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Ancient North America

THE ARCHAEOLOGY OF A CONTINENT

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CHAPTER

10

Pueblo Climax

You feel overwhelmed by the complexity of the "Great House," the serried rooms pressing on the open plazas, all in the heart of an arid landscape. At Pueblo Bonito in Chaco Canyon, New Mexico, it is best to enter through the east wing, where the quiet rooms are carefully preserved, the veneered masonry seemingly as fresh as the day it was laid. Close your eyes and you can imagine them occupied—stacks of maize cobs along the walls, women weaving in the shade, the murmur of voices from the terraces and plazas, and an undercurrent of scents and odors, of sagebrush, human sweat, and rotting garbage. Then the image fades in the warmth of the afternoon and you are back to the reality of an intricate archaeological jigsaw puzzle, much of which has yet to be pieced together.

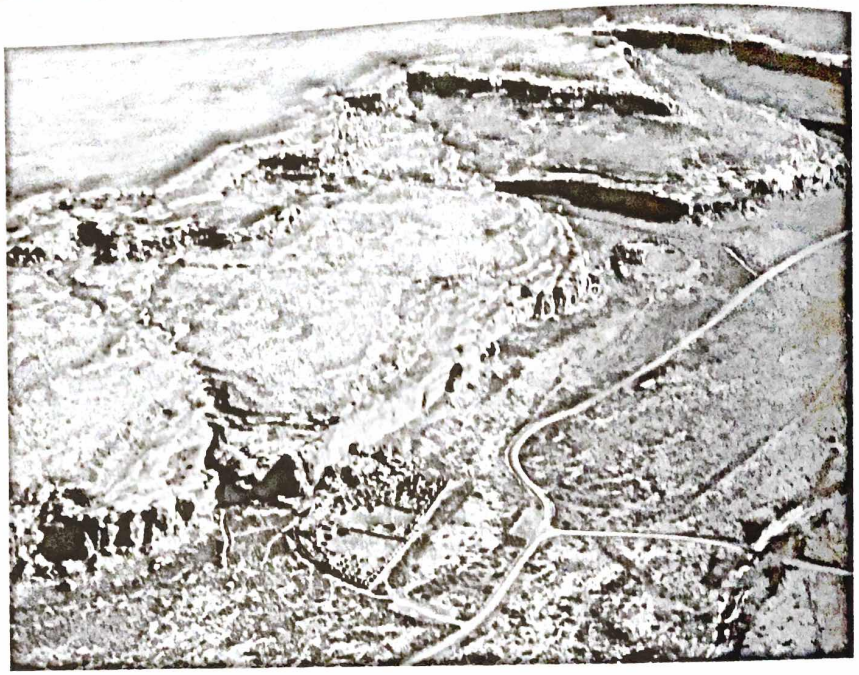
Pueblo Bonito flourished 1,000 years ago, long after agriculture had become well established in the Southwest. This site, along with many similar pueblos all over the Southwest, raises important historical questions. Why did such large pueblos come into being? Why were the societies that built them so volatile? What institutions in Ancestral Pueblo society helped Southwesterners cope with the challenges of unpredictable rainfall and drought? (Ancestral Pueblo are the forebears of historic and living Pueblo communities that we know about in some detail.)

As we have seen, maize agriculture did not bring about immediate changes to Southwestern life. Permanent pithouse villages appeared gradually in northern areas and increased in number until about 700 CE. The next three centuries saw a change from pithouse villages to settlements of multi-room buildings constructed from adobe clay or masonry. In some areas, for instance Mesa Verde, Colorado, the change was a gradual one, the first rooms being storage areas built behind pithouses. Later, people moved into surface rooms, turning their old pithouses into kivas or ceremonial spaces. (Kivas are subterranean chambers, roofed with stout wooden beams, where secret societies met and performed important rituals.) In other places the shift was rapid. Why the changeover took place is a mystery, for there are no such obvious causes as climatic shifts.

Between 600 and 900 CE village settlement expanded greatly throughout the northern Southwest, and especially on the Colorado Plateau. Some of the largest settlements of the period in southwestern Colorado and northwest New Mexico were home to as many as 100 to 120 households. It was at this point that Chaco Canyon came to prominence.

Chaco Canyon: Before 900 to 1150 CE

Chaco Canyon is a dramatic place, set in a stark landscape (Figure 10.1, p. 224). The towering cliffs of the canyon glow yellow-gold in the sun, contrasting with the softer tones of desert sand, greasewood, and occasional willow trees. Shadows fall across the canyon as the sun sets, the grandiose landscape dwarfing the walls of the great pueblos that are camouflaged naturally against the high cliffs. Between 700 and 800 CE the people living at Chaco largely abandoned pithouses and moved into masonry dwellings. The clusters of rooms, known as pueblos and commonly called "small houses," lay in small arcs, so each room was equidistant from the circular pithouses in the center. These gradually developed into kivas, the focal points of ceremonial life. Almost all the small-house settlements lay on



10.1 Pueblo Bonito and Chaco Canyon.

the south side of the canyon, where side canyons joined the central one. These side channels deposited floodwater and nutrient-rich sediment at their ends, creating prime farming land. This ***akchin*** (a Piman word for "at the mouth of the wash") thrived for centuries and is still the primary farming method used by the modern Hopi.

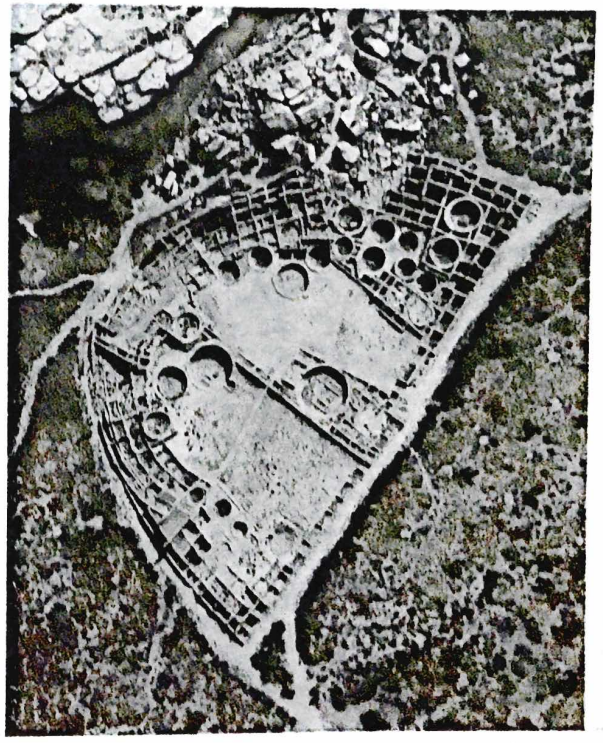
During the ninth century summer rainfall was highly variable. Groups from the north, primarily from the Montezuma Valley in southwestern Colorado, migrated into the canyon, forced from their homeland by a period of somewhat colder climate that shortened the growing season. They settled on the north side, the inhabitants of the small-house sites having already taken up the best land on the south side. The north side more conducive to canal irrigation, having different runoff patterns. These new groups brought an early version of Great House architecture and erected the first four such houses at the junctions of major drainages in Chaco sometime after 850 CE: Penasco Blanco, Pueblo Bonito, Kin Nahasbas, and Una Vida. The largest of these, Pueblo Bonito, near the northeast wall of the canyon, stood three, and later five, stories high along its rear wall and remained in use for more than two centuries (see Box: Pueblo Bonito). By the eleventh century Great Houses dominated Chaco Canyon. Chaco expert Gwinn Vivian (1990) has calculated the potential carrying capacity of the canyon soils

PUEBLO BONITO

Semicircular Pueblo Bonito is the largest and most spectacular of Chaco Canyon's Great Houses. In its eleventh-century heyday, Pueblo Bonito had at least 600 rooms and could have housed about 1,000 people, but by no means all of the rooms were in use at any one time. Tom Windes, who has studied the site for many years, believes that no more than a hundred or so people ever lived there, with the largest amount of residential debris accumulating in the ninth and tenth centuries, and in the early twelfth (Windes, 2003). The two great kivas at Pueblo Bonito lie on either side of a line of rooms that divided the complex into two areas (Figure 10.2). Chaco architecture was based on rectangular rooms, built in contiguous blocks, and round chambers (Lekson, 1984). Some of the latter were subterranean, located in the plaza areas in front of room blocks. Many others were elevated into room blocks and built into rectangular rooms, usually enclosures built exclusively for this purpose.

Construction was simple. Once the site had been leveled and the foundations laid, a room block typically began as a series of continuous, long parallel walls. Cross walls were added later, as the long sides rose higher. Once one story was complete, the rooms were roofed individually and then used as the foundation for the next story. Chacoan walls were built of local sandstone in both harder and softer forms from different cliff strata. The harder rock could easily be split at right angles, making it easier to shape for wall building. The builders used a variety of methods to shape the exposed stone faces, among them grinding and pecking. Clay-sand from canyon alluvial deposits was mixed with water to serve as mortar. The main load on the walls at Pueblo Bonito was the upper stories, so the masons built the walls wide and stable, reducing the width with each story for stability. The outer walls of the Great Houses were battered to support the massive weight of five stories of rooms, which were terraced to allow access without an interior system of ladders. The ceilings are high, and the rooms well constructed with core masonry covered on both sides with carefully selected ashlar, sometimes arranged in alternating courses of large and small stones to form patterns. These decorative veneers were covered with adobe plaster. The great kivas were built with care, roofed over with carefully dressed pine beams, many of them carried in from considerable distances away. This extravagance may reflect the religious importance of Pueblo Bonito and other major pueblos.

10.2 Pueblo Bonito from the air, showing the circular kivas and the probable duality of the pueblo. The rock fall at top center crushed part of the pueblo in 1941.



and believes no more than about 5,500 people ever lived there (estimates of carrying capacity differ considerably, however). The Chaco people took advantage of long-standing kin and trade links with groups living elsewhere and became the hub of a much wider world. Thus was born what is sometimes called the **Chaco Phenomenon**, a number of dispersed communities that interacted constantly, linked by regular exchanges of a variety of commodities. Tree-rings show that the next eighty years were ones of generally good rainfall, a weather cycle that may have meant the system kept going longer than it might otherwise have done.

Many intriguing questions surround the Chaco Phenomenon. How did such an elaborate efflorescence of Ancestral Pueblo culture arise so suddenly, and collapse with such rapidity? What were the cultural processes that led to the sudden emergence of regional integration in this area of the Southwest? The Chaco area is a desert environment, with long winters, short growing seasons, and marginal rainfall. How could the Ancestral Pueblo have developed such an elaborate culture in a high-risk environment, where the most one might expect would be communities of widely dispersed farming villages? The number of rooms suggests a far larger population than could be supported by the available arable land. The people seem also to have used clay vessels much more than is usual, and they constructed many miles of long, wide roads through a sparsely vegetated desert where such constructions appear unnecessary. What activities in the canyon can have prompted this?

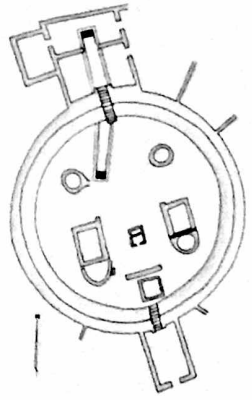
Pueblo Bonito and the other Great Houses defy precise interpretation (Neitzel, 2003). Many people lived in them, but they also fulfilled other important social and religious functions, as well as being used for storing grain and other commodities. The smaller pueblos were really agglomerations of households, organized along kin lines, each of which built its own rooms inside the semi-circular outer wall, which was erected by communal effort. Each kin group used its smaller kivas in the heart of the room blocks as workshops and as places for educating children, storytelling, and family ceremonies. At Pueblo Bonito the division of the pueblo into two areas probably reflected the duality of social organization in Ancestral Pueblo communities, similar to the Winter and Summer people of modern pueblos. In the great kivas the people gathered for more formal ceremonies and to make decisions about the governing of the community as a whole.

Unquestionably, Bonito was an important ritual center, especially during the eleventh century, when construction activity intensified. As in historic Pueblo society, Ancestral Pueblo life and ritual must have revolved around the changing seasons, the solstices, equinoxes, and the routine of the agricultural year. And like later Puebloans, the people who gathered at Pueblo Bonito must have nurtured corn, which pervaded every aspect of their lives with its planting, growth, and harvest. Important seasonal ceremonies involved exchange and distribution of food and other necessities brought to the canyon from some distance. The office holders who organized these ceremonies were the guardians of ritual knowledge and political acumen, gaining social recognition by redistributing commodities to people near and far.

Who these office holders were, we do not know. Some of them were buried at the pueblo at a time of enhanced ritual activity. Pueblo Bonito has yielded at least 130 burials, mainly dating to after 1000. The Chaco pueblos generally are remarkable for the small number of burials found within their precincts; those we do find are probably of important leaders (see Box: Genetic Research at Pueblo Bonito). These burial clusters are associated with very large numbers of cylinder vessels, wooden staffs, and other artifacts associated with important individuals. A recent discovery has established that some cylinder jar fragments bear traces of cacao, a prestigious beverage with strong Mesoamerican associations. The people buried in these clusters were also taller, which suggests that they enjoyed a better diet.

No one knows why the Chaco people congregated in Great Houses. It may have been to avoid building on valuable agricultural land and a way of concentrating food resources. Interestingly, by no means everyone lived in the Great Houses, which lie on the north side of the canyon. The opposite wall sheltered smaller settlements, many of them little more than a few households, located in areas where farming land was more spread out.

The nine larger settlements within Chaco Canyon all have at least one great kiva. The most famous example is one of several isolated kivas. Casa Rinconada is about 63 ft (19.2 m) across, and others are almost as large (Figure 10.3). The



10.3 Plan of the great kiva at Casa Rinconada, showing the subfloor passage, fire box, fire screen, seating pits for the roof-support columns, and the north antechamber rooms.

GENETIC RESEARCH AT PUEBLO BONITO

Major advances in ancient DNA and genomic sequencing approaches have transformed our understanding of population movements and turnover in the past, and have recently been brought to bear on Pueblo archaeology. Archaeologists have long wondered how the people at Pueblo Bonito governed themselves. Was Chacoan social organization similar to that of historic Western Pueblo peoples (for example, the Hopi of northeastern Arizona), where social groups with a matrilineal core are ranked and control ritual sources of power? Or were the Chacoans led by non-kin-based ritual sodalities, comparable to the historic societies of some Eastern Pueblos? Using high-precision AMS-radiocarbon dating and reconstructions of mitochondrial DNA genomes, a multidisciplinary research team has begun to answer this question (Kennett *et al.*, 2017).

Douglas Kennett and his colleagues examined burials in Bonito's most elaborate burial crypt, Room 33, built in the ninth century CE for a high-status member of the community and his lineal descendants. This person was a male in his forties, who died after a fatal blow to his head. He lay in the center of the crypt on a bed of sand and wood ashes, adorned with thousands of imported turquoise and shell beads and pendants, which once formed necklaces, anklets, and bracelets. A conch-shell trumpet and many abalone shells from the Pacific Coast lay on his right side. The entire burial was sealed with a thick layer of sterile sand. A second burial, also adorned with turquoise, was buried above the sand and covered with a plank floor. Twelve other individuals were buried above the plank floor, their bones being disturbed when later members of the lineage were deposited in the crypt. Numerous clay bowls and pitchers, and also shell and turquoise, lay with the bones. Offerings in the crypt included caches of flutes and carved wooden ceremonial staffs. Turquoise beads lay around the corner posts, reflecting the cardinal directions of Puebloan cosmology. Numerous ritual offerings lay in adjacent rooms, among them hundreds of staffs, cylindrical clay vessels, and remains of scarlet macaws.

By examining the DNA of the skeletal remains, the research team discovered that the genomes of nine of the individuals in the crypt shared mitochondrial DNA, which is passed down from mother to daughter, and so were related through a single maternal line. Nuclear genome data from the six individuals with the highest DNA preservation revealed daughter and grandmother-grandson relationships that are consistent with matrilineal descent in this elite lineage. These results suggest that hereditary inequality and societal complexity emerged in Chaco by the early ninth century CE, and that this matrilineal dynasty persisted at the center of this complex society for around 330 years, until its rapid dispersal in the early twelfth century. This state-of-the-art research shows that the long-lasting elite at Pueblo Bonito, and presumably in Chaco society, enjoyed hereditary leadership in one of North America's earliest complex societies.

amount of labor involved in digging these subterranean chambers, either as stand-alones or in Great Houses, and constructing the walls, roofs, and antechambers must have been considerable, for some kiva walls were at least 11 ft (3.4 m) high. They are entered through recessed stone staircases, often through an antechamber beyond the stairs. Common kiva features include wall niches where offerings of beads and pendants were sometimes placed, encircling benches around the walls, pairs of masonry-lined vaults, and a raised firebox in the center. Rinconada is the only great kiva where there was a covered tunnel that allowed masked dancers to enter from an antechamber on the north side and emerge on a circular area on the kiva floor. This was screened, probably with a plank wall. This allowed the dancers to enter as if emerging from the *sipapu*, the entry to the underworld. The isolated kivas are all located near small-house sites. Perhaps Rinconada and other stand-alones were a way of linking the interests of people living on the north and south sides of the canyon. If Great Houses needed more irrigated land they may have "paid" for it and for setting up the canals with elaborate rituals performed in the kivas.

By 1050 CE five great pueblos dominated Chaco Canyon. We do not know how many people lived within its cliffs and in the immediate vicinity. Estimates range from 2,000 to as high as 20,000, but Vivian's figure of around 5,500 is probably about right. Chaco was no agricultural paradise, though the nearby mesa, the boldest topographic feature for many miles, was a rich source of wild plant foods. Some of those who disagree with Vivian theorize that the Great Houses were constructed to accommodate far larger influxes of people, who came to the canyon occasionally, perhaps for regular religious observances. The controversy is still unresolved.

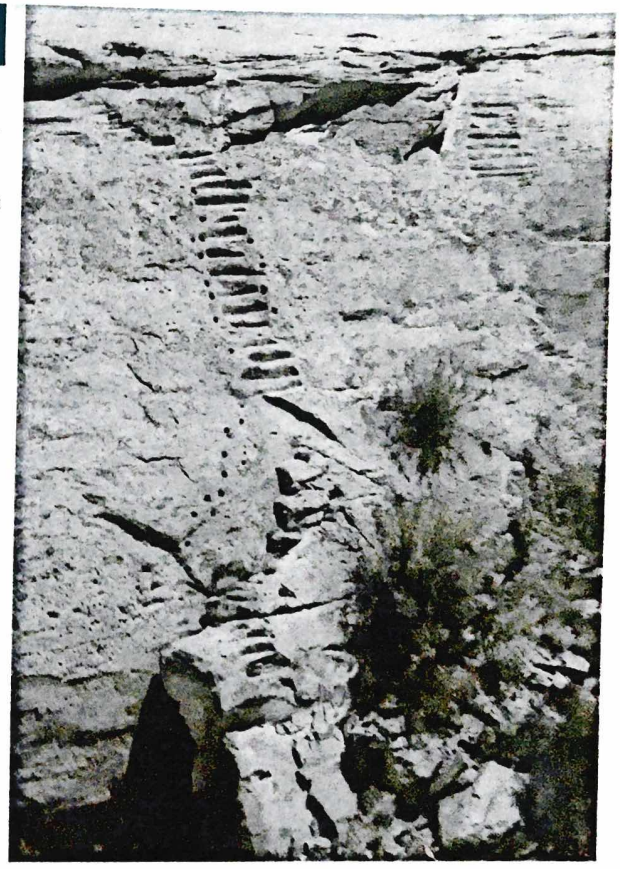
Despite their diverse food resources, the Chaco people were trapped inside the narrow confines of their canyon. They took advantage of long-standing kin and trade links with communities living elsewhere on the Colorado Plateau and made themselves the hub of a much wider world. No one knows who held authority in this society, which would be classified as a mid-level complex society where prominent individuals lacked the authoritarian power that enabled them to achieve complete dominance. Rather, Chaco and other Ancestral Pueblo communities were probably riddled with intense competition and factionalism between different individuals and kin groups. Violence may have played an important role.

By 1115 CE at least seventy communities, known as "outliers," scattered over more than 25,000 square miles (65,000 km²) were linked through socioeconomic and ritual networks centered on Chaco Canyon. The activities of the Chaco Phenomenon were probably controlled by a small number of people. But whether these individuals formed a social elite with special privileges reserved to them, and them alone, or were simply members of an important kin group, is still uncertain. Outlying great-house sites contain much Chaco pottery and share architectural features, such as great kivas, with Pueblo Bonito and other large canyon centers, but with considerable variation. Some also had surrounding communities of their own. An elaborate road system radiated out from the canyon, a web of tracks that run straight or bend abruptly, use stairways and ramps, and extend over more than 250 miles (400 km) (see Box: Chaco's Road System). The roads did not link places as modern ones do; they were probably

CHACO'S ROAD SYSTEM

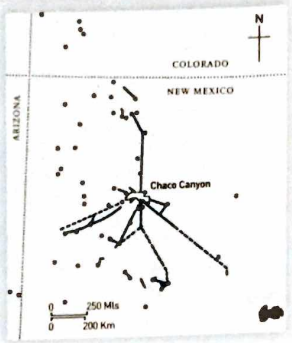
The Chaco Phenomenon is famous for its "road system." Chacoan "roads" were first identified in the 1890s and again in the 1920s. In the 1930s early aerial photographs revealed faint traces of what appeared to be canals emanating from the canyon. During the 1970s and 1980s investigators used aerial photographs and side-scan radar to place the canyon at the center of a vast ancient landscape. Now their successors use GPS and satellite imagery (Snead, 2017). Perhaps as many as 400 miles (650 km) of unpaved ancient trackways link Chaco in an intricate web with over thirty outlying settlements. The "roads" are up to 40 ft (12 m) wide and were cut a few inches into the soil, or marked by low banks or stone walls. Sometimes the road makers simply cleared the vegetation and loose soil or stones from the pathway, lining some segments with boulders. The roads run straight for long distances, in one instance as far as 60 miles (95 km). They do not follow contours, but change direction in abrupt turns, with stairways and ramps to surmount steep obstacles. These may be little more than toe holds, or elaborate stairways with wide steps cut out of bedrock or formed from masonry blocks.

The roads approach the canyon in different ways. To the north, several converge on Pueblo Alto and then split beyond it to drop into the canyon via rock-cut steps or ramps above several Great Houses—Pueblo Bonito, Pueblo del Arroyo, and Chetro Ketl (Figure 10.4). At a point where the roads come together again beyond Pueblo Alto, a groove in the sandstone bedrock on the cliff top keeps the two routes separate before they branch off in different directions,

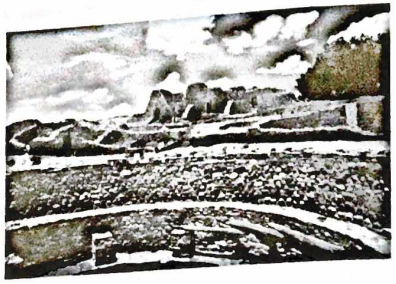


10.4 The Jackson Stairway at Chaco Canyon.

suggesting that the demarcation was of considerable importance. By using aerial photographs fieldworkers have been able to trace roads extending from Chaco almost to the Colorado–New Mexico border and Aztec Ruins, some 50 miles (80 km) away (Figures 10.5 and 10.6). Other roads connect Chaco to natural resource source areas in modern-day Zuni country and elsewhere. More than 250 miles (402 km) of roads have been detected on aerial photographs so far, but the system may have extended as far north as the San Juan Range in the Rocky Mountains to the north, the Mogollon Mountains to the south, and from the turquoise mines near Santa Fé in the east to the Little Colorado River in ▶▶



10.5 Map of some of the Chaco road system and outlying sites of the Chaco Phenomenon (black dots).



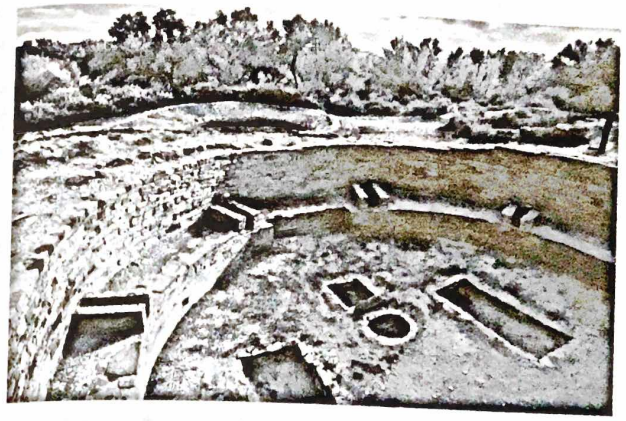
10.6 Aztec Ruins, a Chaco outlier and major ritual center. The western part of the site is a classic Chaco great house, a D-shaped structure with twelve kivas and an enclosed plaza. People settled in the northern parts of the site by 1050, but Aztec was abandoned in about 1268.

the west. Current thinking suspects that the Chaco Phenomenon was the center of a vast regional system that stretched far beyond the San Juan Basin (Crown and Judge, 1991).

Chaco road construction must have involved the deployment of large numbers of people and considerable group organization. Unlike the trail systems that connected hundreds of ancient communities in the far west and in the Eastern Woodlands, these were wide, straight highways, whose significance still eludes us. Were they highways for transporting valuable natural resources to major pueblos? Or were they, as James Judge argues, pilgrim roads? Or did they have some much more profound spiritual importance?

One prevalent hypothesis argues that without draft animals or wheeled carts, the Chaco people had no use for formal roads for their everyday business. Originally, perhaps, people traveled from outlying communities to Chaco to acquire turquoise objects, to trade food for ritual paraphernalia. In time this trade became institutionalized in regular ceremonies and festivals, where people gathered from many miles around for seasonal rituals, for exchange of food and other commodities, and where leaders from widely dispersed communities gathered to cement political and economic alliances. Each member of the network would have complex obligations to fulfill, among them, presumably, the supplying of people to construct and maintain the road system, to transport wooden beams for building large pueblos in Chaco (more than 200,000 were needed to build them), and for many communal tasks. In other words, the Chaco system was a mechanism for integrating a large number of communities scattered widely in a harsh and unpredictable environment. By regulating and maintaining a large and far-flung exchange system, the leaders who controlled this intricate network were able to support far more people than the area would normally have carried, and to do so using very simple agricultural technology. Every leader must have been a player in a complex and ever-shifting political environment, where the periphery was as important as the center.

Another possible explanation lies in Pueblo cosmology. The so-called "Great North Road" travels 40 miles (63 km) north from Chaco. North is the primary direction among Keresan-speaking Pueblo peoples, who may have ancestry among the Chaco people. North led to the origin, the place to which the spirits of the dead traveled. Perhaps the Great North Road was an umbilical cord to the underworld and a conduit of spiritual power. The Keresan also believe in a Middle Place, a point where the four cardinal directions converged. Perhaps the canyon served as the *sipapu*, the entrance to the underworld. Thus, Chaco and its trackways may have formed a sacred landscape which gave order to the world and linked outlying communities with a powerful Middle Place through spiritual ties that remained even as many households moved away from the canyon. Think of a giant ideological spider's web with a lattice of obligations among its component parts, and you have a possible model for Chaco's role in the eleventh-century Pueblo world. The Great Houses of the canyon lay at the center of the web, connected to communities many miles away by kin ties and regular exchanges of food and other commodities. Gwinn Vivian believes the landscape was a powerful statement, which he calls "We the Chaco." At the same time, the roads served as a mechanism for increasing cooperation and exercising social control over communities at a distance (discussion in Vivian, 1997).



10.7 The Great Kiva at Salmon Ruins, New Mexico.

a powerful ideological spider's web that symbolized the ties between different parts of the Chaco world. Perhaps they were ritual pathways set on a landscape both physical and symbolic.

The center of the Chaco Phenomenon shifted northward in the early 1100s. The Salmon Ruin near Bloomfield, New Mexico, is a 290-room pueblo in a slightly modified "E" plan with a great kiva and tower kiva (a circular tower which served as a ceremonial structure) (Figure 10.7). It was constructed in three planned stages between 1088 and 1106 CE. The distribution of local and Chacoan vessels through the pueblo suggests that Salmon was founded by both local San Juan people and migrants from Chaco itself.

Between 1050 and 1130 the rains were plentiful. Building activity continued in the canyon as the Great Houses expanded. Chaco's web of interconnections prospered. The Chaco population rose steadily, which was not a serious problem as long as winter rainfall fertilized the fields. Then, in 1130, tree-rings tell us that fifty years of intense drought settled over the Colorado Plateau. Soon the outlying communities ceased to trade and share food with the Great Houses, which forced the canyon's inhabitants to rely on their own already overstressed environment. Dry year followed dry year. Crops failed; game and wild plant foods were increasingly scarce in an area that was marginal for agriculture at the best of times. An inexorable population decline set in.

The only recourse was deeply ingrained in Ancestral Pueblo philosophy: movement. Within a few generations the pueblos stood empty, as well over half Chaco's population dispersed into villages, hamlets, and pueblos far from the canyon. Those who remained were gone by the early 1200s. The emptying of such a site as Pueblo Bonito seems like an epochal event when considered at a distance of 900 years, but at the time it was merely part of the constant ebb and flow of Ancestral Pueblo existence (see Box: Tree-Rings and Southwestern Climate Change, pp. 232–33).

The Chaco system dissolved, in the sense that some people moved to more productive areas where they maintained long-term alliances, while others

TREE-RINGS AND SOUTHWESTERN CLIMATE CHANGE

After over a century of research, tree-ring analysis is now used widely in the study of the Southwest. For example, modern dendrochronology uses tree-ring data to reconstruct episodes of flooding that were disastrous for Hohokam farmers, as the tree-rings can provide information about runoff (for more on the Hohokam, see below). Researchers have also used such information to study other complex variables, among them the amount of annual rainfall and temperature changes. These estimates can be used in turn to calculate a measure of dryness, known as the **Palmer Drought Severity Index (PDSI)**. This research is extremely complex, involving intricate mathematical expressions of the relationship between tree growth and such variables as rainfall, temperature, and crop yields. These calculations yield statistical estimations of the fluctuations in these variables on an annual and seasonal basis. There are now master tree-ring chronologies for large areas of the Southwest, and these form a reliable basis from which we can examine variation over time and space. The experts can now even track the progress of major droughts across the region.

Using a grid of twenty-seven long tree-ring sequences from throughout the Southwest, tree-ring expert Jeffrey Dean and his colleagues have compiled maps that plot changes for each decade between 966 to 1988 CE (Dean and Funkhauser, 1994). Such fine research even allows us to correlate vacated pueblos with short-term climatic fluctuations. The results showed that the position of the jet stream determines the two main rainfall patterns in the Southwest. These have been stable for the past 1,200 years, with one major exception. Predictable summer rainfall dominates the southeastern areas. The northwestern region receives both summer and winter rain, but the latter is much less predictable.

The boundary between the two zones changed little over the years until 1276 to 1299 CE, when a totally aberrant pattern prevailed in the northwestern area, while the southeast remained unchanged.

For nearly twenty years the long-term rainfall pattern gave way to complex, unpredictable precipitation and severe droughts, especially on the Colorado Plateau in the north. This abrupt change coincided with the great drought of 1276 to 1299 CE, which played havoc with the Ancestral Pueblo peoples. For centuries they had adjusted effortlessly to the effects of short-term drought cycles, heavy El Niño rains, and other short-term fluctuations. These could be handled by moving across the landscape, relying more heavily on wild plant foods, or planting more land.

These strategies had worked well for centuries, as long as the Ancestral Pueblo farmed their land at well below its carrying capacity. For hundreds of years they had adapted brilliantly by selecting moisture-retaining soils on north-facing slopes, using arroyo mouths, and diverting rain runoff onto their gardens. They also developed maize with root structures that could be planted deep in the soil. But as the population rose, their vulnerability to brief climatic perturbations—El Niños or droughts, for instance—rose significantly. By the twelfth century communities in such places as Chaco Canyon were close to the supportive capacity of their environments. When the great drought descended upon the Southwest, it ushered in a period of severe destabilization for agricultural populations on the southern Colorado Plateau. Competition for arable land had already increased because of the high population densities. Simultaneously, more people would have moved to areas with higher rainfall and stable water and land relationships. Many of these areas were already occupied, which would have caused problems integrating the newcomers into existing communities. Social instability, enhanced competition, and even conflict may have ensued.

The new, much more detailed climatic data available to Southwestern archaeologists has revealed the great complexity of the many climatic fluctuations that affected Ancestral Pueblo and later peoples. Sizeable data sets will be needed to understand the changes they underwent, and those are still being accumulated.

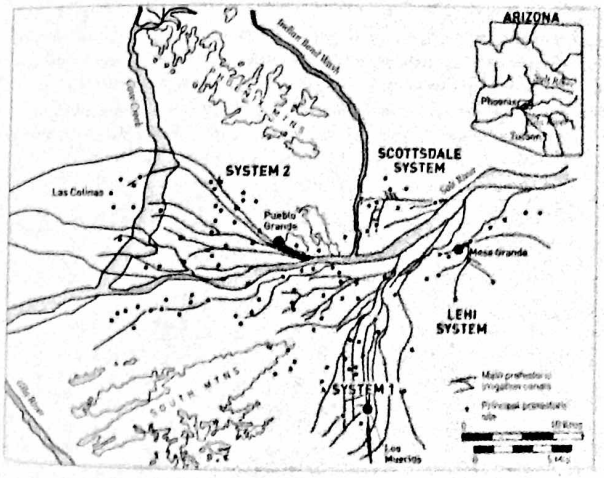
formed independent and highly scattered communities, or simply remained in environmentally favorable areas. Throughout the region once integrated by the Chaco Phenomenon, the reorganized society that emerged from the prolonged drought cycle probably bore some resemblance to Pueblo society immediately before European contact.

The Chaco Phenomenon was by no means the only centralized political and social system that flourished in the ancient Southwest, for there were other complex societies living in sharply contrasting ecological zones.

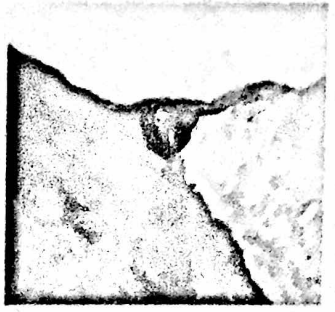
Hohokam: The Desert Irrigators, c. 450 to 1450 CE

Hohokam (a Native American term of uncertain origin meaning "something that is all gone") was the ancient farming tradition of the southern deserts, known from its buff- to brown-colored pottery (Fish and Fish, 2008). If we use such vessels as markers, we can trace the Hohokam over more than 30,000 square miles (78,000 km²) of southern Arizona—an area larger than South Carolina. In general terms, Hohokam groups shared a common identity as farmers, a talent for irrigation agriculture, and an architecture of adobe dwellings. They also shared profound values of mutual obligation.

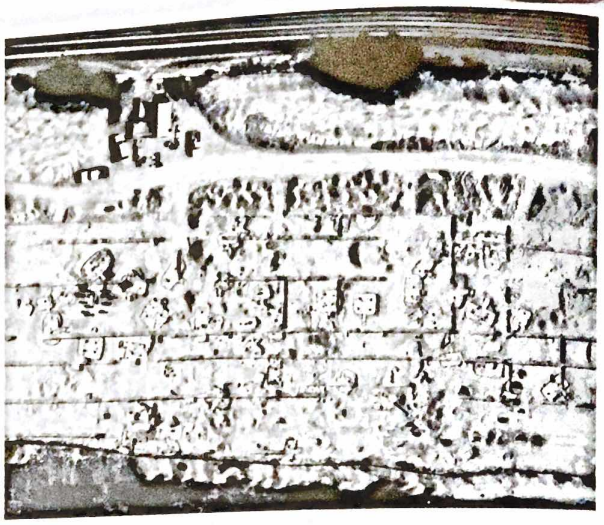
Hohokam culture appeared around 450 CE, as new maize strains arrived and farming populations rose. The land looks barren and utterly dry, yet it has fertile soils and lies near major drainages. Between about 450 and 1450 CE the Hohokam living near the river adapted brilliantly to this seemingly desolate environment, building individual canal networks up to 22 miles (35 km) long and irrigating up to 70,000 acres (28,000 ha) (Figures 10.8 and 10.9). The first irrigation canal systems developed along the Gila and Salt rivers in the modern-day Phoenix area.



10.8 Irrigation systems and major settlements along the Salt River in the Phoenix Basin.



10.9 The late Southwestern archaeologist Emil Haury stands in an excavated Hohokam irrigation canal, part of the elaborate irrigation systems based on the Gila and Salt Rivers that watered surrounding fields.



10.10 Aerial view of pithouses and courtyards at the Grewe site, Arizona.

The Salt River Valley was the most populous and agriculturally productive valley in the Southwest before 1500 CE.

Most Hohokam people lived in small, single-room houses built of pole and brush and covered with hardened clay. Groups of dwellings lay around small courtyards, as if extended families lived close to one another. The size of Hohokam courtyard groups varied considerably, with one of them at the Grewe site in south-central Arizona having as many as twenty-four houses, covering an area of 6,500 square feet (600 m^2) (Figure 10.10). Households, in the wider sense of an extended family, were the primary mechanism for controlling land ownership and the use of irrigation water.

At Grewe, a community founded as early as the sixth century CE and occupied until the fourteenth, the largest houses clustered in a few courtyard groups and were occupied much longer than surrounding smaller dwellings. Here archaeologists Douglas Craig and Kathleen Henderson unearthed a communal cooking area with dozens of pit ovens cut into the soil. This lay on one side of a crowded residential zone. On the other side was a public plaza with a ball court. Craig and Henderson (2007) think that the courtyards nearest to the cooking area, which include the largest and wealthiest collections of houses, controlled food activities and sponsored the feasts that were prepared there, a way of acquiring prestige and social status. At the same time the events reaffirmed property rights held by the wealthiest households as well as fostering a sense of communal identity. There are signs, too, that the same households also subsidized the manufacture of such items as shell jewelry, pottery, and cotton textiles, which were traded to other groups in the region.

The Hohokam exchanged foodstuffs, utilitarian raw materials, ceremonial objects and ornaments (macaw feathers from Mexico, for example), shells (also prestige items), and information. Controversy surrounds the relationship between the Hohokam and cultural groups in Mesoamerica far to the south. Some scholars believe capped **platform mounds**, clay figurines, certain forms of polished and painted vessels, and ball courts show strong Mesoamerican influence. Most, however, argue that the Hohokam was a distinctively Southwestern culture. Certainly Hohokam communities traded with the south for copper bells, mosaic mirrors, and tropical birds, items also found in Chaco Canyon. They were middlemen in the sea-shell trade from the Gulf of California and the southern California coast (where some Hohokam sherds have been found). Between 800 and 1100 CE the Hohokam traded through a network of ball-court communities between the Little Colorado in the north and the Mexican border in the south.

By 1100 CE larger communities comprised a prominent village with communal structures such as a ball court, a plaza, or a platform mound, with outlying smaller settlements and farms, the whole surrounded by carefully laid out and intensively cultivated farm land. Since there are no signs of prominent, authoritarian rulers, it seems that close-knit economic, political, and ritual bonds provided the basis for communal actions and for creating and maintaining irrigation systems. There are few signs of the long-distance trading contacts found at Chaco Canyon or in major Hohokam settlements. Most ceremonial activities appear to have taken place at the community and household level, reflecting a relatively isolated, egalitarian Pueblo society.

Snaketown on the Gila River was one of the largest Hohokam communities, a pithouse settlement with a ball court 195 ft (60 m) long and 15 to 20 ft (4.5 to 6 m) deep (Haury, 1976) (Figure 10.11). Ball-court communities flourished at relatively even intervals along major canal networks. These basin-like ball-court structures were arenas where people from the surrounding countryside would gather for feasts, trading activities, and all kinds of social interaction, as well as ball games between different villages. We know of more than 200 Hohokam ball courts, large and small, shallow depressions with plastered or stamped earth

10.11 The Hohokam ball court at Snaketown, excavated by Emil Haury, is the largest such structure in the Southwest. The court may also have served as a dance arena.

floors, surrounded by sloping banks, where experiments show that up to 700 spectators could witness the games. The largest are up to 250 ft (75 m) long and 90 ft (27 m) wide, dug up to 9 ft (2.75 m) into the subsoil. Quite what form the ball game itself took remains a mystery, but there is no question that it originated in Mesoamerica, where commoners played a competitive game that required each side to cast a rubber ball back and forth without it touching the ground. Three such balls have come from Southwestern sites. Judging from historical analogies, the contests were the culminating event of days of feasting, trading, and social interaction that enhanced a sense of communal identity.

Ball courts gave way to platform mounds after 1150 CE, earth-filled structures that formed elevated places. Some are over 12 ft (3.5 m) high, built within an adobe compound, with as many as thirty rooms on the summit. The platform-mound complexes symbolize a major shift in Hohokam society: the emergence of a small elite. Ball courts were open depressions, accessible to large numbers of people. Platform mounds reached for the sky, stood out on the landscape, and were accessible to only a few. It is as if some members of society now elevated themselves both in material and spiritual terms above everyone else, whereas in earlier times the relationship between the living and the ancestors, and with the underworld where humans originated, was more important. The larger the platform mound, the more labor required to build it, and the greater the status of the individuals or group responsible for its construction.

As the social order changed, so environmental pressures intensified from drought and catastrophic river floods. Hohokam irrigation systems no longer produced the food surpluses to support a now more elaborate culture. The collapse came around 1450, probably a rapid dispersal, household by household, as people moved away to settle with kin or farmed on a much smaller scale.

Mogollon and Mimbres: *c.* 1000 to 1130 CE

The Mogollon Tradition of the ancient Southwest belongs to the uplands and deserts that separated the Ancestral Pueblo and Hohokam. Its most spectacular expression is Mimbres, located along the river of that name in southwestern New Mexico. Between 1000 and 1130 CE Mimbres potters created magnificent painted ceremonial bowls adorned with geometric and pictorial designs (Le Blanc, 1983) (Figures 10.12 and 10.13). These superb examples of ancient artistry are usually found in burials, inverted over the head of the deceased and ceremonially "broken" by making a small hole in the base.

The Mimbres people lived in settlements of up to 150 rooms that consisted of single-story, contiguous and rectangular spaces built of river cobbles and adobe. At the well-known NAN Ranch and Galaz sites the pueblo clusters grew according to household needs, rooms sometimes being subdivided and remodeled. Ceremonial structures included large, rectangular, and semi-subterranean kivas, sometimes with entry ramps and ceremonial offerings under the floors. The relationship between Mogollon and the Zuni is the subject of much debate (see Box: Archaeology and Oral Traditions) (Gregory and Wilcox, 2007).

Mesa Verde: 500 to 1300 CE

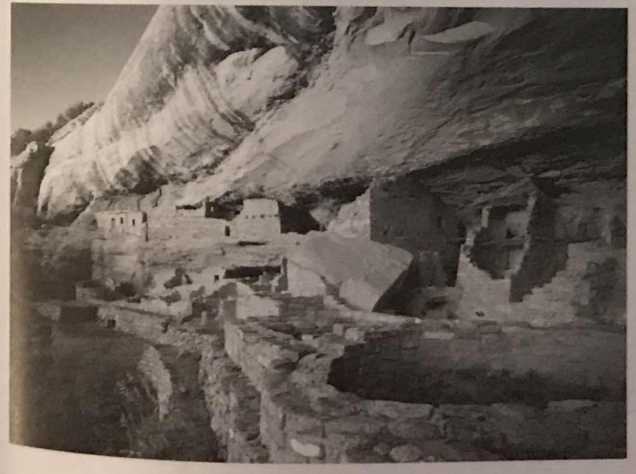
With the decline of Chaco Canyon, the center of Ancestral Pueblo power passed north to the Four Corners region, notably to the Great Sage Plain and a wider area

10.12 A Mimbres bowl painted with enigmatic human figures, possibly representing the contrast between life and death, or male and female. The hole through the base "killed" the object, helping release the vessel's spirit into the next world. Diameter: approximately 11.8 in. (30 cm).

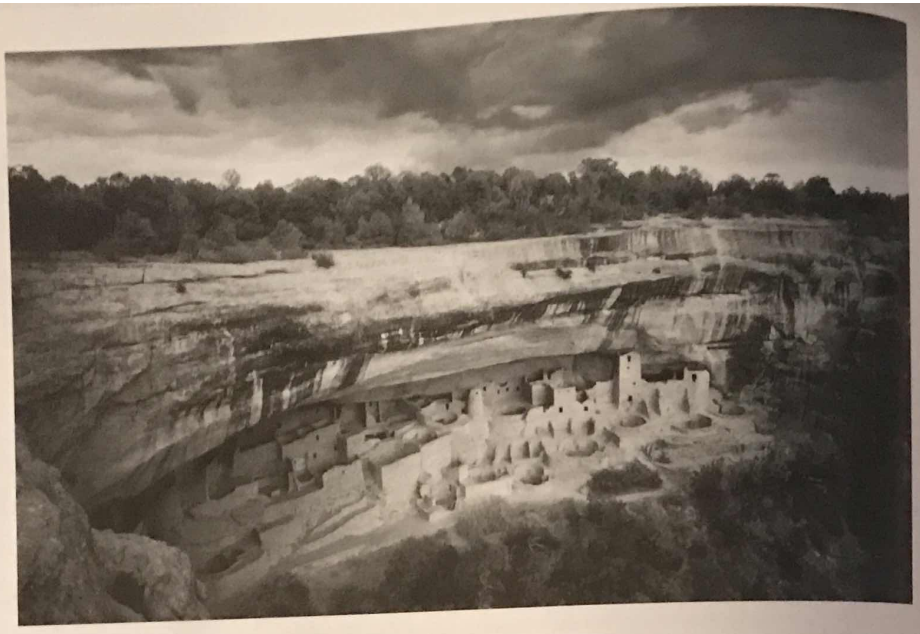
10.13 A Mimbres bowl showing the Guardians of the Four Directions. Diameter: approximately 11.8 in. (30 cm).

north and west of the San Juan Basin—the Mesa Verde area. This was a slightly wetter environment than much of the Southwest, with juniper and piñon cover and many natural water sources. But rainfall was still unpredictable, leading to cycles of scarcity and abundance.

During the twelfth, and especially the thirteenth, centuries, hundreds of Ancestral Pueblo households moved from dispersed communities into large pueblos by rivers and in sheltered valleys. Some populations lived in pueblos built into natural rock shelters in the walls of deep canyons, with one concentration in the Mesa Verde area (Figure 10.14). Between 1200 and 1300 CE the focus of settlement moved south from the area around Chapin Mesa to Cliff and Fewkes Canyons. Fewkes Canyon supported at least thirty-three habitation sites



10.14 The Mug House, Wetherill Mesa, Colorado.



10.15 The Cliff Palace at Mesa Verde, Colorado.

10.16 Artist's reconstruction of Sand Canyon Pueblo, southwestern Colorado, by Glenn Felch.

with between 530 and 545 rooms and sixty kivas. The Cliff Palace, with its 220 masonry rooms and twenty-three kivas, has a spectacular setting but actually differs little from large pueblos elsewhere (Figure 10.15). People had moved from living in open locations to shelters and ledges in canyon walls, perhaps as a defensive measure. Only a few precipitous trails led from the canyon to the plateau farmlands above.

Not that Mesa Verde was the main center of settlement. The nearby Great Sage Plain supported fourteen pueblos larger than the Cliff and Fewkes Canyon villages (Varien *et al.*, 2007). The largest in the region, Yellow Jacket, contains between 660 and 1,200 rooms in 42 architectural blocks, about 195 kivas, and 19 towers, and had a peak population of 850–1,360 people, more than all of Mesa Verde. Another large settlement, Sand Canyon Pueblo in southwestern Colorado, boasted about 400 to 600 inhabitants (Figure 10.16). Sand Canyon surrounded a large spring, as did other major towns in the area. Around 1250 the residents-to-be erected an impressive enclosure wall, which may have taken thirty to forty people two months to build. Over the next thirty years they added over twenty separate room blocks, which incorporated at least ninety kivas and about 420 rooms. Every household maintained its own identity in its cluster of structures—a living space, storage room, place to eat, and a kiva—just as they had in their original dispersed settlements. At the same time, multiple households dwelt within a single architectural complex, as if the wider ties of the kinship group had become more important than in earlier times.

The thirteenth century saw the culmination of seven centuries of rapid social and political development. Then, in about 1300 CE, the Ancestral Pueblo people abandoned the entire San Juan drainage, including Mesa Verde, perhaps because of prolonged droughts. Potential agricultural productivity varied considerably from place to place and from year to year (see Box: Scarcity and Abundance). The farmers tended to locate near consistently productive soils. They could survive the harshest of drought cycles if there were no restrictions on mobility or on access to the best soils, and if they could acquire food from neighbors when crops failed. Their ability to move, however, was severely restricted once population densities approached the carrying capacity of the land and the people had effectively cultivated all the most productive soils (Varien *et al.*, 2017). At that point surviving extreme short-term climatic change was much harder, especially when longer-term climatic cycles happened to coincide with a serious drought cycle, as happened during the major drought of 1276 to 1299 CE. Pueblo construction slowed and ceased altogether by 1290.

By 1300 the great pueblos of the Four Corners were silent. The Ancestral Pueblo people dispersed widely and joined distant communities in less drought-affected regions. They moved south and southeastward into the lands of the historic Hopi, Zuni, and Rio Grande pueblos, where they retained a similar community organization, with villages and larger communities, perhaps better called towns. They developed new social and religious ideas over many generations of cultural uncertainty, until stability returned with improved environmental conditions after 1450 CE.

Shorter-term, high-frequency changes were risks readily apparent to every Ancestral Pueblo community: year-to-year rainfall shifts, decade-long drought cycles, seasonal changes, and so on. These required flexible adjustments, such

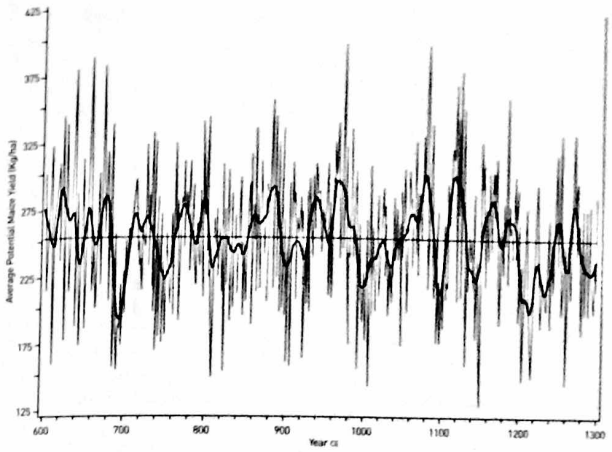
SCARCITY AND ABUNDANCE

The northern Southwest is often assumed to have been a landscape where food resources were scarce and agriculture was high risk because of unpredictable rainfall and a short growing season. Yet Ancestral Pueblo people flourished in the area for thousands of years. Recent multidisciplinary research has shown that the modern-day Tewa-speaking people of the region are among their descendants (Ortman, 2012). The issue of ancestry is still being debated. A project using computer modeling has reconstructed Ancestral Pueblo crop yields in the Mesa Verde region (Kohler, 2012). These models have shown that the ancient maize farmers did indeed experience periods of scarcity. But they also experienced periods when crop yields were abundant. From this information we can examine how constantly changing yields shaped the lives of Ancestral Pueblo people.

Maize was the staple of northern Southwestern life, proven by bone-chemistry studies of skeletons that show people acquired at least 70 percent of their calories from corn. The computer modeling used tree-rings to estimate rainfall and temperature for every year between 600 CE and today. The study area was divided into 110,000 cells, each with an area of 9.8 acres (4 ha). Every cell had its accumulated soil moisture each year calculated using elevation and soil characteristics. The statistical relationship between this measure and crop yields was calculated for the historic period, the results being used to extrapolate back to 600 CE. Many other variables were taken into account, including changing farming technology and planting strategies. The study showed that Ancestral Pueblo people had to cope with agricultural yields that changed every year. Between 600 and 1300 CE yields were close to long-term average about 70 percent of the time, with 230 years above average and 263 years below. But 30 percent of the 700-year interval saw more extreme variation, with 140 years when yields would have been exceptionally abundant and 104 years—about 1 in 7—when yields would have been catastrophically low or even non-existent (Figure 10.17). Even then, there were constant swings between relatively abundant and scarce years. All this data maps closely onto modern Tewa experience and belief.

The study of abundance and scarcity went further. The research teams studied cooking jars from Mesa Verde pueblo households and found that the rate of accumulation of such vessels changed little over time. The steady rate of accumulation of cooking jars could be compared with that of other pottery forms. This study showed that pottery bowls became more abundant through time, and the diversity of clay vessel forms also increased; this may be a measure of the increasing plenty in Mesa Verde peoples' lives.

Other researchers have asked how these periods of scarcity and abundance affected the lived experiences of Pueblo people (Varien *et al.*, 2017). A Tewa elder who participated in the research confirmed that the people think of abundance and scarcity as linked realities occurring in cycles. The one cannot exist without the other. The Tewa have a basic philosophy, which assumes that a basic life force is part of creation. They call it *p'o wa ha*, "water, wind, breath." They believe that this concept of a life force flourished far back in the past, when their ancestors lived in the Mesa Verde region between about 600 and 1285 CE. They achieve a connection to the life force by living their lives according to Tewa values, among which are the importance of community, respecting the elders, hard work, and sharing with others. In other words, abundance ▸▸



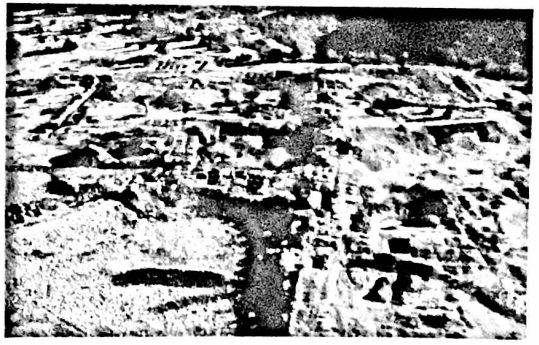
10.17 Annual estimates of maize productivity for the Mesa Verde region, 600–1300 CE, developed by the Village Ecodynamics Project. The average study-area yields in kilograms/hectare per year CE, with the mean annual yield of 254 kg/ha shown for comparison. The unsmoothed yields are in light gray and the spline smoothed ones in black. Bars more than two standard deviations above the mean are unusually wet years with high productivity. Those with more than a single standard deviation below the mean are unusually dry years with low productivity.

as farming more land, relying more heavily on wild plant foods, and, above all, exchange and movement. When the population increased, as it did at Chaco Canyon in the twelfth century, and in the Four Corners region a century later, people farmed more marginal areas, the most likely to fail during dry years. Their vulnerability was even more extreme when long-term changes—such as a half-century or more of much drier conditions—descended on farming land already pushed to its carrying limits. The productive landscape then became more uneven, which could result in conflict and other social crises that are almost impossible to detect archaeologically. Archaeologist Steven LeBlanc has drawn attention to the links between surges in warfare and periods of drought and other climatic stresses in the Southwest, but all kinds of factors were interwoven when surges of violence occurred, notably in the period between 1140 and 1180.

Katcinas and Warriors: 1300 CE to European Contact

The changes of the late thirteenth century changed the social landscape of the Southwest. The focus of human settlement moved south and east to areas of greater summer rains, such as the Rio Grande Valley and the Zuni region in the west of central New Mexico. More people moved from villages into bigger communities, some of them much larger than the greatest pueblos of earlier times. Not that these aggregations were permanent, for, as in earlier centuries, local populations fluctuated and pueblos rose to prominence, then were abandoned or became mere shadows of their former selves.

The pueblos of the Rio Grande Valley, one of the few perennial rivers in the Southwest, epitomize this constant change. Until the twelfth and thirteenth centuries relatively few people lived in the valley. Then the population swelled rapidly, both as a result of local growth and from migration from the north and northwest. Several pueblo sites, notably Arroyo Hondo, just south of modern-day Santa Fé, reflect not continual growth but the ebb and flow so characteristic of Rio Grande settlements (Creamer, 1993) (Figure 10.18). A single-room block rose at Arroyo Hondo by 1315 CE. Within fifteen years about 1,200 two-story rooms arranged over twenty-four blocks centered around thirteen plazas. Just as quickly, the great pueblo emptied; it was almost deserted by the mid-1330s. A second cycle of growth followed in the 1370s and 1380s, with the building of 200 rooms, but these were destroyed by a fire in 1410.



10.18 Aerial view of Arroyo Hondo Pueblo, New Mexico.

and scarcity are both material and spiritual realities.

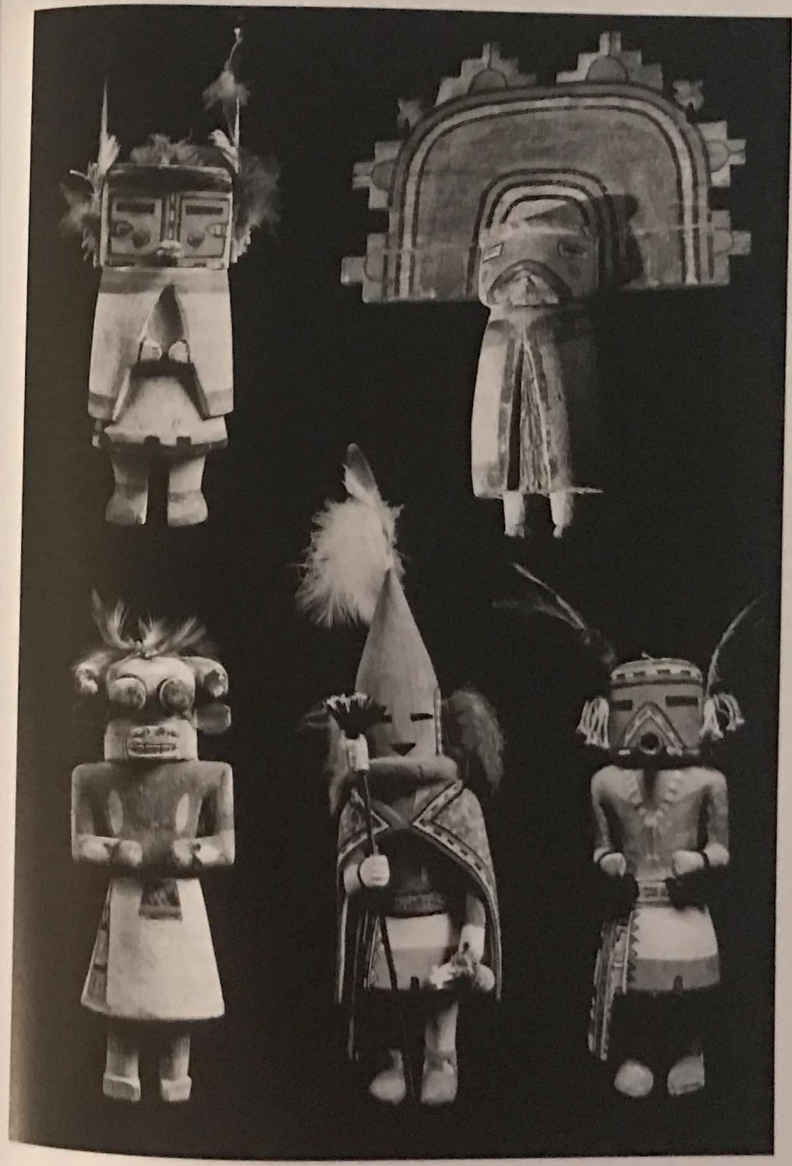
Another sign of abundance was the increasing prevalence of feasting. Pueblo feasts were much less political and less lavish than in many other small-scale societies. They were more like the modern-day potluck: everyone brought food prepared at home, more fortunate households providing more. Food was often distributed to the less fortunate in a manner similar to the way it is distributed by masked **katcinas** today. This ensured that food abundance was shared across the community. Such ceremonies took place at villages rather than tiny hamlets, as these could accommodate the entire community.

The earliest evidence for communal feasting comes from the Dillard village west of Cortez, Colorado, which dates to the seventh century CE. The Basketmaker III village is centered on a great kiva, with two clusters of pit structures. Large numbers of bowls associated with the great kiva are evidence of feasting. An early Pueblo settlement known as Sacred Ridge, on a tributary of the Animas River and dating between 700 and 825, has unusually large pit structures where, once again, large numbers of bowls testify to feasting. McPhee Pueblo in the Dolores River Valley, where population peaked between 850 and 900 CE, had two room blocks; the U-shaped blocks created small spaces where feasts of deer and rabbit meat, using imported red bowls, took place. Finally, Sand Canyon Pueblo, dating to between about 1250 and 1285 CE, had between 400 and 600 residents, and was thus one of the largest villages during the final Pueblo occupation. A great kiva, a plaza, and a D-shaped bi-wall structure testify to intense ritual and ceremonial feasting here. There were also numerous large cooking and serving vessels, perhaps used to cater for greater numbers of people. Unlike at McPhee, feasting here involved boiling profuse quantities of food, probably maize and beans. By this time the accumulation of food surpluses had reached a point where there may have been a communal storage facility, and community surpluses were perhaps controlled by a political leadership. Such organization would have allowed the leaders to redistribute food publically as a way of validating their position—a situation akin to that of the Northwestern potlatch.

This painstaking, multidisciplinary research provides clear evidence that Pueblo communities were well aware of the cycle of abundance and scarcity, the one balanced against the other. This explains why the Tewa and other Pueblo peoples value community and sharing, and the establishment of extensive kin ties over considerable distances, so highly. Feasting was and is an expression of these values, but is today more restrained than it appears to have been in earlier times.

The history of Arroyo Hondo reflects a remarkable social fluidity characterized by repeated movements of entire groups, some of whom traveled distances of several hundred miles from the Mesa Verde region and elsewhere. One reason for this fluidity lay in the larger size of these growing settlements in an unpredictable environment where maize cultivation was always unreliable. At Arroyo Hondo, for example, even the best agricultural land could feed no more than 400 to 600 people in an average year, making it hard to accumulate adequate food reserves against drought years. The farmers tried to minimize famine by irrigating river lands and planting better-watered fields at higher elevations. Despite the difficulties, Arroyo Hondo and similar sites across much of the Southwest were used over long periods.

By the fourteenth century there was frequent warfare. Pueblos now rose in easily defended locations. Sometimes groups of settlements clustered together for protection, as they did in the Rio Grande Valley and the Hopi-Cibola region, with long distances between them. There were also major changes in Pueblo ritual, marked by new styles of kiva murals, pervasive decorative styles on ceramics, and much larger plazas. The plazas became important settings for public ceremonies, especially katcina (*katchina*) dances. Katcinas play a prominent role in modern-day Pueblo belief and ritual (Figure 10.19). They are ancestral spirits who serve as intermediaries between the living and the deities of the



10.19 Hopi artists carve wooden dolls to teach their children about the many katcinas that are important in Pueblo ritual.

ARCHAEOLOGY AND ORAL TRADITIONS

Southwest archaeology is at a turning point. It is the region with the highest density of archaeologists in North America, and most of them are engaged in CRM research. Databases are mushrooming, and a new era is dawning in which multidisciplinary research and close cooperation with Native American communities are at the forefront. We now have a burgeoning amount of data, which allows us to work on fundamental problems and to link archaeological findings and oral histories into respectful, accurate narratives of the past. The Zuni tribe offer an interesting starting point (Gregory and Wilcox, 2007).

The Zuni people have occupied their homeland for over 1,000 years. They reside in a cultural landscape with named places used by them to symbolize and recall the remote past. That past is projected into the contemporary world by defining and understanding this landscape. Zuni traditional history and cultural geography are an independent source of historical information. Their oral traditions are passed down the generations by many channels, among them kiva groups, priesthoods, and religious societies. There are many instances where the archaeology and Zuni accounts diverge. Herein lies the challenge. How does one explain these differences while still respecting both the archaeological evidence and traditional knowledge? The Zuni have a dynamic view of the past that involves their ancestors, who traveled widely in constant migrations. Archaeologists work with relatively static archaeological cultures as a framework for history. At present we have hardly begun to develop the methodology to use Zuni oral traditions in archaeological research.

The Zuni have a rich body of well-recorded oral tradition, including "from the beginning talks" that describe their emergence and subsequent migration to Zuni Pueblo, the "Middle Place." *Telapnawe*, folktales or legends, which mainly revolve around the Zuni Valley, are often recited to teach the young, or simply for entertainment. Among them are "prayer talks"—chants or prayers recited during ceremonies. They are often repetitions of fixed formulae performed with gestures and oral elaborations. There are many such talks that begin with the emergence from the lower world and the search for the Middle Place. There are all kinds of narratives that older men use to pass on the main outlines of Zuni history to the young in kivas on such occasions as the winter solstice. Other accounts are shared within families around the hearth during the winter. These oral traditions are alive and ever-changing, but once written down they inevitably become a more static view of history.

Numerous sources document Zuni oral traditions. Frank Cushing was the first to do so, identifying locations associated with both the origin and subsequent migrations, which he published in a somewhat poetic style. Subsequent efforts added to the original collections in sober anthropological terms, as did the photographer Edward Curtis, celebrated for his images of the Zuni and other Native Americans.

Religious leaders gave invaluable testimony during litigation of Zuni land claims in 1980s, which provided information given under oath about sites used by the tribe for both utilitarian and ritual purposes. The resulting *A Zuni Atlas* maps 234 land-use sites inside and outside the claimed area (Ferguson and Hart, 1985).

From these sources comes a summary that begins with the Zuni people emerging at a place named *Chimik'yana'kya dey'a*, deep in a canon along the Colorado River. Divine instruction taught them all manner of prayers, rituals, and sacred talks before emergence. Once in the world, and guided by their religious societies, they migrated along what is now the Little Colorado River. Along the way they stopped and occupied villages for "four days and four nights," a symbolic expression of a longer, unspecified time. At one of the springs along the way they assumed the appearance of humans. In the Lower Colorado River Valley the people were given a choice of eggs that caused them to split into several groups. Those who chose a brightly colored blue egg continued toward the Middle Place, but split into three groups. After numerous adventures the main group founded a series of settlements in the Zuni Valley, eventually settling at *Halona: Itiwana*, the Middle Place, now Zuni Pueblo.

Research is ongoing to identify the places mentioned in the oral traditions, both the place of emergence and the various locations where the migrants paused and founded villages, also places of symbolic and ritual importance. But can one take these historical accounts too literally? As Zuni interpreters of the oral traditions point out, the journeys mentioned in chants and prayers do not describe exact routes. They tell us that ancestors of the modern-day Zuni traveled over a wide area of the Southwest, some of it outside the present homeland. The challenge for archaeologists, and for Zuni historians, is to reconcile different perspectives on the ancestors, who lived in what archaeologists refer to as the Mogollon area.

This concern with traditional histories is part of a new chapter in the archaeology of the Southwest, and of North America generally. Over the generations we have moved from studying artifacts and chronology to a concern with how ancient societies changed through time. As part of this effort we have focused on changes to landscapes and regions, and on changing patterns of settlement, with promising results. Now we are moving into a new era, in which we are more concerned with what people did, as oral histories are, and can use the vast quantities of raw data now at our disposal to examine a fundamental and much wider question: how did the pueblos come to be as they are? For the first time we are combining data from many sources—archaeology, climatology, and linguistics, to name but three—which will allow us to write the Southwestern past as a comprehensive social history that moves beyond modern-day cultural identities. This is the fascinating challenge for future generations.

supernatural world, as well as bringing rain in clouds that they summon to the pueblos. Katcinas are present on earth between the winter and summer solstices. For the other half of the year they live in the San Francisco Peaks, to which they return through the *sipapu*. Katcina dancers, males who assume the sacred powers of the spirit, wear costumes and masks that impersonate the ancestral spirits during their stay on earth.

Perhaps the elaboration of katcina rituals was a way of binding together the inhabitants of the large, densely populated pueblos. Everyone in the community was part of a katcina society, whose membership cut across potentially divisive kin and lineage lines while ensuring that public ceremonies were conducted properly. Cooperative behavior was vital for survival, and katcina rituals, with their emphasis on rainmaking (as well as warfare), provided important social guidelines and validation for the community as a whole.

Paquime (Casas Grandes): Fourteenth Century CE

Long-distance trade flourished throughout the Southwest, even in troubled times, as such commodities as turquoise, tropical bird feathers, cotton, toolmaking stone, and buffalo hides passed along ancient trade routes. The Casas Grandes area of Chihuahua in northern Mexico lies in relatively high-altitude basin and range country and is centered on a wide, fertile valley long inhabited by an indigenous farming population (Whalen and Minnis, 2001). By about the fourteenth century the inhabitants of this valley had congregated in a large settlement known as Paquime (or Casas Grandes) (Figure 10.20). Initially, Paquime consisted of twenty or more house clusters, each with a plaza and enclosing wall. The people lived in single-story adobe houses, with a single water system for the entire settlement. One compound contained rows of rectangular adobe boxes apparently

10.20 Aerial view of Casas Grandes, Chihuahua, northern Mexico, showing a ball court, lower right, and excavation of room blocks, lower left corner.

used for breeding macaws for their colorful feathers—pollen analyses have yielded traces of the nesting material, even eggshell fragments, skeletons, and traces of wooden perches. Paquime may have been one of the sources of macaws for Ancestral Pueblo communities far to the north. Macaw feathers were widely used in Pueblo rituals and were attached to ceremonial regalia and prayer sticks. They served as conduits to the supernatural.

During the fourteenth century as many as 2,240 people lived in what was now a thriving town, with multistory dwellings, I-shaped ball courts, stone-faced platform and effigy mounds, a market area, and elaborate water-storage systems. At the height of its power Paquime lay at the center of a small region, its influence perhaps extending about 18 miles (30 km) from the town. Like the earlier settlements of the Chaco Phenomenon, Paquime did not flourish for long, gradually falling into disrepair and being abandoned in the fifteenth century. The large towns of the southern desert were vacated, as simpler social institutions prevailed in another cycle of movement and downsizing. The Zuni and Hopi pueblos, however, endured, together with those of Acoma and the Rio Grande Valley, and others to the east, to witness the arrival of Spanish conquistadors in the sixteenth century.

SUMMARY

- Between 600 and 900 CE village settlement expanded greatly throughout the northern Southwest and especially on the Colorado Plateau.
- Chaco Canyon came to prominence before 900, when people moved into masonry dwellings on the south side of the canyon, where soils were most fertile. During the ninth century groups from the north settled on the north side, where the first four Great Houses were erected after 850.
- By the eleventh century Chaco was the hub of a much wider world at the height of the Chaco Phenomenon. These dispersed communities interacted with one another constantly, many of them linked by a road system that may have formed an ideological web. Pueblo Bonito became an important ritual center. Much of the ritual surrounded the passage of the seasons and maize. In 1130 a severe drought cycle led to the dispersal of Chaco's population, part of the constant ebb and flow of Pueblo existence.
- In what is now southern Arizona the Hohokam farming tradition, based on irrigation agriculture, flourished between 459 and 1450. By 1150 there were larger Hohokam communities, such as Snaketown, where communal life centered around ball courts and feasting, trading, and rituals that reinforced community identities. A small elite emerged after 1150, when platform mounds came into use.
- The upland Mogollon with its spectacular Mimbres ceramics flourished between 1000 and 1130.
- With the decline of Chaco, the center of political gravity moved to the Four Corners region—the Mesa Verde area. The Great Sage Plain supported fourteen substantial pueblos, the largest of which was Yellow Jacket. Probably because of intense drought, the great pueblos of the Four Corners were abandoned by 1300.
- The social landscape of the Southwest changed in the late thirteenth century, a period of constant movement and, during the fourteenth century, constant warfare. New forms of ritual reflected new religious beliefs and a concern with ancestors, reflected in katcina ceremonies.
- The great challenge for future generations is marrying archaeological findings with oral histories, like those of the Zuni.
- Long-distance trade flourished up to European contact, especially at sites like Paquime (Casas Grandes) in extreme northern Mexico.