need to adapt farming strategies to localized conditions as they may have shifted through time, however. In turn, we must not neglect the possibility that people altered the environment, necessitating farmers to change their technology further still. This is because "subsistence is dynamic, rooted in past practices but of necessity adapting to technological, demographic, economic, social, and political changes" (Hunn 1999:30).

The Classic period was, in general, a time of marked variability in rainfall. There were episodes of normal or above-normal precipitation punctuated by drought years (Rose 1994; Van West and Altschul 1994). The climatic record as reconstructed from analysis of tree-ring data gives testimony to the unpredictable climatic character and alternating drought-flood episodes of the Classic period. One of the worst dry episodes of the A.D. 1200s was the so-called "Great Drought" of 1276 to 1299, which has been implicated in widespread abandonments and regional population shifts on the Colorado Plateau and the Arizona mountains (e.g., Reid 1989; Reid and Whittlesey 1997). The first three decades of the A.D. 1300s were generally wetter than average, but were followed by dry years. Floods in the late A.D. 1300s have been identified as contributing to the collapse of Classic period culture in the Phoenix Basin (Nials et al. 1989).

In addition to this marked unpredictability that affected the entire region, there may have been changes to local riverine and floodplain environments that influenced farming strategies. Effland and Rankin (1988:194) and Waters (1987:59, 1988) recognized an episode of channel entrenchment along the Santa Cruz River beginning in the later portion of the Rincon phase and continuing through the late Tucson phase. According to Waters (1987:59), a large channel was formed that destroyed many acres of arable land. Seismic activity may have exacerbated this problem by dramatically affecting the velocity of spring flow (Wallace and Holmlund 1986:163-170; Wilcox 1988a:276). With the loss of so much land, farmers no doubt needed to move their field locations and villages.

Uncertainty and unpredictability would have markedly influenced people's ability to carry out traditional farming strategies successfully. Farmers may have responded to these conditions by stressing dry farming, particularly agave cultivation, focusing less intensively on growing

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water-needy plants such as corn and cotton, and relying on floodwater farming techniques. Many of the extensive rock-pile fields in the Tucson area that were used for agave cultivation apparently date to the Classic period. Fields were located in southwestern Tucson near the San Xavier Reservation (Doelle 1988), in the Marana community (Fish et al. 1992a), and near the Picacho Mountains northwest of Tucson (Ciolek-Torrello and Halbirt 1987). Floodwater farming was used for cultigens requiring more water, and the intensification of upland *ak-chin* farming generally characterized the Classic period in the Tucson Basin and its adjacent margins (Whittlesey et al. 1994:177). Herhahn (1995) has cautioned us that although archaeologists typically assume that only one agricultural strategy was used, this was seldom the case. Diverse farming techniques helped to maximize available resources and ameliorate the effects of unpredictable climate and changing local conditions. Diversification helped to cope with possible crop failure (see also Fish 1995). For example, crops grown in higher-elevation areas might be spared the fate of those grown in bottomlands along major streams, which would be subject to destruction during severe flooding. Moister conditions may have facilitated dry farming. Generally drier conditions with fewer but more intense storms might also be more effectively dealt with by diversifying kinds and locations of agricultural sites (Sandor 1995:123).

In some cases, the same areas were used for both dry farming and floodwater farming. The rock-pile fields in the Marana community exemplify this combination of farming techniques that probably characterized much Classic period agriculture. The fields were located on ridge tops where they were optimally situated to catch runoff. The bottoms of the intervening drainages were cultivated, as indicated by berms representing the remains of earthen checkdams; corn pollen was recovered from behind one such berm (Fish et al. 1992a:81). Terraces, checkdams, and roasting pits for agave preparation occur among the rock-pile fields along with tools for harvesting and processing agave (Fish et al. 1992a:Figures 7.7 and 7.8). The configuration of these fields strongly resembles "dry basin slopes extensively planted with agave in highland Mexico" (Fish et al. 1992a:85).

The intensification of agave farming may have had strong ritual and economic components that were less directly related to subsistence. Production of fermented beverages from the agave plant, which may have had a strong ritual component (see discussion below), may have increased during the Classic period. Production of textiles from agave fiber may also have been more important than in pre-Classic times. Agave fibers are thick and principally used for making sandals, basketry, matting, and cordage (Teague 1998:13). The techniques used for processing agave fibers in ethnographic and prehistoric contexts are described thoroughly by Teague (1998:16-17). Importantly, most or all of the processing takes place in the field areas. Agave could well have been an important economic crop that was extensively traded. Certain communities may have specialized in producing roasted agave hearts, beverages, or textiles (Fish et al. 1984, 1992a; Gasser and Miksicek 1985).

In floodwater farming, surface runoff was captured with simple diversion devices and directed to patches of arable land. This technology, based as it was on rock-pile mulches to conserve water and terraces and checkdams to control erosion, maximized what were undoubtedly

limited water and soil resources and was ideally suited to the shifting and unpredictable precipitation of the Classic period. In wet years, farmers could plant along the secondary drainages and divert water to their fields; in dry years, agave could be cultivated with whatever rain happened to fall (see discussion in Fish et al. [1992c]). In the Picacho Mountains, northwest of the Tucson Basin proper, for example, *ak-chin*-type agriculture intensified, and new cultigens, including cotton and squash, were grown. The importance of corn agriculture increased throughout the Classic period in this area (Gasser 1988:209). The Picacho example also cautions archaeologists not to apply localized patterns elsewhere in desert Arizona. During the Classic period, the environment was not only a mosaic of short-term precipitation fluctuations through time; it also represented a fluid, shifting patchwork of highly variable local conditions.

Another kind of farming technology may have involved *cerros de trincheras*. Most *cerros de trincheras* in southern Arizona date to the Classic period, or were used most intensively at that time. As we have seen in another section of the cultural resources overview prepared for the Sonoran Desert Conservation Plan (SDCP), *Ancient Cultural Landscapes of Southern Arizona: The Preclassic Hohokam*, the terraces were used for farming as well as for habitation (Fish et al. 1984; Downum et al. 1985, 1993). Fish (1995:105) has suggested that these hillside terraces were ideal for limited cultivation. Their volcanic soils with high clay content were fertile and retained moisture well. Upslope catchments provided supplemental water; the physical setting also avoided cold-air drainage problems of lower elevations (Adams 1979; Sandor 1995:123). Fish (1995:105) wrote "Although terraces offered modest area for cultivation, small early harvests might have been particularly welcome at winter's end, as is the case with canyon terrace crops of the historic Hopi Indians (Hack 1942)." Although this may have undoubtedly been true, it is also possible that these small farming plots had a more important ceremonial function. If, as Downum (1993) has suggested, *cerros de trincheras* were ceremonial constructions with ritual functions (see discussion below), corn, cotton, or other plants with strong ritual as well as economic character could have been infused with additional significance and power when grown on these sacred slopes. A similar phenomenon may explain the proliferation of tiny farming plots in the Flagstaff area near Sunset Crater Volcano (J. Jefferson Reid, personal communication 1999).

Evidently there was little irrigated farming during the Classic period. To date, no archaeological evidence for irrigation canals along the Santa Cruz River has been unearthed. Fish et al. (1992b:27) have suggested that irrigation canals were used in the Classic period Marana community based on nineteenth-century historical maps that show alignments heading at the terminus of the Tucson Mountains (Point of the Mountain) and extending to the vicinity of the mound site (Roskrue 1896a, 1896b).

Some large Classic period communities, such as Martinez Hill–San Xavier, were located near stretches of the river that would have had permanent surface water, however, or adjacent to extensive *ciénegas* or marshy areas. Certainly these resources would have been used for farming. Historical evidence indicates that *ciénegas* and rivers with many beaver dams—which evidently characterized the Santa Cruz River and its margins in prehistoric times—have more

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stable and permanent surface flow than rivers lacking these features. Pima, Mexican, and Euroamerican farmers all used *cieneegas* in farming (Betancourt 1978; Rea 1983; Sheridan and Nabhan 1978; Whittlesey 1998d). For example, during the Territorial period, *cieneegas* at the foot of Sentinel Peak ("A" Mountain) were developed into reservoirs that fed irrigation ditches and millraces. Local entrepreneur Solomon Warner planned to dam the *cieneegas* to provide water for his mill (Betancourt 1978:72-73).

One thing that remains poorly understood is the role of cotton in Classic period farming. Cotton appears to have been emphasized by pre-Classic Hohokam farmers wherever soil and water conditions were suitable for its cultivation. It is a plant that requires considerable water and a long growing season, making it ideal for irrigated cultivation in desert Arizona (Van West and Altschul 1998:376). As Teague (1998:20) has observed, southwestern farmers had a long history of manipulating a plant that originated in tropical Mesoamerica to enable it to produce well in the colder climate of the Southwest. According to Gasser and Kwiatkowski (1991:442), "the Hohokam area exhibits the greatest antiquity for the presence of [cotton] seeds in any region north of Mexico (Ford 1985:354)." Cotton apparently dominated the textile industry in the northern Southwest (Teague 1998:23).

In some areas during the pre-Classic period, cotton may have been a special "cash crop," as indicated by high percentages of cotton botanical remains (e.g., the lower Verde Valley [Adams 1998]). Cotton cultivation was extremely variable, however, across the desert region as well as through time. In some areas, such as along Brady Wash near the Picacho Mountains, cotton was absent from pre-Classic botanical assemblages and appeared only in the Classic period (Gasser 1988; Huckell 1993:469). Indeed, Gasser and Kwiatkowski (1991:442) suggested that cotton production may have peaked during the Classic period along the Gila River in the area near modern Florence, at settlements such as the Escalante Ruin. In other areas, such as the lower Verde Valley, this was reversed; cotton remains were abundant at pre-Classic sites and absent in Classic period collections (Adams 1998; Van West and Altschul 1998:374; Whittlesey 1998b).

We have insufficient information at the present time to determine which, if either, of these patterns characterized the Classic period in the Tucson region. Although the extreme variability in cotton production may be related in part to archaeological sampling, it seems likely that the extraordinary climatic unpredictability of the Classic period would have made cotton farming a risky enterprise, possible only when and where local farming conditions were suitable. Where it was cultivated in sufficient quantity, however, as along the Gila River in the Florence area where the Escalante Ruin is located, we can assume that the growers traded cotton to people living in areas where cotton production was low or nonexistent, as documented in the historic Southwest. In addition to its importance as a foodstuff (Reid and Whittlesey 1997), cotton has important social and ceremonial significance. As Teague (1998:160) has written, "Textiles are a nonperishable . . . form of wealth, and also a conspicuous means of displaying evidence of status and wealth." Among the Hopi and other Puebloan groups, cotton had an important ritual nature. Cotton textiles were associated with ceremonial uses, such as the wedding garments woven for Hopi brides, and weaving took

place in kivas (Teague 1998:166). Cotton was used to represent clouds in ritual contexts and a raw-cotton mask was placed over the face of the deceased at burial (Titiev 1944). Teague (1998:170) has suggested that cotton was probably subject to centralized storage and distribution in the pre-Classic period, and it is likely that the platform mound system played some role later in time. It seems evident that no single model of cotton production, distribution, use, and function holds for the Classic period. This is another piece of evidence pointing to the multiethnic character of Classic period society.

To imagine the agricultural landscape of the Classic period, we can think of a mosaic of green fields along the lower *bajada* slopes intergrading with the deeper green of irrigated fields along the Santa Cruz River between San Xavier del Bac and Point of the Mountain. Corn, squash, beans, and cotton ripened in the sun. Vast rock-pile fields where agave grew stretched in waves of spiny gray-green plants across the rocky slopes. At harvest time, smoke wafted from the huge roasting pits where the hearts were roasted to succulent sweetness. Kitchen gardens close to the villages and plots of corn, tobacco, cotton, and medicinal plants grown in the ritually powerful terraces of the ceremonial *trincheras* sites filled out the farming landscape. We can also imagine that this landscape shifted relatively rapidly through time with the vicissitudes of rainfall. What may have been bountiful fields one year may have been abandoned and left to wither in the sun in the next.

The Sacred Landscape

"A rich network of supernaturally sanctioned relationships exists between people and places in the Pimería Alta," wrote James S. Griffith (1992:xviii). These relationships and their stories create a spiritual geography, tying past and present together with a complex web of belief, customs, legends, and art forms with roots deep in the past. So it was with the ancient people of southern Arizona. One of the most radical changes to the ancient landscape was in its spiritual geography—the ceremonial structures used in ritual activities were altered, from which we can infer equally dramatic shifts in ideology and belief.

The ball court system that had dominated Hohokam ritualism in the pre-Classic period collapsed in the Sedentary period and was replaced by a new ritual system focusing on artificial platform mounds. The associated ritual practices, symbolism, and cosmology that accompanied the ball court ceremonial system also changed radically. Some elements disappeared and others were incorporated in new and different ways. As Howard (1992:76) has cogently observed, "Pit house architecture is not amenable to the segregation of space found within the platform complexes. . . . The introduction of Classic period architectural styles may reflect the need to segregate space to accommodate new ideological requirements." Changes in ritual organization represent the strongest piece of evidence for cultural disintegration and replacement during the Classic period.

Platform Mounds

Certainly the notion of using elevated structures for ritual purposes had a long history among the Hohokam. Refuse mounds that were capped with caliche and converted to other uses were present at the site of Snaketown as early as the Pioneer period (Haury 1976:82). Deliberately constructed platform mounds appeared only in the Sacaton phase, however, presaging the artificial platform mounds of the Classic period and correlating with the abandonment of ball courts. Mound 16 at Snaketown was such a mound. This low, circular mound was enclosed by a wooden palisade and exhibited a number of floors or use surfaces. Haury (1976:84–89) details the complicated sequence of its construction, remodeling, and use. A central clay core was faced with a caliche-clay mixture; subsequent remodelings expanded the mound and resurfaced the original core. An artificial mound at the Gatlin site near Gila Bend was similar to Mound 16 in its construction features and sequence; it too dates to the Sedentary period (Wasley 1960).

The Classic period platform mound was a different kind of facility. These rectangular constructions were built with deliberately filled cells, some of which may originally have been occupied rooms that were subsequently incorporated into the mound, the whole creating an artificial, elevated platform. Sometimes there were structures built on the top of the mounds, and often the mounds were enclosed with compound walls. There was extreme variability in the size, construction techniques, and inferred purposes of platform mounds both within and between regions, as described by Doelle et al. (1995). All mounds shared the feature of artificial elevation through filling, however, and an inferred public use and integrative function.

In the Tucson area, platform mounds were located at the Martinez Hill complex in the southwestern Tucson Basin, at University Indian Ruin in the eastern basin, and at Marana. These mounds have been investigated, but two were excavated some time ago, and the Marana mound has been explored only minimally. What we know of these mounds is summarized here.

Two and possibly three platform mounds were built at Martinez Hill. Gabel (1931) excavated these features and reported on them, but he did not recognize them as platform mounds. All of the mounds were enclosed within a single, large compound. According to Doelle et al. (1995:427), the excavated mounds appear to have incorporated "special" rooms, and there were structures on top of one mound. Ravesloot (1987:15) has suggested that the mounds were room blocks that had been filled in and around which a retaining wall was built.

The ceramic types recovered from Martinez Hill indicate a date after A.D. 1280, and include Gila and Tucson Polychromes and White Mountain Red Ware as well as Tanque Verde Red-on-brown and corrugated pottery. Another platform mound is reported to be present north of Martinez Hill, but it has never been professionally documented and is now off limits to non-Indian people (Doelle et al. 1995:428).

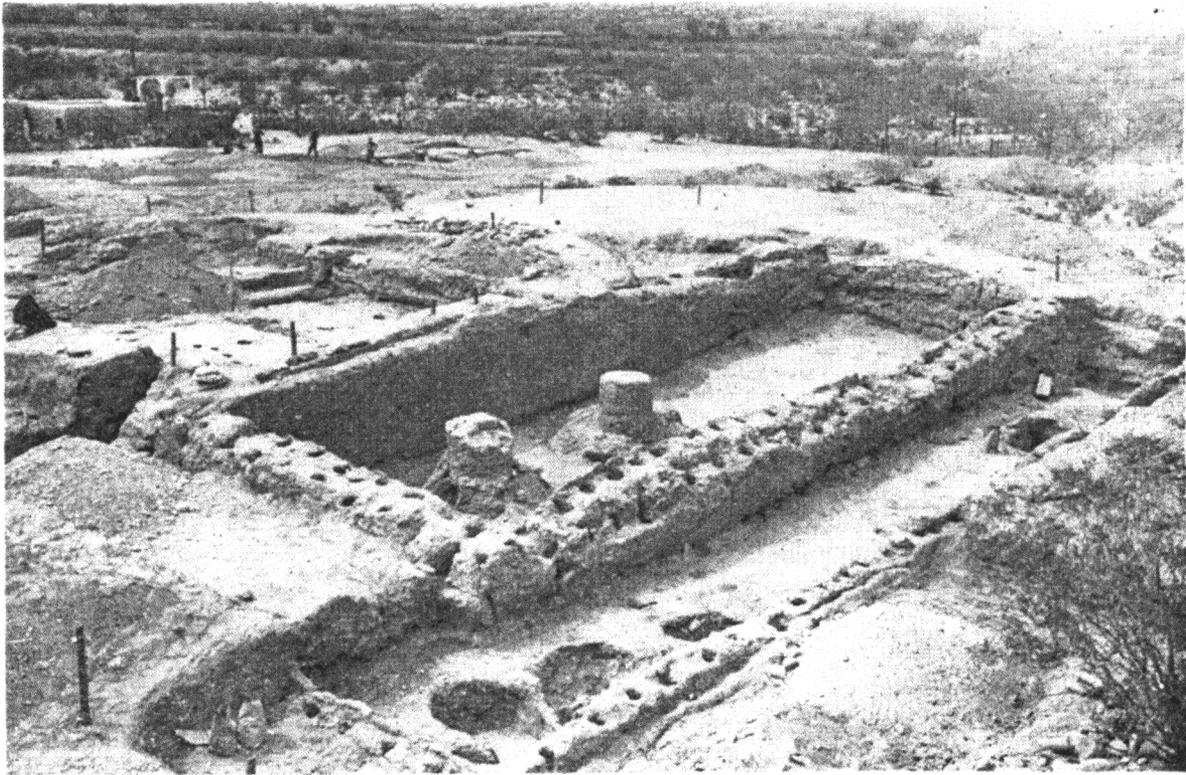
Hayden's (1957) excavation of the platform mound at University Indian Ruin provided a detailed history of mound construction and building methods, although only about one-third of the mound was excavated. This mound also incorporated existing structures that were filled in deliberately. The mound appears to have been built over a Tanque Verde phase pit structure and evidently was constructed in the late Classic period Tucson phase) sometime between A.D. 1275 and 1300 based on recovered ceramics. Construction was of massive, post-reinforced adobe, and the mound was enclosed by a compound wall. The remodeling, resurfacing, and repair that took place at the University Indian Ruin mound was no doubt necessary in part to cope with the ravages to adobe architecture visited by wind, water, and salt erosion, as documented by Hayden (1957).

One of the most interesting features of the mound was the presence of two large support pillars or piers built of caliche along the north-south axis of one large room (Hayden 1957:85-86). Similar piers occur in platform mound sites in the Tonto Basin (Jacobs 1992; Rice et al. 1998:Figures 4.10, 4.11). Their function is ambiguous; according to Rice et al. (1998:64, Figure 4.11), the pillars served as additional support for the roof of particularly large rooms. They may have served other functions as well. Rice et al. (1998:64) state that "the pillars in at least one room were aligned with the doorway so that a narrow shaft of sunlight reached the back wall at sunrise during a period of a few days around the summer and winter solstices." This is an extremely speculative idea. If these inferences are correct, the pillars must have been built and used prior to infilling to support the rooms in which they were found.

The Marana platform mound was enclosed by a compound wall and exhibited wall alignments on the surface. There were also rooms within the compound courtyard (Fish et al. 1992b:27). The mound has not been extensively excavated, so details of its construction are unknown. The mound was located within an essentially linear configuration of massed residential compounds along the *bajada* slopes. This entire community, including the mound, appears to have been constructed, inhabited, and abandoned all within the Tanque Verde phase (Fish et al. 1992b:21).

In the Phoenix Basin, there appears to have been less variability in construction techniques and formal characteristics than in other areas, such as the Tonto Basin. Many mounds were quite large, and they were regularly spaced along canal systems of the Salt and Gila Rivers at intervals of 5 to 8 km (Gregory 1987; Gregory and Nials 1985). A regulatory function associated with irrigation agriculture has been assumed. In the Tonto Basin, platform mounds served many different functions and there was no single architectural idiom (Doelle et al. 1995).

Many mounds have a repetitive, planned character and directional symbolism. For example, entryways into the compounds that enclosed mounds were invariably open to the east and faced the mound (Howard 1992). Examining the architectural characteristics of platform mounds in the Tonto Basin led Jacobs (1992) to speculate that a counterclockwise ritual procession was necessary to gain access to platform mounds. "After entry into the



1940 Excavations of the platform mound and 14th Century Classic Period compound of the University Indian Ruin located near Pantano Wash and Tanque Verde Creek, in Tucson.

(From: *Excavations, 1940, at University Indian Ruin*. By Julian D. Hayden, 1957. Southwestern Monuments Association Technical Services, Vol. 5. Gila Pueblo, Globe, Arizona.)

compound, access to the platform mounds required a counterclockwise processional route around the elevated area before arrival at its front, an elevated stage area with a corresponding formally defined ground-level audience area" (Jacobs 1992:60).

Symbols, Ritual Practices, and Paraphernalia

The iconography, ritual paraphernalia, and elemental-directional-color symbolism associated with the ball court complex was replaced by a new set of symbols and practices. The pervasive water symbolism of the pre-Classic period and the use of fire in ritual performances disappeared. Pottery was no longer tempered with crushed schist that gives it the shining, reflective appearance of light on water. Life forms symbolizing water, such as water birds, frogs, and turtles, were no longer painted on pottery. The palette-censer ritual so important in previous times appears to have been completely abandoned (Doyel 1980, 1991; Gregory 1991; Wilcox 1987a, 1991; Wilcox and Sternberg 1983). Ritual destruction of offerings no longer took place by burning and burial. These changes in ritual paraphernalia and practices correlate with the abandonment of ball courts.

Other aspects of changing symbolism include shifts in the kinds of shell ornaments and objects. In the Phoenix and Tonto Basins, shell trumpets were virtually exclusively associated with platform mounds and the compounds in which they occur (Nelson 1991; Rice 1998b:145–147). Cut-shell ornaments representing life forms were in many cases replaced by the kinds of shell ornaments that have been inferred to be symbols of sodality membership in Mogollon Pueblo societies (Reid and Whittlesey 1982, 1997), such as shell tinklers. There was also an increasing emphasis on animal symbolism. In the Marana community, excavations yielded multiple bighorn sheep skulls and horn cores, and the pelvises of 18 deer and big horn sheep on room floors (James 1987). Similar finds were recovered from the Badger Hole Ranch site in the northwestern Tucson Basin. Excavations by SRI yielded deer scapulae and skulls complete with antlers (William Deaver, personal communications 1999, 2000). The latter may represent a headdress used in ritual performances, much like the Yaqui deer dance (Spicer 1983).

The balanced elemental and directional symbolism of the pre-Classic period—incorporating air, fire, water, and earth and represented most cogently by the quartered layout motif of painted pottery—seems to have been replaced by a dualism possibly centering on earth and air and representing two social groups or moieties (Whittlesey et al. 2000; Whittlesey and Ciolek-Torrello 1992). Duality is an important ideological dimension in many societies worldwide, but in the Southwest is expressed most dramatically in the historically known Pueblo world, as discussed by Ortiz (1969).

There are multiple aspects of duality during the Classic period (Whittlesey et al. 2000), expressed most directly and obviously in platform mound itself. Platform mounds and the compounds enclosing them were designed to provide secrecy for some activities—evidently open only to ritual specialists or the initiated and secluded from view behind a massive adobe

wall—and to allow public view and participation for others (Craig, Elson, and Jacobs 1992; Craig, Elson, and Wood 1992; Jacobs 1992). This construction replicates that of residential compounds, which designate dual aspects of private vs. public, inside vs. outside, sacred vs. secular, and perhaps “us” vs. “them.” Other aspects of duality include occasional twin platform mounds within compounds (Doelle et al. 1995:426); the use of dual ceremonial structures that were later incorporated into platform mounds, or dual structures built atop mounds (Doelle et al. 1995:404); and the presence of cemeteries with different orientations (east-west and north-south) (Whittlesey et al. 2000). The contemporaneous use of cremation and inhumation burial, which will be discussed presently, may be another aspect of duality.

The platform mound itself was a most obvious symbol. Among Mesoamerican societies, pyramids served as expressions of many religious concepts. The Great Pyramid at Tenochtitlan, for example, represented a mountain as the place of origin of the ancestors and the homes of their spirits, and the interior of mountains was viewed as the main source of life-sustaining water (Van Zantwijk 1981:71).

Bostwick (1992) draws a number of intriguing parallels between Mesoamerican ceremonialism and the inferred ceremonialism of platform mounds. According to Carrasco (1990:19–23), all Mesoamerican religions had three central characteristics: *world making*, involving concepts of the universe and sacred space contained in oral history and mythology; *world centering*, including the relationship of the cosmos and the human body; and *world renewing*, or the ceremonial rejuvenation of society and the cosmos through ritual performances (Bostwick 1992:81). World making may be reflected in the architectural layout of platform mounds and their enclosures, the location of mounds within villages, and the choreography involved in mound performances. World centering at platform mound villages likely involved rainmaking ceremonies scheduled according to the solar calendar. World renewing involved ritual activities such as the historically described Tohono O’odham saguaro wine ceremony, hallucinogenic rituals involving use of the datura plant, and ritual renewing of the platform mound itself (Bostwick 1992:84–85). Knight (1986) has argued that the periodic reburial and remodeling of platform mounds in the American Southeast was a ritually expressive act representing a death and rebirth purification. Such remodeling occurs in numerous Sedentary and Classic period mounds (see review in Bostwick [1992]).

Agave and Platform Mounds

Whatever its inspiration and function in ancient society, the platform-mound complex appears to have been associated closely with agave cultivation, and this may signal the use of fermented agave drinks in ritual activities. Although Doyel (1992) has suggested that the use of fermented agave drink (pulque) was central to pre-Classic Hohokam ritualism, there is much more evidence for agave being significant during the Classic period.

The association of platform mounds with agave seems indisputable. Platform-mound communities incorporated extensive rock-pile fields for agave cultivation, as in the Marana



Artist's conception of a Hohokam ceremonial scene. Individual on left is playing a flute. Dancers with gourd rattles are wearing macaw feather headdresses. Observers are wearing carved shell jewelry and woven cotton clothing. Illustration by Jonathon Joha.

(From: *Desert Farmers at the River's Edge: The Hohokam and Pueblo Grande*, By John P. Andrews and Todd Bostwick, 1997. Pueblo Grande Museum and Cultural Park, City of Phoenix.)

community. Stockpiles of knives used to harvest the agave hearts and prepare them for processing have been found at Tonto Basin platform-mound sites (Rice 1998b:150). In the Marana community, agave knives were most commonly found at the platform mound (Bayman 1996:163). The Brady Wash platform mound evidently served, not as a residential area, but a place for communal processing and storage of foodstuffs, including agave (Gasser and Ciolek-Torrello 1988:499, 577).

Agave cultivation, preparation, harvesting, and consumption was likely a communal event (Rice 1998b:150). Fish et al. (1992a:85) have estimated that more than 100,000 person-hours or 50 person-years would have been necessary to construct cobble features in the Marana community—an estimate that excludes the time necessary to plant, tend, harvest, and process the crop.

In ancient and modern Mexico, there was also an association between agave and the use of hallucinogenic plants, such as datura plants, in ritual activities. This may also have been the case for the Classic period. At some platform mounds, effigy vessels have been found in the form of datura seed pods (Downum 1993:120). Downum (1993:120) wrote, "Considering the hallucinogenic properties and ethnographically documented religious significance of the datura plant, this may provide evidence of a previously unsuspected use of platform mounds for vision quests or similar rituals."

J. Jefferson Reid (personal communication 1999) has suggested that the extremely large, painted storage jars of the Classic period—including El Paso Polychrome, Gila and Tonto Polychromes, and possibly Tanque Verde Red-on-brown—were used to ferment agave beverages, and that the enormous bowls of the same types may have been used to serve these beverages to a relatively large group. Other archaeologists working in different areas have proposed similar notions. Shafer (1999:103), for example, has suggested that large jars found at the NAN Ruin in the Mimbres Valley were used "for brewing some kind of ceremonial drink like *tesvino*, much like the modern Tarahumara practice." Although current evidence to support this notion is slim, and primarily comes in the form of negative evidence (the lack of carbonized food remains in such jars, for example), this idea is certainly worth pursuing by means of paleobotanical and residue studies.

How was agave used by Classic period peoples? The use of alcoholic beverages in various ritual situations was pervasive and paramount in Mesoamerica. In prehistory as in the historical period, *mescal* (agave) was widely used to prepare a fermented drink. A variety of other fermented beverages were made from cactus plants and fruit, cornstalks, mesquite pods, honey, and sprouted maize. Frequently, alkaloid-containing plants such as peyote and tobacco were added during fermentation to increase the effects of the beverage (Brumant 2000).

The use of maize beer by the Tarahumara of the Mexican state of Chihuahua may provide insights into how agave beverages were incorporated into ritual life, as it appears to represent a modern survival of an ancient Mesoamerican practice. The Tarahumara or Rarámuri live in

the rugged mountains and canyons of the southwestern portion of Chihuahua (Pennington 1983). They prepare beer, known in their language as *batári* or *sugí* and in Spanish as *tesgüino* or *tesvino*, from sprouted maize. The maize kernels are soaked in water, allowed to sprout, and ground. The ground kernels are simmered for 12–15 hours, strained, and fermented. The jars used to ferment the beer are huge, shouldered ollas that often have conical bases. They are set into trivets for fermentation (Merrill 1983:294–295). The entire process of preparation and fermentation requires about a week.

The Rarámuri lifestyle is focused on maize beer drinking. Kennedy (1963:635) estimated that the average person participates in some 40–60 drinking parties each year, spending at least 100 days preparing and drinking alcoholic beverages and recovering afterward. Drinking parties are usually conducted in social contexts, to obtain the assistance of others in completing some task such as planting maize or staging a ritual. The maize beer compensates the guests for their help (Kennedy 1963; Plancarte 1954:52–53). Importantly, drinking is central to ritual life, and ritual activities suffuse maize beer preparation. Beer is central to curing rituals and to death rites; it is an important accompaniment to Catholic holy day fiestas (Merrill 1983, 1988). Interestingly, agave plants, water, and juice are used in many of these practices along with the maize beer (see Merrill [1988] for an excellent discussion of the ritual uses of maize beer).

The Rarámuri demonstrate how alcoholic beverages can be used in ritual activities. There is an obvious spiritual element of healing, curing, and renewal of life associated closely with drinking maize beer. As Bostwick (1992) has suggested, similar practices among Classic period peoples may have been closely associated with world-renewing activities carried out at the platform mounds, perhaps even with periodic ritual renewal of the mound itself. Agave beverages could have been central to rainmaking ceremonies, as with the saguaro wine of the Tohono O'odham. And, as among the Rarámuri, drinking may also have been associated with curing ceremonies. However it was used, agave-beverage production and consumption was likely an event that may have involved the entire community.

Mortuary Practices

Mortuary practices hint at regional differences, possible duality, and ethnic coresidence. Some sites have predominantly cremations, some have mostly inhumations, and others have a mixture of both. In the Tucson region, cremation was more common than inhumation, and the reverse seems to be true for the Phoenix Basin. There seems to have been considerable variation in time and space.

At the Hodges Ruin, only 15 cremations dated to the Tanque Verde phase were found during the earlier fieldwork, compared to 56 Rincon phase cremations and more in the preceding phases (Kelly et al. 1978:123–125). There was diversity among cremation types—burial in uncovered pottery vessels, burial with inverted vessels covering the remains, and pit burial. It is interesting that the offerings found with these cremations appear to be heirlooms

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reflecting the earlier pre-Classic ceremonialism, including palettes and stone bowls. This is true of some other Classic period cremations; one cremation at the Muchas Casas site in the Marana area included a broken, incised slate palette (Bostwick 1987:110). Six inhumations were found at Hodges; two were dated to the Rincon phase and one each to the Rillito and Tanque Verde phases (Kelly et al. 1978:123). Craig's (1986) analysis of the Hodges archival data showed that, although a few burial features were found in the tightly clustered cemetery area that characterized the pre-Classic occupation, the Tanque Verde phase burials were more scattered across the site surface. The number and diversity of artifactual accompaniments also decreased. Four cremations were found during the 1985 excavations, and they were not classified by phase (Layhe 1986).

At Gibbon Springs, there was a similar mixture of inhumation and cremation burials. Most of the cremations and one inhumation were found within the compound enclosure. Burials were of the urn-and-pit cremation type. There were also a few burials outside the compound. Accompaniments were domestic objects including plain ware pottery, projectile points, manos, and flaked-stone cores. Burials inside and outside of the compound alike included a mixture of ages and sexes (Roberts 1996).

Cremation and inhumation were practiced during the Tanque Verde phase at the San Xavier Bridge site. Thirteen cremations were recovered from Tanque Verde phase contexts during the 1985 work and two crematoria where the dead were cremated were identified (Ravesloot 1987). The urn type of cremation was most frequent. Accompaniments included ceramic vessels, shell ornaments, projectile points, and bone tools. Most of the cremations were found in a discrete cemetery area. Seventeen inhumations were recovered. Eight were assigned to the Tanque Verde phase, six were unplaced, and three represent post-Classic, possibly protohistoric, interments (Ravesloot 1987). The accompaniments with the Tanque Verde phase inhumations were similar to those found with the cremations, but they were less abundant. The inhumations were scattered across the site rather than buried in discrete cemeteries.

Cremations dating to the early Classic period were found in a relatively discrete cemetery area at Los Morteros (Wallace 1995b). Most of these were secondary pit cremations. Wallace (1995b) has suggested that painted pottery vessels were more common among these interments. A unique type of feature was a deep, cylindrical pit used to bury the cremated remains. Five of these were found, and all appear to be Tanque Verde phase in age. Accompaniments with these cremations were numerous and included bone hairpins, literally hundreds of projectile points, shell ornaments, and rare objects—a raven skeleton, an unknown object decorated with features, and textiles. Seeds of false purslane (*Trianthema* spp.) were found with these cremations along with other economic plant remains. Food remains may have been a common burial offering. Tanque Verde phase cremations at the Dakota Wash site were accompanied by abundant carbonized food remains, for example (Craig 1988). Several primary cremations were also found, and this appears to be entirely a Classic period trait at Los Morteros; one crematorium was identified. Only five inhumations were encountered, and of the three that were excavated, two appear to date to the late Rincon-early Tanque Verde phase (Wallace 1995b).

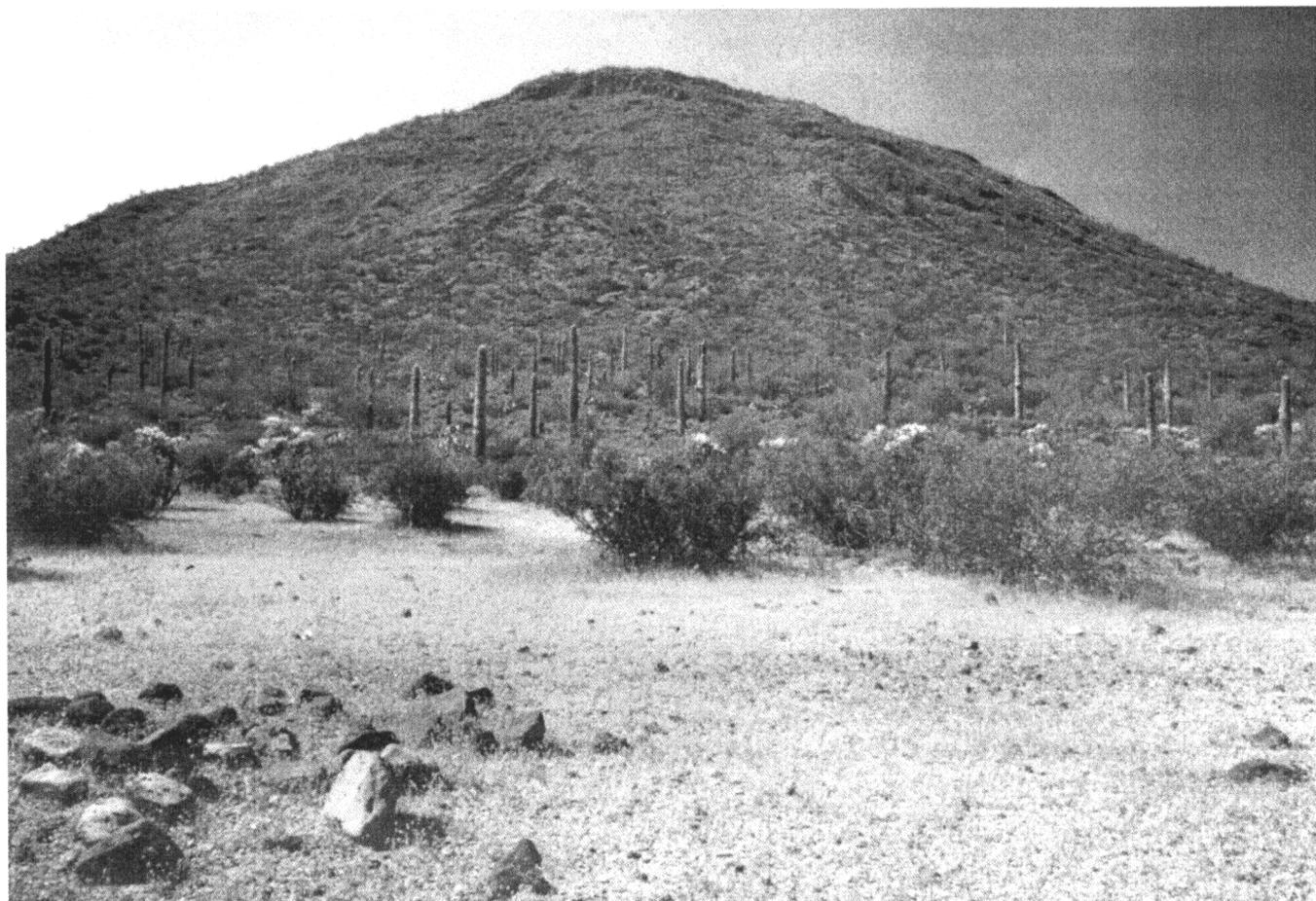
Roberts (1996) synthesized the Classic period burial information from several sites within the Tucson Basin. She found that there was considerable variability in all aspects of the mortuary ritual. Inhumations were twice as frequent as cremations (Roberts 1996:Table 12.7). She also suggested a tendency for burial to shift from discrete outdoor cemeteries to burial in structures, and found similar information from late Classic period sites in the Phoenix area, such as Escalante and Las Colinas (Roberts 1996:442).

We have no clear notions of the factors that may have been responsible for this variability. It is possible that temporal factors may play some role. Inhumation evidently increased in frequency during the late Classic period (Doyel 1991:256). It is obvious, however, that both inhumation and cremation were practiced contemporaneously.

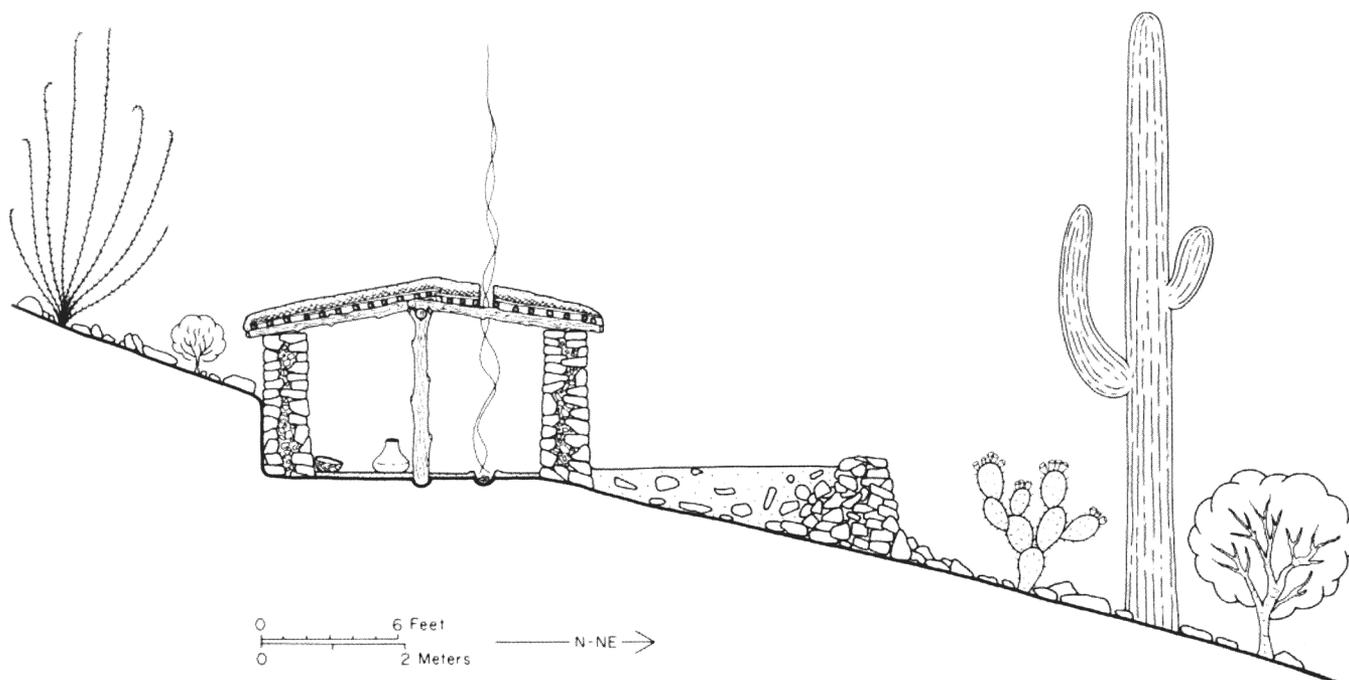
The use of two interment practices may be another aspect of the dualism that appears to pervade Classic period symbolism and iconography. The most likely explanation may be coresidence of culturally or ethnically distinct populations. Inhumation was dominant at some Hohokam sites in the Tucson area (Di Peso 1956; Wilcox 1987b), the Casa Grande area (Doyel 1974), and in the Phoenix Basin (Fink 1989; Harrington 1981; Wullstein 1994), but not all, indicating the possibility of different cultural or ethnic groups. At sites where both practices were evident, there appears to be nothing that distinguishes the two groups of interments from one another, except for slight differences in artifactual accompaniments and a tendency for cremations to be found in discrete cemeteries and inhumations to be scattered more or less randomly. Both were composed of people of all ages, representing neonates to adults, and both men and women. In other words, there is no indication that one form of burial was used for adults and one for children. Different populations, each with its time-honored way of honoring the dead, seem to be indicated.

Cerros de Trincheras

Cerros de trincheras—the terraced, volcanic hillsides found in Sonora, the Papaguería, and the Tucson area that were apparently established rather quickly early in the Classic period (Tanque Verde phase)—may have represented an organizational, ritual, and ideological system that differed from and was perhaps opposed to the platform-mound complex (Downum 1993:117–118). Based on his work at Cerro Prieto, a large *cerro de trincheras* northwest of Tucson, Downum concluded that these settlements were not simply the agricultural and residential locations suggested by previous work. Instead, there were constructions of a ritual and symbolic nature as well as more prosaic, domestic features. In contrast to what Wilcox and Haas (1994:221) have concluded, few of the terraces and associated structures have a defensive aspect. Instead, many of the constructions seem to be symbolic and ceremonial. There was a dual division of the site created by a double row of boulders; a number of large, rectangular enclosures that suggest communal ritual use; and an extraordinarily large structure at the summit of the hill. There were also a large number of petroglyphs, some with unique designs apparently derived from textiles, at Cerro Prieto (Downum et al. 1993:87). Importantly, the hillside was the locale for manufacture of tabular knives used to harvest



Cerro Prieto, view from the east, looking west toward concentration of archaeological features on the northeast hill slope. (ASM photograph 86822, by Glen D. Stone.)
 (From: *Between Desert and River*. By Christian E. Downum, 1993. University of Arizona Press, Tucson)



Hypothetical reconstruction of a masonry room at Cerro Prieto, based on architectural features visible at the surface of Feature 55 and its adjacent small terrace, Feature 367. Details of roof construction and structure height are conjectural, but are based on results of excavation at Cerro Prieto (Feature 4) and the Fortified Hill Site (Greenleaf 1975).
 (From: *Between Desert and River*. By Christian E. Downum, 1993. University of Arizona Press, Tucson)

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agave from the abundant raw material available on-site (Downum et al. 1993:91). This ties Cerro Prieto into the important economic-ritual system of agave production and distribution.

According to Downum (1993:119), the two alternative complexes of monumental architecture and associated ritualism existed side-by-side during the early Classic period, and each originated in a different place. The platform-mound-centered belief system originated from the Gila and Salt River valleys and the *cerros de trincheras* system was evidently derived from Sonora. That these complexes overlap in southern Arizona indicates that this was a zone of cultural, social, or ritual mixing of peoples and traditions. As suggested by Whittlesey (1998c) for the ball court ceremonial complex, widespread ritual cults in the American Southeast involved multiple ethnicities, cultures, and even religious ideologies during the prehistoric and historical periods (e.g., Knight 1986). That two contemporaneous ritual systems occurred in the Arizona deserts does not seem problematic, and even seems probable under the profound social, demographic, and environmental changes that swept the Southwest during the late A.D. 1200s and 1300s.

Summary

The sacred landscape of the thirteenth and fourteenth centuries in southern Arizona was altered radically, to the extent that the pre-Classic period occupants of the Tucson area would scarcely have recognized the new spiritual geography. Where once ball courts hosted noisy games perhaps designed to bring rain, control irrigation water, and center the pre-Classic world, two new edifices rose from the desert floor. Platform mounds focused the sacred activities of the rapidly emerged and dispersed communities. *Cerros de trincheras* were sacred mountains altered by their human users to reflect dual divisions of the cosmos and the secular world. Neither system used the old iconography and ideology, but practitioners incorporated new systems of symbol and belief to anchor their ritual activities. Both systems may have used fermented agave beverages and hallucinatory agents in ceremonies designed to renew the cosmos, bring rain, and promote curing.

Mortuary practices reflect the retention of the old and the addition of the new in belief and ritual. Cremation was retained as an important way of honoring the dead, but new forms of inhumation became equally important. The coexistence of these two systems may reflect the pervasive dualism in Classic period ideology, or it may indicate that two different populations with differing belief systems and ritual practices lived in the Tucson area.

We are unsure about the specific functions of platform mounds. Those in the Tucson region appear to be more consistent in construction features and probably also in function than those of the Tonto Basin, and it is evident that they must have served functions other than the control and distribution of irrigation water, because so few Classic period communities in the Tucson area were based on irrigation agriculture. The majority of Classic period platform mounds were located away from major drainages where irrigation farming could have

been practiced. Their role in controlling irrigation certainly could have been a symbolic one, however.

Both platform mounds and *cerros de trincheras* appear to reflect a religious reorganization that swept the Southwest rapidly in the late A.D. 1200s—at the height of the Great Drought. The importance of population shifts, subsistence stress, and social uncertainties following environmental deterioration cannot be overemphasized. Regardless of their specific functions, platform mounds and *cerros de trincheras* were sacred structures that helped the people of southern Arizona cope with their daily struggles, stresses, and very human problems.

Settlement Patterns: Landscape Relationships

Nazarea (1999:91) has observed that the landscape, which she labels “lifescape,” “can be visualized as the superimposition of human intentions, purposes, and viewpoints over environmental features and the resulting patterns of production, consumption, and distribution.” Settlement pattern is the sedimented representation of the ancient landscape, and in its organization and structure are made visible. In it we see the places that were most important to the dwellers of the desert and the vital connections between these places. We can also see the history of places, as settlements flourished, declined, and eventually died as time passed.

Our understanding of Classic period settlement patterns, and thus our ability to reconstruct the ancient landscape, is much more limited than for the pre-Classic period. There has been little intensive survey and intensive excavation has been extremely limited. The broadest coverage has been in the northwestern Tucson Basin in the Marana area, the slopes of the Tortolita Mountains, and to the west toward the Picacho Mountains. Survey in these areas has identified several early Classic period communities that give us a glimpse of the prehistoric landscape and suggest processes that may be broadly applicable.

The Classic period in general appears to have been marked by extreme locational shifts in settlement pattern, rapid expansion and equally rapid abandonment of communities, and demographic contraction and expansion that suggest intensive organization on the level of community and region (Whittlesey et al. 1994:171). The early Classic period seems to have been characterized by the same proliferation of large and small habitations, specialized resource-procurement sites, and farming sites that marked the preceding Rincon phase, but the new settlements were located in different, often previously unoccupied, areas. This seems to have taken place in the western Tucson Basin (Doelle 1988), the Marana community (Fish et al. 1992b), and in the eastern basin, where pre-Classic primary villages were abandoned or depopulated and new villages established along secondary drainages (Eelson 1986:449–450). The late Classic period was generally characterized by a reduction in the number of settlements and a corresponding increase in size of individual settlements. The number of settlements was sharply reduced in the Tucson phase.

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There was remarkable diversity in Tanque Verde phase communities. According to Fish et al. (1992b:31), there were six zones in the Classic period Marana community as inferred from environmental and archaeological evidence. These zones stretched from the Santa Cruz River to the upper *bajada* of the Tortolita Mountains. The most intensive settlement was located in Zone 1 along the lower *bajada* of the Tortolita Mountains where the most desirable floodwater farming situations were present. Zone 2 further uphill contained the agricultural fields, particularly rock-pile fields. Specialized sites were located in Zone 3 on the middle elevations. Zone 4 on the mountain pediment included small and large habitation sites and agricultural sites, although these occurred together rather than independently as in Zone 2. Settlement in this zone appears to be correlated with a relatively high and accessible water table. Zone 5 represented the floodplain and terraces of the Santa Cruz River, which contained large sites with long settlement histories; Zone 6 encompassed the Tucson Mountains, where *cerros de trincheras* were located.

This organization hints at dual settlement systems, one located on the upper *bajada* slopes and the pediment of the Tortolita Mountains and containing the full range of habitation and economic activities within a single zone, and a second system embracing Zones 1–3 and 5–6, which exhibited functional and activity diversity according to environmental zone. Possibly both systems used the communal facilities at the Marana Platform Mound site, which indeed may have served to integrate the two different and organizationally distinct settlement systems.

The Classic period community must have been organized in different dimensions than the platform-mound communities of the Phoenix area. The regular spacing of platform-mound villages there has been linked with irrigation farming and canal systems. In the Tucson area, only one such community has been suggested to date, that of the Marana community. Fish et al. (1992b:27) have noted that the canals located there would have linked people throughout the community, including the mound village itself, settlements along the river, and those in the lower-*bajada* locales. Importantly, those living to the north would have needed the "acquiescence if not the active cooperation of riverine inhabitants near canal heads," and people living at the mound village were most dependent (Fish et al. 1992b:27). The spatial location of the Marana mound center parallels the Phoenix Basin pattern, where important sites were located near the ends of the canal networks rather than at the intakes or heads of canal systems.

Perhaps the most intriguing aspect of the Marana community is its sudden appearance and brief lifespan. Ceramic evidence indicates that the Marana community was founded, expanded, and abandoned all within a relatively brief span of 200 years or less, beginning sometime during the transition between the Rincon and Tanque Verde phases and ending before the Tucson phase began (Fish et al. 1992b:21). Moreover, the community was established in an area where pre-Classic settlement was relatively sparse. This disjuncture between pre-Classic and Classic period settlement certainly implies an abrupt break in systems of land tenure, the passing of the long-term significance of kinship relations and ancestor veneration that appear to have characterized the pre-Classic period Hohokam, and

hints further at new populations arriving in the area. Importantly, in the Marana community as elsewhere during the Classic period, there was also a significant disjuncture in the location of public architecture. Platform mounds were located at different community centers than those which had hosted the previous ball courts. Fish et al. (1992b:40) state flatly that "ballcourts and mounds do not co-occur at any site." These authors have suggested that this is important in explaining the Marana community:

Separation of the Classic mound from Preclassic ballcourt centers signals a divergence from prior organizational bases, and, inferentially, from traditional sources of local authority, such as established kinship lines and land tenure. The placement of compounds reinforces [*sic*] the appearance of societal realignment. The location of the [m]ound center was not previously occupied. Where riverine settlement was continuous from the Preclassic into the Classic period, compounds were built at a distance from the earlier ballcourt [Fish et al. 1992b:39].

This pattern was probably repeated elsewhere across the Tucson region. In the Los Robles survey area west of the Santa Cruz River and Tucson Mountains, occupation peaked during the early Classic period. Several new large settlements were established, including the Cerro Prieto *trincheras* village. Another large village may have contained a platform mound (Downum 1993:117).

In Marana and the Los Robles areas, there was no late Classic period occupation (Downum 1993:122). Abandonment was on a regional and massive scale; "Residential occupations in the late Classic period are absent in an area of approximately 1300 square kilometers (500 square miles) between the confluence of the Cañada del Oro and the Santa Cruz River and the southern edge of the Picacho Mountains" (Fish et al. 1992b:40). Further to the west on the slopes of the Picacho Mountains and on the Santa Cruz Flats, and to the east in the Tucson Basin proper, there was evidence for late Classic period occupation at a small number of what may have been relatively large sites (Ciolek-Torrello et al. 1988; Hayden 1957; Henderson and Martynec 1993:588; Sires et al. 1988:28-29). This may indicate a drop in population density, widespread demographic shifts, an increase in aggregation, or a combination of these processes.

Organizational differences indicate possible social shifts as well. In the Brady Wash area near the Picacho Mountains, there were no late Classic period residential compounds, but courtyard groups appeared for the first time (Ciolek-Torrello 1988b:806). The latest occupation there was marked by a return to pit house construction, similar to the Polvorón phase defined elsewhere (Ciolek-Torrello 1988b:807; Crown and Sires 1984; Hammack and Sullivan 1981; Sires 1984).

The causal factors for abandonment and reorganization during the Classic period are poorly known. Although archaeologists have traditionally favored environmental causes, there is little evidence for this in the Tucson area (Downum 1993:123; Fish et al. 1992b:39). Social

causes are still more elusive. The massive shifts in locations of new communities, particularly the alteration of the socially and ritually important platform mounds, and changes in domestic architecture all hint at new populations bearing new organizational and ceremonial systems. Smaller-scale shifts in farmsteads, fields, and short-term hamlets may reflect in part the vicissitudes of climate and agricultural productivity during this climatically variable time. The possible existence of dual settlement systems also implies possible ethnic or cultural distinctions among Tucson Basin residents. Overall, the settlement data argue less for continuity between pre-Classic and Classic period communities and more for abrupt dislocation. This is certainly an important direction for future research.

The Social and Political Landscapes

Complexity

One of the strongest points of debates among southwestern archaeologists has been the nature of social organization—how complex was the society of the ancient peoples of the Southwest? There have been two major camps (see review in Ezzo [1999]). One group sees the Southwest as similar to tribal-level human societies across the world, among whom social differences are based largely on age, gender, and achieved status; kinship is the foundation of social organization; political authority is vested largely in those with ritual power; and participation in communal activities of all sorts was voluntary. A second group maintains that ancient southwestern societies were more complex, and approached state-level organization. They see managerial elites controlling the product and distribution of goods, ascribed statuses and incipient class stratification, true political authority and inherited leadership roles with coercive power, conscribed labor, and organized military activity.

Proponents of complex social organization among the Classic period people of southern Arizona have sweeping ideas but little data to support their notions. Several sources of information have been used to build an argument of social complexity. Perhaps the two most important are irrigation agriculture and platform-mound systems.

The patterning of platform-mound locations and their association with irrigation systems in the Phoenix Basin have been argued to represent communal labor and hierarchical control. It is true that mounds in the Phoenix area are regularly spaced and that they appear to be regularly associated with canal systems (Gregory and Nials 1985). There is no evidence to indicate either conscriptive labor involved in the construction, maintenance, and use of irrigation systems, or the ranking of descent groups such that the elite groups lived at the mound communities and controlled irrigation pursuits. Attempts to confirm the hypothesis that a priestly "elite" lived atop the mounds and controlled the production and distribution of resources have failed (e.g., Rice 1998b). Importantly, although some mounds did have residences built atop them, many mounds appear to have been solely ceremonial in function, and others were "empty" ceremonial precincts that were not associated with any residential units (Doelle et al. 1995).

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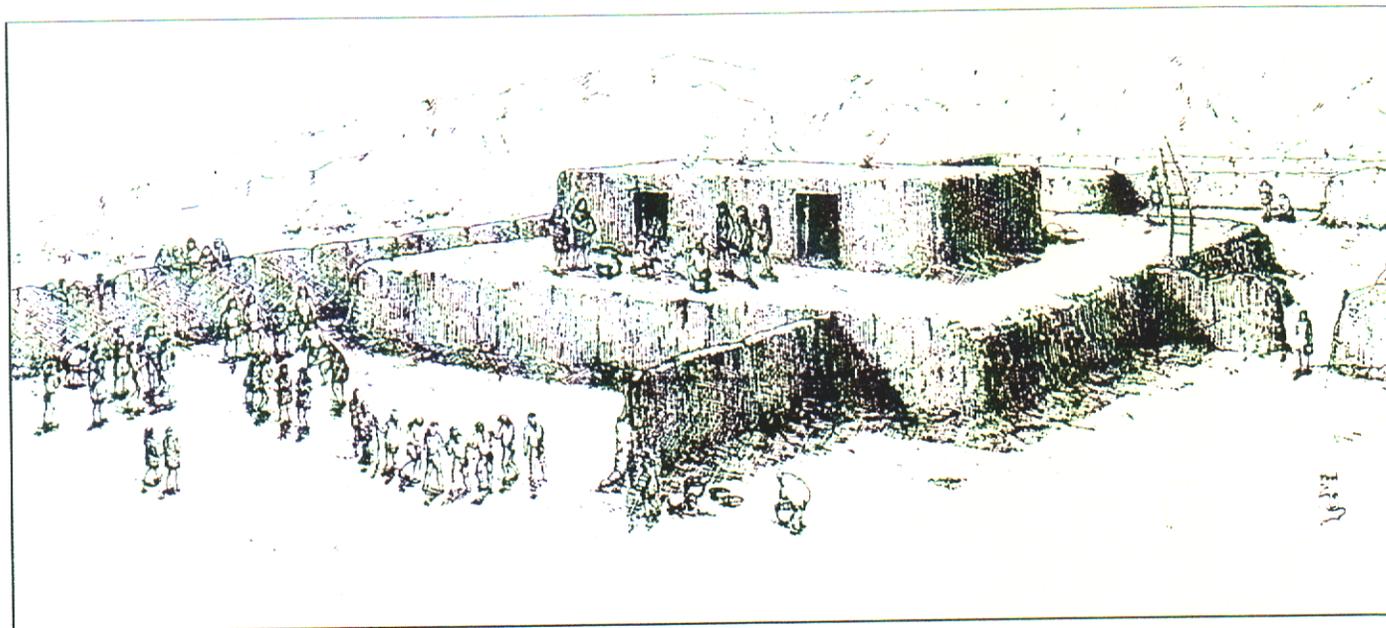
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Irrigation has certainly been implicated in the rise of complex societies the world over, as recognized in Wittfogel's (1957) "hydraulic hypothesis"—irrigation necessitated communal effort, thus creating political control and eventually contributing to the rise of the ancient state—but there are many societies that manage complicated irrigation systems without true political authority, coercive power, and conscripted labor. This is true in societies ranging from Bali, where water temples and their priests controlled the allocation of irrigation water (Lansing 1991), to the Tewa of New Mexico, a Pueblo people among whom irrigation, like other communal activities, was controlled by ceremonial organizations called moieties (Dozier 1970; Ortiz 1969). Some studies, which have used the attributes of ethnographically described societies to understand the social correlates of platform mounds (e.g., Elson 1998), have simply mapped these observations directly and uncritically onto prehistoric societies, which has been considered an inappropriate use of ethnographic analogy since the 1970s. In other words, the presence of irrigation does not automatically indicate a complex social system. Moreover, the majority of platform mounds in southern Arizona were not associated with irrigation agriculture, which could only have been practiced along the Gila and Salt Rivers and limited reaches of the Santa Cruz River.

Another category of information is the size of platform mounds and estimates of labor required to build them. As public architecture, mounds are thought to have required communal labor to construct. For example, Elson (1998:105) has written that "The simplest explanation for the rapid adoption of a new, labor-intensive architectural form that required some form of social control and organization is that construction was mandated by a particularly powerful leader." The notion of hordes of slaves working under the overseer's lash to construct platform mounds is irresistible, but owes more to biblical epic movies than to truth. It is undeniable, however, that communal effort was required to build mounds, and that they also served communal functions.

Several archaeologists have provided estimates on the amount of labor required to build platform mounds. Craig and Clark (1994) and Craig, Elson, and Wood (1992) have provided some estimates on the amount of labor needed to build the Meddler Point platform mound in the Tonto Basin. Craig, Elson, and Wood (1992:27) have suggested that "Working 10-hour days and doing nothing else, a work crew of 24 to 36 could have hauled in all the cobbles needed to build the platform-mound compound in just over a month." This is a realistic estimate of the number of workers available in a community of 100–150 people, but as the authors note, presumes that the workers had nothing else to do, which clearly could not have been the case. Considering all the activities involved in construction, including earth and rock moving, Craig and Clark (1994) estimated that construction of the Meddler Point mound and compound would have taken 3,806 person-days. Or, "a crew of 30 laborers working full-time could have constructed the Meddler Point platform mound and compound in a little more than four months" (Elson 1998:103).

There was without doubt a great deal of variability in the size of platform mounds in southern Arizona. Those along the Salt and Gila Rivers in the Phoenix area were by far the largest. Elson (1998:103) uses this as evidence for social complexity. He has written of excavated



Artist's rendition of the platform mound compound at the Meddler Point Site (AZ V:5:4) in the Tonto Basin.

(From: *The Roosevelt Community Development Study*. Edited by Mark D. Elson, Miriam Stark, David Gregory, 1995. Center for Desert Archaeology Anthropological Papers No. 15.)



Photo courtesy of the Casa Grande Ruins National Monument.

Casa Grande walled village compound at the Casa Grande Ruins National Monument.

temple platforms in Hawaii that only two were of sufficient size to require more than 50,000 person-days of labor to build (the amount estimated to build the Mesa Grande platform mound along the Salt River). Because Hawaii has "long been characterized by anthropologists and archaeologists as the homes of highly ranked or stratified chiefdoms," these comparisons argue "that Phoenix Basin groups were highly ranked and probably stratified" (Elson 1998:103). It should be obvious that these comparisons constitute insufficient evidence, and that what should have been compared was the actual evidence for ranking and stratification among both societies, not the superficial size of platform mounds.

The platform mounds of the Tucson area were of comparable size to those in the Tonto Basin (Doelle et al. 1995), so we can assume labor requirements similar to those made by Craig and Clark (1994) and Craig, Elson, and Wood (1992). Cooperative labor among several settlements was probably necessary to build platform mounds within a relatively short period of time, but neither huge labor forces nor elite managers were necessary to organize and direct the construction of mounds, as can be seen from archaeological and ethnographic evidence.

The truth, as with all such dichotomies, probably lies somewhere in between the two extremes of a wholly egalitarian and an unquestionably stratified society. What we have learned from recent reanalyses of ethnographic data is that a single society may blend attributes of both egalitarian and stratified organizations, making it extraordinarily difficult to classify. This is one reason that older models of organizational forms (e.g., Service 1962) have largely been abandoned. Moreover, social organization is fluid, adopting certain characteristics under particular circumstances and changing to other attributes when necessary (see discussion in Ezzo 1999). Crumley (1979, 1995) has labeled this ability to shift organizational character from relatively unranked to ranked as "heterarchy." Classic period social organization certainly may have been more complex than we have traditionally thought, but we need carefully constructed models and strong empirical support before we can state this with certainty.

Landscapes of Conflict

There has been a recent surge of interest in prehistoric warfare in the Southwest, as indicated most obviously by LeBlanc's (1999) recent book *Prehistoric Warfare in the American Southwest*. He states flatly that "Almost every major area of interest in the region's prehistory has, or potentially has, an important link to warfare" (LeBlanc 1999:2). LeBlanc goes to great lengths to inform the reader that southwestern anthropologists and archaeologists have generally disdained the subject, both because of its distasteful nature and because it was thought to be absent among ancient peoples perceived via historical-period analogs to be peaceful. Although this point is valid, LeBlanc's summation of "evidence" takes much for granted, misconstrues data, ignores important differences between organized warfare and simple human conflict, and glosses over significant variability in the archaeological record. However, LeBlanc does the important service of alerting us to the possibility of conflict and advises archaeologists not to ignore it.

Warfare, as defined by Meggitt (1977), refers to a state or period of armed hostility between politically autonomous communities. To this definition should be added "organized and directed" hostility to distinguish it from other forms of conflict (Ferguson 1984). It is also important to distinguish warfare from economically based raiding activities and from ritual behavior that may mimic conflict. The Western Apache, for example, made a sharp and clear distinction between raiding and warfare. Raiding was a subsistence activity carried out specifically to acquire livestock and other property, and was conducted to avoid contact with the victims and therefore armed conflict and death. Warfare, on the other hand, was specifically to avenge the death of a kinsman. The linguistic definitions emphasize this distinction; raiding is literally "to search out enemy property" and warfare is "to take death from an enemy" (Basso 1971:16). Archaeological and ethnographic data further suggest that behavior often taken to indicate conflict, particularly the burning of houses, may be associated with ritual activities, often mortuary behavior (Drucker 1941; Huntington 1986; Montgomery 1992a, 1992b; Russell 1975; Wilcox et al. 1981). For example, the Akimel O'odham burned the personal property and round house of a deceased individual (Russell 1975).

Keeping these distinctions in mind, a review of the archaeological data suggests little evidence for warfare but possible evidence for raiding during the Classic period. LeBlanc (1999:260–261) has suggested that compound villages and platform mounds, particularly those with tower-like structures (Doelle et al. 1995; Wilcox 1993), were defensive settlements with lookouts. On the one hand, in the absence of clear biological and artifactual evidence for warfare, of which there is little or none, it is more probable that these structures functioned as suggested in previous sections of this chapter—as symbolic manifestations of social identity and as platforms for ritual performances. Arguing against a defensive function is their location, typically on lower-*bajada* slopes without a defensive aspect or commanding view. On the other hand, compound enclosures would have provided greater security for stored foodstuffs and for the residents than the open, scattered *ranchería* settlements of pre-Classic times.

Cerros de trincheras have a long history of interpretation as defensive structures, as summarized by Wilcox and Haas (1994). The most persuasive argument for their defensive nature was originally made by Stacy (1974). David Wilcox in particular has championed the defensive nature of *trincheras* sites in a series of papers (Wilcox 1979a, 1979b, 1987b, 1988b, 1989; Wilcox and Haas 1994; Wilcox et al. 1981; Wilcox and Sternberg 1983). His evidence rests on an analysis of features that *could have served* a defensive function, rather than hard evidence for conflict. For example, Wilcox and Haas (1994:221) have written of the Tumamoc Hill *trincheras* that "(1) although only about half a meter high, the walls would have afforded good protection from bow-and-arrow attack from below; (2) the cleared space behind the walls would have given defenders a natural advantage in hand-to-hand combat with attackers standing on the treacherous loose rock of the revetment wall." By contrast, excavation and analysis has yielded indisputable evidence for habitation and farming on *trincheras* hillside terraces (Downum 1986, 1995; Fish et al. 1984, 1992b:34). As discussed

above, Downum (1993) argues persuasively that *cerros de trincheras* performed a ritual function, representing an alternative ceremonial system contemporaneous with platform mounds.

Another often-cited piece of evidence for conflict is the patterning of site distributions suggesting the presence of "no-man's lands." Wilcox and Haas (1994:231–232) plot site distributions and locations of platform-mound communities to show that three distinct settlement clusters had emerged in the Phoenix Basin by A.D. 1200, which were separated from the Tucson Basin communities by a 25-mile zone of unoccupied land by A.D. 1300. This interesting possibility needs to be further investigated. Given the intensity of archaeological investigations in the Phoenix and Tucson areas and the lack of investigation in the intervening area—along with the pervasive dearth of intensive survey coverage—we cannot be sure if the clusters and proposed "non-man's lands" are real or simply a product of the intensity of archaeological work.

It is highly probable that desert Arizona was profoundly affected by demographic shifts and subsistence and social stresses engendered by unpredictable and deteriorating environmental conditions in the late A.D. 1200s. A variety of archaeological data indicates population movement from the Colorado Plateau southward into the Tonto Basin, the mountain transition zone, and along the San Pedro and Gila Rivers (Clark 1995; Di Peso 1958; Reid 1989; Reid and Whittlesey 1997; Woodson 1995). Excellent data also exist for the extremely poor health and impoverished nutrition of late Classic period populations (e.g., Van Gerven and Sheridan, eds. 1994). Van Gerven and Sheridan (1994) document the conditions at Pueblo Grande, which included extremely high infant mortality, a birth rate implying a population either in decline or dependent upon immigration to maintain its numbers, short life expectancy, evidence for severe stress during infancy and childhood indicating poor nutrition and high incidence of infectious diseases, extensive iron-deficiency anemia, and age-related degenerative diseases. There was evidently extremely poor nutrition caused by dependence on maize in the diet, exacerbated by a decrease through time in consumption of animal protein and wild plant resources. The nutritional consequences of depending on maize are well documented (see discussion in Cummings [1995]; Whittlesey [1998a, 1999]).

Populations fleeing the Colorado Plateau would have added to the social and economic stresses experienced by people living in desert Arizona who were themselves experiencing profound fluctuations in climate, unpredictability of precipitation, and consequent stresses to the resource base. Raiding may have been one response to such profound uncertainty. In areas where immigration of nonlocal groups has been documented, as in the Tonto Basin and the mountains of east-central Arizona, there is also evidence for raiding (Reid 1989; Reid and Whittlesey 1997; Turner et al. 1994). We can imagine that the stored foods securely held in the large-capacity granaries of the Tonto Basin, for example, were irresistible targets for hungry and sick people who would have found the best agricultural land already occupied when they arrived. Little evidence of such subsistence-targeted raiding has been found to date in the Tucson region, but it certainly seems probable in light of the regional processes affecting the Southwest on a larger scale at that time.

In addition, conflict as a means of resolving demographic and economic stresses may have been far more predominant in the wake of the regional disintegration caused by the collapse of the ball court integrative system. As Fish and Fish (1989) have observed, there is extraordinarily little evidence for conflict among the pre-Classic period Hohokam. The tightly integrated social, cultural, economic, and religious networks that marked Hohokam society may have created a *pax Hohokam* that endured until the entire system disintegrated. In summary, although we have no evidence for organized warfare during the Classic period, the body of evidence supporting demographic and nutritional stress is sufficient to suggest that raiding was probable, even inevitable.

The Changing and Modified Environment

Today the riverbeds are dry and sandy, and deeply entrenched. The dense mesquite *bosques* and huge, deciduous trees that once lined their banks are gone, victims of receding water tables and human impacts. The foothills slopes are hot and dry; the sun glints harshly from glittering, bare rock. It is hard to imagine what this land must have looked like when it was used by the ancient peoples of the Classic period, or how they could have made an adequate living in what is today such a dry and arid place. But we must remember that much of what we see today is the product of massive environmental change and degradation caused by human use and overuse of the land during the historical period.

Historical-period documents and archaeological evidence demonstrate how different was this desert land. Although there is disagreement among scholars as to the causes and effects of human-induced environmental change, there can be little doubt that human uses and lack of concern for the environment exacerbated changes wrought by climatic factors, and in tandem altered the face of the southern Arizona land. Bahre (1991) provides the most comprehensive and balanced discussion of this issue.

Although the Santa Cruz River never bore perennial flow along its entire course, there was once much more surface water. Beavers once lived in the Santa Cruz, for example, along with other riverine reptile and mammal species (Fish and Gillespie 1987). The causes of their eradication are poorly understood, but certainly by the turn of the nineteenth century beaver had disappeared from most of Arizona's major streams. Marshland and *ciénegas* were present in the Tucson area, at Sonoita, Calabasas Creek, Arivaca, and Guevavi (Davis 1982:50; Hendrickson and Minckley 1984:156–157; Hinton 1878; Mattison 1967:72).

Sobaípurí *rancherías* were located near areas of surface water in the Tucson area at Sentinel Peak ("A" Mountain) and near San Xavier del Bac, and at the settlement called San Agustín del Oyaur near the terminus of the Tucson Mountains (Whittlesey 1998d:52). The confluence of the Santa Cruz and Gila Rivers created "a vast marshland the likes of which we can scarcely imagine now" (Rea 1983:22). The Santa Cruz River was described as a "slough" in 1849 (Whittlesey 1998d:53). Springs, lagoons, and dense *bosque* characterized the

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confluence area, and there was abundant water for farming. Modern depletion of the water table has coincided both with the drying of southern Arizona's streams and the disappearance of the once extensive and lush riverine *bosques*.

Woodcutting has been implicated in destroying vegetative cover. Mining stripped woodland to feed the ore mills (Hastings and Turner 1965). In southeastern Arizona, in particular, the overnight boom created by the silver discoveries of the 1870s was devastating. Bahre and Hutchison (1985:181–182) estimated that more than 47,000 cords of wood were consumed by the Tombstone stamp mills between 1870 and 1886 alone, and another 31,000 cords were used for domestic purposes.

Perhaps most significant to increased environmental degradation was overstocking of livestock and overgrazing. Severe overgrazing began in the latter half of the nineteenth century following the subjugation of the Apache. Ranges had been fully stocked to meet the needs of the military in fighting the Apache wars (Stein 1993). With the coming of the railroad to southern Arizona, ready markets for its beef were available and the supply of cattle increased vastly. Cattle production peaked in 1891, according to Jones and Ciolek-Torrello (1991:46). Although overgrazing caused damage to the range, the most significant impacts were to riparian areas—river margins, *ciénegas*, and tanks. Cattle can damage riparian environments in several ways, chiefly by congregating around water sources, removing vegetation through close cropping, and trampling the margins of *ciénegas*, and increased runoff and erosion can result (Hendrickson and Minckley 1984:161–162). Severe droughts in the 1890s increased the damages to the land (Whittlesey et al. 1994:318). Drought, overstocking, diversion of the river into irrigation ditches and lakes, followed by massive floods in the late 1890s caused severe downcutting and irreversible changes to the Santa Cruz River that remain today.

Thus the notion that the major washes draining the upland zones such as the Tortolita, Tucson, and Picacho Mountains were used intensively by Classic period farmers is not as surprising as it may seem at first glance. The water supply in these washes was probably much more reliable in prehistoric times than today, even in drier years. Brady and McClellan Washes, for example, which flow near large prehistoric communities located at the base of the Picacho Mountains, would have had sufficient surface water for farming, and they were not entrenched, enabling agricultural use (Earl 1983; Weaver 1988:276). That the greater Tucson area was more moist in prehistoric times is indicated by archaeological analyses of preserved botanical remains, which contain seeds and pollen of water-loving plants such as sedge at sites that are located in places that are extremely arid today (e.g., Huckell 1993).

To what extent the late Classic period farmers of the Tucson region may have initiated the process of anthropogenic environmental change eventually resulting in the obvious degradation of the historical period remains unknown. Clearly the Tucson area population was not as large or as heavily dependent on irrigated agriculture as were people living in the Phoenix Basin, as indicated both by the number and size of platform-mound communities. Although we may think that such small populations had little impact on the environment, this

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may not have been the case. As William deBuys reminds us, even people who have a warm and close attachment to the environment may cause unintentional damage. He wrote (deBuys 1985:297) of a small community of Hispanic farmers in New Mexico, "If there is a flaw in the relationship of the villages to their environment it is that they, like the people of pioneer and subsistence cultures everywhere, have consistently underestimated their capacity for injuring the land" (quoted in Limerick [1987:156]).

The impact of different farming strategies is poorly understood. On the one hand, it seems unlikely that irrigation had a significant impact on soil or hydrology. The areas in the Tucson Basin where irrigated farming could be practiced were highly restricted. Centuries of irrigated farming in these limited areas, however, may have created extremely salt-laden soils that were depleted of nutrients. Sandor (1995:123) has observed that floodplain soils in much of the Southwest are naturally subject to high sodium content and salinization, and may become more so with irrigated agriculture.

On the other hand, the shifting locations of early Classic period communities in places clearly dependent on floodwater farming may have been a product of human impacts through farming. Although soils on higher surfaces such as the lower-*bajada* slopes seldom have the tendency toward salinization reported by Sandor (1995), sediment progression and field infilling is often inevitable in *ak-chin*-farming situations, as described by Ford (1999) for Zuni fields. Shifts in community locations may also reflect the rapidly shifting climatic conditions of the late thirteenth and fourteenth centuries.

Depletion of local fuelwood resources through centuries of dense occupation and intensive farming in a relatively small area and associated erosion may have been phenomena that were exacerbated by the aggregated settlement of the late Classic period and the environmental fluctuations of the time. Moore (1995) has cited a variety of studies indicating that erosion can begin when trees are cut to build habitations, clear fields for farming, and produce firewood. Evans and Patric (1983) estimated that runoff on a forested tract increases dramatically when more than 20 percent of the trees are removed, and erosion accelerates when regrowth is prevented. Mesquite have long tap roots enabling them to survive drought periods but making them susceptible when water tables drop. In dry years, the effects of fuelwood cutting may have been severe. Erosion is also increased when the understory vegetation is removed, and clearing rocks from fields also contributes to the process by increasing runoff and sheet wash (Epstein et al. 1966; Lamb and Chapman 1943). Flooding episodes of the late A.D. 1300s (Nials et al. 1989) may have caused irreparable damage to a landscape already impacted by woodcutting, soil degradation and salinization, and alternating drought and flood cycles. We need to study this issue carefully.

Conclusion and Synthesis: The Classic Period and the Transition to History in Southern Arizona

Who were the people of the Classic period in the Tucson Basin? This question has plagued archaeologists since the 1930s, and it is not an easy one to answer. This section summarizes and synthesizes what we know of this turbulent time of upheaval and social change. Among the topics considered are the development of a new order in the American Southwest, the collapse of the pre-Classic period Hohokam culture, origins of the platform-mound system and other ritual complexes, cultural affiliation, and the transition to the historical period.

We can say with some assurance that the Classic period was a time of reorganization of lifeways and landscapes during a time of sweeping demographic shifts, economic uncertainty, and social unrest that accompanied environmental unpredictability and deterioration. We can also say that the cultural configurations archaeologists recognize as Hohokam and Salado were different, reflecting minimally a reorganization of the ritual sphere of life. People of different cultural backgrounds and ethnicities may have been involved in the shift we label the pre-Classic–Classic period transition. And it is probably also true that the Classic period was a polythetic construction, reflecting not a single culture or ethnic group but many (Reid and Whittlesey 1997). Beyond this, we are on shaky ground.

What we recognize as the Classic period in the Tucson area appears to have been a product of multiple processes. The three most important of these were the collapse of the pre-Classic Hohokam cultural system; the movement of culturally diverse populations, some of whom originated from the Colorado Plateau, into the southern Arizona deserts; and the incorporation of local and migrant populations into a new ritual organizational system focused on the platform-mound complex. What follows is a summary of some of these issues.

The Hohokam Collapse and the Issue of Continuity

Lange (1992:330) has written that “the concept of ‘Classic period Hohokam’ is a fiction. The Hohokam system, the ‘Age of Ballcourts,’ collapsed in the late Sedentary period.” If we accept this proposition of collapse and reorganization—few, if any, would argue that the Hohokam people themselves abandoned the desert, or simply disappeared—we must ask why this happened. There are a number of competing models, and no single one is completely satisfactory. It is tempting to link the fates of the Hohokam and the Chaco culture of New Mexico. Both disappeared or were reorganized at approximately the same time. Possible causes include environmental fluctuations. At Chaco Canyon, a drought from A.D. 1130 to 1175 may have been a precipitating factor (Crown and Judge 1991). The fate of both systems may have depended on the rise and flux of cultures in the greater Southwest, including Mesoamerica.

Archaeologists have long debated the relationship between the Southwest and the higher

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cultures of Mexico (e.g., Haury 1945). It would be extremely unusual if the more complex and powerful regional systems in the American Southwest, such as Chaco and Hohokam, were not only related to one another but also to Mesoamerican cultures. Certainly the Hohokam culture itself had clear ties to Mesoamerica, particularly the coastal cultures of West Mexico, expressed in material culture and possibly also in linguistic connections (Carot 1992; Carot and Susini 1989; Lange 1992; Teague 1998; Wilcox 1986; Wilcox and Sternberg 1983).

Despite attempts to establish continuity between pre-Classic and Classic period Hohokam (e.g., Doyel 1977, 1981), the evidence for discontinuity is far stronger. The list of dramatic changes is long: nonperishable material culture, such as ceramics and architecture; ritual organization, iconography, and symbolism; settlement patterns; subsistence; and perishable material culture. To this we can add bioarchaeological data demonstrating biological differences between pre-Classic and Classic period populations, and ambiguous but intriguing linguistic evidence. Nonperishable material culture has been discussed earlier in this chapter and in other portions of the overview. Perishable material culture and bioarchaeological data provide interesting and less well-known points of view from which to examine the issue of continuity.

Teague (1998) has cataloged changes to the textile industry that not only support the sweeping changes seen in other aspects of lifeways and economy during the Classic period transition, but also imply strong connections with Mesoamerican cultures. She has observed (Teague 1998:183) that the textile industry of the Southwest during late prehistory owed much, not only to Mesoamerica, but to cultures located even farther south, possibly as far as Ecuador.

Before A.D. 1000, southwestern textiles represented three regional subtraditions corresponding closely to the physiographic provinces traditionally associated with Hohokam, Mogollon, and Anasazi (Teague 1992:Figure 34.2, 1998:Figure 8.4). There was an emphasis on cotton fabrics woven with the backstrap loom, balanced plain weaves, twill, and weft-wrap openwork. After A.D. 1100, new fabric structures and decorative techniques appeared that seem to have derived from coastal Mesoamerica and from inland Mexico. Noncotton fibers from native plants, particularly yucca, agave, and milkweed, using techniques that produced coarse, burlap-like fabrics, were emphasized. It is interesting that this change correlated with the increased emphasis on agave in economy and ritual life. After A.D. 1300, the formerly discrete regional traditions had solidified into a single broad tradition extending from the Mogollon Rim to central Mexico (Teague 1998:Figure 8.6).

Bioarchaeological data, in particular dental morphology, have been used as an indicator of affinity among prehistoric populations and between ancient and modern peoples. Although the research is plagued by small and possibly nonrepresentative samples, the bulk of the evidence does not support continuity between the pre-Classic Hohokam and later Classic period peoples. Unfortunately, bioarchaeological studies have not been carried out for the Classic period residents of the Tucson region or for people who lived at *cerros de trincheras*, so we must extrapolate findings from other areas.

An early study (Turner and Irish 1989) compared the bioarchaeology of Classic period residents of the Grand Canal and Casa Buena sites in the Phoenix Basin (Howard 1988; Mitchell 1989), the pre-Classic period Hohokam of La Ciudad in the Phoenix Basin (Henderson 1987), and samples from mountain sites, including Grasshopper Pueblo. Turner and Irish (1989) found that the Classic period Hohokam of the Grand Canal and Casa Buena sites were dentally more like the Mogollon of Grasshopper Pueblo than the residents of La Ciudad.

Similar findings were made by initial research on individual burial collections from sites in the Tonto Basin excavated during the Roosevelt Platform Mound Study by Arizona State University. Dental morphology was overall more similar to that of the Mogollon at Grasshopper Pueblo than to the Hohokam (Regan et al. 1997; Regan and Turner 1997:527). This certainly implied biological differences between the pre-Classic and Classic period populations and also spoke to issues of migration and multiple ethnic affiliation.

Reorganization of Religious Systems: New World Orders

The platform-mound system appears to have been a new religious organization that swept the Southwest during the late A.D. 1200s at the height of the Great Drought. Apparently it was only one of at least three new ritual and ideological systems that were evidently contemporaneous and that emerged in the context of environmental uncertainty, population movement, and social unrest. The diversity of such organizations is intriguing and has numerous implications. Perhaps most obvious, it implies that people were seeking varied kinds of spiritual bulwarks in times of stress and uncertainty. It also underscores the considerable cultural and ethnic diversity of the time. The "new world order" of the Southwest during the A.D. 1300s included the platform-mound system, the ritual system represented by *cerros de trincheras*, and the katsina cult. These systems seem to represent the consolidation of influences stemming from different geographic and cultural areas, and in them we may be seeing the emergence of historical-period belief systems, ritual systems, and worldviews.

Platform Mounds

It is obvious from the marked architectural variability of platform mounds and the different uses to which they were put that the platform-mound concept was incorporated by different populations in diverse ways. "There is every indication," Doelle et al. wrote (1995:439), "that the mounds and associated ideology were modified to fit into an already existing organizational framework, one that developed in situ in particular places, in response to the special conditions of life that existed there." The flexibility of the platform-mound notion probably helped to foster its acceptance "over such a wide area by populations with substantially different characteristics" (Doelle et al. 1995:440). As noted many years ago by Whittlesey and Reid (1982), the cultural and ethnic landscape in many areas where platform mounds are found was polythetic, such that "melting pot" is an appropriate term. Each population found something in platform-mound ideology that was appealing.

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Whittlesey and Ciolek-Torrello (1992) have suggested that the appearance of platform mounds must be viewed within the context of social and economic uncertainties of the climatically unpredictable times. The platform-mound complex was a way of integrating culturally and ethnically diverse communities under a broad ritual system probably focused on water and its control. Ceremonies designed to bring rain may have been a particularly important function. Storage facilities, which are often associated with platform mounds, may have helped to buffer populations against agricultural shortfalls. Mounds may also have served other functions, such as resolving conflicts, managing water distribution, or allocating land, all managed within a community-wide ceremonial framework (Whittlesey and Ciolek-Torrello 1992).

This may also have been true of the Tucson region, where there are indications of the presence of multiple cultural and ethnic groups in addition to what have been the indigenous population with its own distinctive character. For example, archaeologists have demonstrated movement of Kayenta Anasazi people along the San Pedro River into southeastern Arizona, seeking a better place to live and farm than their environmentally degraded Colorado Plateau homeland (Di Peso 1958; Woodson 1995). Some of these northern-affiliated people may have ventured into the eastern Tucson Basin. At places such as Gibbon Springs, there was a substantial use of locally made, brown corrugated pottery (Gregonis 1996), ceramics that are typically associated with the Mogollon Pueblo culture. Significantly, at Gibbon Springs and elsewhere, these ceramics were associated with Tanque Verde Red-on-brown and compound architecture traditionally associated with "Classic period Hohokam."

From where did the platform-mound system originate? This is an extremely important question, and like so many others, it is one that is difficult to answer. Doelle et al. (1995:437) have suggested that "the most common form of Classic period platform mound—a rectangular mound with a similarly rectangular compound wall—has temporal priority in the Phoenix Basin, probably appearing sometime between A.D. 1200 and 1250." But from where did this notion derive? Although there were mounds in the Phoenix Basin before that time, as we have seen, the Classic period platform mound was a new conception that appeared at the end of the Sedentary period.

It is tempting to link the platform-mound complex with Chihuahuan cultures, particularly the central settlement of Casas Grandes or Paquimé. As Lekson (1999:90) has phrased it, "Casas Grandes may have been far more important to the configuration of Classic period Hohokam than the reverse." In addition to Mesoamerican-style, I- or T-shaped masonry ball courts, Paquimé was characterized by a number of platform mounds, some of which represented effigy forms (see the map prepared by Wilcox [1999:Figure 7.2] from the Amerind Foundation's maps of the site). There are other aspects of Chihuahuan architecture that are similar to so-called "Salado" sites in central Arizona and western New Mexico, including adobe construction; massed "Great Houses" and plaza-oriented site layout; compounds or courtyards; the use of pillars or piers in construction; dome-shaped granaries built of jacal and set on cobble platforms; and T-shaped doorways.

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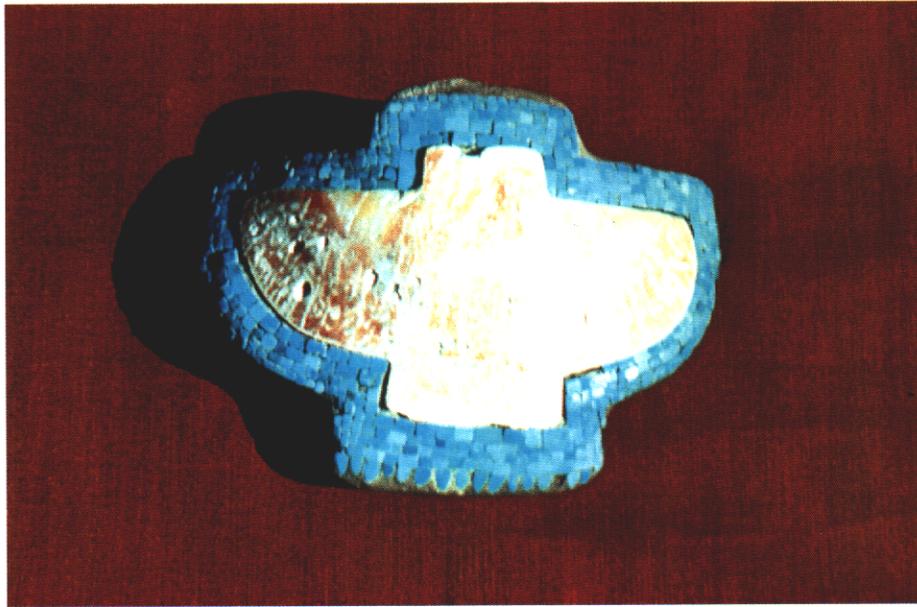
The chronology of events does not contradict a possible relationship. The Medio period at Casas Grandes, which represented the height of cultural development there, began around A.D. 1200 and lasted until A.D. 1400 (Dean and Ravesloot 1993), at which time the platform-mound complex had declined and was replaced by other systems in many regions.

Bioarchaeological data comparing northern Mexico, Mogollon, and Hohokam populations have suggested a close connection between Paquimé and the Mimbres Mogollon, and both populations grouped more closely with the Tonto Basin burial samples than with either the Hohokam group or the Mogollon (Turner 1998:Table 9.1). Turner (1999) later demonstrated, using dental crown morphology, that the people of Paquimé were closely related to those living in Sinaloa, Mexico; next most closely related to the Mimbres population; and least similar to the pre-Classic period Hohokam of La Ciudad in the Phoenix area. Rice (1998a:233) has observed that "the populations of the Hohokam core area were significantly different from those in the Mimbres and Northern Mexico regions;" he goes on to suggest that, because Tonto Basin, Mimbres, and northern Mexico are considered part of the "Salado horizon," this horizon has an unexpected biological component of shared affinity in addition to ceramic and architectural similarities.

Possible genetic links among Paquimé, the Tonto Basin Salado, and the Classic period Hohokam are intriguing and may point at the ultimate origin of the platform system in Chihuahua. This research must be considered extremely preliminary, however, because the samples are so small and because burials from single sites within a region may be different culturally and genetically.

The platform-mound complex and its associated ritual performances, ideology, and iconography may have been disseminated by Casas Grandes through its extensive trade connections. Lekson (1999) has suggested that Paquimé was a capital, or a small ceremonial city, where "low-grade political complexity encompassed and organized surrounding regions," and which controlled the distribution of exotic materials (Lekson 1999:15). Paquimé certainly controlled the marketing and distribution of macaws. These birds were raised in pens at Paquimé in commercial quantities; more than 500 were found there (Di Peso et al. 1974b:272) (see Lekson 1999:Figure 3.17 for a depiction of macaw breeding pens). Shell artifacts and raw materials (Bradley 1999) and copper bells (Di Peso et al. 1974a:507-510) were also among the many "prestige" items that Paquimé seems to have accumulated and distributed, although these items were not necessarily produced on-site (compare Vargas 1995:69-71).

Bradley (1999) provided an analysis of shell artifacts that links Casas Grandes with Western Pueblo and Salado sites, including sites in the Mimbres region and southeastern Arizona. Classic period sites in the Phoenix Basin form another group more closely linked to earlier sites in northern Arizona and the Chaco area (Bradley 1999:Figure 16.7). Bradley (1999:227) also has shown that there were close connections between the distributions of macaws and shell. This further indicates the separation of platform mound and katsina cult imagery, discussed below.



Shell and Turquoise mosaic pendant from Casa Grande National Monument



Photo courtesy of the Arizona State Museum.

Examples of Classic Period polychrome pottery from the University Indian Ruins in Tucson, Arizona.

In a provocative study, Lekson (1999) has gone much farther in linking the Pueblo and Chihuahuan worlds. He has suggested that Chaco and Casas Grandes were single manifestations of a greater southwestern world order at different points in time. The details of his comparisons are extensive, and space precludes recounting them here, but his argument is persuasive. If Lekson is correct, then Chaco and Hohokam may have been linked to a Mesoamerican-derived ideology, economy, and social order just as Paquimé and Salado were linked later in time.

There are some problems with the model connecting Paquimé to the Classic period platform-mound complex, however. As plotted by Fish and Fish (1999:Figure 1.7), the distributions of "Hohokam" platform mounds and Casas Grandes-style ball courts overlap very little. Ceramics also refuse to conform nicely. Chihuahuan polychromes have a restricted distribution centering largely in Chihuahua, although a few entered southeastern Arizona and the Tucson Basin (Heckman 2000). This clearly is a model that needs further refinement and study.

Bioarchaeological data suggest that the platform-mound complex was adopted by people of different genetic backgrounds. The Tonto Basin was certainly one such highly mixed area. Turner (1998:190) concluded that "on epigenetic and cultural grounds" the "Tonto Basin was not a closed, static biocultural system." Initial studies of burials from the Roosevelt Platform Mound Study compared samples from single sites to the baseline data compiled by Turner and associates. These analyses, according to Regan et al. (1997:829), "continued to support the idea based on archaeological finds, such as pottery styles and architecture, of a late external migration into the Hohokam area." More recently, Arizona State University bioarchaeologists grouped all Roosevelt Platform Mound Study burial samples together and essentially reversed their position (Turner 1998:186). Because the Tonto Basin population has been demonstrated to be multicultural (e.g., Clark 1995; Stark et al. 1995), this procedure poses interpretive problems.

Although we lack the supporting bioarchaeological data from Tucson Basin populations, it is likely that the platform-mound complex was also adopted by populations of diverse biological and cultural origins living in this region. Moreover, not all of the people living in a region may have participated in the platform-mound system. In the Tonto Basin, for example, many large settlements in the area, demonstrated to have strong northern connections as indicated by architectural styles (Clark 1995), lacked platform mounds. In the Tucson Basin, residents evidently chose between the platform-mound system and the *cerros de trincheras* complex. This is another piece of evidence that there was no single "culture" in central and southern Arizona during the Classic period.

Cerros de Trincheras

The characteristics of these sites and the hypothesis that they were a ritual system contemporaneous with, but separate from, platform mounds have been discussed previously. Some time ago, Charles Di Peso (1979:158-159) identified Casas Grandes and the site of

Las Trincheras in Sonora as two Mesoamerican commercial centers (McGuire et al. 1999:134). Di Peso argued that Las Trincheras was built by merchants to protect the shell industry and that the community controlled the distribution of shell raw materials to Hohokam artisans (McGuire et al. 1999:134).

Arguments about the role of Paquimé and Trincheras in controlling the distribution of exotic goods aside, that these were important settlements with monumental architecture of different types cannot be disputed (McGuire et al. 1999). No particular iconography has yet been linked to *cerros de trincheras*, but as additional work is carried out in Sonora and elsewhere this information may emerge.

No particular ceramic wares appear to be associated with the *cerros de trincheras* organization. Sites, including Las Trincheras in Sonora, are characterized largely by plain ware pottery with small quantities of diverse, late wares, including Tanque Verde Red-on-brown and Gila Polychrome.

Although "Hohokam" platform mounds and *cerros de trincheras* overlap to some degree in space (Fish and Fish 1999:Figure 1.7; Whittlesey 1996), there is little or no overlap between the distributions of *cerros de trincheras* and Casas Grandes-style ball courts. This implies a separation between the cultures of Sonora and Chihuahua, although some authors see similarities and connections between the so-called "statelets" of Sonora and Casas Grandes, rather than differences (see discussion in Riley [1999]). At present, we can say with some certainty that *cerros de trincheras* represent a second north-south axis connecting southern Arizona with the cultures of present-day Mexico, but one that was centered in Sonora rather than Chihuahua.

The Katsina Cult

The katsina cult is associated with macaws and other birds, masked representations, rectangular kivas, and possibly the Quetzalcoatl (feathered serpent) deity (Adams 1991). As Lange (1992) and others have demonstrated, the distributions of the iconography and ritual structures associated with platform mounds and with the katsina cult are almost mutually exclusive. For example, extremely few macaw skeletons have been found at platform-mound sites, whereas material items and iconography associated with platform mounds, such as shell trumpets (Nelson 1991:81), do not occur in association with kivas.

The katsina cult may have emerged somewhere in the southern Colorado Plateau, possibly the Little Colorado River valley, around A.D. 1275 (Adams 1991:119). The cult may have spread throughout much of the Mogollon and Pueblo worlds. Today, of course, it is associated most prominently with the Hopi culture, where its primary function is rainmaking ceremonies; masked dancers and katsina representations also occur at Zuni and, in extremely diluted form, among the Eastern Pueblos. Thus the third ritual system that emerged in the late A.D. 1200s was northern, centered in the Puebloan world.

Schaafsma (1999) argues persuasively on the basis of katsina imagery and masks, kiva murals, rock art, Mesoamerican codices, and other data that the katsina cult had an ideological origin in Mesoamerica. She has written that the katsina cult "derived from concepts underlying rituals and funerary practices in Mexico that involved integrating the spirits of the dead with natural forces in order to transform the deceased into rainmakers." Tlaloc was the Mesoamerican deity most closely involved with rain and appeals for rain. The paradox seen in Paquimé's control of the breeding and distribution of macaws that were used solely in katsina cult rituals is an interesting disjuncture that suggests archaeologists should begin to separate the analysis of economy, ritual organization, and other fundamental bases of culture, as suggested by Whittlesey (1998c).

The role of Gila Polychrome in the development of the katsina cult is highly ambiguous, made more so by archaeological confusion over pottery types and decorative styles (e.g., Adams 1991; Crown 1994). As numerous archaeologists have stated, this pottery type—traditionally considered the sine qua non of the "Salado" culture—occurs in a variety of late cultural contexts from the Mogollon pueblos of east-central Arizona to Paquimé itself. There have been attempts to relate this pottery to a widespread cult (e.g., Crown 1994). Ciolek-Torrello (1987:368), for example, concluded that "the Salado presence may represent in part the spread of a cultural horizon expressed in a form reminiscent of a mortuary cult rather than an actual Salado presence." Archaeologists who seek to connect the katsina cult and Gila Polychrome ceramics point to shared images, such as snake (possibly feathered serpent) and macaw motifs. The latest Gila and Tonto Polychrome designs resemble Chihuahuan polychromes (Whittlesey 1994).

Whereas there certainly may have been a mortuary cult that was shared widely among the late cultures of central Arizona, it did not have a strong ceramic component represented by Gila Polychrome (Whittlesey and Reid 1999). Although mortuary practices found in different regions—the mountains of east-central Arizona, the Tonto Basin, the Phoenix Basin, and to a lesser degree, Paquimé—show extraordinary similarities, burial accompaniments contained highly variable quantities of Roosevelt Red Ware, particularly Gila Polychrome (Whittlesey and Reid 1999).

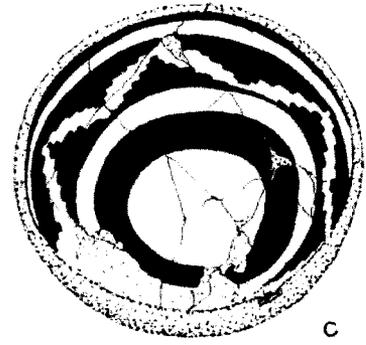
The Late Classic Period, the Protohistoric Period, and the Transformation to History

Today's Native American peoples of the Tucson region, particularly the Tohono O'odham, see a close ancestral connection between themselves and the Hohokam. The archaeological data tell a different story, as summarized here. There was no single "Hohokam culture," either during pre-Classic times or in the Classic period. Instead, we see a polythetic mosaic of different cultures, biologically based groups, ceremonial systems, and more, shifting through time and changing external characteristics, cultural and social ties, and ways of living. Language during prehistoric times is difficult for us to study, but there are intriguing suggestions that this mosaic must also incorporate linguistic connections.

Regardless of ultimate origin, purpose, or cultural linkages, the platform-mound system was



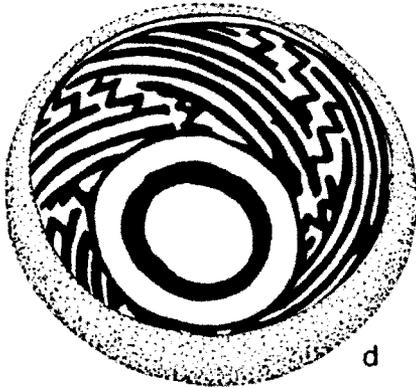
a



c



b



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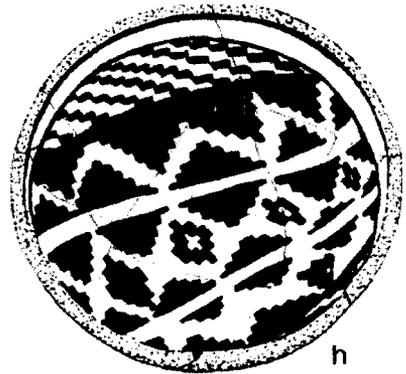
f



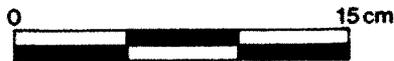
e



g



h



Gila Polychrome Vessels A.D. 1325-1450, from the Cline Terrace Mound (Roosevelt 5:10), Arizona State Museum (AZU:4:33ASM).

(From: *Salado Ceramics and Social Organization: Prehistoric Interactions in Tonto Basin*. Edited by Arley W. Smith, 1998. Roosevelt Monograph Series II, Anthropological Field Studies 40. Arizona State University, Office of Cultural Resources Management.)

short-lived in most areas. In the Tonto Basin, most platform mounds were abandoned or transformed by A.D. 1350 or so, and were replaced by large, compact masonry pueblos with central plazas (Whittlesey and Ciolek-Torrello 1992). In the Tucson Basin, many platform-mound communities appear to have expired quickly (Fish et al. 1992b), although the University Indian Ruin settlement continued to be occupied during the late Classic period (Hayden 1957). This may also be true of the Phoenix Basin; Doelle et al. (1995:Table 13.11) indicated that there were no mounds postdating A.D. 1375. If there was a reorganization following the collapse of the Hohokam culture and the migration of culturally distinctive people into the Tonto, Phoenix, and Tucson Basins along with other regions, there was an equivalent reorganization in the late-Classic-period Gila, Civano, and Tucson phases. In other words, the Classic period cannot be seen in unity; we must consider the early and late Classic periods separately (Lange 1992). Similar distinctions mark the contemporaneous, "Salado"-influenced phases in the Mimbres area, the Black Mountain phase between A.D. 1200 and 1300 and the Cliff phase between A.D. 1300 and 1400 (Schaafsma and Riley 1999:Table 1).

Bioarchaeology provides a perspective on the issue of prehistoric-historical period continuity. Turner (1998:190) has stated that the Roosevelt phase Saladoans of the Tonto Basin "possessed an external linkage with peoples to the north of Tonto Basin, including the Sinagua and Western Anasazi. Later, in Gila phase times, that connection had ended, and a new dynamic appeared that shifted southward, linking the Tonto Basin Saladoans with the Hohokam communities." In addition to indicating a difference between the early and late Classic periods, this seems to be rather strong, bioarchaeologically based support of the original Gladwin and Haury migration hypothesis—movement of people from the north into the southern Arizona deserts.

There is some evidence of a third phase of reorganization extremely late in the Classic period, during the time labeled the Polvorón phase. In the Phoenix Basin, there was a return to pit house architecture and the abandonment of platform mounds or their conversion to nonceremonial uses (Crown and Sires 1984). This reorganization has been linked to drastic flooding episodes of the mid-to-late A.D. 1300s (Nials et al. 1989). A Polvorón-like manifestation has been found in the Picacho Mountains area (Ciolek-Torrello 1988a) and the Santa Cruz Flats (Henderson 1993), and may also be present in the Tucson area (Ravesloot 1987). Late dates that have been obtained in the former two areas suggest the continuation of this Polvorón-like occupation into the A.D. 1500s (Whittlesey 1996:73), and possibly even later. Most interesting is the use of "loaves" of adobe much like adobe bricks found at the Brady Wash platform mound and a radiocarbon date at that site of A.D. 1650 ± 70 (Gasser and Ciolek-Torrello 1988:533–536), which would place it long after the Spanish *conquistadores* first crossed Arizona and just a few decades before Padre Kino arrived. Again, it is tempting but probably premature to link the late Classic period reorganization with the abandonment of Paquimé around A.D. 1425.

At some point before the arrival of the first Spanish conquistadors in southern Arizona, the Classic period population was reorganized yet again. The great "apartment building" at Casa Grande was an abandoned ruin when Padre Kino visited in the late 1600s (Bolton 1919), and

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a new population was living along the San Pedro and Santa Cruz Rivers. These were the Sobaípurí, a now-extinct subgroup of O'odham people who were long ago absorbed into other O'odham groups. The evidence for the Sobaípurí occupation of the Tucson area has been reviewed in a previous section of the SDCP cultural resources overview, *The People of Southern Arizona, Past and Present*, and will not be repeated here. The archaeological data are at odds with the documentary records, and both the archaeological and archival accounts contrast strongly with the archaeological evidence of Classic period occupation in southern Arizona. We know little of the chronology of this reorganization, the ethnic affiliation of the Protohistoric and early historical-period groups, or details of lifeways.

Worth noting is the presence of flexed burials at the San Xavier Bridge site and their distinctive accompaniments. Located stratigraphically above the late Classic period features, these burials had artifacts suggesting flintknapping tool kits and objects with clear ceremonial uses, including the skeleton of a golden eagle (*Aquila chrysaetos*), *Strombus* shell trumpets, abalone shell from the Pacific Coast, and many other ornamental and ritual objects. Two of the burials had clusters of Sobaípurí-style projectile points, and one cluster was evidently encased in a quiver decorated with mountain lion claws (Ravesloot 1987). These inhumations and accompaniments differ in many ways from Classic period burials and indicate a strong possibility of a different ethnic or cultural connection.

Were the Sobaípurí the descendants of the Classic period peoples? It is impossible to say. Bioarchaeological and linguistic data suggest few if any connections between modern O'odham peoples and the Classic period populations. Turner and Irish (1989) found that neither the pre-Classic nor Classic period Hohokam samples were similar to modern Pima peoples. The linguistic evidence is equivocal, at best. Shaul and Hill (1998:392) were unable "to distinguish between a scenario that sees [O'odham speakers] (or some of them) as the contemporary descendants of participants in the core Hohokam complex or one in which they entered the core Hohokam area at the time of, or after, the Hohokam collapse." The larger Tepiman language stock includes the Upper Piman and Lower Piman and the Northern and Southern Tepehuan languages (Miller 1983). These languages contrast with other linguistic groups and this is often cited as evidence that Piman speakers were relatively late immigrants into southern Arizona, perhaps entering the region shortly after the Classic period occupants had abandoned it.

On the other hand, oral history accounts discuss a close connection between the O'odham peoples and the "Hohokam" of the Classic period. The narratives tell of the O'odham culture hero Elder Brother and his successful attacks on the Hohokam towns along the Salt and Gila Rivers. Concentrating on the great houses of prominent chiefs and leaders who controlled the wind and rain gods, Elder Brother was able to vanquish the Hohokam (e.g., Bahr et al. 1994). Evaluating such oral histories is an extraordinarily complex task in and of its own, but it is worth noting that the O'odham traditions themselves are inconsistent. Some versions posit a connection between O'odham and Hohokam, some do not, and still others make no mention of the Hohokam whatsoever (Bahr 1971; Teague 1993). We may never know the true story, but a search for connections should include all categories of data and not give credence to one kind over the other.

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Today southern Arizona is a vastly different place than it was around A.D. 1200. The people of that time could not possibly have envisioned the changes that would come to the people, the land, and the relationships between humans and their environment. It is the task of archaeology to try to sift from the soil, from the ruined villages, and from the bits and pieces of multivariate evidence the shifting history of southern Arizona and the causes of change. We may never know the tale as it would have been told around the campfires of eight centuries past, and we can be assured that the story will change tomorrow, as new evidence is uncovered—but we can sketch its outlines, and this will have been well worth our time and our effort.

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