

## The Hohokam of Southwest North America

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*The Hohokam reached an apex of sociopolitical development between the twelfth and fifteenth centuries in the Sonoran Desert of North America. Hallmarks of the Hohokam tradition included red-on-buff pottery, large-scale canal irrigation agriculture, and monumental buildings, including ball courts, platform mounds, towers, and Great Houses. The development and elaboration of Hohokam society from their ceramic-producing predecessors during more than two millennia (ca. 1000 B.C. to A.D. 1450, or later) is a remarkable example of an arid land adaptation in the New World. The enigmatic “collapse” of Hohokam society took place shortly before European colonialists entered the North American Southwest in the mid–sixteenth century. Various agents (e.g., floods, disease, warfare) of this event are poorly understood and require additional study. So, too, does the degree of historical continuity between contemporary indigenous peoples and precontact archaeological cultures (e.g., Hohokam) in what is now Arizona and northern Mexico.*

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**KEY WORDS:** archaeology; prehistoric; North America; Southwest.

### INTRODUCTION

Hohokam society achieved a remarkable adaptation to the Sonoran Desert in the North American Southwest. Unlike other archaeological traditions in the region, the Hohokam are notable for their large-scale canal irrigation agriculture, red-on-buff ceramics, and marine shell ornament production and circulation. At its maximum extent, the Hohokam interaction sphere encompassed an area that exceeded 73,000 km<sup>2</sup> (Doyel, 2000, p. 311). Hohokam livelihood was diversified and agricultural production

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was supplemented with foraging and long-distance exchange. In many areas, and for most time periods, Hohokam society centered on sedentary village-based communities along perennial and nonperennial streams and rivers that crosscut the desert valleys of south-central Arizona (Fig. 1).

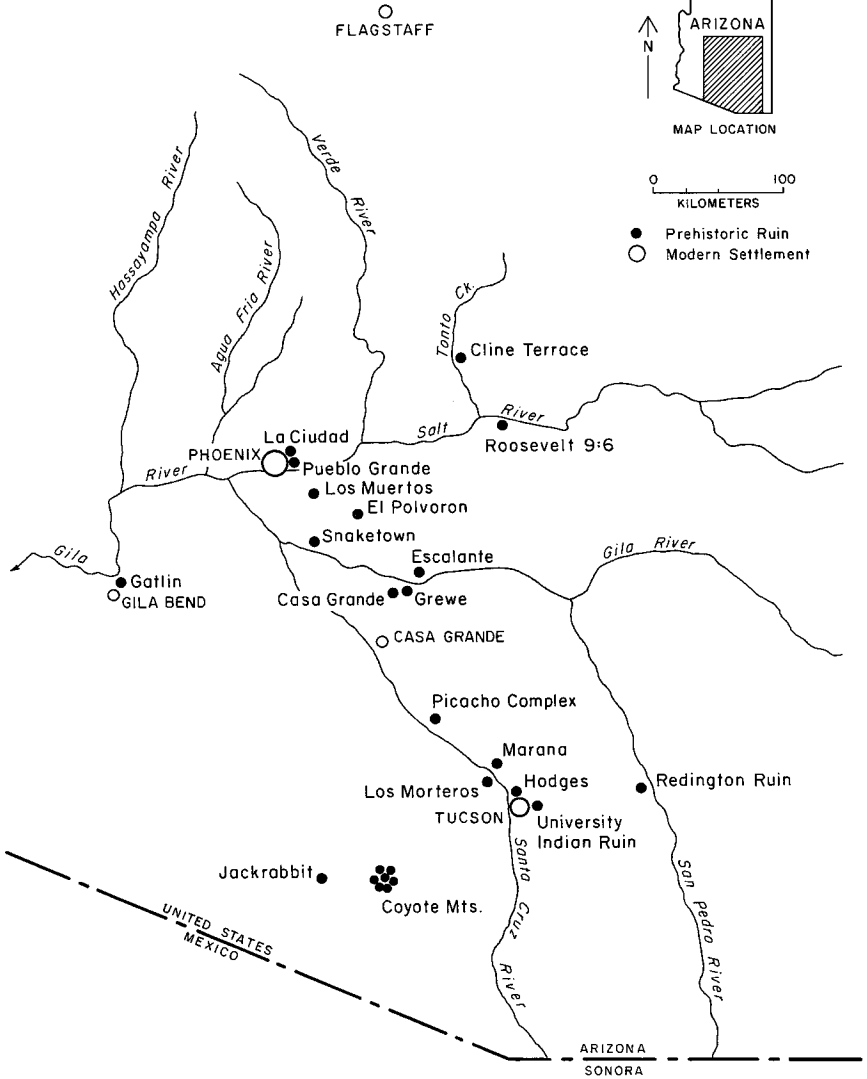


Fig. 1. Locations of selected Hohokam archaeological sites (adapted from Doyel 1996:47, Figure 1).



**Fig. 2.** Great House at Casa Grande under modern protective roof (Photo courtesy of the United States National Park Service).

In the latter part of the Hohokam sequence (i.e., after A.D. 700) multiple settlements surrounded public monuments known as ball courts, platform mounds, and Great Houses (Fig. 2). The precise functions of these facilities are debated although a consensus exists that their associated settlements served as administrative centers for Hohokam society. While their sociopolitical organization remains poorly understood, most archaeologists agree that the Hohokam exhibited some level of inequality in power and status (e.g., Crown and Fish, 1996; Elson, 1998; Elson and Abbott, 2000). Not surprisingly, neoevolutionary labels like “complex chiefdom” are often used to describe Hohokam society, although such terminology is clearly inappropriate and has been the target of recent criticism (e.g., Elson and Abbott, 2000; Harry and Bayman, 2000; Fish and Fish, 2000; Fish and Yoffee, 1996).

In spite of these conceptual problems, Hohokam archaeology has developed greatly over the past 25 years. An overwhelming volume of work has been undertaken in the Hohokam area in the wake of explosive economic development and an infusion of many millions of dollars in cultural resource management (CRM). To name one example, a recent study of one large site in the Salt River valley (i.e., Pueblo Grande) cost more than 3.5 million U.S. dollars and required over 60 person-years of effort (Breternitz, 1994, pp. xi).

Moreover, more than 2000 pages of data and interpretations were generated and published for this individual site (Breternitz, 1994, p. xi).

This paper provides an updated summary of Hohokam archaeology since Crown's seminal contribution to *Journal of World Prehistory* (Crown, 1990). For purposes of clarity and economy, this review focuses on a few major themes and it emphasizes recently published materials. Specific themes of discussion include, but are not limited to (a) Early Villages and Hohokam Origins, (b) Community Organization and Regional Systems, (c) Craft Economies, and (d) Ideology and Worldview. This review also considers societal changes that occurred immediately before and shortly after European contact. Before I begin this review, however, I briefly summarize the environmental and historical context of Hohokam archaeology.

## BACKGROUND

### Geography and Ecology

The Hohokam tradition was one of four major cultural manifestations that archaeologists recognize in the North American Southwest: Hohokam, Mogollon, Anasazi, and Patayan. Contemporary archaeologists are divided on whether these manifestations represent "cultures," "ethnic populations," or "environmental adaptations" (e.g., Cameron, 1998; Clark, 1995, 2001; Lekson, 1993; Reid, 1997; Speth, 1988); yet archaeologists continue to use these culture area designations on a routine basis. There is a consensus, however, that they do reflect differences in ceramic technology, architectural forms, and modes of subsistence and settlement.

The earliest Hohokam archaeology took place more than a century ago at sites with large-scale irrigation canals around the confluence of the Gila and Salt River valleys (e.g., Cushing, 1890, 1995; Fewkes, 1912; Gladwin *et al.*, 1937; Haury, 1945), in what is now called the Phoenix Basin (Fig. 3). Most Hohokam work was conducted in the Phoenix Basin and Gila River valley until the 1970s, and this geographic focus reinforced views that the Phoenix Basin was the "core" of Hohokam society. Work since the 1970s suggests that Hohokam sites are also located in a vast "periphery" that extends in all directions. These peripheral areas center on intermittent streams and perennial rivers, including the Santa Cruz, the San Pedro, the Tonto Basin, the Verde, the Agua Fria, and the Hassayampa River valleys. Many of these valleys fall within a so-called "Transitional Zone" (Whittlesey and Ciolek-Torrello, 1997) between the lower and upland Sonoran Deserts; their archaeological records differ, in some respects, from the core. This archaeological, geographical, and ecological variation suggests that Hohokam

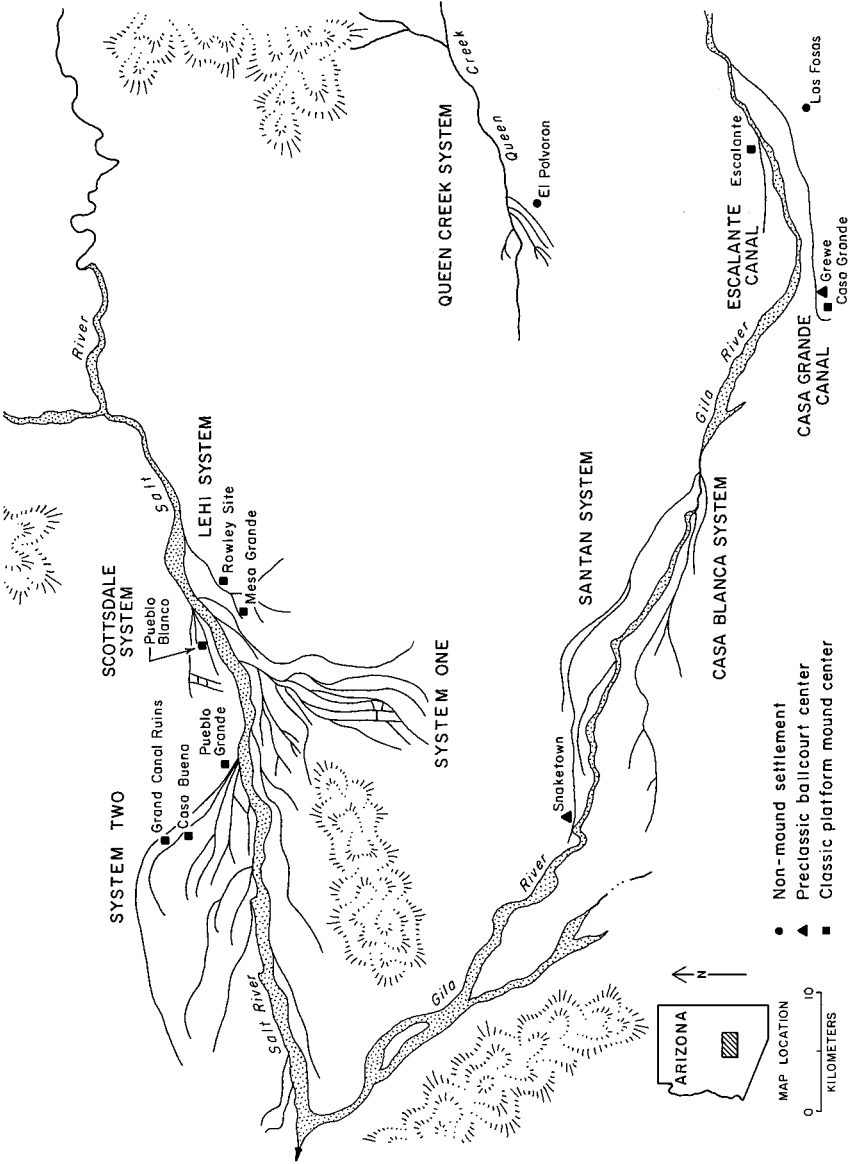


Fig. 3. Primary irrigation canals and selected archaeological sites in the Salt and Gila River valleys.

society comprised different “local systems” or “ethnic” populations” that occupied south-central Arizona (e.g., Ahlstrom and Roberts, 1995; Elson *et al.*, 2000; McGuire, 1991, p. 371; Slaughter and Roberts, 1996; Stark *et al.*, 1995a,b; Wilcox and Sternberg, 1983).

The Hohokam are widely known by archaeologists for their large-scale canal irrigation farming in the desert of south-central Arizona. The Sonoran Desert is characterized by relatively high temperatures and low rainfall, and perennial water was present only in the major river valleys (i.e., Salt, Gila, Verde, and San Pedro). Annual precipitation averages less than 15 inches (400 mm) in most areas, and a few locales (e.g., Gila Bend) receive less than 6 inches (150 mm). Rainfall is seasonal and bimodal and the greatest concentrations fall during summer and winter (Fish and Nabhan, 1991, p. 35).

Overall, the Sonoran Desert is a resource-rich environment (Fish and Nabhan, 1991, pp. 51–52) and storable foods from fruit-bearing cactus and seed-bearing trees and shrubs offered Hohokam communities the opportunity to accumulate sizable surpluses (Fish and Nabhan, 1991; Rice, 1992, pp. 15–17). Economic plant resources include a variety of seed-bearing trees and shrubs, along with fruit-bearing cactus. Small and large fauna included large game (deer and bighorn sheep) and small game (e.g., rabbits), as well as riverine resources like fish and mussels. Although wood for fires, house construction, and crafts was less abundant in the Sonoran Desert than in some areas of the Chihuahuan Desert (Fish and Fish, 1999, p. 35), ironwood, paloverde, mesquite, and cottonwood trees were concentrated along the margins of drainage systems.

### **Brief History of Research**

Archaeological exploration of the Sonoran Desert in the late nineteenth and early twentieth centuries (Bandelier, 1890, 1892; Cushing, 1890; Fewkes, 1912; Mindeleff, 1896) was generally ignored as Ancestral Puebloan (formerly “Anasazi”) sites located on the Colorado Plateau and in the San Juan Basin. The Ancestral Puebloan sites captured the imagination of early researchers like Neil Judd (1922), at Chaco Canyon, and Jesse W. Fewkes (1923), at Mesa Verde. Subsequent work in the 1930s by the Gila Pueblo Foundation led to the formulation of the Hohokam concept by Harold Gladwin and his associates (Gladwin, 1928, 1948; Gladwin and Gladwin, 1935; Gladwin *et al.*, 1937). Work in the region intensified at sites like Snaketown, Grewe, and Casa Grande during the 1930s and 1940s. The Arizona State Museum also launched the Papaguera Project on what is now the Tohono O’odham Reservation west of Tucson (e.g., Haury, 1950). Archaeological research on this nonriverine territory was undertaken to

balance a prior emphasis on sites in the Phoenix Basin core (Haury, 1950, pp. 13–15).

Hohokam archaeology in the core then waned, briefly, until Emil Haury's second expedition to Snaketown in the 1960s (Haury, 1976). Haury's goal in this work lay in refining the ceramic chronology and/or reevaluating the potential relationship between Hohokam society and Mesoamerica (e.g., Di Peso, 1974; Schroeder, 1966). The evidence for Hohokam interaction with Mesoamerica was substantial and includes copper bells, ball courts, tropical birds, and the largest canal irrigation system north of Peru (Doolittle, 1990). Throughout this period, Sonoran Desert archaeology in Arizona focused on establishing a detailed cultural–historical framework for the Hohokam tradition.

With few exceptions, almost all Hohokam archaeology since 1970 has taken place under the rubric of cultural resource management (CRM). Although CRM research has been sponsored by federal, state, and municipal government agencies, in tandem with economic development, the largest amount of research has focused on the construction of public water management through the construction and maintenance of dams, canals, and related facilities. The abundant funding resources available for such research has enriched Hohokam archaeology immeasurably; a sample of sites in most sectors of the Sonoran Desert has now been thoroughly investigated and reported, and more than 2500 chronometric dates have been accumulated (Deaver, 1997). The remainder of this essay focuses on synthesizing our current knowledge of the Hohokam. Brief comments on the Hohokam chronology are a necessary precursor to a discussion of recent archaeology.

### **Calibrating the Hohokam Sequence**

The Hohokam chronology was first devised by Gladwin *et al.* (1937) at the Gila River valley site of Snaketown (Fig. 4). The Gladwin chronology was based on stratigraphic analyses, without the benefit of chronometric dating. Refining the Hohokam chronology has been a fundamental goal of research in the region for decades (e.g., Dean, 1991; Deaver, 1997; Eighthmy and McGuire, 1988; Elson, 1996; Haury, 1976; Plog, 1980; Schiffer, 1986) since dendrochronological methods (i.e., tree-ring dating) have limited utility in the Sonoran Desert sites (cf. Dean *et al.*, 1996; Ahlstrom and Slaughter, 1996). Unlike Ancestral Puebloan sites on the Colorado Plateau, which frequently contain datable tree-rings specimens (especially conifers) that yield precise dates, Hohokam sites are often dated using radiocarbon and archaeomagnetism (e.g., Henderson, 1987a,b; LaBelle and Eighthmy, 1995).

Time Frame	Regional Periods Used in This Paper	Conventional Periods	Phoenix Basin (Dean, 1968)	Tucson Basin (Waltace and Craig, 1968)	Tonto Basin (Eison, 1966)	Lower Verde (Deaver, 1997, p. 459)	Papaqueria (Ahstrom et al., 2000, p. 83)	
AD 1450	POST-CLASSIC	Post-Classical	Polveron	Tucson	Gila		Sells	
		Late	Civano					
AD 1150	CLASSIC	Classical	Soho	Tanque Verde	Roosevelt Miami	Period 3		
		Early			Ash Creek	Period 2		
AD 700	PRE-CLASSIC	Sedentary	Sacaton	Rincon	?		Vamori	
					Sacaton		Hiatus	
		Colonial	Santa Cruz	Rillito	Santa Cruz			
			Gila Butte	Canada del Oro	Gila Butte		Period 1	Gila Butte
			Snaketown	Snaketown	Snaketown	Snaketown		Snaketown
			Sweetwater		?	?		
			Estrella					
			Vahki	Tonolita		Early Ceramic Horizon		
			Red Mountain	Agua Caliente				
					Late			
AD 400			Cienega Phase					
800 BC			Early					
1000 BC								
1200 BC			San Pedro Phase					
AD 1	FORMATIVE							

**Fig. 4.** Hohokam chronologies for south-central Arizona (adapted from Deaver 1997, Figure 12.6, p. 459). Note the compressed scale of the pre-AD 1 time frame.



These “floating” chronologies also use, but do not entirely rely upon, ceramic design–style seriations (e.g., Wallace, 2000). Less frequently, Hohokam sites may be cross-dated with nonlocal tree-ring–dated ceramics from the Colorado Plateau (e.g., Crown, 1987; Doyel, 1993a; Elson, 1996; Haury, 1976).

The review follows prior syntheses of Hohokam archaeology (e.g., Doyel, 1991a; Fish, 1989) by using a temporal framework to organize its discussion. Any pan-regional examination of Hohokam archaeology is complicated by the rich variety of local phase sequences that have been devised for individual drainage systems and river valleys. Thus, although this review is organized into four major blocks of time (i.e., Formative, pre-Classic, Classic, and post-Classic), it also integrates periods (i.e., Pioneer, Colonial, Sedentary, and Classic) from the original Snaketown chronology, as well as local phase names (Fig. 4).

While some local variation is masked by using these broad periods, this review examines general Hohokam trends rather than provide detailed phase-by-phase accounts of developments. I begin this review by summarizing recent discoveries concerning the development of Hohokam society from their ceramic-producing predecessors in the Formative period.

### **FORMATIVE PERIOD (1000 B.C.–A.D. 700)**

The Formative period spanned nearly 2000 years, between ca. 1000 B.C. and A.D. 700, and is sometimes called the “Early Agricultural period” since the development of agriculture and village life that foreshadowed Hohokam society occurred during this time. This agricultural adaptation was a flexible and enduring one throughout the prehistoric period (Huckell, 1996, p. 343). Although the Early Agricultural period is currently best documented in the Tucson and Tonto basins (e.g., Clark, 1995; Deaver and Ciolek-Torrello, 1995; Elson *et al.*, 1995; Mabry, 2000) it is also being identified in the northern Phoenix Basin (e.g., Hackbarth, 1999).

This multiphase period also witnessed the emergence of craft economies that developed into distinctive hallmarks of the Hohokam in the pre-Classic period: the production and circulation of red-on-buff ceramic containers and fired-clay figurines, and the fabrication of ornaments with marine shell, minerals, and obsidian (e.g., Ferg, 1997; Gregory, 1997; Heidke, 1998, 1999a,b; Roth, 2000; Vokes, 1997). Bow-and-arrow technology also developed during this period, perhaps as early as 800 B.C., indicating that dart points were no longer used after the adoption of agriculture (Sliva, 1999, p. 339). Evidently, the inception of the Formative period varied by several centuries in

different areas of south-central Arizona. Thus, accumulating further knowledge of this early period is essential for framing and answering questions about the genesis and development of Hohokam society.

### Early Villages and Hohokam Origins

Competing interpretations of Hohokam origins once emphasized local–internal developments or external influences from migration or diffusion (e.g., Di Peso, 1956; Gladwin, 1948; Haury, 1976). The relatively early Hohokam use of large-scale irrigation canals, along with other evidence at Snaketown, Led Haury (1976) to conclude that a Mesoamerican migration to Arizona must have taken place in the Pioneer period (hence the name “Pioneer”) as early as 300 B.C. This perspective represented a reversal of Haury’s prior view of a local origin from a pre-Ceramic horizon known as the Cochise culture in southeast Arizona (Haury, 1943).

Other researchers concluded instead that Mesoamerican influence in the Sonoran Desert was only visible after A.D. 750, when ball courts, platform mounds, and other Mexican-derived goods like copper bells and tropical birds appeared in the archaeological record (e.g., Di Peso, 1956; Gladwin, 1948; Schroeder, 1947). According to Di Peso (1979, p. 92), Hohokam colonialists dominated an indigenous pottery making culture called “O’otam.” After the 1960s, theoretical influences of processual archaeology increased skepticism that a direct migration of immigrants from Mesoamerica was a defining factor in Hohokam origins (e.g., Wilcox, 1979; Plog, 1980). Archaeologists of this era formulated alternative explanations that focused on local cultural–ecological adaptations, rather than cultural–historical migrations and diffusion.

Although the precise genesis of Hohokam culture remains a matter of debate, recent findings along the Santa Cruz River in the Tucson Basin offer persuasive evidence for local origins of the Hohokam (Whittlesey, 1995, p. 467). Work in the 1990s revealed ninth to fifth century B.C. (Early Cienega phase) ceramic-bearing pithouse villages and irrigation canals in the middle Santa Cruz River valley of the Tucson Basin (Heidke, 1999a,b; Mabry, 1997, 2000; Mabry *et al.*, 1997). These findings indicate that extant models (e.g., Cable and Doyel, 1987) of a Hohokam genesis in the Phoenix Basin, with a subsequent radiation southward, must be revisited.

Prior to these new findings, regional evidence for a local origin of Hohokam culture was never abundant, although Phoenix Basin sites like Pueblo Patricio did yield evidence of a transitional phase (i.e., Red Mountain) between the pre-Ceramic horizon and the Pioneer period (Cable and Doyel, 1987). The location of some Red Mountain phase occupations underneath

Vahki phase components indicates a level of continuity between pre-Ceramic and Ceramic period Hohokam in the Salt River valley (e.g., Cable and Doyel, 1987; Henderson, 1995). Current chronometric dates for the Red Mountain phase generally span a period between A.D. 1 and 450 (Mabry, 2000, p. 7).

New findings in the middle Santa Cruz River valley confirm that the transition from a foraging lifeway to one centered on residential villages took place almost 1000 years earlier in the Tucson Basin than the original Red Mountain phase proposed for the Phoenix Basin (Morris, 1969), the Early Ceramic horizon in the Tonto Basin (Stark, 1995), or the Aqua Caliente phase proposed for the Tucson Basin (Ciolek-Torrello, 1995). At present, the earliest communities in the Tucson Basin predate, and may have been the source of, Red Mountain phase communities in the Phoenix Basin that emerged several centuries later (Mabry, 2000).

Given the sheer abundance of economic resources in riverine areas of the Sonoran Desert, it is not surprising that sedentism would have emerged prior to the emergence of well-developed agriculture along major drainage systems like the Santa Cruz River (Fish *et al.*, 1990). As yet, little or no evidence of the Formative period has yet been documented in the Lower Verde river valley (Ciolek-Torrello *et al.*, 1997, p. 664). Similarly, only limited evidence of this period is apparent in the Papaguera south and west of the Phoenix and Tucson basins (Ahlstrom *et al.*, 2000, pp. 71–84; Haury, 1950, pp. 341–361).

These new findings confirm that the theoretical underpinnings of the term “Hohokam culture” must be refined. The original formulation of this concept was cultural–historical in its orientation (Gladwin and Gladwin, 1934). The term “Hohokam” referred to a normative constellation of traits that included canal irrigation agriculture and red-on-buff ceramics, then ball courts, and later red-on-brown ceramics and platform mounds. Evidence for surprisingly early pre-Pioneer period canal irrigation and undecorated ceramics (and later Vahki phase redware ceramics) in the Sonoran Desert illustrates problems in trying to identify the precise time of Hohokam origins.

The nonsynchronic emergence of these phenomena also underscores problems in using the “Hohokam culture” concept. Some researchers emphasize specific technological traits (e.g., Haury, 1976) or ecological adaptations (e.g., Grebinger, 1971; Weaver, 1972), whereas others consider ideological practices (e.g., Preucel, 1996; Wallace *et al.* 1995; Wilcox and Sternberg, 1983). Regardless of terminological preference or theoretical perspectives used by archaeologists, culture and society developed continuously in the Sonoran Desert, and local populations adopted different technologies and ideological perspectives at varying points in the sequence.

## Early Agriculture and Ceramic Technology

Many parts of the world exhibit a lag between the beginnings of domestication and its ultimate adoption as a foundation of a sedentary subsistence economy. In some respects, this was true in south-central Arizona, except that sedentary villages emerged much earlier in the region than many archaeologists once believed (see Fish *et al.*, 1990, for a notable exception). Current dates for early maize agriculture from several sites in the Sonoran Desert (e.g., Los Pozos, Las Capas, Milagro, Tumamoc Hill) range between 1700 and 1200 B.C. (Fish *et al.*, 1986; Huckell *et al.*, 1995; Stevens, 1999, p. 5). The presence of bell-shaped storage pits and irrigation canals at early San Pedro phase (1200–1100 B.C.) sites (e.g., Las Capas) underscores a substantial degree of sedentism and reliance on agriculture (Mabry, 1999, p. 14) well before Hohokam culture emerged.

In addition, some early agricultural sites in the Sonoran Desert were rather large: Santa Cruz Bend yielded between 500 and 600 structures, and Los Pozos had between 700 and 800 structures (Gregory, 1999, pp. 14–15). Although Gregory (1999, p. 15) argues that contemporaneous populations at villages like Los Pozos were relatively small (perhaps on the order of 15 to 40 people), he also adds that there is convincing evidence that they were occupied year-round.

Ceramics at so-called Early Agricultural period (Cienega phase) sites put their earliest production as early as 800 B.C., and perhaps even 1000 to 900 B.C., in the Santa Cruz River valley (Heidke, 1998, 1999a,b, p. 311; Heidke and Ferg, 1997; Kisselburg, 1993). Ceramic production in south-central Arizona apparently began at least 700 years earlier than what Haury (1976) once claimed for early (Vahki phase) Hohokam pottery (Heidke, 1999a,b). Early ceramic-bearing sites in the Santa Cruz Valley with pit structures, large storage pits, abundant midden accumulations, and burials suggest sedentism, agriculture, and ceramics appeared together in the Sonoran Desert region, and that this shift occurred earlier than researchers once assumed (Heidke, 1999a,b, p. 312).

In spite of technological differences between this early ceramic tradition and later Tucson Basin Hohokam ceramics (Heidke, 1999a,b, p. 313), technical studies suggest that Early Agricultural period (e.g., Cienega phase) ceramics were produced by the same population that eventually developed Hohokam red-on-buff and red-on-brown pottery. This hypothesis is arguably supported by significant quantities of processed iron oxides (or “ochre”) in some early ceramic-bearing sites in the Santa Cruz River valley (Heidke, 1999a,b, p. 313).

As noted previously, debates concerning Hohokam origins hinge on the classificatory criteria commonly used to define Hohokam culture:

red-on-buff and/or red-on-brown ceramics and fired-clay figurines. While ceramic style and technology distinguishes Hohokam from other late pre-historic Southwest traditions (e.g., Mogollon, Anasazi, Patayan), the fact that both Hohokam and Mogollon communities manufactured undecorated ceramics (often called “brown wares”) has suggested a shared origin of these two traditions to some archaeologists (e.g., Whittlesey, 1995). This and other evidence reveal that the divergence of “Hohokam” and “Mogollon” cultures was not complete until the Formative period had terminated. Moreover, other artifacts that are often used to distinguish the Hohokam from their predecessors are now being discovered in surprisingly early (“pre-Hohokam”) contexts.

### Religion and Ritual

Apparent evidence of ritual and religious behavior during the Formative period (e.g., Late San Pedro phase and Cienega phase) includes caches of fired-clay figurines, marine shell ornaments, quartz crystals, stone pipes, fossils from Pleistocene fauna, painted artiodactyl bones, and nonlocal minerals and stones (e.g., Ferg, 1997, pp. 8–9; Gregory, 1999; Huckell, 1990; Huckell *et al.*, 1995). Notably, many of these items (e.g., cruciforms) were once thought to date to the pre-Classic and/or Classic periods. Their use during (and even before) the Formative period (e.g., Cienega phase) offers yet another example of typical “Hohokam artifacts” predating the Hohokam horizon. The heritage of Hohokam craft economies and ritual may be much deeper than many archaeologists once believed. The widespread circulation of marine shell ornaments and other nonutilitarian objects during this early period foreshadowed the emergence of “regional systems” that characterized subsequent periods of the Hohokam sequence.

Large buildings near the center of some early villages were likely used for communal religious ceremonies, or as places where lineage councils held meetings (Mabry, 2000, p. 3). The possibility that Formative period sites with communal buildings were local centers of a broader regional system merits further empirical and theoretical investigation. It is interesting that such structures contained reconstructible small ceramic bowls: researchers like Heidke and Stark (in press) hypothesize that these containers’ communal structures were used for consuming ceremonial beverages. An analogy for such behavior is found among the contemporary Tohono O’odham, potential descendants of the Hohokam. The Tohono O’odham used gourd cups in a saguaro wine ceremony to commemorate the onset of the annual agricultural cycle (Underhill, 1938, pp. 21–41).

The Formative period archaeological record also contains rock art, which may also be expressions of ritual. Not surprisingly, geometric elements common in so-called “Western Archaic Period” rock art were sometimes adopted by later Hohokam artisans after A.D. 700. However, the addition of “naturalistic” motifs and “life-forms” after A.D. 750 (Gila Butte phase) signaled a shift in rock art and ceramic design iconography (Smith, 2000; Wallace *et al.*, 1995, pp. 601–602). Although many archaeologists find interpretations of rock art representations to be problematic, geometric rock art is used to encode hallucinogenic visions of shamans in many native cultures (Whitley, 1997). Some researchers argue that such behavior is expressed in Sonoran Desert petroglyphs of this period of time (e.g., Empie, 1999, p. 258; Schoonover and Virden, 1999, p. 231).

### **PRE-CLASSIC PERIOD (A.D. 700–1150)**

The pre-Classic period began ca. A.D. 700 and included the terminal phase (i.e., Snaketown) of the Pioneer period, as well as the Colonial and Sedentary periods of the Phoenix, Tucson, and Tonto Basin sequences. The pre-Classic period contains the robust archaeological signatures that archaeologists most often equate with Hohokam culture: red-on-buff and red-on-brown ceramics, widespread construction of ball courts, cremation burials, and expanded systems of large-scale irrigation (Wallace *et al.*, 1995). The pre-Classic period was especially notable for the widespread production and/or distribution of a ceramic type from the Phoenix Basin called Snaketown Red-on-Buff.

In the cultural–historical framework devised by Gladwin *et al.* (1937) and elaborated by Haury (1976), this period witnessed a “colonization” of the Hohokam periphery of south-central Arizona by immigrants from the Salt and Gila River valleys. After a hiatus of several decades archaeologists have turned once again to the study of migration and ethnicity (Reid, 1997). This interest in tracking small-scale population movements (e.g., Clark, 2001; Rice, 1998a; Stark *et al.*, 1995a,b), which complements work on large-scale “regional systems” that may have included culturally diverse populations, still pervades research in Southwestern North America (e.g., Hegmon, 1999). During the latter part of the pre-Classic period, Hohokam society crystallized into a “regional system” (Wilcox and Sternberg, 1983) that spanned a vast territory of south-central Arizona. Although marine shell ornaments, copper bells, and tropical birds were acquired from northern Mexico, archaeologists have not identified strong evidence of Hohokam settlements south of the international border.

### Community Organization and Regional Systems

The internal organization of Hohokam settlements, as well as their local and regional distribution, shifted notably with the onset of the pre-Classic period. Although incipient “house groups” characterized villages in the Formative period (Huckell, 1995; Mabry and Archer, 1997), site structure was more formalized in the pre-Classic period. The site of Snaketown offers a particularly vivid illustration of internal domestic organization (Fig. 5): groups of individual houses were clustered around courtyards or plazas (Howard, 1985; Wilcox *et al.*, 1981). This pattern is a possible outgrowth of the Formative period practice, along the Santa Cruz River, wherein houses were often clustered around a large communal structure (Mabry, 2000).

In the pre-Classic period, these courtyard groups often shared outside cooking ovens, formal refuse middens, and cemeteries. Sometimes called “village segments” (Howard, 1985) or “precincts” (Doelle *et al.*, 1987, p. 83), Doyel (1991a, p. 249) suggests that these units may represent corporate descent groups. Within larger settlements such as Snaketown, multiple village segments surrounded a large central plaza (Wilcox *et al.*, 1981). These general patterns are by no means peculiar to Snaketown; they have been identified repeatedly at Formative period settlements in the Phoenix and Tucson basins (e.g., Craig, 2000; Doelle *et al.*, 1987; Huntington, 1988; Jones, 1998, p. 211; Rice, 1987a; Wallace, 1995), Tonto Basin (e.g., Elson and Lindeman, 1994), and the Lower Verde (e.g., Klucas *et al.*, 1997, pp. 512–516). Moreover, such plazas probably originated and developed from much earlier plazas that were used in Formative period settlements along the Santa Cruz River (Mabry, 2000).

On a local scale, groups of sites along individual canals are commonly referred to as “irrigation communities” (e.g., Doyel, 1976, 1980, p. 31). Settlements in these communities were presumably interrelated with respect to their economies and social organization. Wilcox (Wilcox and Sternberg, 1983, pp. 195) especially emphasizes the integrative functions of settlements with ball courts (e.g., Snaketown), since public ceremonies would have taken place at such locales. In the Phoenix Basin, sites with ball courts were roughly 5.5 km apart on canals (Wilcox and Sternberg, 1983, p. 195). In the Tucson area, sites with ball courts along the Santa Cruz River are only about 3.0 km from one another (Fish and Fish, 1994:124). In spite of this closer spacing, Tucson Basin communities also incorporated vast desert areas away from the river, and their overall territories were much larger (Fish and Fish, 1994, p. 125). Settlement pattern studies have provided an important tool for making economic and organizational comparisons between core and noncore Hohokam communities (e.g., Fish and Fish, 1994).

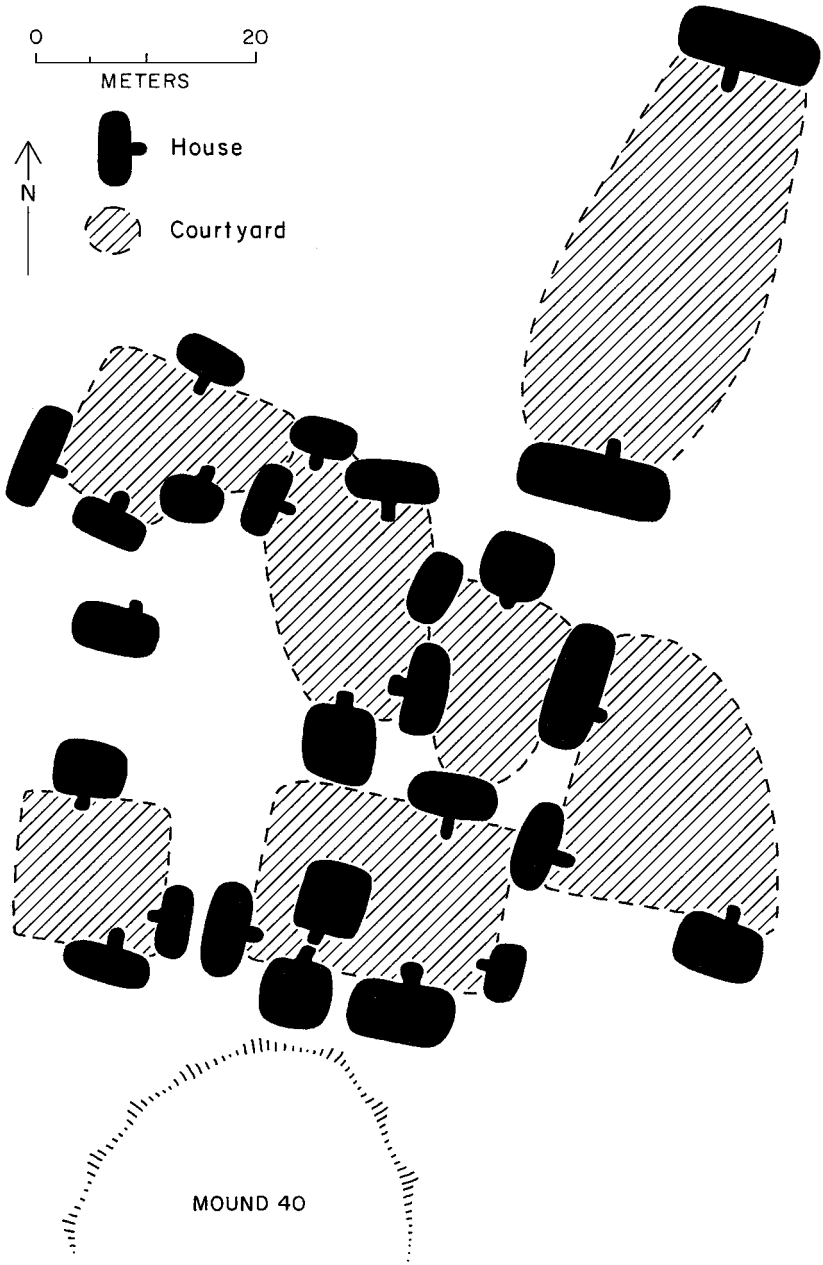


Fig. 5. Plan of selected courtyards and their houses at Snaketown (adapted from Wilcox *et al.*, 1981).



On a regional scale, Hohokam settlements were established in a greatly enlarged territory after A.D. 700 (during the so-called “Colonial” period). Earlier settlements (i.e., Pioneer period) were almost entirely concentrated along the major rivers like the Salt and the Gila, Santa Cruz. Settlements occupied between A.D. 700 and A.D. 1150 with Red-on-Buff ceramics and ball courts were located in upland areas south and west of Tucson and Phoenix, and between Phoenix and the Flagstaff areas. The social and ecological factors behind the “colonization” of areas outside the Phoenix Basin core are somewhat illusive (Clark, 2001). Population growth, increased rainfall, and/or periodic flooding of canal systems in the Phoenix Basin core might have stimulated the Hohokam to diversify both their subsistence base and their contacts with outside groups (Crown and Judge, 1991, p. 297). Residential occupation of noncore areas offered Hohokam communities more direct access to desert resources away from perennial streams.

For reasons as yet unknown, no ball courts have been identified at pre-Classic period settlements in the Tonto Basin or the Papagueria, even though these areas participated in the Hohokam regional system through long-distance exchange (see for example, Doyel, 1998, pp. 238–239). Although these areas maintained some sort of contact with Hohokam society, they did not adopt the ball court ideology. In the Phoenix and Tucson basins, as well as the Verde Valley, settlements with ball courts functioned as community centers for public ceremonies, rites of passage, and ceremonial exchange (Wilcox and Sternberg, 1983). This new regional system included elaborate mortuary rituals during which some cremation burials were interred with stylized craft goods.

Although archaeologists like Emil Haury (1950) once argued that dual traditions (“Riverine” versus “Desert” Hohokam) developed in the Sonoran Desert, subsequent research demonstrated the limitations of this approach (Masse, 1980). In the Papagueria, for example, many so-called “Desert Hohokam” settlements were apparently seasonal occupations for riverine-based populations from the Gila River valley (Masse, 1980). Groups of settlements along the perennial Salt and Gila rivers, called “irrigation communities” (Schroeder, 1966), relied on crops watered by canals, whereas residential communities away from perennial streams in the western Hohokam area relied on various forms of dry farming, foraging, and systems of craft production and long-distance exchange.

What now seems clear is that many communities integrated both riverine and nonriverine agriculture into their economic systems, even those strictly based in nonriverine locales. Residential communities in the Papagueria, for example, were presumably more mobile (Haury, 1950), although the degree of this mobility is contested (e.g., Bayman, 1993, 1996a; Fish *et al.*,

1990; Wallace, 1995). Haury (1950) relied on direct historic analogy with nineteenth century Tohono O'odham Indians to construct his interpretation of residential mobility in the Papaguera. The Papaguera lacked perennial streams for canal irrigation, and water storage reservoirs used by nineteenth century Tohono O'odham also dried for several months a year (Castetter and Underhill, 1935).

Remarkably, however, biological samples (e.g., ostracodes, pollen, macrobotanical) from prehistoric reservoirs reveals that the Hohokam stored water on a long-term and perhaps perennial basis (Bayman, 1996a, 1997; Bayman and Fish, 1992; Bayman *et al.*, 1997). Cattail pollen from sites bordering former cienegas (ponds) in the Papaguera also imply that year-round water sources were present away from perennial streams (Dart, 1994, pp. 357–358). Moisture-retaining sand dunes in some areas also conserved water for agriculture (Henderson, 1993, p. 594). This, and other work (e.g., Fish and Nabhan, 1991, p. 51; Gasser, 1990, pp. 8–11), suggests that interpretations of Hohokam mobility in the Papaguera must be reconsidered. Although interpretations of sedentism vary, there is widespread agreement that the Hohokam were more sedentary than populations elsewhere in the North American Southwest (Dean *et al.*, 1994, p. 70).

Estimating prehistoric populations is always difficult, and debates concerning regional and site-specific demographic interpretations of the pre-Classic period remain unresolved. Nonetheless, broad trends can be documented, and some researchers have argued for an acceleration in population growth beginning ca. A.D. 700 that lasted until ca. A.D. 1100 or so (Dean *et al.*, 1994, p. 72). Most population estimates for the pre-Classic period are site-specific (Doelle, 2000, for exception), unlike estimates made for the post-twelfth century populations. Past estimates of peak populations at Snaketown range between 300 (Wilcox, 1991, p. 262) and 2,000 (Haury, 1976, p. 356; see also Abbott, 1985).

Subsequent reconstructions of the Grewe site, which lies immediately upstream from Snaketown offer compelling evidence that population at Grewe probably was as high as 1,000 by the late A.D. 700s (Craig, 2000, p. 26). Novel methods used in Craig's reconstruction (Craig, 2000) suggest that Snaketown's population was also considerably higher than once believed (i.e., Wilcox, 1991, p. 262). Unlike Haury (1976), Craig included counts of both well-preserved and poorly preserved houses when he calculated his population estimates. Relatively high populations at ball court sites like Snaketown and Grewe provide support for Craig's contention that site-size hierarchies and increasingly strong administrative structures characterized the pre-Classic period (Craig, 2000, p. 27).

### Subsistence Economies

Pre-Classic period subsistence varied among areas despite a common emphasis on agricultural production. Maize cultivation was important in both the core and the periphery (Gasser and Kwiatkowski, 1991, pp. 422–425), and the technology of its irrigation included canals, as well as less labor-intensive means. With canal irrigation, at least two maize crops could be produced annually (Van West and Altschul, 1997, p. 389). Archaeological signatures of pre-Classic period water management include canals (e.g., Howard, 1993), stone check dams and rock piles (e.g., Fish *et al.*, 1985, 1992), wells (Haury, 1976), and earthen water-storage reservoirs (e.g., Bayman, 1993; Bayman and Fish, 1992; Bayman *et al.*, 1997; Raab, 1975).

Floodwater farming along rivers and alluvial fans is implied by water management features and low-density artifact scatters (Fish *et al.*, 1992). Canal irrigation systems in the Phoenix Basin core were already largely in place by A.D. 800 (Howard, 1993), although some facilities increased in size through time. The addition of irrigation on terraces and locales further away from floodplains during the pre-Classic period foreshadowed developments in the early Classic period. In the Phoenix Basin, for example, canals and settlements initially located near the river eventually expanded onto terraces (Doyel, 1991a, p. 247). An expansion of upland agriculture likewise took place in the Tonto Basin (Van West *et al.*, 2000, p. 42) during the Sedentary period.

Plant use varied over time during the pre-Classic period (see Van West *et al.*, 2000 for example). Differences in plant consumption within the regional system could be due to differences in preferences of local communities and/or ethnic groups, microenvironmental differences among areas, and sampling bias (Gasser and Kwiatkowski, 1991, p. 447; Gasser, 1980). Evidence for notable temporal changes in maize dependence has not yet been detected (Gasser and Kwiatkowski, 1991, p. 443), and yet agave cultivation and consumption does illustrate some within-region variability. Agave cultivation, for both food and fiber, was evidently important at several mid-Colonial sites in the Salt River valley (Gasser and Kwiatkowski, 1991, p. 441). Agave cultivation requires less water than maize cultivation and has been documented at archaeological sites within and beyond the Tucson and Phoenix basins (Fish *et al.*, 1985). Cotton, beans, squash, and other cultigens (e.g., barley grass, tobacco, weedy annuals) are spotty in their geographic distribution and less frequently documented in the archaeological record. Beans, for example, are most common in the Tucson Basin where moisture was relatively abundant and a local preference apparently favored its cultivation (Gasser and Kwiatkowski, 1991, pp. 430–431).

Foraging supplemented the Hohokam diet in several respects. Much like the Formative period, foraging still focused on seed-bearing trees and shrubs and fruit-bearing cacti, as well as animal hunting (e.g., rabbit, deer, bighorn sheep). Preliminary processing of plant resources is documented at small locales within catchment zones surrounding residential villages (e.g., Hohmann, 1999, p. 90; Wright, 1999, p. 108). Patterns of Hohokam hunting varied across different areas in the pre-Classic period, with some notable general trends. For example, some upland sites in the "Desert Transitional Zone" contained more artiodactyls (deer) than lagomorphs (rabbits) in the pre-Classic period, and at least some of these locales were used for specialized hunting (Bayham, 1985).

Moreover, populations at some large pre-Classic period settlements, such as Snaketown, apparently had access to larger game than did neighboring small sites (Szuter, 1984, 1991). However, rabbits were the most frequent Hohokam prey, and habitat modification by human occupation and agriculture affected the distribution of jackrabbits and cottontails: jackrabbits frequented open gardens or fields, whereas cottontails preferred areas like washes with dense vegetation (Szuter, 1991). Rodents were another source of Hohokam food and their bones comprised 40% of the faunal assemblage at the Phoenix Basin site of La Lomita (Mitchell and Motsinger, 1997, p. 107). Freshwater clams (*Anadonta* sp.) from the Salt River and Hohokam canals were also probably consumed, given their discovery in archaeological contexts (Mitchell and Motsinger, 1997:107). A variety of fish, amphibians, reptiles, and birds were evidently also consumed by Hohokam in the Tonto Basin, and probably elsewhere (Van West *et al.*, 2000, p. 37, Table 2.2). A decline in the availability of large game in the Late Colonial and Sedentary periods may account for the relatively heavy reliance on rabbits and rodents at some sites (Schroeder and Clark, 1999, p. 167).

In many respects, the organization of subsistence technology in the Formative period reflects a continuation and elaboration of strategies and systems that originated in the pre-Classic period. Canal irrigation certainly has its origin in this earlier period. However, an expansion of dry-farming techniques, including agave cultivation, was particular to pre-Classic period subsistence economies.

### **Craft Economies**

Recent interpretations of eighth to twelfth century Hohokam craft economies focus on the social and economic contexts of production and circulation. Goods examined include ceramic containers; fired-clay figurines; marine shell ornaments; chert and obsidian projectile points; steatite,

turquoise, and argillite ornaments; copper bells; textiles; tabular knives; and ground stone (e.g., Abbott, 1999; Adams, 1995; Bradley, 1993, 1996; Crownover *et al.*, 1999; Doyel, 1991b, 1996; Elson and Gunderson, 1992; Heidke, 1995, 1999a,b; Heidke and Miksa, 2000; Hoffman, 1997; Kisselburg, 1987a,b; Lange, 1982; McGuire and Howard, 1987; Teague, 1998; Vargas, 1995). Although each of these goods has been studied on some level, most recent research centers on identifying and explaining specialized production and circulation of either ceramics or marine shell ornaments, or ground stone.

Some models argue for specialized production (*sensu* Costin, 1991) of pre-Classic period commodities (e.g., A. V. Howard, 1993; McGuire and Howard, 1987; Nelson, 1992); however, opinions are not unanimous and vary by craft (e.g., Seymour, 1988). The specialized production for local and non-local consumption of undecorated ceramics is well-documented in the Salt and Santa Cruz River valleys, and in the Tonto Basin, for the Sedentary period (Abbott, 1997; Heidke and Miksa, 2000, p. 294; Huntington, 1988:219; Harry, 1997; Van Keuren *et al.*, 1997). By contrast, most plain and decorated ceramics in the Lower Verde river valley were imported from the Phoenix Basin through processes of population movement or exchange (Whittlesey, 1997, pp. 421–429). There is, however, an increased emphasis on local on-site manufacture along the northern reaches of the river, indicating some degree of cultural/ethnic, social, or political diversity along the Lower Verde Valley (Bilsbarrow and Kwiatkowski, 1999, p. 133).

Research on ground stone manufacture in the northern periphery suggests that grinding basins (metates) were traded, along with game from upland hunting, for pottery from the Phoenix Basin core (Bostwick and Burton, 1993, p. 368). Alternatively, populations from the Phoenix Basin may have directly procured grinding implements from the New River area. Either model might explain the relatively specialized artifact assemblages in the New River area, compared to those from the lower Verde River valley (Stone, 1993, p. 80). In this northern periphery, a decline in the frequency of Hohokam buff ware ceramics in the Sacaton phase was balanced by an increase in so-called “Ancestral Puebloan” ceramics (i.e., Tusayan White Ware) from the north and east (Whittlesey, 1997, p. 429). A parallel pattern—importation of Ancestral Puebloan ceramics (i.e., Cibola White Wares) during the Sedentary period in the Tonto Basin—also illustrates increasing influence (and perhaps migration) from the northern and eastern Southwest.

Marine shell ornament production was most concentrated at settlements in the western periphery during the pre-Classic period (A. V. Howard, 1993; McGuire and Howard, 1987), although some production also took place at core area settlements like Snaketown in the greater Phoenix Basin (Seymour, 1988). Site-level specialization of shell ornament production and trade has been considered a “buffering” strategy for settlements in the

so-called periphery (Doelle, 1980). In such shell-for-food scenarios, desert-based communities traded with riverine settlements where agriculture was more favorable (Doelle, 1980). Unfortunately, such economic transactions are difficult to infer in the archaeological record. The fact that some desert-based shell ornament production sites (i.e., Shelltown and Hindsite) also produced their own food also challenges this model (Marmaduke, 1993, pp. 646–650). Alternative models of marine shell ornament manufacture emphasize the social and ideological contexts—rather than simply economic imperatives—that underlie the production of high-value goods (e.g., McGuire and Howard, 1987).

Obsidian was imported from sources throughout the greater Southwest, although locally available material was used most frequently, at least in the middle and lower Gila River valley (e.g., Bayman and Shackley, 1999; Doyel, 1996; Shackley and Tucker, 2001). The presence of small amounts of obsidian from the Mogollon Highlands and the Colorado Plateau indicates some interaction with mountain-based communities, or perhaps hunting expeditions (Bayman and Shackley, 1999). Obsidian from the Sauceda source implies that marine shell and obsidian circulated together through Gatlin, which may have been a “gateway” between communities in the Phoenix area and the Papagueria (Doyel, 1996, 1998, pp. 238–239). Gatlin also may have been a regional center for distributing copper bells from West Mexico (Vargas, 1995, p. 70). The recovery of obsidian and chert projectile points from cremation burials at Snaketown (Haury, 1976) and Los Morteros (Wallace, 1995) reflects their utility as mortuary grave goods.

Recent artifact characterization studies clearly demonstrate that some materials circulated widely, and important interpretive advances have been made regarding the organization of their production. The assumption that household production (rather than supra-household production) correlates with egalitarian sociopolitical organization (e.g., Seymour, 1988) is at odds with contemporary theoretical perspectives and recent empirical findings in archaeology. High intensity production by households is now well-documented in complex and noncomplex societies (e.g., Feinman, 1998). Moreover, inequalities in power and prestige are documented in a wide variety of social formations and economic systems. Craft specialization is not an unambiguous and distinguishing signature of sociopolitical complexity (Bayman, 1999, p. 249).

### **Ideology and Worldview**

Widespread agreement exists among archaeologists that ideological aspects of pre-Classic Hohokam society were expressed in cremation rituals

and ball court events (e.g., McGuire, 1992; Wallace *et al.*, 1995). Cremation burials are sometimes associated with censers, fired-clay figurines, stone palettes, and stylized projectile points (Haury, 1976). Best known from the site of Snaketown, fired-clay figurines were most common prior to the Snaketown phase (Haury, 1976) and examples from pre-Classic period (e.g., Colonial period) contexts are well-documented (Thomas and King, 1985). Interpreted alternately as the paraphernalia of an agricultural fertility cult (Haury, 1976), or of ancestor worship (Wilcox and Sternberg, 1983), anthropomorphic figurines are reminiscent of a Mesamerican orientation and worldview (Doyel, 1991a, p. 245). The use of Hohokam palettes as “snuff trays” for ingesting hallucinogens like *Datura* in magico-religious ceremonies is plausible, given their similar use in South America for religion, divination, and curing (Lowell, 1990).

Mortuary practices differ in the northern periphery of the Hohokam regional system from those found in the Phoenix and Tonto basins. This difference in patterning may indicate that ideology and degrees of ethnic assimilation varied along the frontier. Burials at one cemetery, for example, were sufficiently heterogeneous to suggest an admixture of Hohokam and non-Hohokam mortuary behavior (Schroeder and Fink, 1999, pp. 224–225). Several cremations were unusual for their relative lack of calcined human bone, and flexed inhumations were also present (Schroeder and Fink, 1999, pp. 215–223). Although the ideological basis of Hohokam society quite likely was materialized in funerals and other rituals like ball games, the nature of political power in the pre-Classic period remains poorly known.

Populations at ball court settlements seem to have been involved in external exchange networks, but it remains unclear whether or not elites were directly involved in this activity. Richly endowed burials at some, but not all, large ball court settlements (e.g., Snaketown, Grewe) illustrate some degree of elite intervention in interregional exchange (McGuire, 1992, p. 144; Nelson, 1992). Competing models of pre-Classic period marine shell ornament production and exchange (i.e., McGuire and Howard, 1987; Seymour, 1988) arise from conflicting views of craft specialization. High numbers of marine shell ornaments in subadult burials at Sedentary period sites (i.e., La Ciudad) may simply reflect the efforts of courtyard groups and their leaders to recruit labor, rather than advertise achieved or ascribed status distinctions (McGuire, 1992, p. 152).

Arguments for an “egalitarian” social and political organization in the late pre-Classic period (i.e., Sedentary period) often emphasize the unrestricted nature of “public” involvement in games or funerary rituals at ball courts (e.g., McGuire, 1992, p. 157; Wilcox and Sternberg, 1983). To some archaeologists, open embankments around ball courts imply that community-wide participation and hosting of visiting delegations was feasible. A large

ball court at Snaketown could have held 500 people (Wilcox, 1987, p. 154); an even larger court at Grewe could have accommodated up to 700 people (Craig, 2000, p. 3). Earlier archaeologists like Haury (1976) and Woodbury (1961) drew analogies with nineteenth century native Piman Indians to infer that Hohokam society was egalitarian, although more recent work suggests that direct historic linkages between Pimans and Hohokam are unclear. As Doyel (1991a:233) observes, nineteenth century Pima Indians did not build hundreds of kilometers of canals and over 225 ball courts; nor did they possess the high populations or the complex settlement hierarchies of pre-Classic period Hohokam.

Neoevolutionary perspectives have generated a bewildering variety of interpretations surrounding pre-Classic period sociopolitical organization (Doyel, 1980, p. 23). Unfortunately, the typological framework of such perspectives emphasizes a lock-step process of political development of societies (e.g., Rice, 1987b). Thus, it is not surprising that neoevolutionary models of Hohokam development should downplay evidence of pre-Classic period complexity to further strengthen interpretations of Classic period complexity (see Doyel, 1980, for an exception). Consequently, the pre-Classic period Hohokam were once viewed as an egalitarian “tribal” society that later developed into a “chiefdom” (Rice, 1987b).

Models explicitly focused on social agency and historical contingency, rather than simple development through a series of “stages,” have recently emerged in Hohokam interpretations (e.g., Ensor, 2000; McGuire, 1992; Preucel, 1996). These more nuanced interpretations offer insights on dimensions of inequality in power and status that were intentionally masked through ideology (e.g., McGuire, 1992). Such perspectives are increasingly common elsewhere in the world, and they are also assuming more influence in Hohokam archaeology, especially for interpreting the Classic period.

### **CLASSIC PERIOD (A.D. 1150–1450)**

The penultimate horizon of the Hohokam sequence, the Classic period, is a period of exceptionally vigorous research since 1990 (Fig. 4). Specific changes in ceramic and architectural technology during the Sedentary and Classic period transition are grouped into a Santan phase by some archaeologists (e.g., Abbott *et al.*, 1994; Doyel, 2000a; Gladwin *et al.*, 1937; Mitchell and Motsinger, 1998, pp. 175–176). Whether or not this specific phase has merits, the onset of the Classic period ca. A.D. 1150 was followed by three centuries of development until the Hohokam tradition waned sometime after A.D. 1450. The Classic period is often also divided into “Early Classic” and



“Late Classic” subperiods to acknowledge marked shifts within the broader block of time.

Unprecedented changes in patterns of settlement, technology, material culture, and ideology took place during the Classic period. Hohokam regional organization shifted throughout the Sonoran Desert, in many peripheral areas (e.g., Tucson Basin), as some communities abandoned their ball court settlements (e.g., Doyel, 1998) and other communities constructed earthen platform mounds (e.g., Fish *et al.*, 1992). An average distance of 5.0 km between platform mound settlements in the Phoenix Basin closely matches the former spacing (i.e., 5.5 km) of ball court settlements (Fish and Fish, 1994, p. 121). Despite this similarity, platform mound community centers became increasingly nucleated as populations increased, especially in the Phoenix Basin core. One symptom of this demographic growth was a greater degree of interconnectedness among canals (Nicholas and Feinman, 1989).

Although some correlates of the Classic period such as walled compounds, pueblos, and small platform mounds appeared in some areas (e.g., Tucson Basin) shortly after A.D. 1050, these elements became widespread only after A.D. 1150. As a rule, compounds at sites in the Phoenix Basin core were much larger than those in the periphery (Doelle *et al.*, 1995, pp. 435–437). The construction of platform mounds at settlements that already contained ball courts is a hallmark of the Early Classic period. Pueblos and walled compounds were built at some settlements that were once dominated by pithouse structures.

Early Classic period villages were also occasionally built on terraced hill-sides (*cerros de trincheras*) in the Papaguera, in the western Tucson Basin, as well as northern Sonora, Mexico (Downum *et al.*, 1994). The hypothesis that terraced hillsides were used as war refuges (e.g., Wilcox, 1979; Wilcox and Haas, 1994, p. 221) is an unresolved controversy (Fish and Fish, 1989; LeBlanc, 1999, pp. 258–259), since strong evidence exists for long-term habitation and plant cultivation at these settlements (Downum *et al.*, 1994).

During the Late Classic period, massive buildings we now call “Great Houses” were constructed at some sites in the Phoenix area (Fig. 6). The so-called “Salado” phenomenon (Dean, 2000, p. 3) also emerged during this period in the Tonto Basin and elsewhere in the southern Southwest. Salado archaeological traits include polychrome redware ceramics, supine inhumation burials, platform mounds, and walled compounds. Defining exactly what is meant by the term “Salado” (Gladwin and Gladwin, 1930) is problematic since its archaeological traits are not uniformly distributed at any place and point in time.

Thus, the meaning and utility of the Salado concept is highly controversial. Interpretations of Salado vary widely (Dean, 2000). Some archaeologists view Salado as an ethnic “culture” that migrated from a Tonto

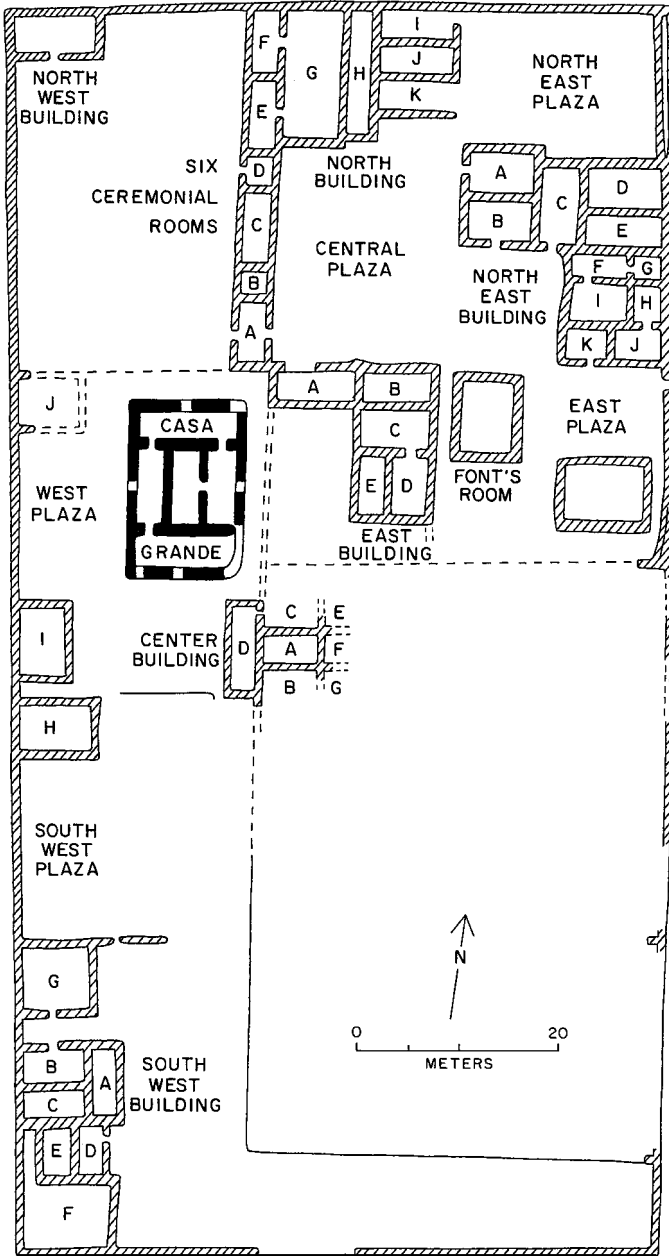


Fig. 6. Plan of Great House and its compound at Casa Grande (adapted from Wilcox and Shenk, 1977, p. 167, Figure 98).

Basin heartland and influenced the Phoenix Basin Hohokam (Gladwin and Gladwin, 1930) and neighboring areas. Other scholars (i.e., Doyel, 1981, p. 64; Rice, 1998a) view Salado in the Sonoran Desert as an expression of the Classic period Hohokam. More recently, many archaeologists view Salado as a religious ideology (e.g., Crown, 1994, 1995) that was adopted across a vast region of the southern Southwest. In either case, identifying and interpreting the different cultural, ecological, and ideological factors behind the emergence of the archaeological record known as “Salado” is a serious problem facing archaeology in the North American Southwest.

### Subsistence Economies

Broad patterns of subsistence that developed and expanded in the pre-Classic period continued in the earlier part of the Classic period. Although residential habitation of some areas, such as the western periphery, diminished with the onset of the Classic period, economic utilization of some upland or nonriverine areas intensified (e.g., Fish *et al.*, 1992; Homburg *et al.*, 1993). Canals had already been constructed in the Phoenix Basin prior to this period, but most known or suspected canals in the Tonto Basin first appeared in the Classic period (Van West *et al.*, 2000, p. 48). The construction of platform mounds also signaled an unprecedented adoption and materialization of Hohokam ideologies in the Tonto Basin.

Regional and temporal variation is also apparent in terms of the plants that were cultivated and consumed. Increased cultivation and consumption of agave evidently took place in the northern Tucson Basin (Fish *et al.*, 1992) and in the Tonto Basin (Van West *et al.*, 2000:39, Figs. 2.4a and b), as it continued in other areas like the lower Salt River valley and the Papaguera (Dart, 1994, pp. 340–346) throughout this period (Gasser and Kwiatkowski, 1991, p. 441). Populations continued to cultivate other crops, such as cotton and maize into the Classic period. Although an increased reliance on foraging, rather than on cultivated crops, is often implied or stated directly in models of the Classic period (e.g., Doyel, 1981, p. 46), analyses of archaeobotanical remains (e.g., Crown, 1984, p. 112) and ground stone assemblages (Stone, 1994) do not support this interpretation (Gasser and Kwiatkowski, 1991, p. 444). Nonetheless, evidence exists for the importation of maize into some desert communities in the Avra Valley, which lies west of Tucson today (Dart, 1994, pp. 338–340).

Meat consumption in the Classic period emphasized the Hohokam “staples” of rabbit, deer, and bighorn sheep. Secondary sources of meat were acquired from muskrat, beaver, fox, racoon, rat, and badgers, as well as various reptiles and birds (James, 1994, p. 316). In the Tonto Basin, evidence

exists that the best cuts of meat were most often consumed in platform mound community centers (Cameron, 1992, pp. 89–91). Moreover, trace-element studies of Late Classic period burials from Pueblo Grande indicate that men consumed larger amounts of meat, whereas women relied more heavily on a plant-based diet (Foster, 1994, p. vi; Jones and Sheridan, 1994). The overall health of both women and men declined at Pueblo Grande in the twelfth and thirteenth centuries (Van Gerven and Sheridan, 1994, p. 124). This decline in health was not a pan-regional phenomena among the Hohokam and Salado; people living in the Tonto Basin, in fact, exhibited better health than surrounding Southwestern populations (Ravesloot and Regan, 2000, p. 66).

The ritual use of animal body parts, particularly bighorn sheep and deer skulls with antler crowns, is another notable feature of the Classic period. In the Marana community, antler crowns and skulls were stored inside special buildings (James, 1987). Although their exact functions are unclear, their use as hunting costumes or ritual headdresses is ethnographically supported in the North American Southwest (Castetter and Underhill, 1935, pp. 40–41; James, 1987, pp. 187–188; Spier, 1928).

Evidence of freshwater fishing at Pueblo Grande in the Phoenix Basin and at Schoolhouse Point the Tonto Basin illustrates another important dimension of Hohokam subsistence (James, 1994, pp. 310–318; Lindauer, 2000, p. 224). Fish was second only to rabbits as a source of protein at Pueblo Grande (James, 1994, p. 316). The consumption of increasingly small fish over time at Pueblo Grande indicates that the community faced increasing levels of nutritional stress through time (James, 1994). Fishing will almost certainly be documented at other Hohokam areas and time periods, once appropriate recovery methods (i.e., small mesh screening of fill) are used routinely at site excavations (James, 1994, p. 316).

### **Craft Economies**

Organizational shifts in the production and circulation of crafted materials have been documented in recent research on utilitarian and high-value crafts (e.g., Abbott, 2000; Crown, 1991; Doyel, 1991b; Neitzel, 1991). Most of this research has employed an array of compositional techniques. Plainware and redware ceramic containers circulated widely within and among canal-based communities in the Salt River valley (Abbott and Walsh-Anduze, 1995), suggesting to some that kinship (Abbott, 1996, 2000; Elson and Abbott, 2000) or other nonkin social institutions (Fish and Fish, 2000) governed this economy. Immigration to the Tonto Basin from the north and east is exemplified through the importation of Cibola White Ware ceramics

(Ancestral Puebloan), nonlocal Salado Polychromes, and corrugated wares (Clark, 2000, p. 11). Specialized production of some local ceramics (e.g., Salado Red Corrugated) may have been conducted by land-poor immigrants (Clark, 2000, p. 11; Stark and Heidke, 1998, p. 497).

A notable constriction of buff ware ceramics to the Phoenix Basin in the Classic period indicates an overall contraction of the Hohokam regional system (Crown, 1991, pp. 154–157; Doelle and Wallace, 1991, pp. 321–322), even as the importation of nonlocal ceramics increased (Doyel, 1993a, p. 455). Surprisingly, other crafts like obsidian circulated more widely even as some areas of the Hohokam regional system like the lower Gila River valley and Flagstaff areas were abandoned (e.g., Bayman and Shackley, 1999). This enlarged importation of nonlocal obsidian and nonlocal ceramics may have signaled emerging alliances among elites and/or accelerated immigration of Puebloan populations. Although the precise function of such potential alliances is difficult to interpret, insecurity induced by the potential for warfare and/or food shortages is one plausible hypothesis (e.g., Doelle and Wallace, 1991, pp. 329–333; LeBlanc, 1999). The maintenance of these social ties is corroborated by an increase in the acquisition of nonlocal decorated pottery in the Phoenix Basin, especially pottery made with raw materials from the Colorado Plateau (Doyel, 1993a, p. 455).

The regional organization of high-value, “prestige good” economies included marine shell ornaments and obsidian projectile points and these goods have concentrated consumption in community centers with platform mounds (e.g., Bayman, 1995, 1996b; Bayman and Shackley, 1999; Griffith *et al.*, 1992; Howard, 1987; Mitchell and Shackley, 1995; Peterson *et al.*, 1997; Teague, 1984). This pattern is a notable departure from the pre-Classic period, when marine shell ornament manufacture frequently occurred in remote settlements in the nonriverine desert “periphery” to the south and west of Phoenix and Tucson (McGuire and Howard, 1987). Archaeologists suggest that this production was undertaken by nonelite households and villages as a community-based specialization; in this model, villages traded their crafts for agricultural produce and other resources (Doelle, 1980; McGuire and Howard, 1987).

Concentrated production and consumption in Classic period platform mound community centers illustrates some degree of elite intervention in craft economies (Bayman and Sanchez, 1998; Harry and Bayman, 2000), although spatially restricted loci of specialized craft specialization are not generally detectable within these settlements (e.g., Bayman, 1996b; Foster, 1994, p. v; Rice, 1998b, pp. 145–149; Rice *et al.*, 1998). This pattern confirms that Hohokam communities did not practice “attached specialization” (Brumfiel and Early, 1987; Costin, 1991) in which elites directly controlled craft manufacture. However, elite sponsorship of community-wide ceremonies, during

which high-value crafts were used and consumed, provided opportunities for their intervention in these economies (Bayman, 1999, p. 269; Harry and Bayman, 2000, pp. 148–149; Rice, 1998b, p. 237).

Community-wide ceremonies offered an ideological and religious mandate for managing large-scale canal irrigation systems (e.g., Bostwick, 1992; Howard, 1992; Rice, 1998b, p. 237). Thus, elite intervention in craft economies was probably also legitimized by these same institutions. Gendered interpretations of Hohokam craft economies are only now beginning; evidence already exists that women's heavier workloads in the Classic period were caused, in part, by their involvement in craft production (Mills, 2000, p. 24).

### Sociopolitical Organization

The development of platform mounds followed the abandonment of key pre-Classic period settlements like Gatlin and Snaketown along the Gila River, and Valencia and West Branch in the Tucson area. In most models, abandonment of ball court villages in the periphery reflected a contraction of the Hohokam regional system to the Salt-Gila core (e.g., Crown and Judge, 1991; Doelle and Wallace, 1991; Haury, 1976; Wilcox and Sternberg, 1983). However, Late Classic period platform mounds in the Papaguera (Dart *et al.*, 1990) and the San Pedro River valley (Doelle and Wallace, 1997), as well as evidence for interregional exchange (see below), confirms that prior models of the Classic period Hohokam regional system should be refined (Bayman and Shackley, 1999).

Whether or not the Hohokam regional system was significantly reduced in its overall geographic scale, substantial changes occurred in patterns of settlement within and beyond the core. Canal irrigation expanded within the core while dry farming expanded in some areas of the periphery (e.g., Fish *et al.*, 1992). In the core, for example, canals were extended to water fields on terraces overlooking the riverine bottomlands. In fact, more than 500 linear kilometers of primary canals were built in the Phoenix Basin core alone (Masse, 1991). In the Phoenix Basin core, platform mound villages on larger canals were typically about 5 km apart (Gregory, 1991, p. 170; Gregory and Nials, 1985). Although much smaller in scale, canals in the Marana platform mound community and in much older Formative period settlements along the middle Santa Cruz River (Fish *et al.*, 1992; Lange and Deaver, 1989, pp. 158–162) confirm that this technology was not confined to the Salt-Gila core, and that it developed earlier in the Tucson area (Mabry, 2000).

Reorganization of Hohokam multisite communities was also reflected in the linkage of multiple platform mound settlements to each other along

large primary canals (e.g., Rice, 1998c). Casa Grande and its neighboring settlements may have been a “supra-community”: it included platform mound settlements both along and away from the Gila River (Downum and Madsen, 1993; Wilcox, 1988). Multivillage “irrigation communities” (Doyel, 1980, 1981, 1993b) were certainly integrated by a variety of sociopolitical institutions. Whether or not these institutions were heavily based on kinship relations is debated (e.g., Elson and Abbott, 2000; Fish and Fish, 2000; Rice, 2000). Models of Hohokam community organization from the 1970/1980s emphasized the ecological imperatives of irrigation management (e.g., Grebinger, 1971; Weaver, 1972; Rice, 1998c). Although a need for water management is not denied by more recent work, actor-based models and historical contingency are assuming greater attention. These new models more explicitly highlight the roles of social agency and elite ideologies in Hohokam community leadership and organization (e.g., Bayman, 1996b; Bostwick, 1992; Bostwick and Downum, 1994; Preucel, 1996).

Archaeologists continue to offer competing interpretations of Hohokam sociopolitical organization (Fish and Yoffee, 1996; Yoffee *et al.*, 1999). Consensus exists, however, that platform mound settlements were community centers for Hohokam and Salado society (e.g., Elson, 1998; Lindauer and Blitz, 1997). Interpreting the role of these administrative centers within “macro-regional” systems (Wilcox, 1999) awaits further refinement, and yet some level of elite intervention certainly took place with respect to the consumption, if not the production, of ceremonial craft items (e.g., Rice, 2000, pp. 257–158). The precise role of elites in coordinating nonelite labor for the construction of large-scale canals and public monuments is an unresolved debate in Hohokam archaeology (e.g., Howard, 1996). Some models view elite intervention in large-scale construction as a self-interested endeavor to acquire power and status (e.g., Craig, 1995), whereas other models see more altruistic motives (e.g., Bostwick and Downum, 1994, pp. 379–382).

Immigrants whose origins lay north of the Mogollon Rim moved into areas like the Tonto Basin and San Pedro Valley sometime after ca. A.D. 1150 (Clark, 2001). In these areas, platform mound settlement organization offered an institutional context for ideologically mediating different ethnic divisions in Classic period Hohokam and Salado society (e.g., Clark, 1995, pp. 378–381; Elson *et al.*, 2000, pp. 185–186; Simon and Jacobs, 2000, pp. 216–218).

In spite of their integrative functions, burials from some large platform mound sites reflect increased social distinctions (e.g., Brunson, 1989; Crown and Fish, 1996, pp. 807–812; Mitchell and Brunson-Hadley, in press). Although grave lot values at Pueblo Grande varied by gender and age, and indicated some differentiation in prestige, evidence for ascribed or hereditary status is equivocal to some researchers (e.g., Mitchell, 1994, pp. 211–215).

It is notable, however, that burials for infants and children were sometimes the richest individuals interred at Pueblo Grande (Mitchell, 1994, p. 214). Analyses of burial treatment also indicate that while the status of Hohokam women was rarely high; some women did acquire significant status and they were buried atop platform mounds (Crown and Fish, 1996). These high status women enjoyed more prestige during their lives than both men and women who were buried in compounds and cemeteries away from platform mounds. Probable avenues for power and status among women lay in their productive activities, opportunities for elite marriage, and shamanism (Crown and Fish, 1996, p. 804).

### Ideology and Worldview

Politics and ideology certainly intersected in Classic period Hohokam society, and together they comprised a worldview that was unique in the North American Southwest. With some exceptions (e.g., Preucel, 1996; Wilcox, 1991, 1987), interpretations of Hohokam ideology and worldview are frequently embedded in highly generalized models of sociopolitical organization (e.g., Bayman, 1995; Doyel, 1980; Fish and Fish, 1991; Rice, 1992).

Hohokam ideology and worldview were “materialized” (*sensu* De Marrais *et al.*, 1996) in monumental architecture, burial treatment, site structure, and craft economies, and an increasing amount of work has focused on this topic (e.g., J. B. Howard, 1992). Most striking in the Classic period was the disappearance of many highly stylized crafts such as carved stone bowls and tabular schist palettes and cup-shaped censers, and fired-clay figurines and ceremonial projectile points. According to Haury (1976), the loss of fired-clay figurines, palettes, and censers confirmed that “ancestor worship” was no longer practiced in domestic contexts. Instead, platform mounds functioned as public and nondomestic markers for descent groups to legitimize their hereditary land rights (Elson, 1998; Elson and Abbott, 2000; Rice, 1992).

Beginning in the late thirteenth century, demographic upheaval on the Colorado Plateau and elsewhere led to an influx of immigrants to the Mogollon Rim and the Tonto Basin (Clark, 2001). The widespread production and use of Salado Polychrome vessels with distinctive iconography suggests to Crown (1994) that the Classic period Hohokam participated in an interregional religious ideology, i.e., the so-called “Southwestern Cult.” This “crisis cult” may have flourished, in part, to ameliorate the anxiety and uncertainty of this era (Crown, 1994, pp. 211–225). Among the Hohokam, platform mounds almost certainly became residential loci as this public cult entered the Sonoran and Chihuahuan Deserts. This change in platform mound function implies that Hohokam ideology shifted its orientation.



Did elite appropriation of ceremonial platform mounds, which became residential buildings by the Late Classic period (i.e., Civano phase), usurp private household worship via figurines? Compound walls enclosing platform mounds may imply exclusivity in terms of participation in rituals and ceremonies in these locales (J. B. Howard, 1992), or they may simply reflect domestic segregation of social groups and genders within a stratified community (Crown and Fish, 1996, p. 806; Shapiro, 1999, p. 445). Exclusive rituals were possibly undertaken to forge alliances between local and nonlocal elites (Preucel, 1996, p. 126). Platform mounds potentially functioned as locales for the conduct of rituals of renewal and fertility (Bostwick, 1992; Bostwick and Downum, 1994; Mitchell, 1994). Rainmaking rituals were a possible function of Classic period platform mounds (Bostwick, 1992; Bostwick and Downum, 1994). Preucel (1996:130) argues that the large roasting pits (*hornos*) located near some Hohokam platform mounds reflect elite-sponsored feasts that were held to legitimize their power.

“Great Houses” atop platform mounds and “towers” (Wilcox, 1999) are relatively rare and their functions are unclear, although they were present at Casa Grande, Pueblo Grande, and perhaps other sites (Fig. 2). Casa Grande, the best-preserved Great House, was arguably unique in terms of its monumental scale and its possible function as an “outlier” of a Salado regional system that was (hypothetically) centered in the Chihuahuan Desert of northern Mexico (see Lekson, 2000, pp. 292–294). Space syntax analysis of Casa Grande architecture implies that it was used for the management and dissemination of esoteric information (Shapiro, 1996, p. 419) and its interpretation as an astronomical observatory seems plausible in this regard (Wilcox, 1987).

Archaeologists like David Wilcox (1991) contend that symbolism through color and directionality—common among historic native North Americans—also pervaded the Hohokam worldview. The association of specific colors (e.g., white, red, blue, yellow, and black) with particular deities in native North America is notable given the materials that were often interred with Hohokam burials: white marine shell ornaments, redware ceramic vessels, turquoise jewelry, yellow pigment, and black obsidian (Mitchell, 1994, pp. 183–185; Preucel, 1996, p. 126; Teague, 1984). Specific directions are frequently noted in Native American myths and legends, including the historic Pima, arguable descendants of the Hohokam (Russell, 1908). Among the Pima, for example, it is said that “. . . souls go to the land of the dead in the east . . .” (Mitchell, 1994, p. 182; Russell, 1908, pp. 252–253) and two major deities (i.e., Earth Magician and Elder Brother) dwelled in the east. Such meanings potentially influenced the common orientation of Hohokam inhumations along an east–west axis (e.g., Haury, 1945; Mitchell, 1994, p. 182; Wilcox, 1987). At Pueblo Grande, all age and sex categories were represented among eastward-facing graves (Mitchell, 1994, p. 183).

The Classic period also saw inhumations (rather than cremations) become the dominant mode of burial at some, but not all, sites (e.g., Brunson, 1989, pp. 339, 386; Clark, 2000, p. 11; Mitchell, 1994, p. 74). These dual traditions of burial treatment may reflect competing belief systems (Doyel, 1991a, pp. 256–257; Wilcox and Sternberg, 1983). Alternatively, they may reflect membership in different status roles (e.g., Brunson, 1989; Fewkes, 1912) or different ethnic or cultural populations (Gladwin and Gladwin, 1934). In either case, these different burial treatment traditions certainly illustrate ideological dimensions of Hohokam society and worldview (McGuire, 1992). Elaborate burials with large amounts of associated goods have been interpreted as “elites” (e.g., Brunson, 1989) or as “shamans” (e.g., Mitchell, 1994, pp. 195–199). Crypts for mass burials of up to 18 individuals among the Classic period Salado in the Tonto Basin might have legitimized land ownership and symbolized ascribed corporate status through ancestor worship (Loendorf, 1998, pp. 343–345).

The post-Classic period witnessed an enigmatic termination of Hohokam society shortly before—or immediately after—European contact in North America.

### **POST-CLASSIC PERIOD (A.D. 1450–1540)**

The terminal period of the Hohokam sequence is clouded by a gap, of sorts, between the demise of Classic period traditions and sixteenth century European contact in the post-Classic. Archaeological recognition of a so-called “Polvoron phase” (ca. A.D. 1350–1450) cannot yet be solidly confirmed with conventional chronometric techniques like radiocarbon and archaeomagnetic dating that are normally used in the Sonoran Desert (see Doyel, 1995, pp. 485–486; Zyneicki, 1995). The utility of this phase, which is thought by some (e.g., Chenault, 1996; Sires, 1984) to reflect a transition between the Classic period and a less “complex” post-Classic period (i.e., protohistoric), is questioned by others (e.g., Doyel, 1995, pp. 484–495; Henderson and Hackbarth, 2000).

As originally defined by Sires (1984, p. 324), the Polvoron phase featured small dispersed settlements composed of adobe-lined or “jacal” pithouses clustered along small canal segments, increased proportions of redware ceramics, Salado polychromes, proto-Hopi (Yellow Ware) ceramics and obsidian. Cremation cemeteries, as well as inhumations in house floors, are also typically present at Polvoron phase sites. Although the Polvoron phase is often viewed as a time of significantly reduced population and a greatly simplified social structure (Chenault, 1993, p. 137; Crown, 1991, p. 406), Henderson and Hackbarth (2000) outline an alternative reconstruction. In

their view, Polvoron is mostly (but not entirely) contemporary with the Civano phase. Polvoron phase society was highly stratified and the occupants of pithouses and jacal structures outside the walled compounds surrounding platform mound centers were merely the transient members (incoming immigrants?) of multisite communities (Henderson and Hackbarth, 2000, pp. 11–12). This interpretation is commensurate with evidence that significant changes were underway throughout Hohokam society after the Classic period.

Although debates concerning the timing and political organization of the Polvoron phase are still unresolved, they underscore the need to sharpen our interpretations of the Classic to post-Classic transition. The pace of Hohokam change was evidently continuous, albeit variable, across different periods and geographic areas in the Sonoran Desert. Dynamic explanations of the Hohokam decline must acknowledge both the heuristic values and inherent limits of phase-based systematics in archaeology. Refined chronological control and theoretical interpretations must be developed to identify the agents of change behind the post-Classic demise of the Hohokam tradition.

### Agents of Change and Collapse

Explanations of the Hohokam demise vary significantly (see review in Chenault, 1996, pp. 167–221), and include droughts and floods (e.g., Gregory, 1991; Huckleberry, 1999; Nials *et al.*, 1986; cf. Waters and Ravesloot, 2001); warfare, either internecine or external (e.g., LeBlanc, 1999); and disease, either endogenous (local) or European-introduced (e.g., Di Peso, 1956, p. 539; Dobyns, 1983; Fink, 1991a,b; Ramenofsky, 1987, pp. 137–176; Reff, 1990, 1992; Roberts and Ahlstrom, 1997). Other explanations include a Salado invasion that disrupted Hohokam society (Haury, 1945), agricultural field salinization (Haury, 1976, p. 355), soil degradation (cf. Huckleberry, 1992, p. 237), canal sedimentation (Dart, 1986) and earthquakes (Cushing, referenced in Haury, 1945, p. 210) (summarized in Chenault, 1996, pp. 221–222). Notably, Piman oral histories offer support for the role of Hohokam warfare and flooding in the early post-Formative (Bahr *et al.*, 1994; Teague, 1989, 1993). Hydrological streamflow data arguably support interpretations that floods took place in the Salt River watershed at various times in the Hohokam sequence (Nials *et al.*, 1986).

Consequently, the role of floods in a Hohokam “collapse” is favored by many archaeologists working in the Phoenix Basin core (e.g., Gregory, 1991; Howell, 1993, p. 11; Nials *et al.*, 1986), although acceptance of this viewpoint is certainly not unanimous (Chenault, 1996, p. 200; Waters and

Ravesloot, 2001). Rather, growing numbers of archaeologists are dissatisfied with predominantly ecological explanations of precontact change in the North American Southwest (e.g., Ensor, 2000; Preucel, 1996). Moreover, the role of disease must be assessed in further detail as chronological control is eventually strengthened in the Sonoran Desert. Reff (1992) and others (e.g., Fish *et al.*, 1994) offer the provocative argument that Hohokam society was not truncated until the introduction of European diseases in the sixteenth century. Chronometric dates from Hohokam sites that were potentially occupied in the early 1500s (e.g., Howell, 1993) underscore the necessity of refining the latter phases of the chronological sequence.

### Historical Continuity?

Establishing the “ethnic” identity(ies) of Hohokam society and their descendants among contemporary indigenous peoples in North America has practical as well as scholarly implications, and remains unresolved with respect to archaeology, language, and oral traditions (e.g., Doelle and Wallace, 1990; Ezell, 1963; Haury, 1976; Ravesloot and Whittlesey, 1987; Reff, 1991; Shaul and Hill, 1998; Teague, 1993). European eyewitness accounts in south-central Arizona began with the arrival of the Spanish missionary Fray Marcos de Niza in 1539, who was followed by the explorer Coronado in 1540. Although the value of these sixteenth century accounts is debated (e.g., Reff, 1991; Sheridan, 1992), accounts by seventeenth century missionaries, Eusebio Kino and Manje (e.g., Bolton, 1936; Burrus, 1971), are frequently used by archaeologists as sources for ethnographic analogy (e.g., Doelle and Wallace, 1990; Dart, 1994).

There is, nonetheless, a consensus that the social and economic systems observed by these sixteenth and seventeenth century visitors were markedly different than those that seem evident in the archaeological record of the period before European contact, and archaeologists believe that historic-period populations were much smaller than in the precontact Classic period (e.g., Doyel, 1991b). This disparity is strongest in the central Phoenix Basin, and evidence for historical continuity with ethnographic populations is most likely in surrounding territories (e.g., San Pedro, Northern Tucson Basin, Papagueria).

In terms of simple geographic proximity, Piman (e.g., O’Odham and Sobaipuris) and Yuman (e.g., Opas and Cocomaricopas) populations are plausible descendants of the Hohokam, although intermarriage among these historic groups confounds interpretations of the post-Classic (Bostwick *et al.*, 1996; Doelle and Wallace, 1990, p. 254). This picture is further complicated by the possibility that elements of contemporary Zuni language

originated among Hohokam populations (Shaul and Hill, 1998, p. 375). Hohokam contributions to contemporary Puebloan society are also broadly supported by Hopi oral traditions and certain aspects of the archaeological record (Teague, 1993, 1998, p. 188).

General material parallels between the precontact Hohokam and the postcontact Pima include ceramic technology (e.g., redware and red-on-buff/brown containers), textiles, burial types, overall subsistence practices, and certain architectural traditions (Doyel, 1991a, pp. 266–267; Teague, 1998, p. 186), although stronger connections must still be identified. Archaeological evidence for bridging the precontact to early historic period horizon in south-central Arizona has probably gone unrecognized (Doelle and Wallace, 1990, p. 256), though important advances in identifying such signatures are gradually being made. To some (e.g., Reff, 1991), Spanish documentary evidence of continuity between the Hohokam and postcontact Pimans in the Sonoran Desert is sufficient evidence.

Among other things, Reff (1991, p. 646) argues that Marcos de Niza witnessed the use of polychrome bowls (Gila Polychrome), long-distance trade in turquoise and bison robes, and that significant numbers of Pimans were still living in permanent settlements. Moreover, Reff (1991, p. 646) concludes that at least some Hohokam “Great Houses” (Civano phase) were probably also occupied in the early contact period. Anecdotal claims that European glass beads and metal have been recovered from protohistoric archaeological contexts offer intriguing, albeit arguable evidence that “Hohokam” (or Salado) people were directly encountered by sixteenth century Spanish explorers (e.g., Franklin, 1980, p. 184; Schroeder, 1992, p. 204, 1996, pp. 111–119).

## CONCLUSIONS

The unrelenting intensity and volume of archaeological research in the Sonoran Desert in the last two decades almost certainly exceeds most comparably sized regions in North America, and many other parts of the world. The production of the Hohokam archaeological record over a period approaching two millennia offers a diachronic perspective on emergent complexity that is unrivaled in many regions. Unlike areas where ancient complex states developed and altered the stratigraphic records of their emergence, Hohokam archaeological deposits have been impacted only relatively recently (Fish and Fish, 2000, p. 167). In this respect, Hohokam studies offer an exceptional opportunity to inform anthropological archaeology of the processes that govern sociopolitical complexity. Yet, after a century of Hohokam archaeology, countless questions remain.

Although Hohokam chronological sequences, the mundane technology of everyday life, and the spatial organization of multisite communities are now well documented, sociopolitical institutions in the Sonoran Desert are maddeningly elusive in terms of their specific structure and organization. The role of kin-based institutions, for example, is still unclear given the serious limitations of the direct historical approach in the Sonoran Desert (Fish and Fish, 2000, pp. 157–160) and the notorious difficulty of identifying such phenomena in the archaeological record. Likewise, identifying and interpreting “ethnicity” is equally intractable in current Hohokam and Salado research. The perspective that “ethnicity” is only a development of state-level societies (e.g., Redman, 2000, p. 318) now seems unlikely. Such a view parallels earlier (but now discarded) views that “specialization” is only a correlate of state-level societies (e.g., Childe, 1936).

Craft specialization and exchange has been carefully documented in the Sonoran Desert and elsewhere in the North American Southwest. Craft specialization was situated in contexts with—and without—high degrees of social inequality (Bayman, 1999, p. 249). Much like craft specialization, institutions of ethnicity (or cultural identity) must have had their genesis relatively early in the Hohokam sequence. Thus, identifying the archaeological signatures of specific social boundaries should be a priority of upcoming Hohokam research. Detecting the empirical correlates of these and other social institutions will enrich interpretations of Hohokam political organization.

Currently, the most promising theoretical avenue for interpreting Hohokam society is that proposed by Blanton *et al.* (1996). Thus far, the empirical record unearthed in the Sonoran Desert illustrates that elements of inequality and egalitarianism (*sensu* Flanagan, 1989) both characterized Hohokam society. Hohokam society may have contained dual systems of leadership that involved both network [individual] as well as corporate [group] power-seeking strategies (see Elson and Abbott, 2000; Fish and Fish, 2000; Harry and Bayman, 2000). Whether or not these dual systems of leadership reflected structural tensions among competing interests in Hohokam society is unknown. Clarifying and explaining this phenomenon with an anthropological framework is the primary challenge now facing Sonoran Desert archaeology. The intensity and quality of ongoing research ensures that this challenge will be met and that the immediate future of Hohokam archaeology is bright indeed.

### ACKNOWLEDGMENTS

This paper was completed when I was a Visiting Scholar at the Arizona State Museum. Angela Close, Suzanne Fish, Miriam Stark, and an

anonymous reviewer provided comments on an earlier draft of this paper, for which I am grateful. In spite of their kind assistance, I am solely responsible for any errors in content, style, and perspective.

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