

Adobe:

An Ancient Folk Technology

By Peter Nabokov

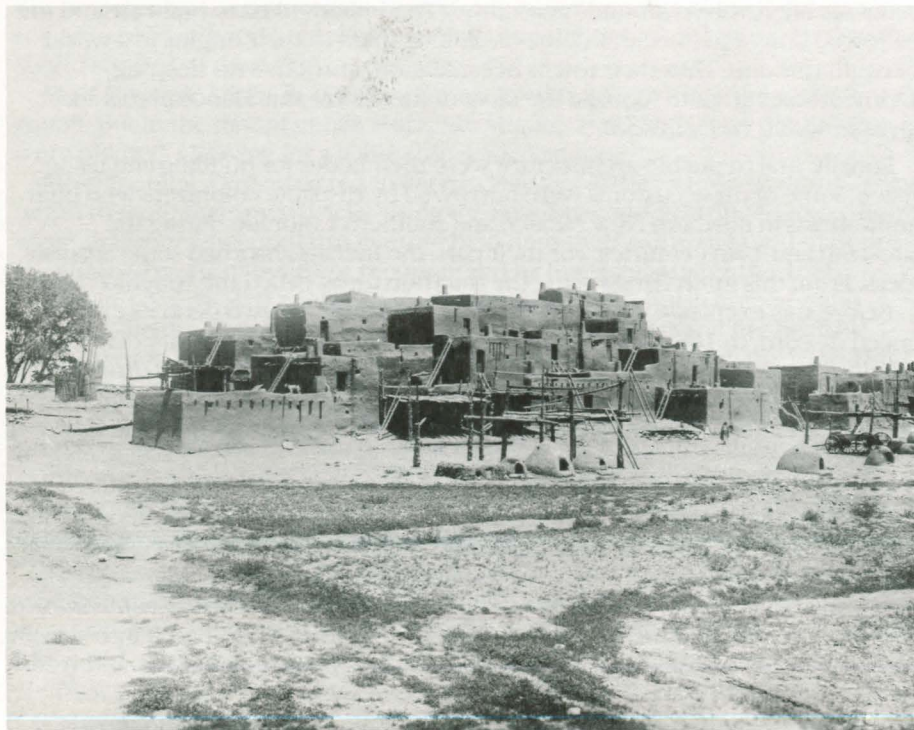
In the ancient world, Arabs mixed sand, clay, water, and a vegetal binding material to make *al-tob*. The Spanish, principally because of contact with the Arabic Moors of North Africa, knew the process and called it adobe. When they arrived in the New World, the Spanish colonists found that the Indians in the Southwest had been using the same process for centuries. Today, we still know it by its Spanish name: adobe.

It is not surprising that the Spanish and Indians shared an affinity for building with adobe. The basic materials used to make it were common to both continents. In addition, it had unique qualities that made it an ideal building material for arid climates. During the day, adobe absorbed the heat of the sun, leaving the house interior much cooler than the outside. As the outside air cooled in the evening, the walls reflected the stored heat into the houses, taking the chill off the night air. Adobe was also an infinitely adaptable construction medium: it could be shaped in many forms to meet a wide range of social, cultural, and physical housing needs.

Indians throughout the Southwest employed a variety of earth-building techniques. Since A.D. 350, they constructed pit houses, which were partly excavated homes with rounded corners, tunnel entrances, and roofs made of earth atop a frame and with underblanket. Later, as they started to build surface structures, this pit house was retained in altered form as the *kiva*, a religious building still hallowed throughout the Southwest.

Simultaneously, the early natives here developed a range of techniques for building with mud. Their cliff dwellings often had wattle-and-daub walling. They smeared mud into a fence of interwoven willow rods or they built in the *jacal* style, cramming adobe mixture between upright posts. More commonly, they

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1 Taos Pueblo in 1899. PHOTO COURTESY SMITHSONIAN INSTITUTION, NATIONAL ANTHROPOLOGICAL ARCHIVES.

2 Taos Pueblo, ca. 1910. PHOTO COURTESY SMITHSONIAN INSTITUTION, NATIONAL ANTHROPOLOGICAL ARCHIVES.



1

1 Men constructing modern adobe house with traditional sun dried adobe bricks. PHOTO COURTESY CHARLES H. LANGE.

2 Woman plastering house at Cochiti, 1951. PHOTO COURTESY CHARLES H. LANGE

3 Taos woman seated at horno. PHOTO COURTESY SMITHSONIAN INSTITUTION, NATIONAL ANTHROPOLOGICAL ARCHIVES.

piled up sandstone, lime, or volcanic rocks (sometimes faced) and steadied them in place with mud mortar. Along the Gila and Salt rivers they employed a so-called *pise* or “puddled adobe” method. They used a wattle-work box as a type of mold, then built up adobe .5 m (20 in.) high bands. Walls sometimes reached a height of 8 m (30 ft.).

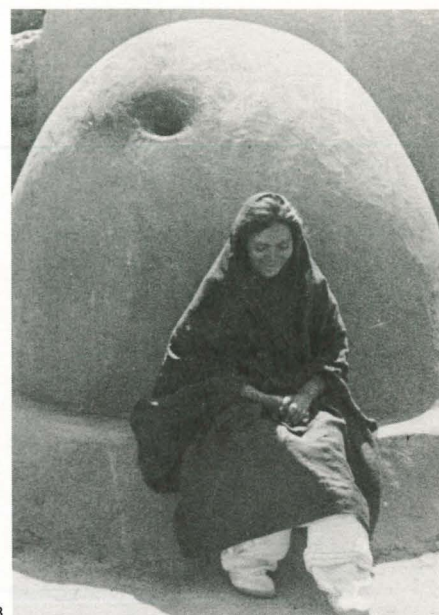
While these Indians never made adobe bricks with wooden forms – the Spanish way – they handmade the so-called “Vienna roll” loaves, which they squashed in layers to build up walls, or they patted mud into rounded “turtle back” bricks.

Using an east-west axis, the Indians early on oriented their connecting houses to exploit the sun. Still other considerations helped determine the form of their villages. Defense was one concern and community was another. Their social and religious life revolved around “centrality.” The Indians liked to build around the hallowed kivas and to center domains, linking them to their origins in a world beneath this one. Thus their towns became multi-storied, with sleeping chambers facing south to make the most of the winter sun. Dance plazas and kivas generally faced inward.

Equally vital to pueblo architecture were their codes for building and using space. Some of these customs were borrowed by Hispanic colonizers who built homesteads in northern New Mexico and southern Colorado during the late-18th and 19th centuries. For their part, the Indians absorbed some Spanish ideas. From this interchange came the tradition today called the “pueblo” style.

Before this exchange was commonplace, however, the two peoples experienced discord. In 1680 the Pueblos rebelled against nearly a century of harsh, religious oppression. In their great revolt that August they united to drive all Spanish from their territory. The Spaniards reconquered most of the region a dozen years later, chastening the Indians. Thereafter, their cultures coexisted more equally.

The partial blending of Indian and Hispanic worlds found architectural expression. In the Hispanic hamlets of the Sangre de Cristo Mountains and the San Luis Valley, new modes were picked up. The Hispanic people seemed to assume the Indian habit of allocating to women the critical finishing work of plastering. The women organized a loose guild and were known as *enjarradoras*. These women applied the adobe slip, *alisando* and hand smoothed it into swirling patina. At some pueblos, like Taos, women always “owned” the home and were the fashioners of its final form and coloring. They were also responsible for general maintenance of the entire village. The Taos men, their characteristic



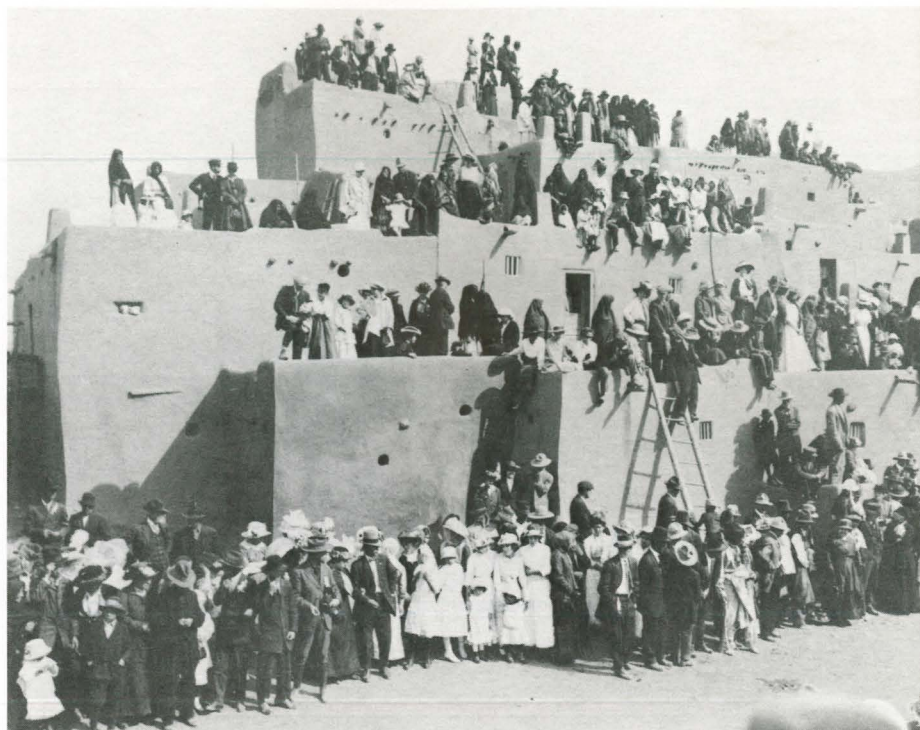
shawls furred on top of their heads like turbans, would mix adobe for the women when they replastered before the San Geronimo fiesta in the early autumn. In the Hispanic villages, the adobe mixers were known as *suqueteros*. They prepared the *suquete* with rakes and bare feet – careful in some regions to mix in only straw that had been finely ground by livestock. The buildings they helped construct differed from the Indians' in style. They were in a line (not grouped around a center) or shaped in an L form. Generally Hispanics lived in far-flung homesteads, coming to trade in a central plaza. In their ranches a variety of free-standing structures could be seen: *dispensas* for storing grain; the *fuerte* of jacal construction for holding tools and tackle; a *barbacoa* for cornstalks; log structures such as the *tapiesta*; a raised platform; the two-story *tasolera* which held forage above and sheltered animals below; and the *cochera* for a wagon. There were also the mysterious *moradas* where members of the Penitente religious brotherhood held their meetings and the occasional *torreone*, the New World survival of the castle for defense.

Most Hispanic adobe houses had flat roofs with a slight tilt to the earth for rain runoff. But in the mountainous Mora, San Miguel, and Rio Arriba counties, they were pitched, allowing for a gable story called an *alto*.

Most Pueblos were attracted to certain features of the Spanish tradition. They began to mold their own bricks, using the Spanish wooden form. An exception were the Hopi who, until this century held onto their stone and mud-masonry tradition. (The Hopi were not reconquered by the Spanish after the 1680 rebellion.) Nearly all the Pueblo peoples adopted the Spanish fireplace and chimney. Before this, Indian homes had been heated by central fire hearths; smoke exited from the ladder hatch where one entered through the roof. The Indians placed their choice of *fogon*, the Spanish-style fireplace, in the middle of a wall or at corners where it seemed to blister out above the floor. They might prop up a fireplace hood with posts or cantilever it. They also adopted the *born*, the beehive-shaped outdoor ovens, to let their own unleavened corn bread, formerly peeled from a heated stone into parchment-like rolls, rise into baked loaves; these ovens became fixtures of the Pueblo village.

To be sure, the Southwest was not the only adobe-using region. To the east, where humidity was too high to let adobe bricks dry in the sun within a reasonable time, a form was placed for the wall and earth was "rammed" into it. The mold was lifted as the walls grew. In California, sea-shell plaster replaced the special earths that were sought by Hispanic women: *Tierra Amarilla* or *Tierra Colorado* (for a yellowish or reddish interior) or *Tierra Vallita* (for a suede-like

San Geronimo Day, Taos Pueblo, Ca. 1926.
PHOTO COURTESY SMITHSONIAN INSTITUTION,
NATIONAL ANTHROPOLOGICAL ARCHIVES.



Suggested Readings

Bunting, Bainbridge. *Early Architecture in New Mexico* Univ. of N.M. Press: Albuquerque, 1976.

Judd, Neil M. *The Use of Adobe in Prehistoric Dwellings of the Southwest* The Holmes Anniversary Volume.

Mindeleff, Victor. *A Study of Pueblo Architecture in Tusayan and Cibola* Smithsonian Inst., 8th Annual Report of the Bureau of American Ethnology, Washington, D.C., 1891.

McHenry, Paul Graham, Jr. *Adobe: Build It Yourself* Univ. of Arizona Press: Tucson, Arizona, Second Printing 1974.

Smith, Edward W. *Adobe Brick Production in New Mexico*, New Mexico Geology Science and Service Vol. 3, #2, (May 1981). New Mexico Bureau of Mines and Mineral Resources. Socorro, New Mexico.

exterior). Sea shells were smashed up and burned until they turned to lime; the plaster was then mixed up and applied. To make flooring, the ground was first dampened, then spread with bull's blood to harden it; the process was repeated each year.

Travelers through northern New Mexico can still occasionally find old adobes with .8m (30 in.) thick walls crumbling picturesquely. Their roofs are no longer of wood but rather of rusting, corrugated iron. Around the turn of the century they sported "gingerbread" woodwork trim, often mail-ordered. At that time it seemed that the adobe tradition might become an industry. One famous *adobero*, Abencio Salazar, hand built a great number of adobe buildings around Albuquerque, among them a 110m (12,000 sq. ft.) school that stands today. It is said he could lay 1000 adobes a day. He used a "woven" technique for alternating the alignment of his tiers of bricks, resulting in thicker, sturdier walls.

But adobe gave way before the demand for lighter, synthetic building materials. Today's adobe makers are small-scale home builders with a passion for the aesthetics and history of the material as well as its ancient virtues of providing coolness and warmth in their arid land. They have innovated new techniques of brick making and its use, even building solar adobes.

Pueblo architectural traditions are very much alive today. When plastering takes place at Hopi villages, it occurs in the old way, especially for the ritual upkeep of their underground kivas. At most pueblos, prayer sticks are planted at key places during construction to consecrate the finished house. One of the most impressive rituals happens in December at the Zuni Pueblo. Six 3m (10ft.) spirit figures, known as Shalako, visit the villages to bless the houses and renew the Zuni world. During the ceremony, one god-like figure utters this prayer:

*Then in the middle of my father's roof,
With two plume wands joined together,
I consecrated the center of his roof.
This is well;
In order that my father's offspring may increase
I consecrated the center of his roof.
And then also, the center of my father's floor,
With seeds of all kinds,
I consecrated the center of his floor.*