Platform Mounds of the Arizona Desert
An Experiment in Organizational Complexity

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In the fall of 1989 we began an eight-year project to investigate platform mound communities in the Tonto Basin of central Arizona. The project is being funded by the Bureau of Reclamation as part of an overall plan to study sites that may be affected by proposed modifications to Theodore Roosevelt Dam (Fig. 2; see box). We are particularly interested in how the societies that built the platform mounds were organized, and how this organization might have been related to developments either within or beyond

Figure 1. One or two families lived in the four rooms and three courtyards of this 13th century Salado compound. Two rooms are located at the corners of the compound (including the nearest corner) and two rooms are located side by side in the middle of the compound. The backhoe is assisting the archaeologist by removing the dirt that has been blown and washed over the area. Photo courtesy of Bureau of Reclamation, U.S. Dept. of the Interior
the local area. We began the project believing that the platform mounds of the Arizona desert were pretty much part of a single historical movement that swept the region, but as our work has progressed, we have had to rethink our models for the development and organization of the mound-building societies of Arizona.

Platform mounds were built by the prehistoric Salado and Hohokam peoples of southern Arizona from the 13th through the 14th century A.D., the Classic period. They were basically artificial, flat-topped hills on which the ruling families of the day built their houses. Additional residences and storage rooms were built around the base of a mound, and the whole was enclosed within a compound (Fig. 1). Each mound was the administrative, ceremonial, and economic center for a small-scale political system, or polity, whose settlements were scattered over 5 to 25 square miles (Fish 1986; Rice et al. 1990). At their maximum extent there were probably about 100 of these little political systems scattered across the Sonoran Desert of Arizona.

Platform mound polities were not evenly distributed across the desert floor nor did they completely fill the region. They occurred in groups of as few as four to as many as two dozen, and the groups were limited to the floors of the major valleys and low basins (Fig. 4) where agriculture, combined with the gathering of abundant wild foods, allowed for the growth of large populations. Distances of up to 25 miles might separate one cluster from the next, and much of the Sonoran Desert of central and southern Arizona remained uninvolved in the platform mound polities. There is little doubt that some people continued to live in relatively independent and self-sufficient villages in the areas between the polities, but probably in far fewer numbers than those associated with the platform mounds.

These platform mound polities scarcely compare to the Mesoamerican empires controlled by the Toltecs, Aztecs, or Maya, yet it is their illusory scale that we find most interesting. Although the Salado had not formed states, their societies were organized on a scale larger and more complex than the individual village unit. The elites living on top of the platform mounds, who organized the large labor forces needed to construct and maintain the mounds, were much more than tribal elders with temporary authority over a ceremony or a task group. These were full-time leaders who had the authority and power to make demands on the local population for services and products. In exchange, they provided the organization needed to protect the community, maintain public facilities, and ensure that people were fed.

The largest sites in the Chaco Canyon area might indicate another example of a complex society in the prehistoric Southwest, but a similar pattern could not have generated the levels of surplus food needed to support a complex society (Vivian 1990; Johansen 1990). On the other hand, the production of a food surplus would not have been a problem for the platform mound polities living in the well-watered valleys of the Sonoran Desert (Rice et al. 1990:21-24). The desert climate provides a long growing season, with opportunities for two or more planting cycles per year. To agricultural produce could be added the rich harvests of natural foods such as cactus fruits, agave (see article by Minnis and Whalen, this issue), and tree legumes. The abundance of the desert is attested by Catholic priests writing in the 18th century who found that the Pima (descendants of the Hohokam) frequently left surplus harvests rotting in the fields, having planted far more than they could possibly use. In bad years the extra acreage planted in fields would have come in handy. During the era of the platform mounds, such surpluses could have been harvested and accumulated in central locations for use by the leaders living on the mounds. The peoples of the platform mounds had taken the first step toward the kind of organizational complexity that functions today throughout much of our industrialized world. Over and over again human societies have taken this road to complexity, and within the last century, human societies have almost completely abandoned the tribal forms of life that had served us so well since the end of the last ice age. As archaic peoples would like to know why and how human societies make these changes, but many of the first (or primary) transitions to complexity took place thousands of years ago, and evidence of them has been obscured, if not eradicated, by the subsequent development of even more complex societies. This is the case for many of the original "cradles" of complex societies, like Mesoamerica, the Middle East, and Asia.

But in southern Arizona, prehistoric peoples of the platform mounds took a small step towards complexity, experimentally with it for the relatively brief span of two centuries, then nearly completely abandoned it. Small polities remained, but they lacked the size to maintain, much less require, a complex organization. The evidence of this early experiment with complexity has not been clouded by a long archaeological record of subsequent states and empires (Rice 1990:357-58). With the arrival of European American settlers in the last part of the 19th century, however, complex society once again began to spread across the Arizona desert, and true to historical precedence, our own growth is rapidly destroying the evidence of that first experiment in complexity. Every year we at our Institute of the American Desert go by a distance of 100 miles from the nearest city, we find our investiga-

Figure 3. The Cline Terrace mound in the Tonto Basin is actually a combination of a big and small mound within a single walled compound. The rooms on top of the mounds are thought to have been used both as residences for the ruling elite and as ceremonial rooms.

Figure 4. Tonto Basin is one of several river valleys in the Sonoran Desert containing platform mounds. In the Salt and Gila Basins, such mounds developed from an earlier form of dance mound, while in the peripheral basin platforms mounds appear to have been proceeded by special ceremonial buildings called big houses.

Figure 2. The Roosevelt Dam reservoir now covers the valley floor where the Salado would have had their irrigated fields. Ceremonial mounds were held in mid summer to celebrate the ripeness of the fruit of the saguaro cactus. The puly can be made into a wine, while the highly nutritious seeds are stored for use later in the season. Photo by Borda Beards.
Dams, Problem-Oriented Research, and Salado Platform Mounds

In the first decade of this century Theodore Roosevelt laid out a plan for the development of the abundant natural resources of the western United States, a vision that had as much to do with the creation of the Yellowstone National Park as it did with the construction of the Theodore Roosevelt Dam, the nation's first major hydroelectric and water conservation dam at the confluence of the Salt River and Tempe Town Lake in Arizona. By storing water, generating electricity, and controlling the unpredictable floods of the Salt River, the dam made possible the phenomenal growth of modern Phoenix.

The building of the dam took nearly a decade, and brought together Italian stone masons, Irish construction workers, and Apache laborers in what was at that time the United Largest project ever to have been undertaken by the United States government. The project gave birth to a new agency, the United States Reclamation Service, known today as the Bureau of Reclamation.

In the last decade of this century the Bureau of Reclamation has returned to the Roosevelt Dam. The height of the dam will be increased and larger spillways will be constructed. Iconic as it may seem to people not accustomed to life in the Sonoran Desert, the dam is being modified not to store more water but to provide improved capability for controlling floods that might threaten the Phoenix metropolitan area. The modifications will result in a larger reservoir, and could potentially involve the inundation of more than 600 archaeological sites in the Salt and Tempe Town Lake areas.

To deal with the impact to these sites, the archaeological staff of the Bureau of Reclamation sought to develop a program that fulfilled the laws on historic preservation. Kathy Pedrick, one of the archaeologists with the Bureau of Reclamation, remembers that "the challenge was to develop a mitigation program that would embrace critical research issues for the area." After nearly a year of study and preparation, a study team of government archaeologists (including Kathryn Pedrick and Thomas Lincoln from Reclamation, Scott Wood from the Tonto National Forest, and representatives from the Arizona State Historic Preservation Office) identified a set of distinct research efforts, each of which was to be undertaken by a different research group.

Those of us on the research team from Arizona State University have the task of documenting the nature of Salt River prehistory, through a stratigraphic excavation of five platform mound complexes in three areas within the Tonto Basin (Fig. 5). Desert Archaeology, Inc., a private firm directed by William Doelle, is examining two platform mound communities with a slightly different emphasis, to detail the changes in social organization that took place as the platform mound communities developed from the earlier period of pithouse villages. A research team from Stanford University (led by John Alcock) has studied a series of small compounds, field houses, and terrace systems in order to document the relationships between "rural" sites and the populations living at the platform mounds. Richard Ahlstrom of SWCA, Inc., has conducted a sampling survey in the upper reaches of the Salt-Jade (alluvial fan) that surrounds the valley, and has provided valuable information about the contemporaneous populations living in the upland areas. In the spring of 1993 Arizona State University will excavate some of the bajada sites in order to establish the relationship of the upland populations to those living at the platform mounds. Finally, far to the south, Paul and Suzanne Fish of the Arizona State Museum are mapping and excavating a platform mound community in the northern Tucson Basin. Some of their research was supported by the Bureau of Reclamation (a large aqueduct was constructed by Reclamation) to evaluate coastal issues with the Tonto Basin.

By the close of this decade the archaeologists working on these various teams will have developed the first comprehensive views of the community systems that envelop platform mounds.

Life During the Early Classic Period (A.D. 1200-1325)

For the first two years of the Roosevelt Archaeological Project, our research focused on the excavation of several platform mound complexes and a larger number of residential compounds in a portion of the Tonto Basin called Livington (Fig. 6). Most of the sites in the Livington area date to the Roosevelt phase (A.D. 1200-1325) and only a few were previously discovered in the earlier Gila phase (A.D. 1325-1450). We found a number of surprises in the Livington area that have forced us to continue to rethink our models of Classic period society (Wood 1980).

During the Roosevelt phase the people of the Livington area lived in about 40 small compounds and 5 platform mounds dispersed along a 3-mile stretch of the Salt River valley. We had hoped over the years showing similar kinds of dispersed community patterns in the nearby Phoenix basin, but the only extensive excavation of multiple sites (that is, both mounds and compounds) in such a grouping of settlements had taken place many years before (see Hunsaker's 1945 report on the Homemeyer Expedition of 1887 and 1888). Excavation coverage from more recent projects usually focused on only a few compounds or mounds within much larger groupings.

Here in the Livington area of Tonto Basin was an opportunity to gather fresh data using modern methods and current research orientations. Along with our colleagues from Desert Archaeology (see box), we are paying particular attention to architecture and associated features. Artifacts are being systematically collected from screened samples or from carefully recorded location on the horse floors and compound plans. We are collecting flotation samples (soil from which burned seeds and plant pieces are extracted), pollen samples, charcoal fragments, and artifactual samples (clay samples taken from hearths for dating) into the Tonto Basin platform mound complexes constantly bent by problems caused by vandalism and modern construction.

Figure 6. Livington area. During the Roosevelt phase (A.D. 1200-1325) this part of the Salt River valley contained over 40 small residential compounds (indicated by the small squares). Five platform mounds were built around A.D. 1290. By the Gila phase (A.D. 1325-1450) the community in the Tonto Basin had moved into a few very large sites, such as the Schoolhouse Mound. The size of the Schoolhouse Site grew considerably during this later period as people of the Livington area flocked to it. Some people continued to live at a few small sites near Schoolhouse (shown in color). Drawing by Louis Hannon.

Figure 7. This pre-Classic dancer mound at Snaketown was constructed of compacted dirt and was approximately 1 meter in height. Edna Hunsaker suggests that such mounds were used for ceremonial dances. In the Salt and Gila Basins, these dancer mounds are frequently the stratigraphic precursors to Classic period platform mounds. Drawing by Craig Phillips.
Figure 8a. The four high areas on the Schoolhouse mound mark the locations of four clusters of rooms built on a raised platform. The northern mound is the earliest, and it is probably the only one of the four that was constructed during the Basketphase. Preliminary analyses suggest that the other three mounds were added during the succeeding Cibol phase.

Drawing by Lewis Gamble

Figure 8b (below). Cross-sections (AA’ and BB’ on Fig. 8a) through the Schoolhouse mound. The elevated portion of the mound was built as a "hollow" square. At the center of the ruin 25 or more rooms were built at ground level and used for storage. Encircling these rooms was an irregularly shaped, elevated mound supporting about 40 rooms and several small courtyards. Around the edges of the ruin, 25 to 30 rooms built at ground level and used as residences.

Drawing by Lynn Gove

needed to resolve archaeological questions concerning subsistence, chronology, trade, and craft production.

The level of detail in this new information has been gratifying. Inside the walled compounds (Fig. 1) we found the circular bases of granaries, open-air hearths, and small pits for mixing the adobe needed for the regular rebuilding of the adobe walls. Pollen studies indicate that the granaries were used for the storage of corn and squash. Pine pollen, usually found at higher elevations, was recovered from the plaza areas, suggesting that pine boughs were used in ceremonial processions through the compounds. Fragments of a local form of tule were found clinging to the walls of storage vessels on the house floors. Outside some of the compounds were large earthenware pits that our flotation studies showed were used for the baking of agave. We found that many of the compounds were divided in half by a wall, suggesting that perhaps two closely related families, or two generations of the same family, resided within each site. In a typical residential compound, only a third of the rooms contained hearths and were used as residences; other rooms were used as workshops or for storage. One room might contain small flake manos and pieces of shattered stone indicating it had been used as a mica workshop. Other rooms contained polishing stones and chinks of pigment used for pottery manufacture, along with hardened pieces of raw clay that had never been worked.

Just as the rooms within a compound had different functions, so did the compounds within the local area. For example, from member David Jacobs found that compounds that had large pits for roasting agave tended not to have granaries for the storage of corn. Large knives made from polished slabs of whetstone were found for harvesting agave occurred with great frequency at some compounds, while projectile points and obsidian were found in unusual concentrations at others. Yet the metates and manos that were

Figure 9. Pillar Site. During a two-day period around the summer solstice, the downslope and columns of the original two rooms block the rising sun so that a shrine of light extends to the back wall. Although adobe columns also occur in a third room added to the building later, the alignments necessary for this phenomenon exist only in the original rooms.

Drawing by Glenn Cranmer

Figure 10. The floor of this storage room at the center of the Schoolhouse mound was covered with large vases, most of them jars, several baskets, and two wattle and daub granaries. The storage rooms at the center of the mound contained from three to five times more food than was needed for the members of the elite families living on top of the mound. After the site was abandoned, the rooms gradually filled in with layers of water-deposited silt and mud washed down from the surrounding walls and roofs.

Drawing by Greg Phillips
needed to prepare corn and other grains for cooking were found in all of the sites, as were fragments of agave fibers and the bones of deer and rabbit. The individual sites may have been economically specialized, but the fruit of each family’s labor was made available to other families within the pueblos.

This evidence for the economic diversity and specialization of households was one of the things we had expected to find if our ideas about the complexity of Classic period societies were correct. One of the benefits for individuals living in a complex society is that the elite rulers provide an administrative framework and the facilities to ensure regular trade and exchange. This made it possible for the families who concentrated on growing corn or specialized in making the projectile points needed to bring down game.

An Unusual Building

While our research was beginning to provide answers to some of our questions, it was producing highly unexpected results in other areas. Raised on what was known about platform mounds in the Salt and Gila Basins, we had expected to find buried houses and courtyards like those of our platform mound evidence of an earlier and much simpler kind of structure called a dance mound. Dance mounds were frequently circular, although they tended towards the rectangular. They contained doorways in the two walls of the Pillar Site were aligned in such a manner that for a period of about 10 days during the winter and summer solstices they block all but a thin sliver of light from reaching the back wall of the Modern Native American pit houses. The site may have been similarly constructed and then filled to create the platform mound. The use of rooms or cell structures as a form of construction is the explanation of large mounds by helping to stabilize lateral movements of fill within the mound.

At the Pillar Mound, the large rooms of the building were filled with dirt and cobble hearths about 2.2 meters and new rooms were constructed on top of the resulting platform. The construction of the platform was halted at intervals when layers of brush piles were laid over the soil. The porportion of construction was the result of radiocarbon analyses of samples of these materials that have helped date the construction of the mound. Similar layers have been found in other Tonto phase platform mounds.

Figure 11. One of the walls and doors of the Pillar Mound was preserved when the occupants of the site decided to transform this ground level room into part of the raised platform. They filled the interior of the room with dirt and cobble and constructed a new room on top of the resulting platform. This modification helped to fill in a gap in the excavated area, permitting the storage room.

A Late Platform Mound at the Schoolhouse Site

The Schoolhouse mound, one of the largest in the Tonto Basin, was excavated under the direction of Owen Lindauer in 1900 and 1901. The architecture of the Schoolhouse Mound contains a striking record of the changes that took place during the Gila phase. The site was first occupied in the Gila phase, and our current thinking is that it had a small mound at that time. Three additional mounds may have been added at the start of the Gila phase. Through time the mound expanded and additional rooms were built at ground level. More than a century later, at the end of the Gila phase (AD 1855), the mound had been linked into a nearly continuous unit of rooms and raised patio-like areas. The additional rooms and the Schoolhouse Mound were built by people who moved in from elsewhere.
Schoolhouse Mound. This final provided us with basic needed data on the size and construction of these structures. The base of the granary was a circular pedestal of adobe and cobbles designed to prevent rodents from burrowing into it. The upper part was made of branches cunningly woven into a shape roughly like a bee hive. Both the outside and inside walls were then plastered with mud. Small stone walls were laid across the opening at the top to seal the granary. It was about 70 centimeters high, with a diameter of 1.14 meters at the base, and had a capacity of 560 liters (about 15.5 bushels).

Assuming that the people living on top of the mound controlled the food stored in the central storage room, Lindasager estimated that the granaries in these rooms alone contained as much as five years' worth of surplus food. This surplus would be increased by approximately another 80 percent if the storage volume of the large vessels was also included. The granaries in the rooms of the peripheral residential zone might have contained three years' worth of surplus food. Both of these figures are considerably higher than the maximum estimate of one year's surplus for the small domestic compounds of the preceding Roosevelt phase. The central storage rooms thus contained the surplus "capital" that would be needed by the leaders in order to feed people while they were involved in construction projects that served on behalf of the entire polity.

Arthursitton, the laboratory director for the project, has determined that the Schoolhouse Mound was one of a few pottery-producing communities in the valley. The residents of this site also had a disproportionate amount of ceramic vessels, pictorial points, and even deer meat. A total of four shell trumpets, five stone bowls, 120 pieces of pottery, 10 bird effigies, and 12 stone spearheads suggest the presence of particular groups, or even individuals, living at the Schoolhouse mound (Figs. 12, 13). Shell trumpets and elaborate headdresses are still used for important ceremonial occasions by present-day Native American groups in the Southwest.

This suggests to us that the platform mound leaders had intensified the extent of their control over the economy of the polity. The architecture of the Schoolhouse Mound reflects this concern with economic matters; ritual and social control was undoubtedly still an important function of the platform mounds, but it was no longer as dominant. The emphasis on amassing considerable surpluses, the control exercised over the production of craft items such as ceramic vessels, and the concentration of prestige items (including prestige foods such as deer meat) reflect a far greater level of centralization than we saw at platform mounds during the Roosevelt phase.

"the relationship between mounds may have been more cooperative than competitive."

Some Closing Thoughts

The archaeology of the Livingston area has provided new insights into the development of platform mounds. It has shown in surprising detail how a centralized, powerful leadership emerged through a process of gradual social organization. The importance of family leaders in the early Roosevelt phase was replaced in the late Roosevelt by a smaller number of important leaders, and in the Gila phase by the authority of a single clan chief. The lower-level leaders did not disappear from the society, every family still had a family chief, and every lineage still had their respected elders. But a new level of hierarchy developed, with leaders who assumed greater power and authority.

The amalgamation process in Livingston also exhibited an interesting progression from ceremonial authority toward economic authority. Public buildings at the beginning of the Roosevelt phase were devoted completely to large communal meeting rooms. By the end of the Roosevelt phase, the platform mounds functioned primarily as elite residences and as storerooms for the society's wealth.

Unusually, we found that the mounds in the Livingston group developed from a previous architectural tradition of big houses, rather than from the dance mounds found in the Salt and Gila Basins. We will continue to expand our ideas about platform mounds in the next two years of research, and to think about the powerful forces that were shaping the societies of the Southwest during the 14th and 15th centuries.

the other sites and mounds of the Livingston area. Then, the small dispersed compounds of the Roosevelt phase disappeared. Only a few continued to be occupied during the growth and expansion of the Schoolhouse Mound as the people of the Livingston area collected at Schoolhouse, they effectively abandoned nearly all of the area that lay upstream (to the east; see Fig. 6).

As it grew, the Schoolhouse Mound became segmented into a series of subzones (see Fig. 8b). There were three concentric zones within the site, with accessibility decreasing toward the center. Much of the population resided in the rooms at the outside base of the mound. These rooms contained cooking as well as storage vessels, decorated bowls, tools, and frequently one or more granaries. Within this was a second zone consisting of the platform itself. The rooms on the platform were also residences, and while they contained many highly decorated vessels in addition to the various utilitarian artifacts needed for households, very little space was devoted to storage.

At the absolute center of the platform mound, but at ground level, were rooms with massive quantities of stored food and supplies. The central storage rooms were entered through openings in the ceilings, and contained granaries, large storage jars (Fig. 10), and a variety of more portable artifacts including axes, adzes, knives, serving bowls, and decorated vessels. One of the great mysteries of the Schoolhouse Site is why these rooms were not emptied as the site was vacated. The completeness of the assemblages suggests that Schoolhouse may well have been one of the last sites in the basin to be abandoned.

An intact granary (Fig. 11) was found buried beneath part of the

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Bibliography


