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9 PUEBLO

SOUTHWEST II

"We came in sight of Cibola," wrote Father Marcus de Niza in the spring of 1539, "which lies in a plain on the slope of a round height. Its appearance is very good for settlement, the handsomest I have seen in these parts." Assessing the region's rumoured riches on behalf of the Spanish viceroy in Mexico City, the Franciscan friar never actually set foot in this Southwestern Indian community, located along a tributary of the Little Colorado River in present-day western New Mexico. He had already dispatched his black slave, Estevan, to do that. But the residents, who were probably Zuni Indians belonging to the village of Hawikuh, one of seven early Zuni towns, killed Estevan at the entrance to their village.

What Father Marcus glimpsed from a mesa away was an example of a distinctively Southwestern Indian architectural creation: a cluster of contiguous rooms constructed up to several stories which the Spanish quickly classified as a "Pueblo." Since that time, the natives belonging to a number of different language groups, who for over a thousand years have continued to farm and occupy these housing complexes, have been known collectively as "Pueblo Indians." Over the decade preceding Father Marcus's arrival, Spanish greed had been aroused by extravagant reports that the pueblo walls were inlaid with precious jewels and their alleyway-like streets lined with silversmith shops. When Father Marcus's own exaggerations about the village of Hawikuh reached Spain, the court was excited again to learn that this "city" was larger than the Aztec capital of Mexico and could "encompass two Seville."

A glance at an archeological map of the American Southwest reveals that the priest was exploring near the heart of a pre-Columbian cultural region that had witnessed a succession of architectural traditions, leaving behind a large number of stunning and intact building remains. To early visitors, the American Southwest was perhaps the most spectacular corner of the continent. Its arid isolation, high desert panoramas, and gorgeous light were reminiscent of mythological holy lands and ancient civilizations. Its northern rim begins as the tail end of the Rocky Mountains gives way to the Colorado Plateau with its sandstone mesas, outstretched valleys, and hardy upland forests, which are watered mainly by the Colorado River and its tributaries. The air is dry and clear, the winters are cold, topsoil is meager, and life-giving rains fall only occasionally in late summer.

Toward the Mogollon highlands of eastern Arizona the topography grows increasingly rugged where the Gila and Salt River systems penetrate the mesquite and cactus desert. Continuing down into northern Mexico, the withering Basin and Range country lifts into the Sierra Madre wall. The great pre-Columbian Pueblo cultures of the Southwest were invigorated by traders and emissaries from the civilizations of Mesoamerica, who made their way through the natural passes and corridors of this rough terrain.

The earliest Spaniards to see the American Southwest and its Indian housing tended to regard architectural size and apparent permanence as reflections of cultural development. Initially they admired these communal stone and adobe towns with their clusters of multistoried and specialized rooms, their connecting rooftops and interior passageways, their spaces for storing water and processing the produce of agricultural fields, their bustling



Emergence

The emergence of human beings from the underworld is a fundamental theme in Pueblo Indian myth, ritual, and architecture. The emergence design (*above*) is from a bowl made by the Mimbres people, southwestern New Mexico, A.D. 900-1200. This wide view (*bottom*) of the rooftops of Zuni Pueblo, New Mexico, looks toward the sacred mountain, Dowa Yalanne. Photographed ca. 1880.





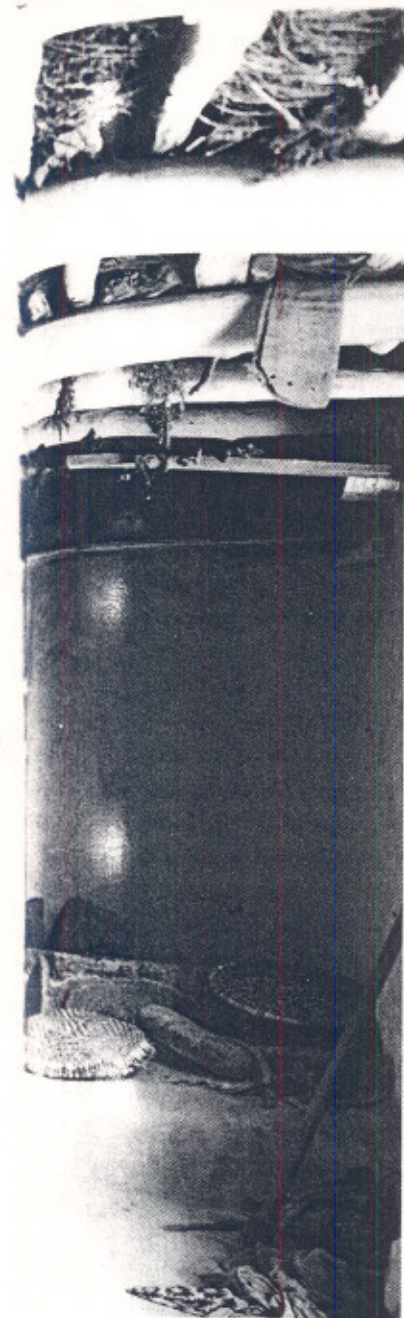


work terraces, and their public plazas and underground religious chambers (which we now call by the Hopi term *kivas*, but which the Spanish called *estufas*, or stoves, because of their overheated interiors). In this architectural ensemble the Spanish sensed a familiar civic impulse. Furthermore, the developed look of the towns, the manpower and level of social organization needed to maintain them, and the pieces of turquoise and coral jewelry they found, suggested to the Spanish the sort of byproducts of civilization they had exploited among the Aztecs and Incas: a native labor force and natural riches.

Fourteen months after Father Marcus's visit, however, the humble, mud-plastered town of Hawikuh was demoted in Francisco Coronado's eyewitness report to "a little crowded village, looking as if it had been cramped together." Yet if the houses were "not decorated with turquoises, nor made of lime nor of good bricks" as the priest had implied, "nevertheless they are very good houses, with three and four and five stories, while there are very good apartments and good rooms with corridors, and some very good rooms underground." As for deducing wider cultural development from architectural evidence, Coronado expressed disbelief that the Zuni occupants could produce even these structures. "I do not think they have the judgement and

Hopi food room

Most of the space within a typical southwestern pueblo was given over to the storage and preparation of food. People lived in the upper rooms, and stored dried corn, vegetables, and other food in chambers deep within the houseblock. This Hopi food room (*above*) shows stacked corn cobs to the left, fresh melons, and a row of milling basins to the right. The basins hold grinding stones, or *metates*, of varying degrees of roughness for grinding corn from coarse to medium to a fine meal.



intelligence needed to be able to build those houses in the way in which they are built, for most of them are entirely naked...."

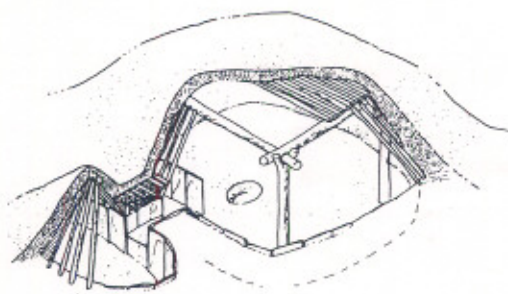
Of course Coronado was as misled about the sophistication of Zuni society as he was about the durability of their architecture. The size of their mortared-stone buildings belied their relatively impermanent construction. Unlike the great buildings of the Anasazi period whose primary structures often were built in one organized construction campaign, these Zuni house-blocks were actually fragile honeycombs of plastered and whitewashed cell-like rooms which had been stacked up somewhat haphazardly over time. Relatively little attention was paid to bonding together the rooms, which themselves were often hastily dismantled to provide building material for a new unit somewhere else.

The country of the Zuni people, or "Cibola" to the Spanish, was one of three Indian "kingdoms"—containing nearly eighty Indian Pueblos altogether—that were identified by the Coronado expedition. To seven other native villages in the province of Tusayan, the Painted Desert homeland of the Hopi Indians, Coronado dispatched Pedro de Tovar. He sent Hernando de Alvarado to the third province of Tiguex, which included a dozen or more villages along the banks of the Rio Grande to the east. En route, Alvarado passed beneath the site of Acoma Pueblo, perched atop an impregnable sandstone mesa. Finally he reached the easternmost Indian town, a large settlement named Cicuique, which today is the archeological site of Pecos Pueblo.

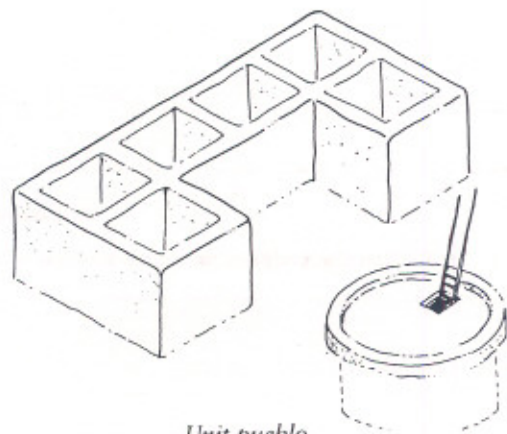
Alvarado's description of this village offers a checklist of features that would typify Pueblo architecture over the next three centuries: "... it is square ... situated on a rock with a courtyard in the middle, containing the estufas. The houses are all alike, four stories high. ... There are corridors going all around it at the first two stories, by which one can go around the whole village. ... The houses do not have doors below, but they use ladders, which can be lifted like a draw bridge. ... The village is enclosed by a low wall of stone."

Such sketchy glimpses are all that Spanish sources yield of late-period Pueblo architecture, whose built forms had undergone six centuries of change and decline. The Spanish also tell us little of the impressive archeological sites for which the region is renowned today. Before Coronado ever reached Hawikuh he had noted a massive ruin along the Gila River south of present-day Phoenix, Arizona, which almost certainly was the adobe citadel of Casa Grande. But Spain was uninterested in scientific or cultural exploration, and further disclosures of the region's architectural heritage would not come for almost three hundred years.

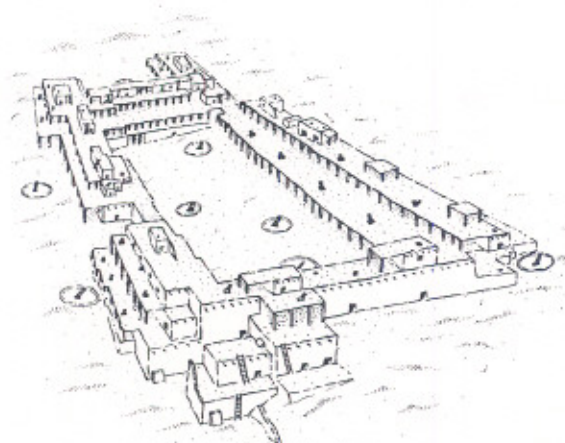
In the mid-nineteenth century, the United States took over the Southwest from Mexico and sent its own military emissaries to learn about its people and natural resources. Their reports included drawings and descriptions of the native buildings they found everywhere—recently abandoned, long in ruins, or occupied by surviving Pueblo societies. As ranchers began chasing stray stock into unexplored canyons, other ancient settlements came to light. In the 1870s and '80s, pioneer archeologists and anthropologists began discovering old rooms that seemed frozen in time: fresh murals were on the walls, fiber sandals lay on the floor, and cooking pots rested on cold fire pits.



Pit house



Unit pueblo



Pecos Pueblo

THE PREHISTORIC SOUTHWEST

The earliest excavators of old Pueblo ruins tried to reconstruct the chronology of their pre-Columbian societies by making general correlations between painted designs on old pots and architectural features. With the refinement of this approach, the first major effort to establish the sequence of early Southwestern cultures occurred in 1927 during a symposium at Pecos Pueblo, which by then had been excavated and restored. The best scholars in the field hammered out a broad timeline which, with important additions, remains the most developed chronology for the cultural prehistory, and architectural evolution, of the central American Southwest.

According to the Pecos schema, early Indian groups, which shared what has been labeled the Basketmaker culture, occupied caves in the Four Corners heartland around 200 B.C. Five centuries later, agriculture was well-established and the Basketmakers were living in villages composed of one- or two-family, circular pit houses.

The culture known as prehistoric Pueblo emerged around this time, identified architecturally by the Indians' gradual move into above-ground "unit pueblos." From then on the techniques for building monumental houseblocks and separate ceremonial chambers, for organizing sophisticated regional food production networks and communication systems among many towns, developed with unparalleled rapidity. During the classic period of Pueblo architecture, from roughly 1100 to 1300 A.D., extensive cliff dwellings were constructed in the northwestern plateaus, and an even more elaborate regional network of agricultural townships appeared in western New Mexico: the "Great House" architectural system centered in Chaco Canyon. Toward the close of the thirteenth century, however, environmental or social troubles seem to have precipitated the relatively sudden abandonment of these magnificent stone-and-adobe city-states. For the next two and half centuries, the Pueblo Indians' descendants periodically regrouped and resettled, migrating gradually ever eastward.

By the mid-twentieth century, further archeological work and refined dating techniques, including counting tree-rings on old Pueblo house beams and comparing the annual growth cycles against a master chronology to pinpoint the year the beam was cut, made it clear that the Southwest's prehistory involved more traditions than could be embraced by one architectural chronology. The Pecos timeline remained basically sound for the widespread cultural world known since 1936 as *Anasazi*, from a Navajo word meaning "enemy ancestors," which had produced spectacular cliff dwellings such as Mesa Verde and the even more impressive buildings of Chaco Canyon. But it largely ignored the architectural and cultural achievements of the great

Pre-Hispanic building

These drawings trace major stages in the evolution of Pueblo architecture. Pit houses, the earliest house type, were built in various ways. The reconstruction of an early Basketmaker form (*above left*) is based on archeological work at Shabik'eshchee Village in San Juan County, New Mexico. After A.D. 850, early Pueblo period builders began constructing rectangular rooms above ground of stone and adobe, roofed with timbers, branches, grass, and adobe mud. Combined to share walls, and with a kiva (a vestigial pit house) close by, these are called "unit pueblos" by archeologists (*above right*). A fully developed early example of this construction is Pecos Pueblo in central New Mexico, as it appeared ca 1700.

Mogollon pit houses (*right*) are drawn from excavations at Harris Village in southwestern New Mexico.

Mogollon and Hohokam cultures found further to the southwest.

When the Spanish encountered the native descendants of all of these cultures, nearly a thousand years of migration, cultural interaction, ecological adaptation, and climactic shift had already taken place. Despite the harsh program of Spanish colonialism, including military conquest, Catholic missionization, and conscripted labor, the Pueblo Indians and their architectural traditions remained remarkably resilient. Although the Indians incorporated new architectural ideas, they did not forswear their construction practices or abandon their traditional spatial concepts. Today the Pueblos still represent the most persistent architectural heritage in North America.

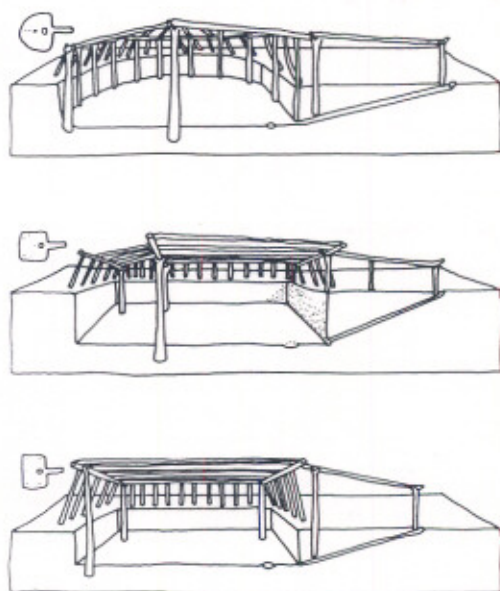
MOGOLLON

Mogollon culture is named for the rugged plateau and mountains of central Arizona and southwestern New Mexico, where archeologists have found remains of another distinctive prehistoric Southwestern tradition. Dating from shortly before 300 B.C. and generally found in villages built on defensible mesa crests, the early Mogollon habitations had floors excavated quite deep, up to three feet. The sides of the pit formed the walls; the roof was supported by heavy posts and the principal rafters which held a layer of smaller sticks and a final mat of brush capped with wet earth. One entered through the smoke hole by a ladder or down a ramp, which was usually oriented south-southeast, and near the entryway stood a square, stone-rimmed hearth. Otherwise the construction and shape of Mogollon structures varied: the interior posts could be positioned near the center of the room or stand closer to the walls; the buildings could be built upon a D-shaped, ovoid, or rectangular plan.

Mogollon settlements contained from five to fifty of these semisubterranean structures and were fortified on their exposed sides by simple masonry walls. The dwellings had plank-lined food storage cysts and cooking pits inside and out. Additional heat for the house was sometimes generated from rocks that were warmed in outside fires; then carried inside. Nearby were garden plots, where Mogollon farmers raised the corn, beans, and squash that augmented what they hunted and gathered.

For ceremonies a special pit house was built either in the midst of the settlement or on its periphery. As Mogollon society grew more agriculturally competent around A.D. 800, members began to move down into the valleys. There they reinforced their pit house walls with masonry linings and expanded the single "Great Kiva" to serve larger communities. Built on a rectangular plan, these religious structures sometimes extended 40 feet.

After A.D. 1000, Mogollon architecture seems to have reflected Anasazi influence as rooms were joined and walls composed of cobbles held together with mud mortar were raised to two stories. These apartment-style room clusters, facing central plazas, could multiply into sizable communities, such as the 500-room Grasshopper Ruin found in western Arizona. Scholars cannot agree on what precipitated the population decline of Mogollon society in the 1100s, but it left their villages utterly deserted by A.D. 1450. Some suggest that their survivors were among the founders of the Zuni pueblo of Hawikuh seen by Father Marcus de Niza.



*Mogollon pit houses,
section and plans*

ANASAZI

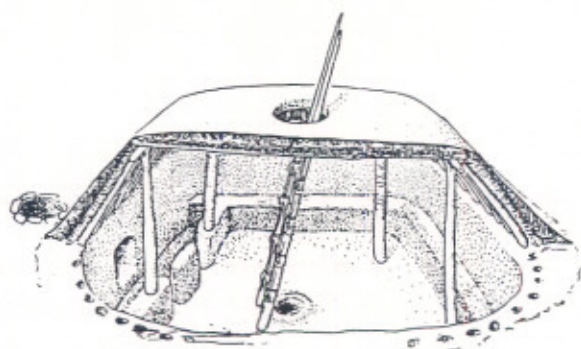
Without question the most elaborate native architecture in North America was produced by the cultural world we identify by the name Anasazi. Nestled beneath sandstone cliffs or positioned along valley floors, their compact apartmentlike town clusters integrated the most advanced inventory of building types, special-use rooms, construction methods, and road and water management systems in the continent.

Constructed with only the available materials of earth, stone, and sunlight, these proto-urban settlements still appear strikingly harmonious with their high desert surroundings. As archeologists Michael P. Marshall and David E. Doyel have written of what is popularly labeled the "Chaco Phenomenon" of the southeastern Anasazi, "The buildings often appear as extensions of pinnacle spires, mesa cliffs, and canyon walls . . . A sense of place is clearly a very important aspect of Bonito-style architecture, especially in the outlying districts. It is as if the environment were personified with attributes of mythological character, and the placement of the structures were dictated by Chacoan cosmography and sacred geography, balanced by certain economic considerations."

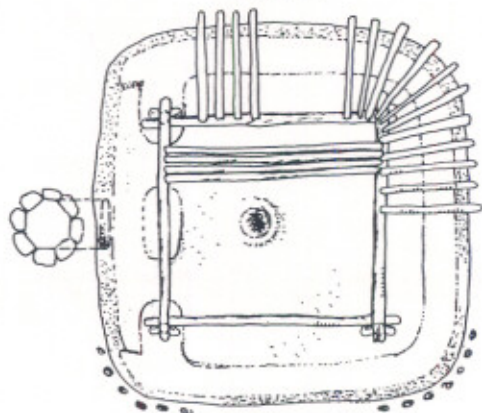
As with the Mogollon and Hohokam architectural heritages, Anasazi house building started with semi-subterranean structures. About the time of Christ, their forebears were digging 4-foot-deep house floors in the Mesa Verde region of southern Colorado. These shelters contained sunken hearths and sandstone slabs to deflect drafts that blew through their tunneled entryways. Gradually these rooms expanded, and ladders through the smoke hole replaced the doorway, which shrank into a ventilation shaft. Sometimes pit house floors contained a fist-sized pit later called a *sipapu*, from the Hopi word for the mythic place of emergence. Some archeologists believe that this floor shrine stands for the opening in the earth from which, according to Pueblo myth, human beings emerge after their ascent through a succession of underworlds.

A change occurred around A.D. 700, however, when people began to live for part of the year in small "unit" structures above ground. Constructed of easily chipped sandstone rock set in masonry, their walls lacked windows or doors and were roofed like pit houses with main rafters, smaller closing material, and earth. These cubicles were combined so that adjoining units shared walls, and eventually the linear arrangement of rooms embraced irregular plazas, usually with the rear facade toward the prevailing northerly wind or backed against a cliff. The front facade and terracelike roofs faced south. During the winter the adobe soaked up solar heat throughout the day and radiated it into the domestic rooms at night. With small, relatively smokeless fires burning in the rooms during very cold weather, and the smoke hole shuttered for the night, the warm walls kept the interior comfortable.

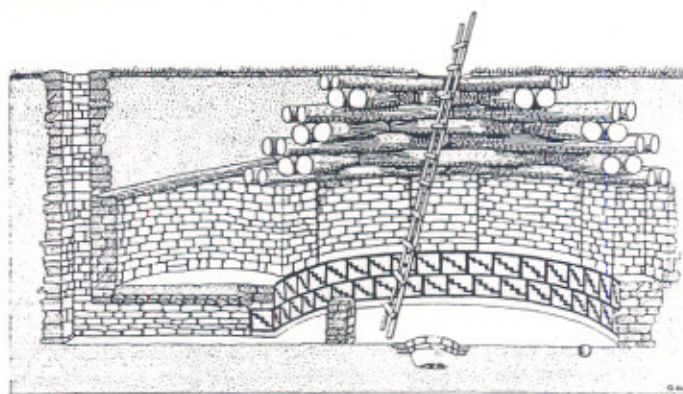
In colder reaches of Anasazi land, pit houses, which probably kept family groups warmer than the multiroom pueblos, continued to be used for awhile for shelter and storage. But by about 950, as an increasing population depended more extensively upon agriculture and new, efficient practices of processing and food storing, most of the multiroom pueblos were occupied year-round. Also around this time, the pit house form appears to have gradually transformed into the circular sacred or social kiva. Over the next thousand years it became the most symbolic Pueblo built-form, an architec-



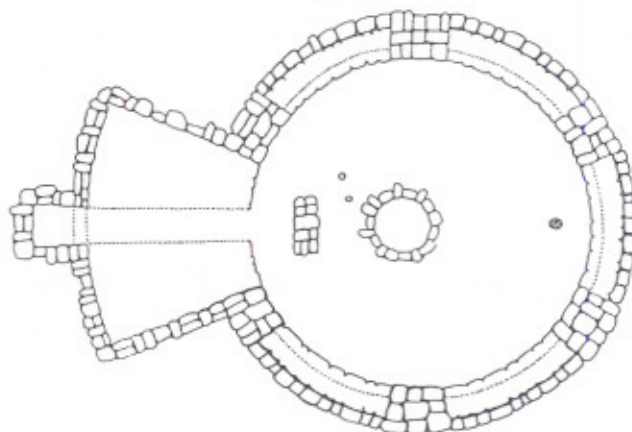
Section



Pit house plan



Section



Kiva plan

Prehistoric change

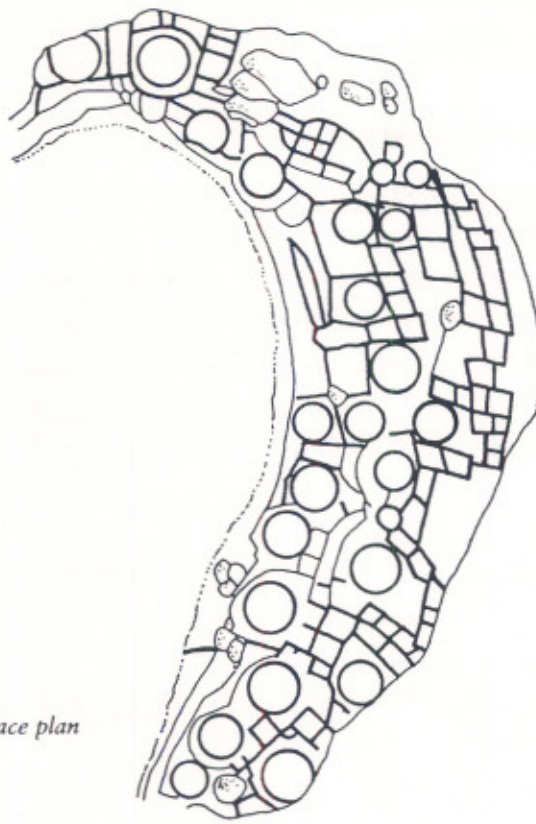
Buildings used exclusively for sacred and social purposes, known as kivas, evolved from domestic pit houses. The pit house drawing, (top left) is based on remains from the La Plata district in southern Colorado. It was built between between A.D. 500 and 700, and has a bench around the interior, a small air vent and a stone to deflect incoming drafts, a central hearth and ladder for entering through the roof.

In the generalized drawing of a Anasazi "keyhole" kiva (top right), which was fully developed in the same region by the twelfth century, the ventilator shaft has been lengthened, the structure is sunk deeper within the ground, the bench has become more elaborate—with paintings and often with pilasters—and the roof is composed of corbeled logs. Behind the firepit is the small cavity known as the *sipapu*.

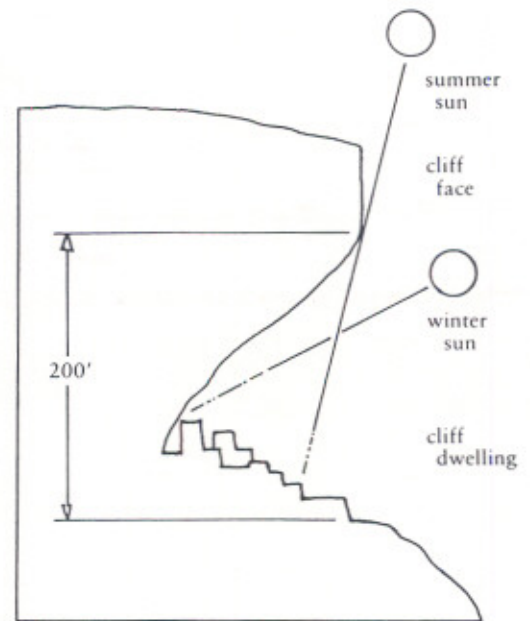
tural embodiment of the collective, insular, and spiritual nature of Pueblo theocracy. Anasazi kiva interiors were often covered with multicolored murals and ringed with adobe-plastered benches on which rested pilasters or embedded posts that supported corbelled-log ceilings. These San Juan kivas featured ventilation shafts and fire pits, and sometimes included sipapu shrines and floor basins for ritual activities.

To shelter their growing population, the Anasazi added second stories to their unit pueblos. Families slept in the upper, front units where sunlight peered through the smoke hole, and the passive-solar heating properties of adobe were most effective. During late fall and early spring the inhabitants worked or socialized on the outdoor roof terraces. In the cooler, darkened interior rooms they processed and stored dried corn, squash, and other produce. Over time, archeologists now believe, the more organized Anasazi villages used the interiors as storage depots for a regional food supply; a remarkable number of rooms are devoid of any sign of domestic life.

By the time of the florescence of the Anasazi culture, between about 1100 and 1300, kivas—tightly inserted between recent building additions—were proliferating. At settlements in the Mesa Verde region, for example, they fit snugly amid concentric walls, unusual D-shaped buildings known as "horse-shoe" houses, and ceremonial towers to which some are connected by underground tunnels. Scholars have suggested that this plentitude of kivas is evidence of the emergence of a clan form of social organization, with larger kin groups starting to favor "suites" of rooms, each with their own meeting chamber or kiva. It is conceivable that such ensembles actually comprised neighborhoods, with tribal rules dictating the interdependent work, worship, and recreation of the pueblo as a whole. It has also been proposed that the community at large convened in the expanded circular structures that archeologists call "Great Kivas," over twenty of which have been found throughout Anasazi territory.



Cliff Palace plan



Cliff Palace profile

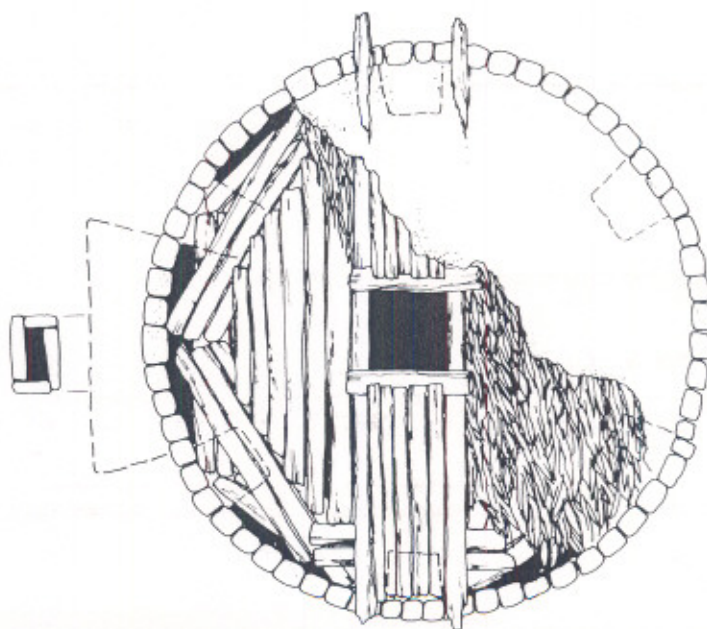




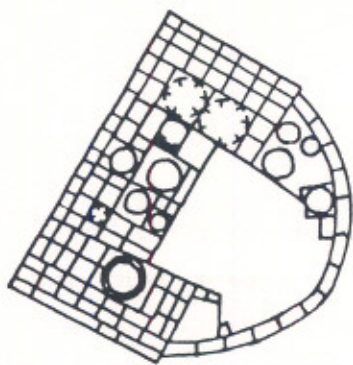
Mesa Verde

In the southwestern corner of Colorado, at Mesa Verde National Park, are preserved many spectacular Anasazi cliff dwellings from the period A.D. 1100 to 1275. Cliff Palace (*left*) had plazas, 220 rooms in buildings up to three stories, 23 kivas, and ceremonial towers.

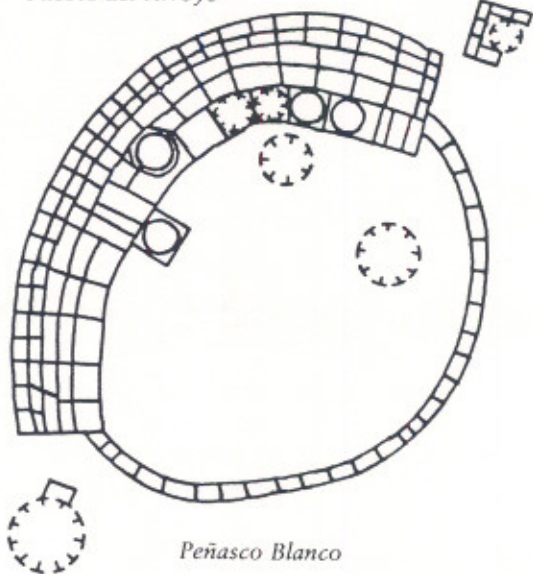
Spruce Tree House (*above*) is another large cliff dwelling. The walls have been restored and the kiva ladder reconstructed. The upper-level T-shaped doorways would have been entered from roof terraces which no longer exist. Food was probably prepared and cooked outdoors in front of the rooms. The small plazas were actually the roofs of kivas buried below, which were framed as shown to the right.



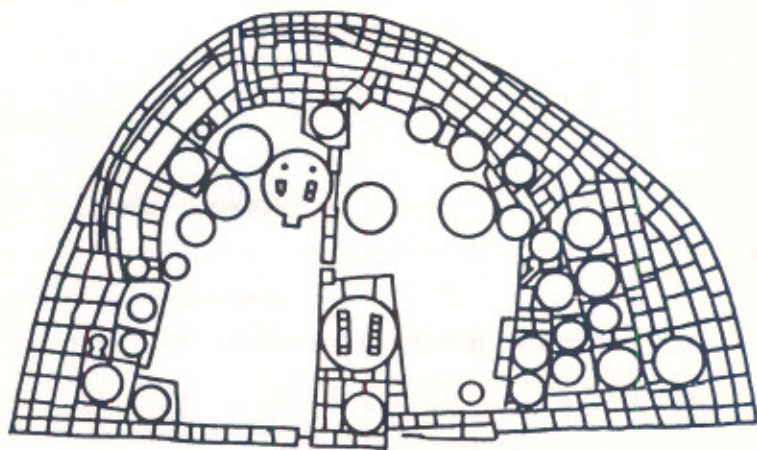
Kiva roof framing plan



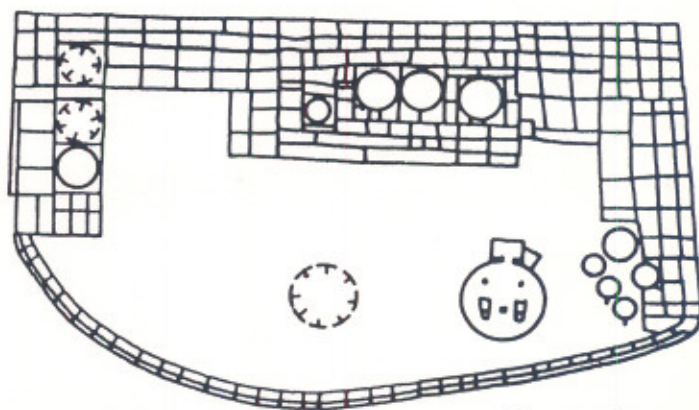
Pueblo del Arroyo



Peñasco Blanco



Pueblo Bonito



Chetro Ketl

Chaco Canyon Great House plans





Chaco Canyon

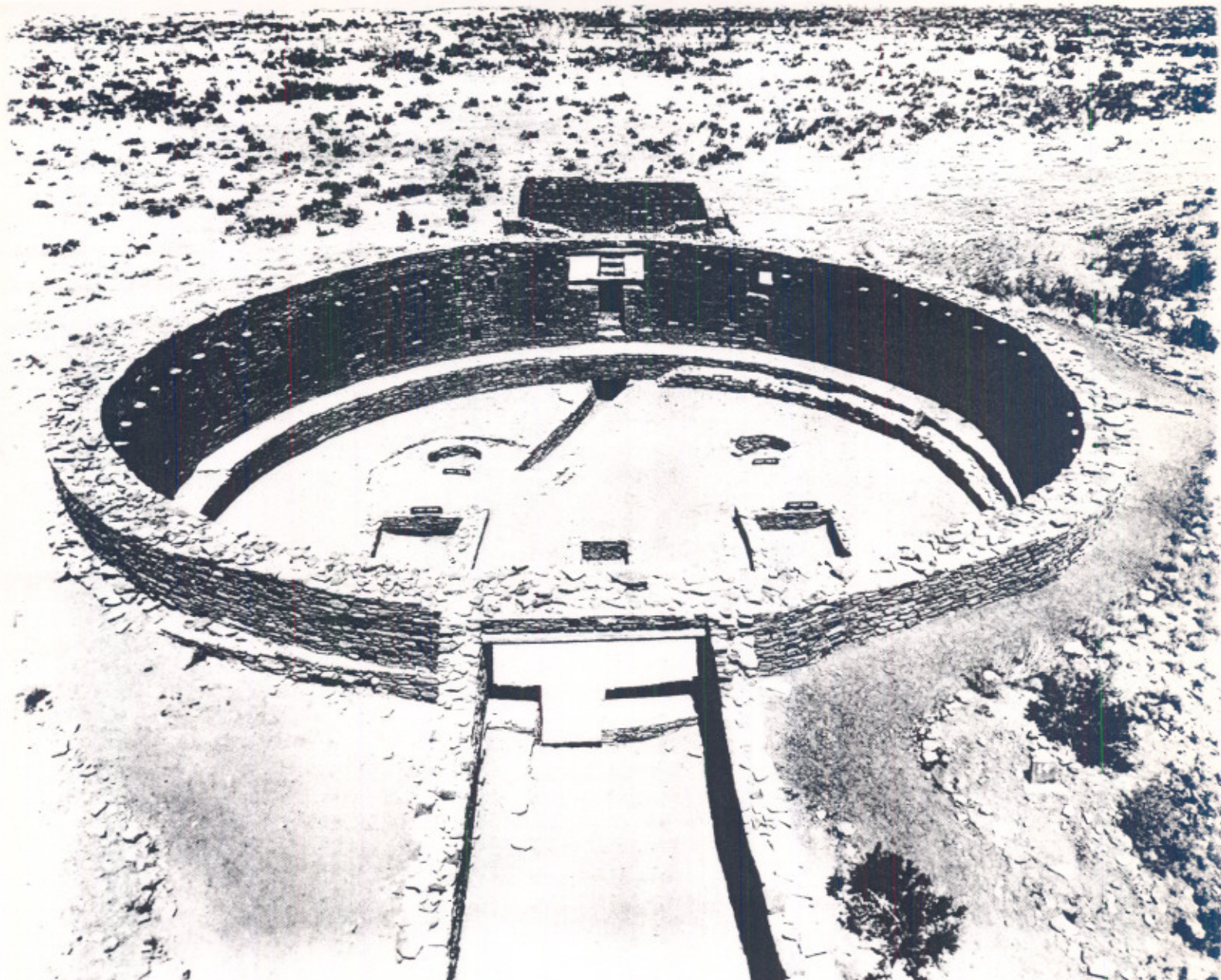
Most of the Great House complexes of Chaco Canyon (*above, looking east*) were built by the Anasazi along a seven-mile stretch of Chaco Wash. Entering the canyon from the west, Peñasco Blanco is encountered first. It is the only town complex situated to the south of the wash, and was built between A.D. 900 and 1120. When architect Victor Mindeleff visited this pueblo in 1888, some rooms still retained their original wood plank roofs. Further into the canyon three major towns are side by side: Pueblo del Arroyo, built between A.D. 1065 and 1110, Pueblo Bonito, (920 to 1085), and Chetro Ketl (1010 to 1105). At the eastern end of the canyon, La Fajada Butte can be seen; its pictographs and stone alignments possibly functioned as a solar observatory, marking the solstices and equinoxes.

The reconstruction drawing of Pueblo Bonito in its prime (*bottom left*) was by the photographer William H. Jackson, who visited the canyon in 1877.

It was during this period that Mesa Verde and Chaco Canyon appear to have become the command centers of the Anasazi Southwest. While the extent of Mesa Verdian influence is harder to identify, Chaco Canyon, according to archeologist Stephen H. Lekson of the National Park Service, held sway over a regional system "only slightly smaller than Ireland." A shared religious worldview and sociopolitical system probably created a certain unity among the inhabitants of the northerly and southern Anasazi regions. A communication network of straight roads and fire beacon signals extended for hundreds of miles, linking smaller outlying pueblos, and long-distance trade relations brought prized goods such as macaw feathers and copper bells from hundreds of miles away.

By the eleventh century, undoubtedly the most skilled builders were in Chaco Canyon, where at least nine major "Great Houses," highly integrated assemblages of rooms, kivas, plazas, towers, and terraces, lined the valley floor. Unlike the gradual process of room accretion which the Spanish were to witness among the historic Pueblos, the construction of these immense house-blocks was not piecemeal. According to Lekson, "Complete blocks of up to 50 rooms or more were built as single planned structures. Clearly, the design of Chacoan Great Houses was not a committee affair; not all of the occupants or users had a say in how the finished building would look. Design was centralized, and the role of architect was at least rudimentally present." Also present must have been the role of contractor, for Lekson emphasizes the amount of material and sweat which went into the building phase in Chaco Canyon in the 900s: "Construction of a typical room required 45,000 kilograms of stone, 15,000 kilograms of clay, and 4,100 liters of water. The massively timbered roof or ceiling of a typical room required 40 beams, each a separate pine or fir tree obtained from forests up to 60 kilometers from the desert canyon."

The apparent "capital" of Chaco Canyon was Pueblo Bonito, a D-shaped Great House which grew in successive stages from a kernel arc of about one hundred rooms in the early tenth century to a garrison town covering almost two acres by 1070. By then it stood at least four stories high at the rear, which backed against a sheer sandstone cliff, and contained 800 rooms, 37 kivas, and a divided plazalike open area which held two Great Kivas.



From ground-level footings, which rested upon trenched foundations filled with rubble and clay mortar to prevent the walls from settling, the curved back of Pueblo Bonito was about 35 feet high. At its widest point, where the central rooms faced the low-lying winter sun, the living area was six rooms deep. The tapering of the outer walls from a thickness of about 3 feet at the base to 1 foot at the uppermost story supports the supposition that the central section was conceived as a total unit. As in most Chaco Canyon constructions, it was the unparalleled craftsmanship of these walls, which, unlike abutted historic period pueblo walls, were often bonded together by interlocking the stone in adjoining walls, that makes Chacoan architecture so outstanding. As described by archeologist Linda S. Cordell, "The Bonito sites were constructed of cored, veneered masonry in which the load-bearing wall core was composed of rough flat stones set in ample mortar with each stone oriented to only one face of the wall and overlapping or abutting the stone on the reverse face, creating a structurally sound wall. The wall core was then covered on both sides with veneer of coursed ashlar, often in alternating bands of thick and thin stones, forming various patterns. The strikingly decorative veneers were then covered with adobe plaster or matting."

Chacoan kivas

Near Pueblo Bonito are the remains of Casa Rinconada (*above*), a Great Kiva 63 feet in diameter. It included a masonry box for the fire, trunk-like vaults possibly for foot drums, and a subfloor passage which might have been used for theatrical effects during rituals.

The overview photograph of Pueblo Bonito (*right*) shows round kivas amongst the rectangular rooms.

By contemporary standards, the rooms at Pueblo Bonito were cramped, averaging 9 by 14 feet and under 8 feet in height. They were entered by ladders, as was the walled town itself. Within the darkened rooms, doorways and trap doors opened on to storage rooms, units with rows of milling basins for grinding corn, and chambers with carefully oriented observation windows so ritualists could mark key moments in the solar and lunar calendars that governed agricultural and ceremonial life.

To maintain this dense population and highly organized way of life, the canyon and upper mesa rim around Pueblo Bonito and its sister towns had been converted into a major water management enterprise. Residents tilled the garden plots that lined the valley bottom's trickling stream. They also cooperated on the upkeep of an intricate system of dams, floodgates, and ditches. As the thunderstorms of July and August brought rain, virtually all of the water that fell in the immediate vicinity was channeled down spillways and troughs to feed their gardens and replenish their reservoirs.



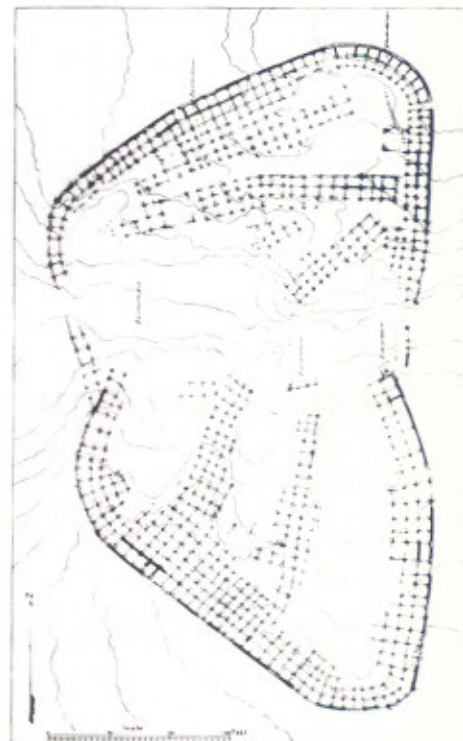


DECLINE

What led to the abrupt end of Anasazi society in the late thirteenth century remains a mystery. There is no convincing evidence that some "invading horde" of aggressive hunters, Athapaskans or otherwise, wiped them out. Theories of social or religious schism remain speculative. A period of threatening droughts is known to have occurred between 1276 and 1329, but its full ramifications remain unclear. Whatever the combination of likely causes, after 1300 all the major Southwestern cultures experienced disarray, migration, and reconsolidation.

It is believed that in the wake of these upheavals the upper Rio Grande basin eventually became a refuge for Anasazi survivors who abandoned the San Juan basin and adjoining areas in increasing numbers. Their hastily built, oversized settlements—many hidden in mountain pockets—are found along a 150-mile stretch of the Rio Grande. Other Anasazi offshoots, perhaps migrating as intact clans, coalesced as the incipient Hopi around the Black Mesa terrain of northeastern Arizona.

Although during this unsettled period the Anasazi resettlers continued to use traditional building methods, masonry at the new sites was not up to former standards. Some of the large communities, such as the briefly occupied Kin Tiel site north of present-day Holbrook, Arizona, seem little more than refugee camps. Covering 30 acres, Kin Tiel seems to have been built with defense in mind around 1275. While its house blocks were split into two sections in a town plan remarkably similar to present-day Taos Pueblo in northern New Mexico, square kivas are found here, too, more in keeping with the rectangular kiva tradition found among the Western Pueblos of historic times.



Late Anasazi settlements

About A.D. 1300, Anasazi migrants from the Mesa Verde and Chaco areas moved east and south. They resettled in large communities such as Kin Tiel (*bottom left*). Another important pueblo built between A.D. 1300 and Spanish arrival is Puñe; this view (*top left*) shows the grid of rooms atop the Parajito Plateau; other dwellings were carved into the soft tufa rock at the base of the mesa. About a thousand rooms are estimated to have housed some 2,000 people. Among the kivas at Puñe is this solitary kiva (*below*), which overlooks Frijoles Canyon 150 feet below.

As the emigrants continued eastward, two forms of settlement predominated. At sites like Tyuonyi in Frijoles Canyon in present-day Bandelier National Park, single-story structures were the norm, arranged linearly around plazas. In other transitional communities rooms were massed into irregular pyramids. These towns were laid out in a circular or rectangular shape, walling in an enclosed courtyard or, as at Tsirege, Otowi, and Tsankawi, merely establishing house blocks on three sides of a plaza with openings generally to the south. The new Rio Grande communities seemed to prefer the rounded, San Juan style of kiva, and in a few of their plazas the old Great Kiva reappeared.

Some of these settlements withered, while others flourished and developed new construction techniques. Along the Rio Grande, where usable stone was at a premium, Indian builders formed squat wet bricks known as "turtle backs," slapped and shaped them atop each other, then smoothed the surface over with plaster. We will never know, however, what architectural forms might have been produced during this time of reorientation, for the arrival of the Spanish in the mid-sixteenth century abruptly ended that natural evolution.



SPANISH INFLUENCE

The Spanish campaign to dominate the Pueblos had an impact on Indian culture and architecture for the next 140 years. The roofline of many Pueblo villages betrayed one highly symbolic modification: The harmonious planes of pueblo terraces and mesas were now pierced by the bell towers of Franciscan missions. Other innovations were less obvious. Spanish interior corner fireplaces, known as *fogon*, were gradually adopted by the Indians, who added flues and chimney pots to release the smoke. In replacing their old center-floor hearths with the Spanish molded fireplaces, however, they improvised ways to suspend smoke hoods over the raised burn area that still allowed them to fit pre-Spanish granite griddles over the fire. The stone pans were used to toast unleavened *piki* bread, made from thin corn batter. Beehive-shaped outdoor ovens, known as *horno* to the Spanish, were added to roof terraces. The ovens were fired up with burning juniper, and held heat long enough to bake yeast bread and pastries and to roast game and unhusked corn.

In regions with sufficient water to make adobe, the Spanish wooden forms for molding the bricks made raising walls somewhat easier. But the Indians' bricks and the walls they built were not as thick as those preferred by the Spanish, perhaps because the Indians were less preoccupied with the permanence of their constructions. Nor did the Pueblo Indians alter greatly the dimensions of their diminutive rooms or adopt such Hispanic adobe features





Spanish influence

Catholic churches were built within the Pueblo. As suggested by the church at San Felipe (left), they often combined Spanish and Indian elements. Although pre-Hispanic Indians did use hand-molded adobe bricks, the Spanish brought the idea of the form-molded brick to the Southwest. A Zuni woman is shown forming bricks (above).

as wrap-around porticos, carved lintels, or corbels. For their part, Spanish homesteaders appear to have been equally influenced by Indian building patterns and customs. Soon they were forming their northern New Mexico ranchos protectively around plazas, and Spanish women took charge of the fresh plastering each year as if imitating Pueblo Indian custom.

From 1600 to 1680, as Spanish oppression intensified, the Pueblo Indian population dropped an estimated 50 percent from forced labor, execution, and epidemics. In 1680, however, the Pueblos of Hopi country, the Rio Grande villages, and the Indian communities in between staged the most successful multitribal uprising in American history. Its architectural consequence was the destruction of most of the Catholic chapels. Indeed, among the Hopi, church beams were salvaged as rafters for their traditional kivas. After the city of Santa Fe was liberated by the Indian rebels, a kiva was built in the downtown plaza as if to declare their triumph in architectural terms.

The all-Pueblo rebellion of 1680 surprised the victors as much as the vanquished. Perhaps fearing retaliation, or to exorcise spiritual contamination after so much bloodshed, a reshuffling of Pueblo sites took place. The Hopis rebuilt their villages atop three secluded stems of Black Mesa, where they still live today. The Anglo-American visitors of the late nineteenth century were recording the lifeways and architecture of Indians who wanted little to do with the white man again.

PUEBLO

In few tribal regions are the culture and architecture so closely identified as they are among the southwestern Indian village peoples. Yet technological and social variations distinguished Pueblo traditions from one another. In the Western Pueblo villages of the Acoma, the Hopi, and to some extent the Zuni, water was scarcer than in the eastern or Rio Grande communities. Wet adobe was used more often as mortar and plaster than as masonry. The western methods of walling included using a rubble core faced with split sandstone slabs. When the wall was chinked with stone fragments, the surface took adobe plaster more economically. The social customs reflected in village patterns also varied. In the Western Pueblos, where clan organizations were politically prominent, residence patterns were dictated by relationships in the extended family. Hopi and Zuni villages, for instance, were not divided into halves, or moieties. Clans and members of the many kivas, who felt a sense of mutual dependency, lived together in adjoining rooms and spaces. Garden plots also were inherited through the female line. Most of the rituals in the Western villages were devoted to inducing rainfall, and the well-being of crops was a constant concern.

In the Eastern Pueblos, where access to the flowing Rio Grande alleviated worries about irrigation, form-molded adobe bricks were used. Rituals involving social solidarity seem to have taken precedence over ceremonial attention to fertility and rainfall. Communities often were divided into moieties named for vegetables and minerals, such as Squash and Turquoise, whose members convened in one of the two kivas found in each community. Extended family groups owned the house sites and garden plots, and agricultural work was delegated among them.



All Pueblo Indians inherited a common cosmology with a distinctive spatial organization which emphasized motifs of ascent, descent, and the four directions. Their origin myths told of underworld migrations that led upward to the earthly plain of the present "fourth world." Higher still lay the powerful, life-giving "houses" of the sun and rain spirits. Hence emergence motifs and shrines and symbols of a celestial nadir and zenith recur in Pueblo folklore and rituals. On the horizontal plane, an idealized schema of Pueblo spatial concepts might show zones of sacredness radiating out from such a "center" shrine toward the "houses" of the four cardinal directions.

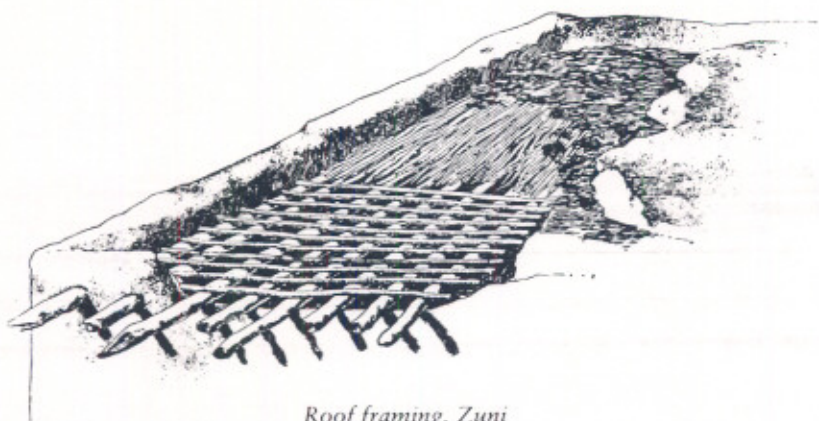
The "heart" of a pueblo was sometimes architecturally represented in a modest rock shrine or by an offering beneath the central plaza. In striking contrast to the uninhabited ceremonial centers of Mesoamerica, the plaza itself seemed to incarnate this idea of a sacred, shared center space, with domestic rooms where people actually lived piled protectively around it. Beyond the village walls were the gardens and encampments, and still farther into the countryside lay sacred springs and cave shrines—the entire matrix of special places enclosed by four holy mountains that usually bounded and nurtured each Pueblo territory.

Pueblo planning

Open areas within the pueblos are used for sacred and festive occasions. In the "plaza type" pueblo such as San Felipe (*above*), the houses define the center space, the kivas and the church (*upper left in the photograph*) are off the plaza.

Santo Domingo is a "street type" pueblo (*bottom right*) organized on a linear plan, the widest middle street used as a dance ground. The elongated street-type plaza of Zia (*top right*) is a combination of the two. Its small mesa-top site does not allow room for other streets parallel to the central plaza.





Roof framing, Zuni

ROOM

In northern New Mexico, the phrase of the Tewa-speaking Pueblos for building an adobe house translates as “raising” a house, in the sense of bringing a dwelling out of the earth much as one “raises” crops, or children. Among all Pueblo Indians building a house is an undertaking of the entire extended family, in which men and women have distinct roles.

The primary building unit—the rectangular room—was perhaps 12 feet wide, 14 feet long, and no more than 7 feet from hard-packed floor to ceiling rafters. Construction was generally done in early spring or late summer when agricultural work slackened and there was enough water to mix adobe. Men who had recently married traditionally moved into a place near their wife’s mother, often building an adjoining room if necessary.

Adding on new rooms was a collective affair. Among the Hopi, a man’s clan mates helped measure the area, gather and haul earth, and collect the rock, timber, brush, and water. At intervals the work was halted to pray that the house would have a firm foundation, that its walls would remain strong, and that its inhabitants would prosper. Prayer sticks, little offerings of feathers and other sacred items, were placed in the walls as embodiments of these wishes and blessings. Hopi women took over once the foundation had set, reaching from ladders to build their walls with fitted sandstone shaped by the men. Then they plastered or chinked the rocks with wads of adobe as they worked upward. Thereafter the walls were freshly layered with adobe plaster each year, generally in late summer when the cisterns were fullest.

To construct the roof the men first put peeled ponderosa pine or fir beams, known by the Spanish term *vigas*, in place. Wood was a precious resource in the arid Southwest and had to be cut in distant forests, packed on mules, then trimmed and aged for a year. Rarely thicker than a foot, the beams were staggered about 2 feet apart by means of spacing stones. A second layer of lighter, peeled poles called *latillas* came next, followed by twigs or brush. Then a blanket of grass or hay held the wet adobe, which was spread smooth by the women and left to dry. A final skin of dry earth was raked so that it tilted slightly toward the drains to avoid losing earth during downpours.

Pueblo buildings were most vulnerable at drainage points on the roof and at ground level. To divert water from the roofs and the walls, Zuni and Acoma builders raised a low parapet, or coping wall, around the edge of the roof, capping the spots where roof beams jutted beyond the wall. This parapet was pierced by drainspouts, or *canales*, devised from broken pottery, pieces of old metates, gourds, and, in modern times, old cans or discarded stovepipe. Then “splash rocks” were positioned below them to deflect the water as it spilled off the roof.



Canale (roof drain), Hopi



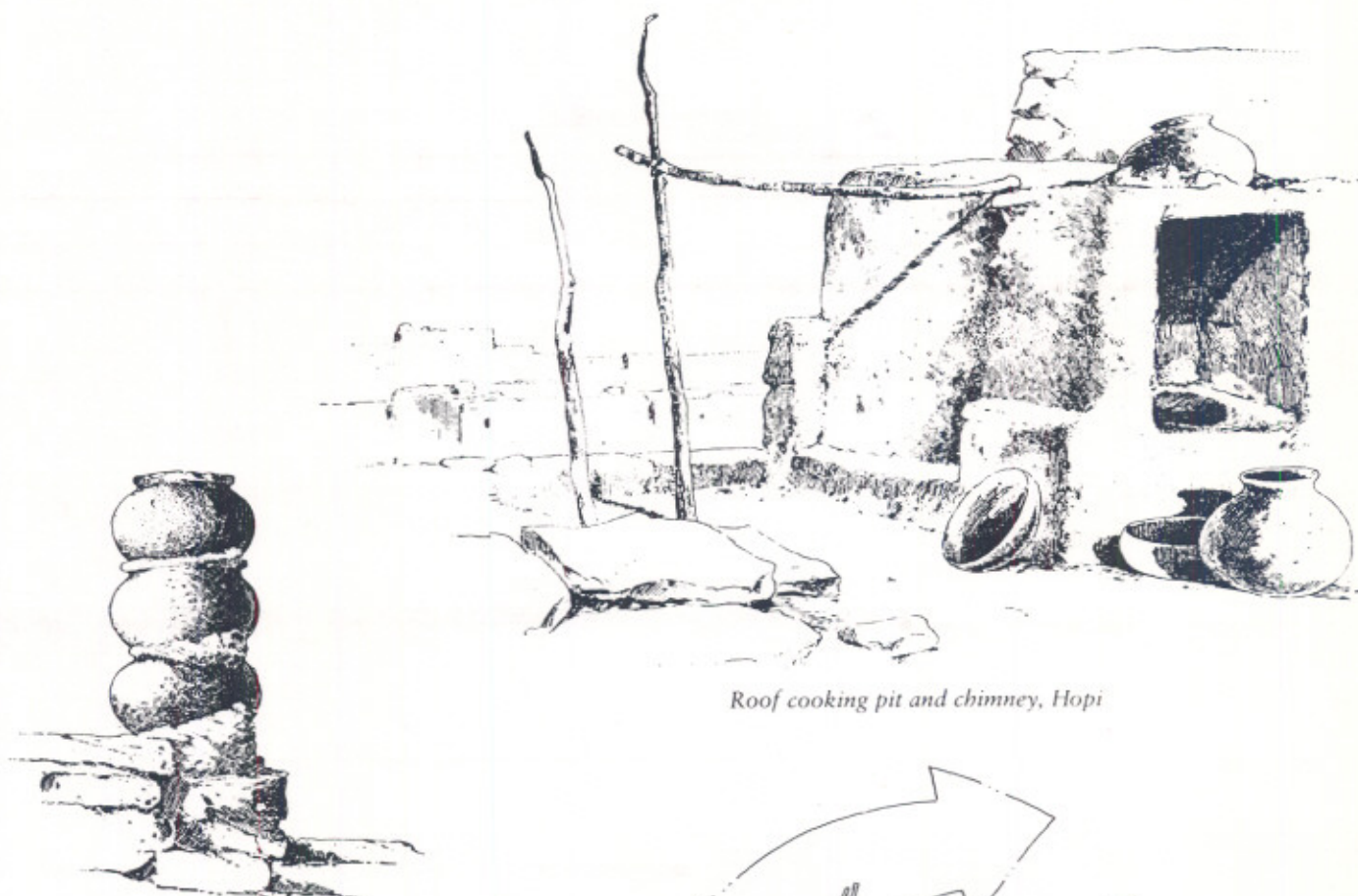
Splash blocks under Canale, Zuni

Pueblo architecture and details

Adobe construction began with first-story walls of adobe-packed rubble, often set on a rock foundation to deter the capillary action of ground moisture. In the Rio Grande area, upper-story walls were constructed with mud-packed adobe brick or crudely worked sandstone and adobe mortar. Floors were smooth adobe mud.

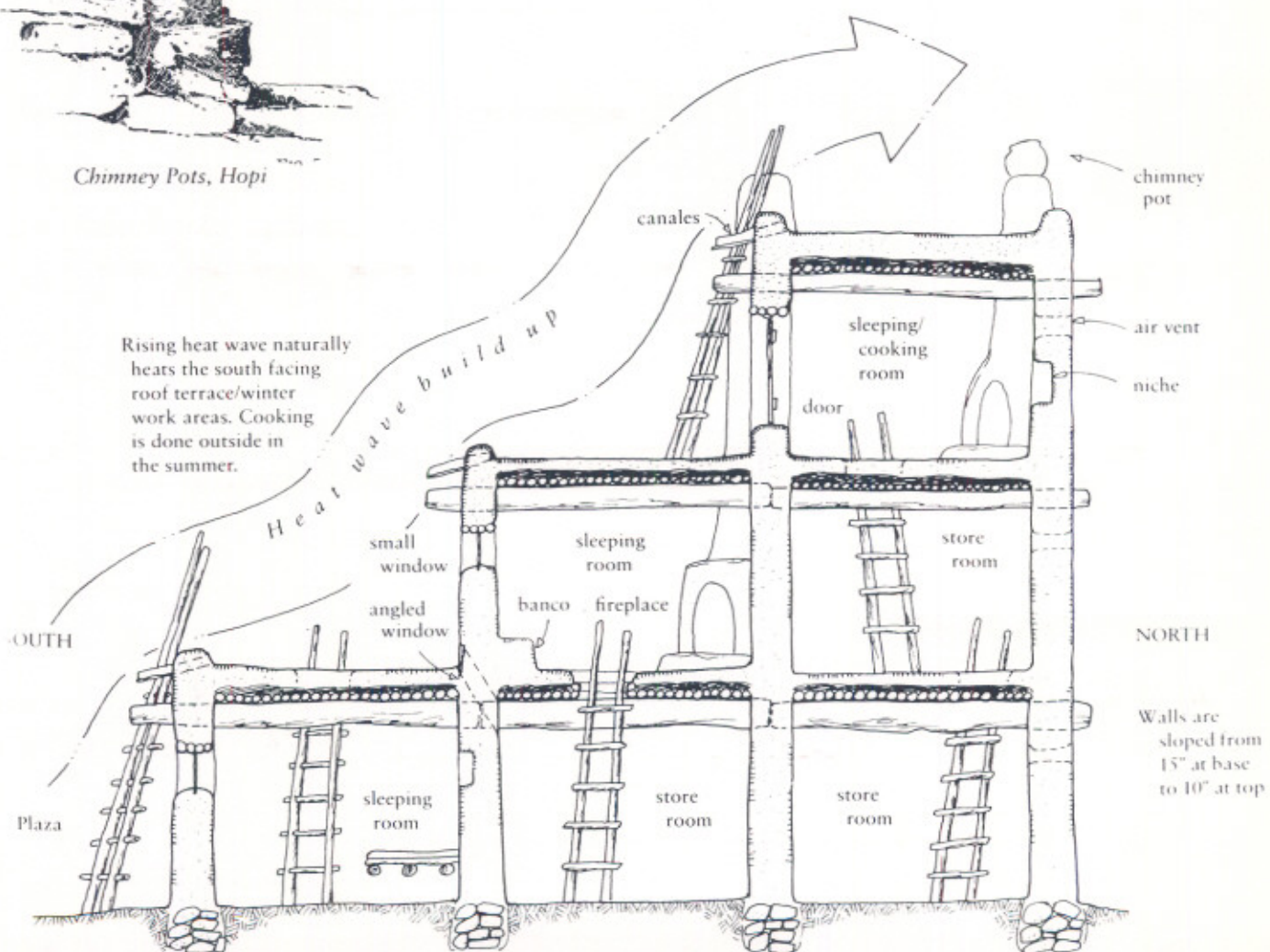
To frame the roof, round beams, (*vigas*) were then laid atop the walls and small poles (*latillas*) were placed over the *vigas*. Grass packing, adobe, and a final layer of dry earth sealed the roof structure. Women smoothed mud plaster by hand over outer and inner surfaces. An interior layer of whitewash completed the finished walls.

The detail drawings on these pages are by architect Victor Mindeleff, who visited Zuni and Hopi Pueblos in the 1880s.



Chimney Pots, Hopi

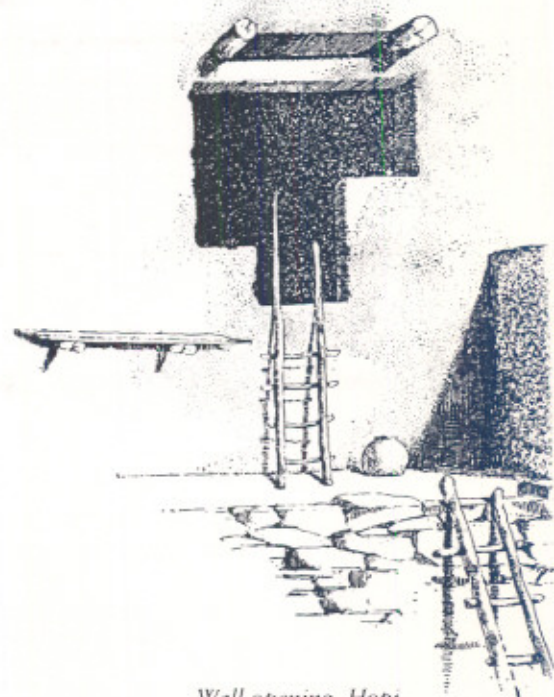
Roof cooking pit and chimney, Hopi



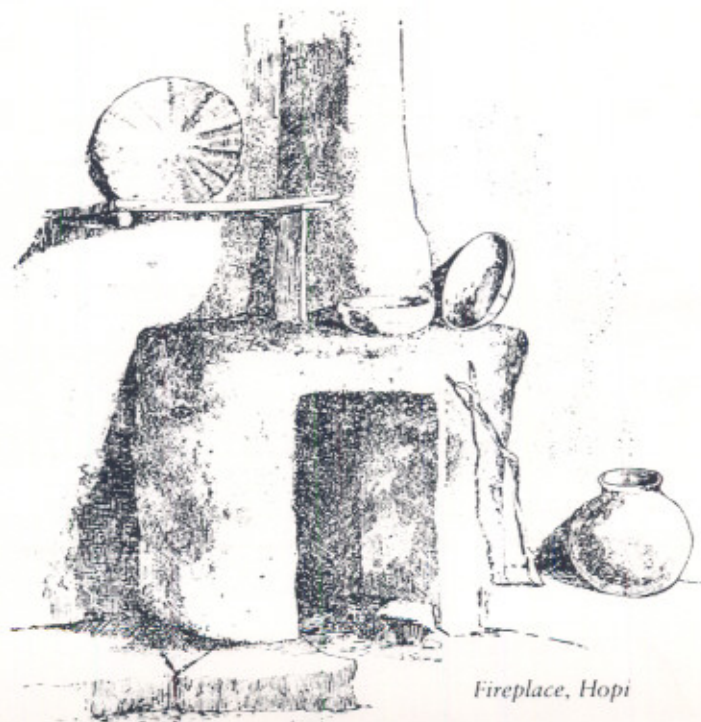
Idealized Pueblo cross section



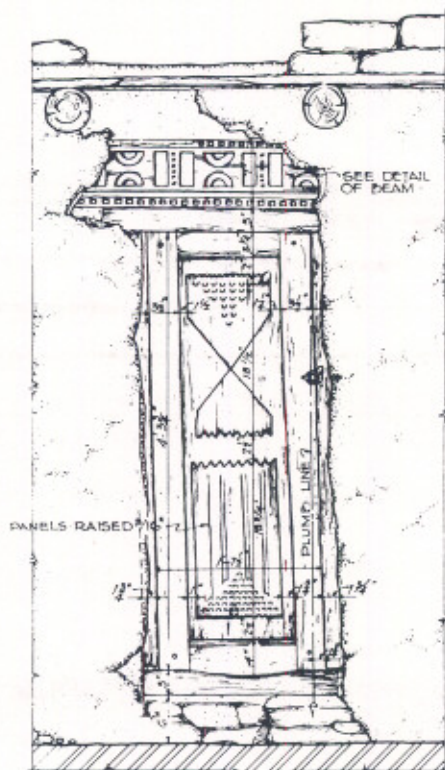
Interior of a Zuni dwelling.



Wall opening, Hopi



Fireplace, Hopi



Log ladder, Hopi



*Detail of exterior door, from
Historic American Buildings
Survey drawings, Acoma*

Pueblo details

To enter a traditional Pueblo, one climbed up ladders to the lower rooftops. Smaller ladders (*above right*), led to the upper rooms. The T-shaped doorway (*above*), still found in Hopi structures in the late nineteenth century, resembled prehistoric Pueblo door forms. The Zuni interior (*above left*) shows non-Indian influence in room furnishings, but is still illuminated through skylights as in older times. Flagstones made sturdy treads on this Acoma stairway (*right*). Sometimes Pueblo builders incorporated carved elements from non-Indian buildings into their own homes. The Spanish beam (*above*), from a church or convent, has been recycled as a door lintel.





Building elements

Vigas were set on top of the walls, then held in place with stones or adobe set between and on top of them (*top left*). Adobe bricks set with mud mortar formed the wall, (*far left*), which were plastered with adobe by the women (*near left*). Inside a completed room (*above*), which has a built-in corner fireplace, or *fogon*, women prepare bread dough for baking in an outdoor oven, or *horno*.

Since Spanish times a traditional way to enhance light in the rooms was to glaze small, circular windows or skylights with selenite—a form of crystallized gypsum. To enter or leave the house, one went “up the ladder and down the ladder,” as the Zuni people used to say. But sometimes T-shaped front entrances resembling those of prehistoric buildings were used on upper terraces. From the Spanish the Indians borrowed the idea for small wooden trapdoors, crafted without nails, which they placed within the houseblocks for access to rooms below the floor.

As in prehistoric times, people usually unrolled their blankets on adobe or wood pallets in upper rooms that faced inward toward the plaza. Each room had its terrace space overhead—an elevated “front yard.” Their roofs offered this important domain for working and socializing, which were reached by ladders until milled lumber doors were introduced with the railroad. The rooms benefited from the southern exposure, as the walls absorbed the sun’s heat. Innermost rooms were used for storage. Some cooking rooms held a bank of three or four corn-grinding stones, or metates, which were cured with spruce gum and blessed prior to use.

Furnishings in domestic rooms were spare. Wooden poles hanging from the ceiling beams were used to store bedding after a night’s sleep. Other personal items were stored in trunks or hide containers against the wall. Niches held religious items; in Hopi rooms, kachina dolls carved from cottonwood root hung from the walls. On the upper terraces stood chimneys made of stacked broken pots held together with mortar; the higher they stood, the better they drew. In case of rain, sandstone slab covers were kept beside the ladder hatchways. The terraces were strewn with drying strings of chilis, skins on which corn was drying, hides being processed, and tools for various domestic activities.

KIVA

As religious and social havens of Pueblo Indians everywhere, kivas are the oldest type of religious building in continuous use in the Western hemisphere. Their location—often sunk halfway into the earth like their pit house prototype—intentionally suggested a link between this world and the ancestral underworld with its manifold benevolent powers. In many kivas the old sipapu shrine was maintained; among the Hopi it was covered by a cottonwood board that dancers could stomp upon to send messages to the spirits below.

Kivas have many forms and functions. What is known about them is mostly conjectural, however, due to the cloak of secrecy around Pueblo religious beliefs and practices. It is often difficult to distinguish kivas from fetish rooms or the meeting chambers used by special sacred societies or by separate clans. Kivas of the Western Pueblos are almost invariably rectangular, as if stemming from the Mogollon prehistoric tradition, while those of the Eastern Pueblos are more often circular. Some rectangular rooms were reserved by Eastern Pueblos for special sacred purposes, however. Hopi kivas are generally about 25 feet long, 15 feet wide, and 10 feet high, with a third of the floor space raised half a foot or more so that an audience can watch performances from behind the leaning entry ladder. Wood stoves near the ladder warm the rooms, and nearby is the covered sipapu hole. In most Hopi communities, each of the village clans and religious societies has its own kiva. At Old Oraibi, for instance, there are thirteen. Wherever possible they are oriented north-south, although some mesa-top sites are too narrow.

Among the Hopi, each clan traditionally renovated its kiva on the winter solstice. In anticipation of this job, a "kiva chief" chanted a "house song." Only the choicest beams were used in kivas. At Old Oraibi a few have been in place for over 300 years. Consecration rites performed at the sipapu shrine were so hallowed in the Hopi village of Mishongnovi that onlookers were warned to avert their eyes. Feathered prayer sticks, color-coded for the cardinal directions, zenith and nadir were strung along the roof so it would not fall. During the annual replastering, Hopi workers left white hand smears on kiva beams to represent their prayers for rain.

At Acoma Pueblo, west of present-day Albuquerque, New Mexico, an origin myth tells of the First Kiva. A culture hero declares, "We have no sacred place. . . . This is the way I emerged, so I guess we will make a house in the ground . . . this will be a sacred place for the kachina when they come." The first Acomans learned how to design this circular kiva so that it resembled their emergence place, but it also symbolized the entire world. Four of its beams were drawn from the first four trees to stand on Earth, and its roof stood for the Milky Way. The walls were "the sky," and four hollows in the walls stood for the "doors" of Acoma's four sacred mountains. Encircling the chamber was a bench, or *banco*, which stood for the fog where their rain-giving kachina spirits dwelled. When descending the tilting ladder, which represented a rainbow, one faced the rungs, because to look down shortened life.

By historic times, the circular kiva described in the origin story had been absorbed into rectangular house blocks, as at Jemez Pueblo, where they also originally were round. One explanation for this conversion is that the Indians began camouflaging their places of worship as domestic units to avoid persecution by Catholic priests.





The kiva

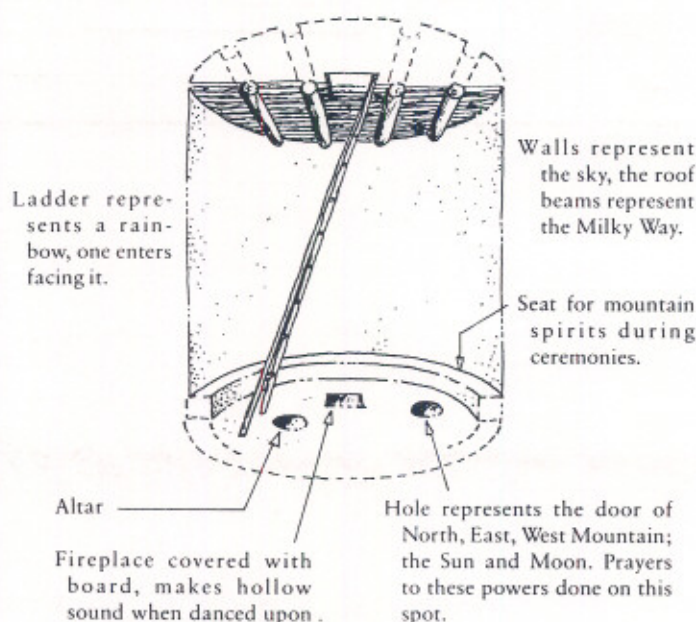
For more than a millenium Pueblo peoples have constructed various forms of social-ceremonial meeting chambers known as kivas. These special multipurpose buildings, sometimes free-standing, sometimes embedded within the larger houseblocks, are primarily used by men. In the kiva, men discuss the governing of their community, decide when to plant and harvest crops, plan seasonal rituals and rehearse dances, build altars and repair kachina costumes, train the young, smoke, and pray. During major ceremonies, however, both men and women dancers use these rooms for rest and costume changes. The photograph shows a dancer descending the steps of the communal kiva at San Ildefonso Pueblo.

Among the Eastern Pueblos, kivas are less associated with clans than with the theocratic divisions that administer everyday work and life. At Taos and Picuris Pueblos, which have six kivas each, the kivas are divided into two groups—three on the north side of town and three on the south. In other Rio Grande settlements farther down the river, the “summer” half of the community is generally associated with a Squash kiva, while the “winter” moiety belongs to the Turquoise kiva. In some places, as at San Ildefonso, there is an additional kiva, possibly the legacy of the Great Kivas of Anasazi times, which serves the entire village during festivals in which both moieties participate.

Kivas can easily be identified by the presence of ladder poles reaching into the sky. Some are topped by ladder braces ornamented with terraced “cloud” symbols. Often a wooden stairway leads to the kiva roof where people descended into the interior by ladder. Nearly all of these sacred structures are off-limits to nonresidents, and many a tourist has been sternly reproached, even by young children, for failing to observe the prohibition against taking photographs or trespassing. They remain the most potent architectural reminder of the abiding gulf between Pueblo and Anglo-American worldviews.

Roof is built with beams of four different trees, said to be from the underworld, planted for the people to climb on.

Placed under the foundation is yellow turquoise to the north, blue to the west, red to the south, and white to the east. Prayer sticks are also placed there.

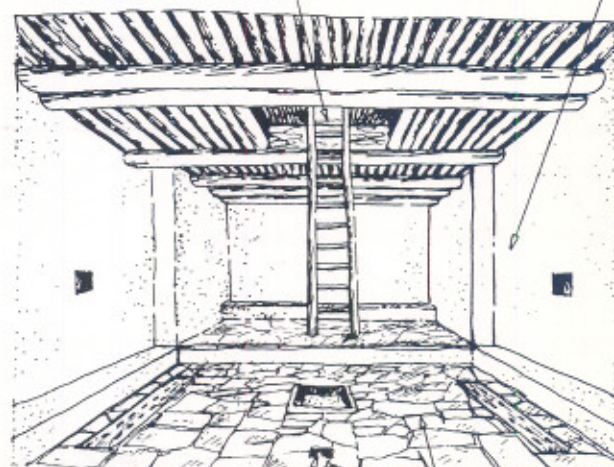


Mythic Acoma Kiva

The ladder is invariably made of pine.

Above the hatchway is the fourth world, the occupied world.

Upper room area is the third world, where animals were created.



Hopi kiva

Kiva symbolism

All kivas are used for ritual or private activities. Hence it is usually inappropriate for nonresidents to press for information about what occurs inside them. However, anthropologist Alfonso Ortiz, himself a member of San Juan Pueblo, has discussed generally the underlying meanings of contemporary kivas among Tewa-speaking villages: "... the contemporary Tewa kiva, whether circular or rectangular, subterranean or entirely above-ground, set apart or incorporated into a houseblock, is regarded, when in use, as a symbolic representation of the primordial underworld home from which the Tewa believe they emerged to this world. The term used for the kiva when the gods [kachinas] are impersonated, *Sipofene*, is the same name used for the primordial home. The impersonation of the gods is itself a reenactment of the original act of emergence from the underworld. Therefore, although there may be numerous sacred centers, the kiva itself is the center of centers, or the navel of navels..." Kiva architecture is more conservative than that of domestic units.

Whether kivas are rectangular, as among the Western Pueblos, or circular, as in most Eastern Pueblos, one usually descends into them as into an ancient Pueblo room, by means of a ladder, simulating a return to an earlier, mythic realm.

These drawings offer symbolic interpretations, from published sources, for a circular kiva (above left) from Acoma Pueblo, and a rectangular kiva (above right) from the Hopi. Acoma information derives from a portion of their origin myth which tells of the First Kiva. What is curious about this description of a mythic round kiva is that the kivas at Acoma today are rectangular and built into the first story of a houseblock. It has been suggested that this architectural transformation was a conscious effort by the Acoma people to disguise their traditional places of worship from Spanish eyes. The speculation that the rectangular kiva of the Hopi symbolized former underworlds of Hopi existence comes from Victor and Cosmos Mindeleff, who authored a major study of Pueblo architecture in 1891.

TODAY

With the extension of railroads through the Southwest in the 1880s, imported building materials began to open up the solidity of pueblo facades. Frame doors, windows, and commercial colors on trim were innovations that the conservative Pueblos gradually adopted. New demands on their lives—9-to-5 jobs, mandatory schooling for the young, and a growing sense of individualism—also were reflected in their buildings and spaces. In certain communities, nuclear families withdrew from kinship groups, either migrating or resettling in single-family houses beyond the old Pueblo perimeter. With factionalism, new plazas were built and old kivas abandoned, which disrupted the architectural ideal of residential unity around a common center. Tract housing built by the U.S. government in the 1960s further changed residence patterns.

Most of the families that once occupied old Acoma Pueblo, for instance, have descended over the years from the mesa, resettling in housing developments in Acomita and McCarty's, which are closer to the highway, the railroad, plumbing, and the job market. Yet most of them also retain strong emotional and proprietary ties to the stacked rooms on the mesa, where they return for traditional feast days. A skeleton crew of rotating "war chiefs" and their families, appointed by the tribe's *caciques*, or religious leaders, guard the deserted community year-round and guide tourists. It is as if these narrow sandstone streets, the crumbling house blocks, the kivas, and the graveyards of the old Keresan-speaking town have been transformed into a vast architectural shrine.

Hopi kiva interior

This kiva at Mishongnovi Village on Second Mesa (*below*) shows the flagstone floor and planks along both wall's sides with sockets for loom frames on which men weave home-spun cotton cloth. During theatrical rituals, the audience stands on the raised platform behind the square fire pit and ladder base. Plaster hand smears barely visible on the rear roof beam represent prayers for rain, ca. 1902.





TAOS

In 1540, when Hernando de Alvarado visited Taos Pueblo, the village probably had been expanding for at least a century. Seventy miles up the Rio Grande from Santa Fe, New Mexico, situated in the shadow of Taos Mountain and straddling the principal trade route between the Rio Grande Valley and the Great Plains, Taos remains the exemplar of traditional Pueblo construction. Entering the village for the first time, one is reminded of what Alvarado recorded more than three and a half centuries ago: "The houses are very close together and have five or six stories." More than any Eastern Pueblo, Taos epitomizes the pre-Hispanic imperative to concentrate and cluster. Described as the only Anasazi-style community still occupied, Taos possibly was founded by Chaco Canyon refugees who had intermixed with Plains Indian migrants.

The aesthetic link between Taos and any possible Chacoan heritage is the pyramidal massing of living units. Taos features major house blocks on its north and south sides, the village's social and architectural divisions. Classified as a "plaza" rather than a "street" type of pueblo, its irregular, semipublic plaza is bisected by Red Willow Creek, the community's main source of drinking and washing water. Like an artery, it also connects the village to its sacred Blue Lake, hidden from view behind the mountain. Surrounding the north and south sides of the village is an eroding five-sided adobe wall. Although ineffective as a physical barrier, it functions well as a psychological and cultural barricade. Electricity is banned within the low wall, and architectural change is governed by stringent rules. Even adding a window requires a council's consensus. As the Taos people have expressed their sense of architectural integrity, "We are in one nest."



Early Taos

Situated on the valley floor below its sacred mountains, the plaza of walled Taos Pueblo is split by Red Willow Creek. The north block of houses (*below*) rises five stories. Photographed ca. 1880.

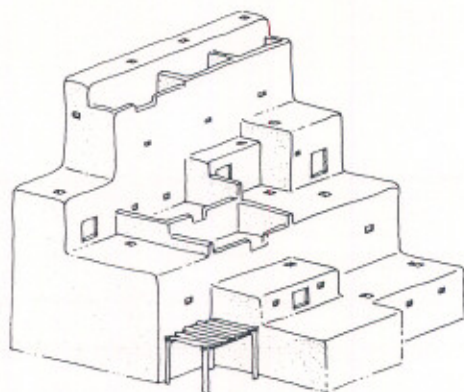


Change at Taos

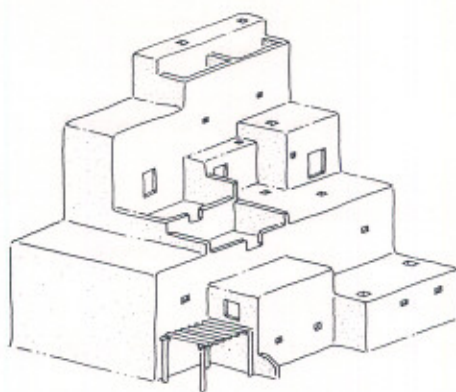
The kivas at Taos closely resemble those of Anasazi times, as seen in this photograph by W.H. Jackson (*bottom*). The houseblocks, however, have been slowly changing for decades. This was the conclusion of scholar William Reynolds who recently studied a half-century of historical photographs and visited the community.

Change in the massing of room blocks (*right*) was due as much to interpersonal relations and housing customs as to residents quitting the village for lives in the outside world.

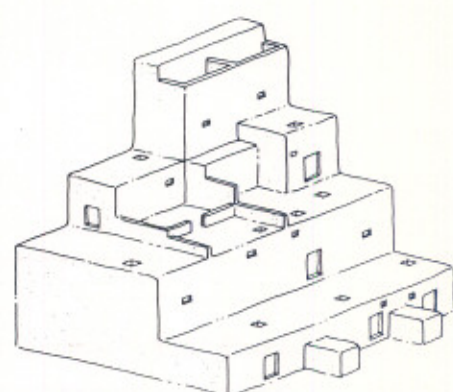




1880



1900



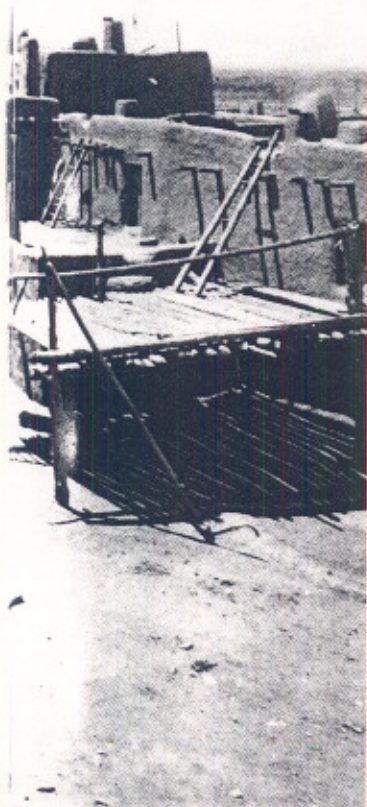
1935

Four hemispherical mounds known as “ash piles” stand just outside this perimeter. They function as more than refuse dumps, as archeologist Florence H. Ellis has clarified after excavating similar heaps in Chaco Canyon: “They put with the ashes the broken shards, the broken implements and everything that comes sweeping out of their houses . . . it all goes back to nature and this is the Pueblo idea of what is good in the world . . . they put prayer offerings on top of the dumps, periodically, on ceremonial occasions.”

Beyond the immediate village are sacred shrines, springs, and caves that play a part in religious observances. Most notable is the Taos pilgrimage to Blue Lake every August. Songs are sung and prayer sticks are planted where the Indians believe human beings first emerged. Another sacred space linking Taos to the wider cosmos is an unmarked east-to-west racetrack. Running for a quarter-mile from the plaza through a break in the adobe wall, it is known as the Sun Road. For Taos and most Rio Grande Pueblos farther south, these racecourses symbolize the path the sun follows through the sky each winter. Each fall and spring, ceremonial runners initiate relay races to lend their strength to the sun so that it will make it through the season. These spaces can be overlooked by planners anxious to upgrade Indian communities. When a road was proposed from nearby Ranchos de Taos to the Indian village, Taos leaders refused permission because it would have desecrated an ancient “sun road.”

In addition to the racetrack, ash piles, and shrine and pilgrimage sites, the central plaza also is regarded as sanctified space. Its earthen floor is crossed every day as families draw their water from the common creek, but on feast days it becomes the stage for ceremonial dances. Set back from direct view, but detected from the plaza by their towering ladder poles, are Taos’ six active kivas. Lacking the clan or strict moiety organization found among most Eastern Pueblos, Taos Pueblo’s political and social organization appears to be based on kiva allegiance. Each child is “given” to one of these kivas at adolescence and is introduced by priests to the religious and civic responsibilities of being a Taosño.

The only Eastern kivas that are almost entirely underground, Taos’ round kivas are evocative of Anasazi architecture. Within the community wall, northside kivas feature unusual wood fences encircling the ladder housing, while the three southside kivas are found outside the wall with masonry enclosing their hatchways. Rising perhaps 15 feet into the air, the older ladders have rungs still fastened with buffalo thongs. Utmost secrecy surrounds the kiva. “People want to find out about this pueblo,” a Taos man once told anthropologist Elsie Clews Parsons, “but they can’t. Our ways would lose their power if they were known.”





It is not clear when the Taos people adopted wooden frames for making adobe bricks, or when the cubist lines of their rooms were offset by domed cedar-burning adobe ovens. Today, sundried mud bricks are set in masonry that is mixed by Taos laborers who twirl their characteristic flannel cowls into makeshift turbans for the task. Bricks for the hornos, the beehive-shaped outdoor ovens, are molded into a triangular shape to form the oven dome—often over a metal rebar support.

The greater height and breadth of the north house block, rising up a full five stories, maximizes southern exposure during the cold winter. One cannot know whether the lower-story walls are substantially thicker—as at Pueblo Bonito—because Taosños refuse to let outsiders inspect their buildings. Traditionally, the north block, eleven rooms wide, would have storage rooms in its innermost recesses. Upstairs one might find corn-milling rooms, used today only in preparing ritual meals.

When the north house block was photographed by Adam Clark Vroman in 1899, many families still climbed ladders from ground level to the first terrace. The tiny windows, placed high, were still glazed with selenite. Around the turn of the century, factory-made doors were painted a bright turquoise. In the 1930s, after considerable discussion, the Taos elders allowed windows to be enlarged with glass and sashes.

Near the houses are racks of stout juniper posts for drying firewood and corn and storing hay. During trade fairs or public dances they became bough-roofed concession booths. Plastered enclosures beside the doorways hold split pinon kindling. Each family also owns one or more hornos; over a hundred of them turn out prune pies and steaming loaves of bread before the Taos feast day of San Geronimo.



Building renewal

With a steady source of water close to every home, the adobe brickwork of the buildings is kept thickly coated with adobe plaster mixed with straw. In this photograph (*left*) a Taos man swathed in flannel blanket piles pumpkins from his garden on the first terrace. The upper terraces are reached by ladders, and turquoise colored door frames lead into living units.

On the feast day of San Geronimo, September 30th, the terraces serve as bleachers (*below*) for visitors to view the sacred relay races, ceremonial dances, and clown performances. House and oven replastering occurs just before the Fiesta.

Early fall, before the equinox, is the customary time for house renewal, when rooms and dance grounds are swept clean and women apply fresh plaster to their house walls and ovens. This traditional architectural facelift anticipates the San Geronimo Fiesta, when visitors arrive to watch the sacred relay races. Another rare occasion when Taos hosts outsiders is Christmas eve, when drummers and dancers fill their tiny church, and hundreds of lighted candles on terraces and rooftops outline the architecture against the night sky.

Following Christmas, however, the community goes into retreat. During this private period, Taosños who live far from home often return to their tribal roots, and tribe members who have built homes just outside the walls visit relatives more often. What the anthropologist M.E. Smith observed of Taos' acculturation can be said of its architectural evolution: "... it is this dance with time—two steps forward, one step back—which allows the Taos to gradually adapt to the new while retaining (or even inventing when necessary) the past."





Mesa-top pueblo

Located between the Eastern and Western Pueblos, Acoma shares features of both building styles. It is a street-type village like Santo Domingo further east, but it contains rectangular kivas—six in number—like those to the west. Its mesa-top cisterns hold water for drinking, washing, and mixing adobe. The water supply also makes Acoma self-sufficient, as suggested by one of their names for the village, “place of preparedness.”

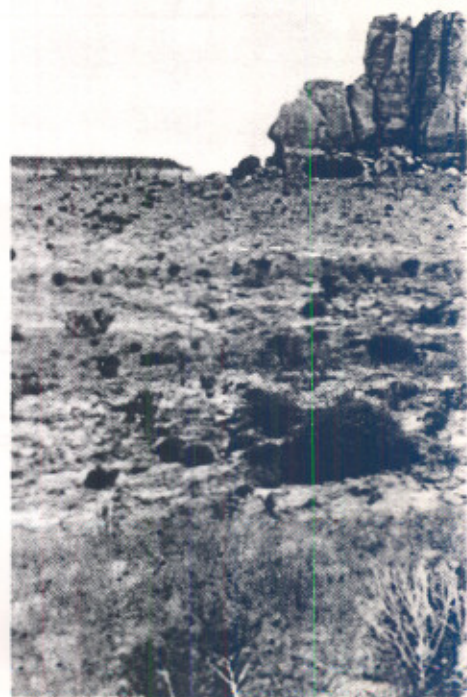
This is an early aerial photograph of Acoma (*right*), while below is a view of the mesa and pueblo from the valley below (*bottom*).

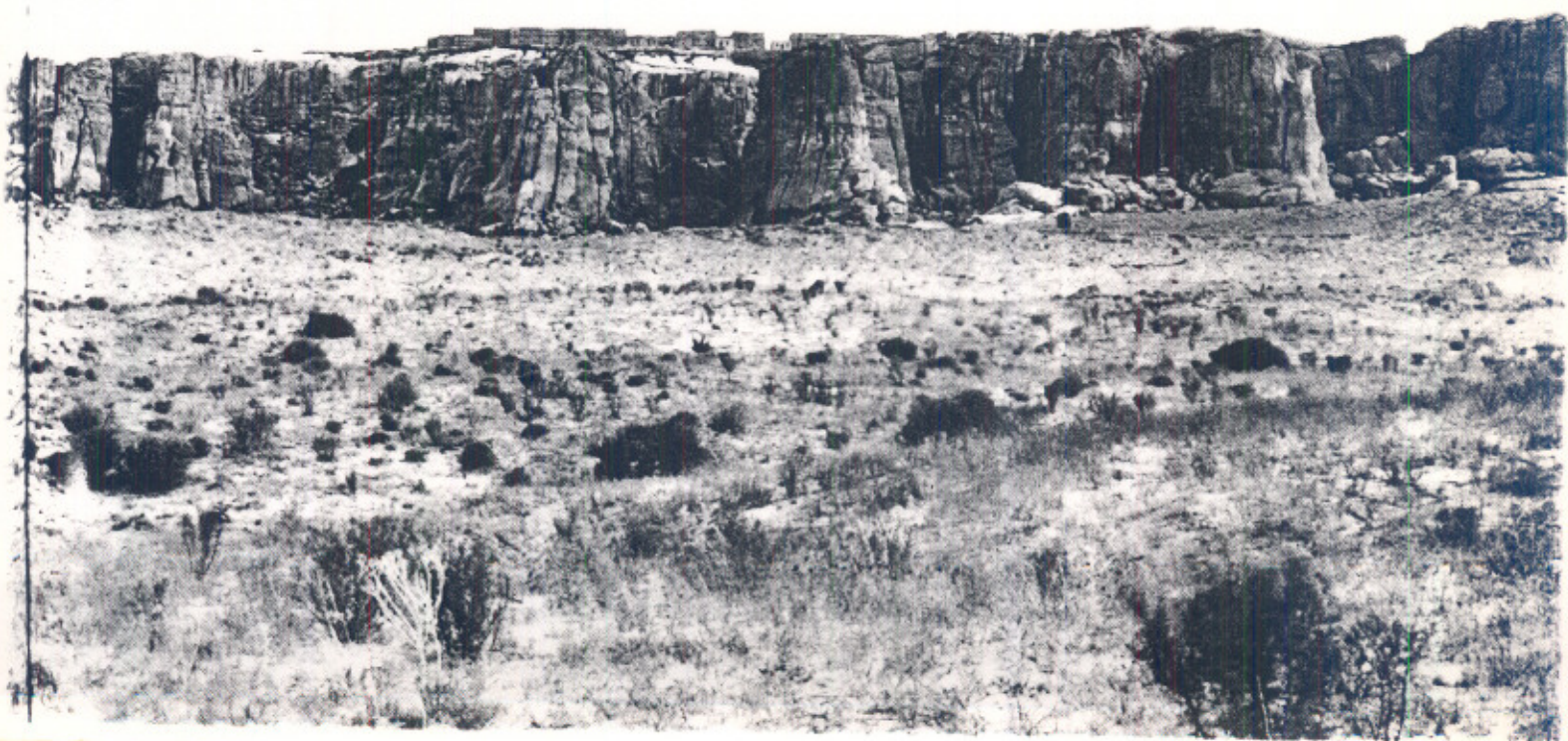
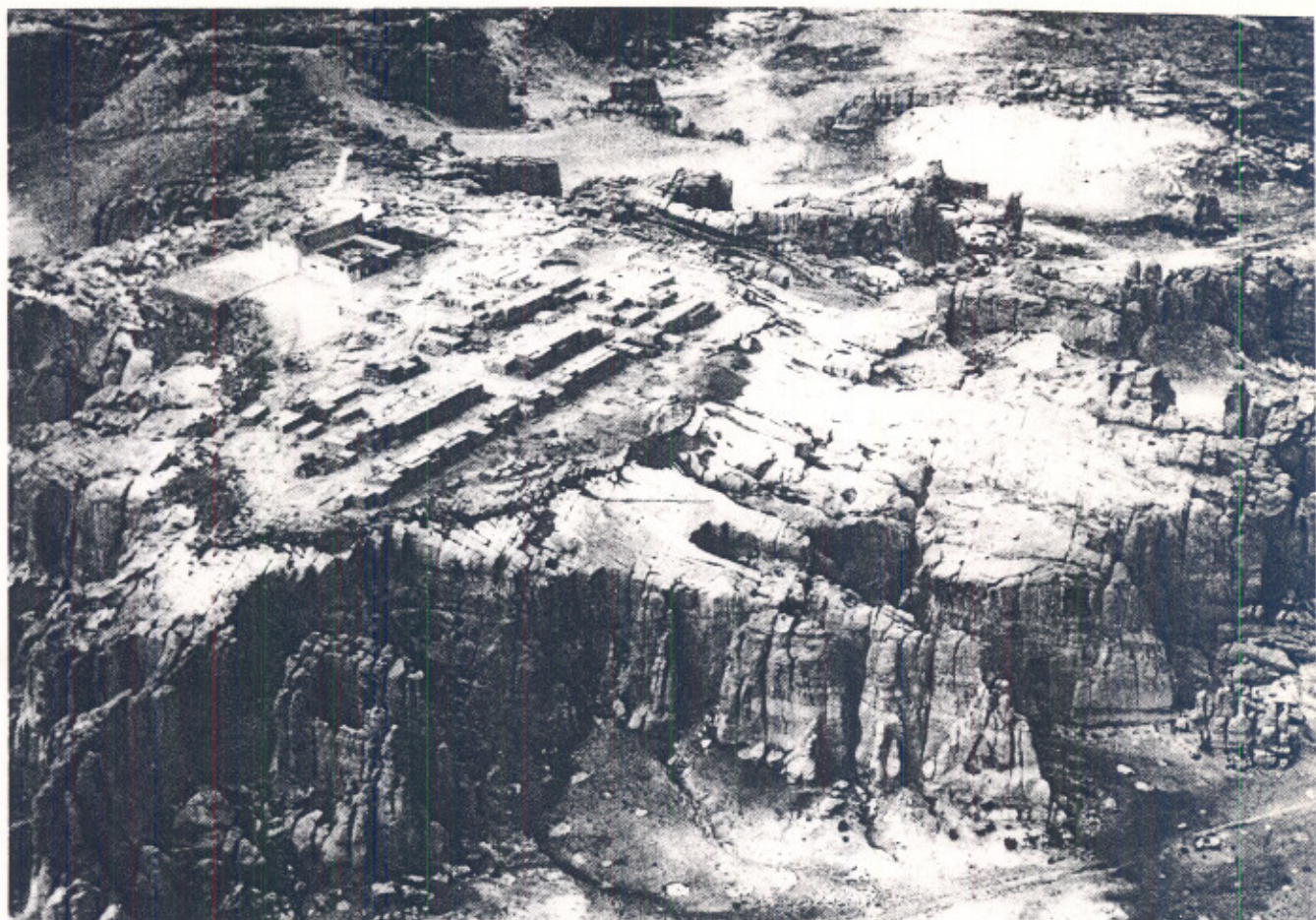
ACOMA

Acoma is a “street”-type pueblo built by Keresan-speaking Indians and placed dramatically on the summit of a craggy 375-foot sandstone mesa west of Albuquerque, New Mexico. Vying with the Hopi Pueblo of Old Oraibi as the oldest continuously occupied village in the United States, Acoma is believed to have been a cultural—and architectural—bridge between the Eastern and Western Pueblos for a thousand years. Over the centuries its parallel corridors, with plazas tucked between house rows, have undergone significant alterations.

In 1540 Alvarado wrote of Acoma, “The village was very strong, because it was up on a rock out of reach. . . . There was only one entrance by stairway . . . no army could possibly be strong enough to capture the village. On the top they had room to sow and store a large amount of corn, and cisterns to collect snow and water.” Acoma resisted the invading Spanish until 1598, when troops led by Don Juan de Oñate scaled the mesa and their cannons destroyed Acoma’s buildings and kivas. Oñate executed one-tenth of the residents of Acoma, amputated the right foot of every man over twenty-five, and sentenced the rest to twenty years of slavery.

During the early seventeenth century, a friendly priest helped the Acomans reconstruct their Pueblo and its church, San Estevan. This may have been the rebuilding program that an Acoma man described to linguist Wick R. Miller in the 1930s. First, a row of houses on the north side was erected, then a middle row, and finally a south row. “Everybody helped with each building,” the Indian said. “The building materials were carried up from down below, things like fine sand being carried on the back to be used for plaster. . . . Bark, sticks and ashes were mixed together. Then they mixed the adobe with this, and the bricks were made. And I believe they used to haul pine and oak from Pine Mountain for beams (forty miles away, across the San Jose River basin and into the San Mateo mountains).”





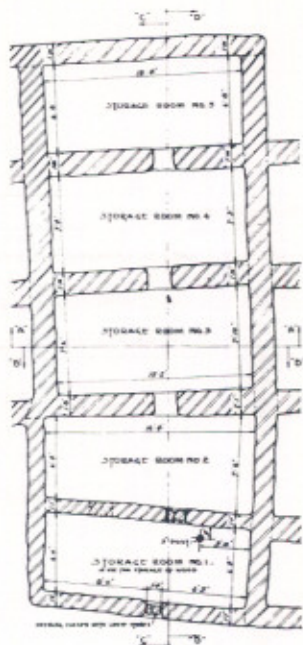


Documenting Acoma

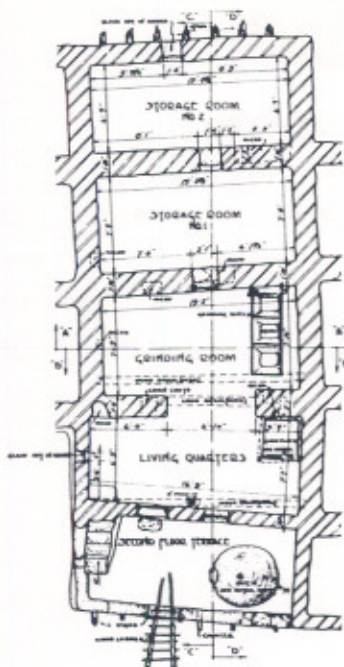
In the spring of 1934, draftsmen produced eighty-three drawings of the entire Acoma Pueblo for the government's Historic American Buildings Survey. The drawings (*right*) are of a representative three-story section, from the westernmost houseblock of the north row of buildings. The second floor is for food production, with storage in the rear. One room contains corn-grinding *metates*; another a hooded fireplace. A oven for baking is on the terrace.

The same house was photographed (*below*) by Forman Hanna, ca. 1930. A larger-than-average Acoma interior (*left*) shows furnishings of European origin, and traditional pottery, for which the pueblo is noted, ca. 1900.

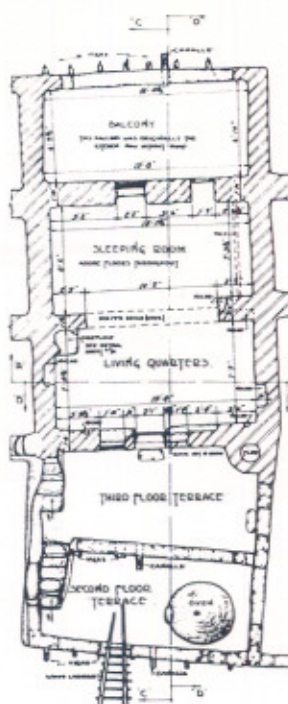




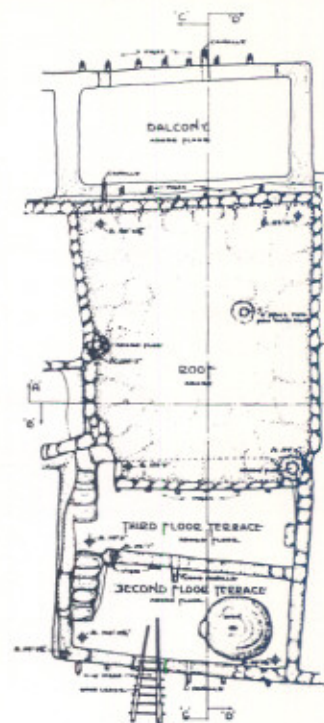
Ground floor plan



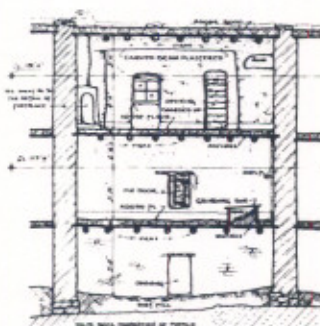
Second floor plan



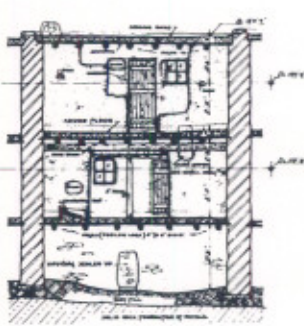
Third floor plan



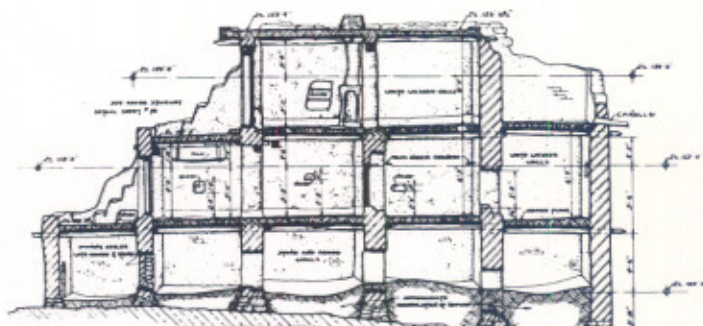
Roof plan



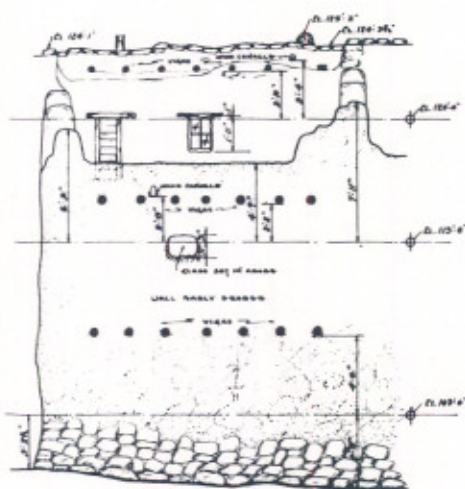
Section A-A



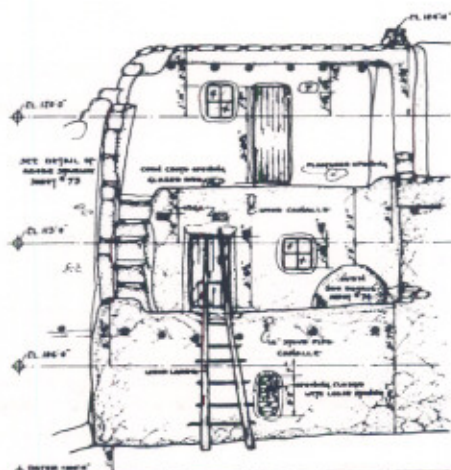
Section B-B



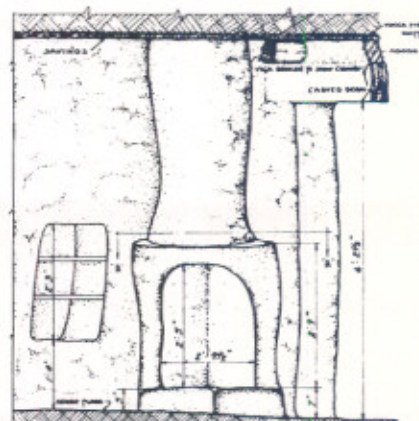
Section C-C



Rear
North elevation



Front
South elevation



Fireplace (Fogon)

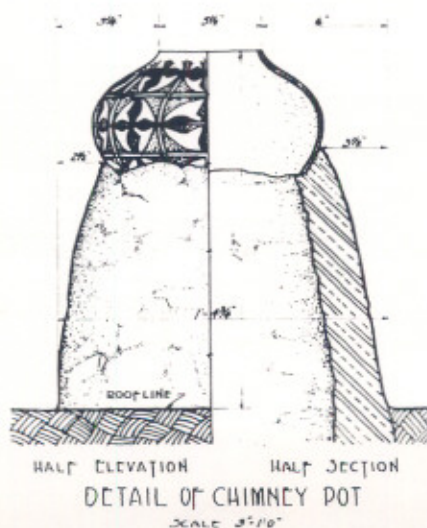
← BLOCK No 1 ← UNIT No 3 ←
• OLD • ACOMA • PUEBLO •

As work proceeded across the seventeen-acre mesa, nine separate house block units were arranged into three rows facing two principal thoroughfares, portions of which served as community dance plazas. Facing southward, the houses were set back on the upper stories, forming a sort of raised patio where people could prepare food and enjoy being outside in fall and spring. Inside might be stored enough food to supply the Pueblo for three years, and the mesa-top cisterns contained fresh, cool water all year round.

Walls were composed of the thin Indian brick, or mud mortar and rock, rising from a foundation layer of fieldstone. They were rarely more than 2 feet thick, and they customarily were not bonded. Partition walls never bore loads; the weight of the roof and upper stories was carried on cross walls, which were usually continuous from grade up through three or four stories. Men completed heavier tasks, from leveling and mortaring the sandstone at ground level to laying the major cedar beams. Skylights on the roof or selenite portholes high in the walls illuminated the rooms.

Roofing methods changed little from pit house times. Shorter pieces of cedar were laid above the major vigas, followed by a mat of willow or yucca fiber and a final 6-inch layer of earth. The floors were hardened by wetting and tamping, with animal blood sometimes used as a sealer. Plastering, flooring, and building the inside and outdoor fireplaces were the women's responsibility. They baked ground gypsum and dung chips to make whitewash for the walls and collected yellowish clay for a wash that protected the baseboard area from dirt. At Acoma, the season for renewing buildings was August, when enough water had collected in the washing cisterns for the women to replaster the walls and ovens.

In August 1980, we joined members of the community on a kiva rooftop—one of six at Acoma—as tribal runners darted into the village in a symbolic reenactment of the secret courier mission that set up the Pueblo rebellion three hundred years before. Northward was the Enchanted Mesa, a stony column once occupied by Acoma ancestors. Below us the skeleton crew of families who serve as custodians of the pueblo greeted the runners, handing them ears of blessed, boiled corn.



Acoma street scene

Houseblocks at Acoma face south-southeast, for protection from winds that come from the west, and to expose the living areas to solar heating. This early view of the northernmost row shows meat and vegetables drying in the sun, bread ovens, and stacks of firewood which have been packed up the mesa on burros. Photographed ca. 1890.

