

Chimney Rock and the Ontology of Skyscapes: How Astronomy, Trade, and Pilgrimage Transformed Chimney Rock

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Abstract: Because of its architectural style and excellent masonry, the Great House of Chimney Rock in southwestern Colorado has been identified as one of some 225 outliers of the Chaco regional system. Located just below the spectacular double rock towers, the Great House is set in a dramatic and unique skyscape containing a number of sight-lines to extremes of the Sun and Moon. Once considered important as a calendrical station, which communicated astronomical information southward to Chaco Canyon, the Great House may have been primarily important as a place for viewing the juxtaposition of the gods of earth and sky, a theophany similar to that of *darśan* of India. This paper proposes that the initial identification of a number of skyscapes as horizon calendars and calendrical stations should be reconsidered in the perspective of animism and alternate ontologies. Construction of the Great House may have been initiated by the local community and accomplished with the help of masons from its closest neighbour, the Great House of Salmon. The area appears to have become a pilgrimage centre in its own right, not under hegemonic control of the powerful elites of Chaco Canyon. Rejection of the Chacoan influence is indicated by the construction by the local community of a structure that restricted entry to the area of the Great House. The decline of Chimney Rock as a pilgrimage centre sometime after 1093 AD was accompanied by the abandonment of the Salmon Great House, the breakup of a trade network, and out-migration to the Taos Pueblo.

Keywords: animism; Chaco Canyon; Great House pilgrimage; ontology; pilgrimage

Introduction

Between 1020 and 1130 AD, Chaco Canyon in northwestern New Mexico became the centre of a socio-political system involving massive Great Houses and Great Kivas. It spanned an area of 30,000 to 40,000 sq m, about the same size as Portugal. The Great Houses are today the most monumental prehistoric structures north of Mexico. The

largest Great Houses, such as Pueblo Bonito and Chetro Ketl, contained more than five hundred rooms and stood three to four storeys high. The influence of Chaco extended far beyond the canyon to as many as 225 outlying sites, with the architecture and masonry characteristic of the canyon. Because of its architectural style and excellent masonry, the Great House of Chimney Rock has been identified as a Chacoan Outlier, and, in fact, it has even been called the “ultimate outlier” (Malville 2004). While many of the outlying communities were contemporary with the Bonito Phase, construction of others continued long after the political power of the residents of the canyon had faded (Van Dyke 2007). A number of archaeologists feel the use of the term “outlier” is inappropriate, as it suggests a subservient and passive connection between Chaco Canyon and the outlying sites (Kantner and Mahoney 2000; Kantner 2004).

Placed close to the spectacular double rock towers between which the major standstill Moon rises, the Great House is located in the High Mesa Group and is one of the eight communities of the Chimney Rock area (Figure 1). It lies above and separate from the other structures of the group, on the upper mesa, which is reached by a narrow causeway. The Great House has an area of 2535 sq m and contained some 35 rooms in two storeys. The size gives it a rank of 19th among Chacoan Great Houses, comparable in size with well-known Late Bonito Great Houses, such as Wijiji and Kin Kletso, in the canyon. In 1922 Jean Allard Jeançon, the first archaeologist to excavate the site, speculated: “Originally the building must have presented an imposing picture as it rose above the cap-rock to a height of not less than 20 feet and perhaps more. In many places the walls are still standing from 10 to 14 feet” (Jeançon 1922, 14).

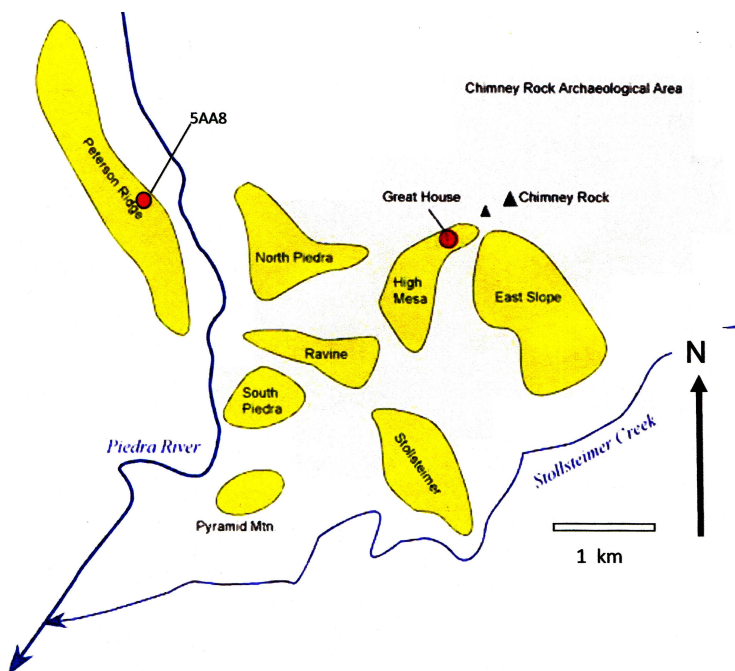


FIGURE 1. Communities of Chimney Rock.

The Great House is contained in a spectacular and unique landscape, close to the double rock towers, between which the major standstill Moon rises every 18.6 years (Figure 2) (Malville *et al.* 1991). The Chimneys are identified as a shrine to the Pueblo Twin War Gods by the Winter People of the Taos Pueblo (Eddy 1977, 1; Fowles 2013, 87–93). There are multiple astronomical sight-lines in the area. A bedrock basin in the high mesa identifies a viewpoint for observing the June solstice sunrise occurring along the north wall of the Great House and over a fire pit on the upper mesa. An unexcavated tower on the rim of the upper mesa provides a place for observing the June solstice rising at a notch on the horizon. To the west, across the Piedra River, the major site on Peterson Ridge, 5AA8, provides dramatic views of both the Sun and Moon rising between the two chimneys (Malville 2004) (Figures 3 and 4).



FIGURE 2. (top) 26th December 2004 (photograph by Helen Richardson); (bottom) 8th September 1988 (photograph by author).

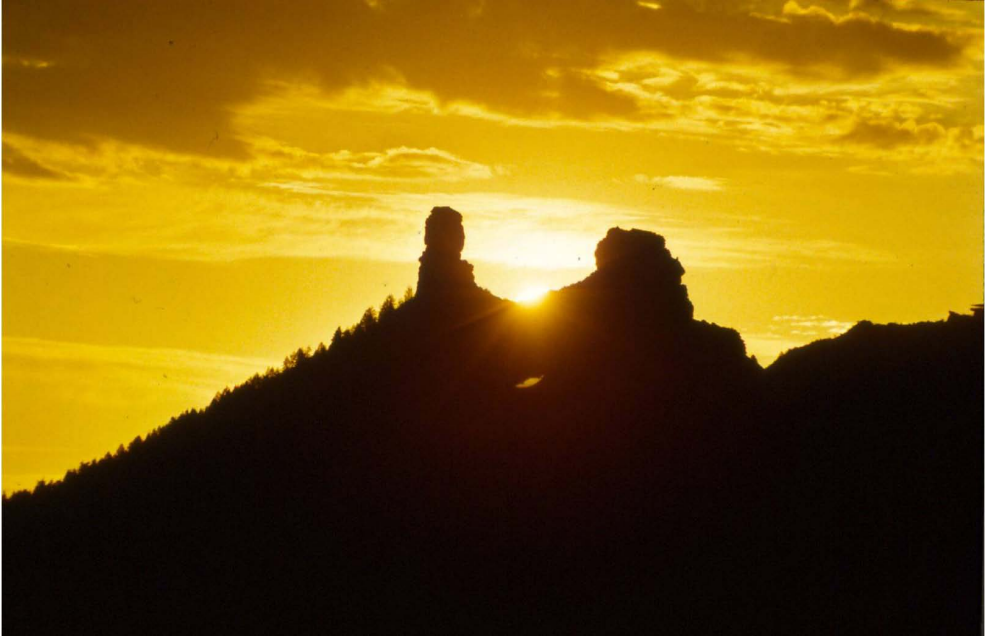


FIGURE 3. Sunrise from 5AA8 on Peterson Ridge.

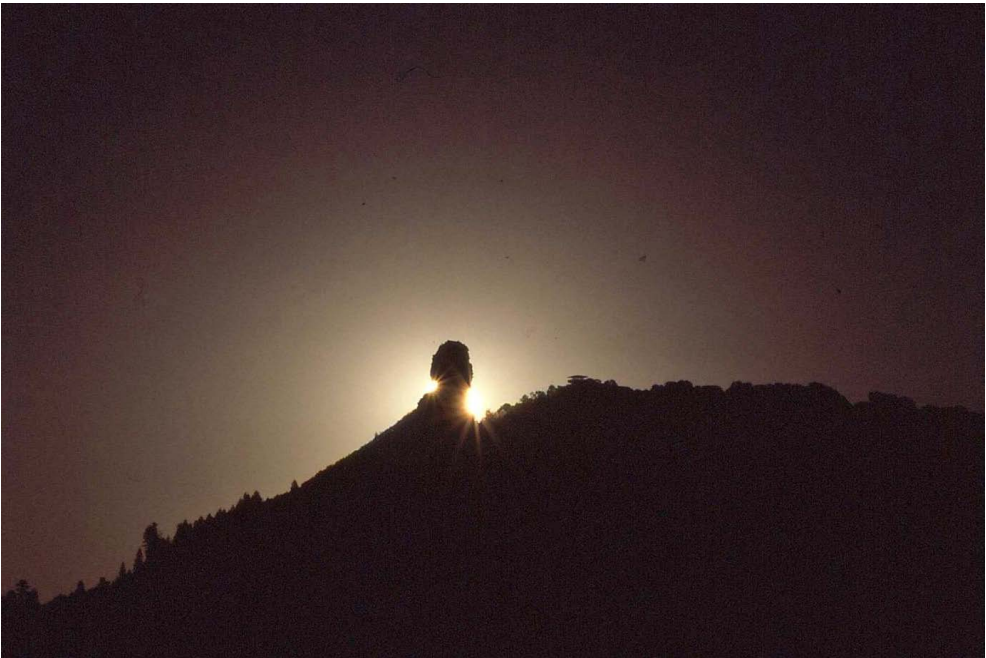


FIGURE 4. Sunrise on Peterson Ridge at June solstice (sunrise occurs behind the merged double chimneys; note the fire tower, which has now been removed).

This paper proposes that these astronomical events combined with the natural double chimneys led to the establishment of the high mesa as a secondary pilgrimage destination within the Chaco regional system. At the time of the construction of the Chimney Rock Great House, the closest Great House was that of Salmon on the north bank of the San Juan River. The similarity between the dates of construction as well as the presence of a shrine at Salmon marking both June solstice and the major standstill Moon suggest a close connection with Chimney Rock. Residents and masons from Salmon may have played a significant role in the design and construction of the Chimney Rock Great House. After its construction access to the Great House was limited by the construction of the Guard House, apparently built by the local community. This development suggests that the community and visitors engaged in a combination of private and public ceremonies, similar to what may have occurred in Pueblo Bonito (Ashmore 2007, 193).

At one time it appeared likely that Chimney Rock might have served as a calendrical station, passing astronomical information to Chaco Canyon by long-distance signaling using Huerfano Peak as an intermediate station (Judge and Malville 2004). That messaging could have included information about both lunar and solar cycles to be used, respectively, for predicting lunar eclipses and correcting the solar calendar. However, a putative calendrical station has a mechanistic and Eurocentric quality to it: an interest in simply counting days for a calendar does not seem to justify the effort involved in the construction of the Great House and Guard House. This paper offers an alternate hypothesis that the Great House was intended as devotional space for viewing and celebrating the juxtaposition of the Moon and the rock towers, experienced perhaps as a theophany, a manifestation of the deities of earth and sky (Eliade 1958).

The Ontology of Skyscapes

The fundamental nature of earth and sky, the ontic cosmology of the Ancestral Pueblo, was certainly different from ours. We know that the Sun is a hot ball of gas 93 million miles from earth with an interior heated by thermonuclear reactions. The Moon, at a distance of 240,000 miles from the earth, is a cold ball of rock with a surface battered by meteorite impacts. For the residents of the Chimney Rock area in the eleventh century, the Sun and Moon were probably animate beings to whom offerings were made and to whom devotions were appropriate. If we are to understand what ancient people saw and how they experienced the heavens, we must avoid judging the ontologies of indigenous people as “fascinating but ultimately mistaken ways of knowing the world” (Alberti and Bray 2009; Alberti and Marshall 2009, 344; Alberti *et al.* 2011). As Fowles (2013, 9) argues: “are we really to conclude that Native Americans ‘see’ Father Sun travelling across the heavens any less clearly than Anglo American scientists ‘see’ a stationary mass of hydrogen and helium?”

The tension between competing ontologies is a familiar one in the physical sciences. Most of the modern world lives by the 300-year-old Newtonian ideas of force, time, space, and mass. These concepts still possess ontic significance for many modern people. Space and time appear absolute and fundamental and provide the foundations of our

understanding of the natural world (Sachs 1974). The force of gravity and Newton's Laws of Motion continue to be taught in introductory physics courses in high school as well as college, and they are treated not as archaic and embarrassing misconceptions but as useful ways of viewing the world.

In the beginning of the twentieth century, physics moved beyond the Newtonian world into a revolutionary new ontology built of relativity, quantum mechanics, and quantum electrodynamics. Without this ontology it would be impossible to understand today's exotic astrophysical phenomena such as black holes, spinning neutron stars, curved space-time, and the gravitational bending of starlight. Even something that is used daily in hospitals around the world, positron emission tomography (PET), would be beyond understanding. Many people living in the modern western world would be shocked to learn that the "force of gravity" is entirely illusory (Sachs 1974). Considering that in today's world we are living in a culture in which incommensurable ontologies exist side-by-side, it is not unreasonable to consider multiple ontologies in exploring ancient cosmologies. Consideration of alternate ontologies in anthropology and archaeology is viewed as a "quiet revolution", described as "the ontological turn" (Henare *et al.* 2007, 7–12; Bray 2009). This approach has even been described as a "theoretical bomb", in that it provides a "fundamental challenge to dominant western understandings of culture" (Alberti and Bray 2009, 338; Olsen *et al.* 2012).

In the Andean world, stone *huacas* are animate, sentient beings with extraordinary powers (Bray 2009). These sculptural modifications of natural rocks are revered, clothed, fed, married, and consulted for advice. In his discussion of animism in the Andean world, Sillar (2009) shows that a variety of material objects, mountains, and landscape features continue to be viewed as animate and responsive to human attention, through offerings, annual pilgrimages, and evocation. This form of animism seems predicated upon the "belief in the ability of people, places, and things to communicate with each other and engage in reciprocal relationships" (Sillar 2009, 369).

The concept of reciprocity between a deity and a human is similar to the Hindu experience of *darśan*, in which seeing a god and being seen by the god occur simultaneously (Eck 1981). Hindus visit a temple to perform *darśan* to the image, to see and be seen by the deity. *Darśan* also can involve temples and buildings associated with a deity. Viewing the outside of a major temple may be sufficient, as in viewing the Visvaneth temple in Varanasi (Eck 1981) or taking *darśan* at holy places during pilgrimage to Pandaphur (Stanley 1992).

In the ethnography of the historic Puebloans it is clear that the Sun and Moon are considered to be sentient beings, gods, who play roles in everyone's lives (Tyler 1964; Young 2005). The Sun is the most important because it is the giver of light, warmth, and life itself. The land is also sacred (Swentzell 1997). The skyscape of Chimney Rock contains gods of both sky and earth. The double rock towers of Chimney Rock are recognized as a shrine to the Twin War Gods by the Day People of the Taos Pueblo (Eddy 1977, 1). The Twin War Gods were created to protect the first people. Their father is the Sun, and their mother, the Moon (Stevenson 1904, 35; Parsons, 1939; Tyler 1964). According to the interpretive staff of Chimney Rock, in 1941, just after the Japanese attack on Pearl Harbor,

a group of Hopi elders and religious leaders visited Chimney Rock and performed rituals to call the Twin War Gods forth to assist the United States during the Second World War.

The Nature of Pilgrimage

It is generally agreed that in the eleventh century Chaco Canyon was a destination for visitors, traders, and pilgrims, who congregated in periodic gatherings, probably near the day of December solstice (Judge 1989; Malville and Malville 2001a, 2001b; Ashmore 2007; Van Dyke 2007). Pilgrims may have been drawn to visit the canyon by a compelling ideology embedded in its monumental architecture and its dramatic landscape. There also must have been promises of rainfall, prosperous harvests, and opportunities for trade (Judge 1989; Malville and Malville 2001a, 2001b; Van Dyke 2007). In the case of Chimney Rock, pilgrims may have visited the place to be close to the double chimneys and to view the Sun and Moon rising in a spectacular landscape.

The study of pilgrimages falls under two general anthropological theories, sometimes known as Durkheimian and Turnerian (Eade and Sallnow 1991; Morinis 1992; Coleman and Elsner 1995; Bauer and Stanish 2001). From the viewpoint of Emile Durkheim (1965 [1912]) religion is not a spontaneous and inherent human creation but is the result of socio-political processes, sometimes intentionally manipulative, in which an elite class creates a mythology and organizes participatory rituals to promote and maintain their own political authority. Such pilgrimage systems “legitimize domination and oppression” by an elite (Eade and Sallnow 1991, 4). Lekson suggests that we should view Great Houses in the canyon as palaces, not temples or places for ritual (Lekson 2006a, 31). To the extent that he views the development of the Chacoan system as the result of imperial subjugation, it would seem that his interpretation of pilgrimage fits into the Durkheimian model: “Chacoan power was projected, at least in part, by the socially sanctioned uses of force, manifest in the brutal group executions discovered in excavations at scores of sites throughout the Chacoan region” (Lekson 2006b, 105). Construction of the Great Houses may have involved the *corvée* labour of pilgrims, which would be consistent with the Durkheim model.

The alternative theory of pilgrimage proposed by Victor and Edith Turner (Turner and Turner 1978; Turner 1979) involves a diametrically opposite relationship between pilgrims and political authority. In their understanding, pilgrimage subverts established social order and is counter-hegemonic in that it challenges the authority of the state or the established religion by setting up competing religious symbols and destinations. The Turners argue that when pilgrims voluntarily embark on their journey they abandon the structures of their ordinary world and enter a landscape of “anti-structure” where ordinary norms and differences of status are left behind. An important feature of pilgrimage is *liminality*, in which pilgrims cross a threshold into unfamiliar landscapes and consequently become open to new perceptions and understandings. The more extreme the landscape, the greater the physical dislocation, the greater the liminality, as evidenced by journeys to remote places such as Mount Kailash in Tibet (Snelling 1990), Isla del Sol in Lake Titicaca (Bauer and Stanish 2001), and Machu Picchu (Ziegler and Malville 2013; Malville 2015). The journey, climbing the narrow causeway onto the remote high mesa of Chimney Rock, would have been a liminal experience for many visitors.

The development of pilgrimage at Chimney Rock may have been more Turnerian and, perhaps, even counter-hegemonic in challenging the authority of the leaders of the Great Houses in Chaco Canyon. By setting up an alternative pilgrimage centre north of the San Juan River with its own unique icon of the double rock spires enhanced by the Moon and Sun, the Chimney Rock community may have been asserting its independence from Chaco Canyon. This may have been especially meaningful at the time of the major lunar standstill of 1093 AD, when the authority of the canyon was probably faltering due to the extensive drought of that decade (Van Dyke 2007).

The tradition of pilgrimage to the Great House was strangely short-lived. The last cutting date on the upper mesa is 1093 AD. Archaeomagnetic samples taken from a fire pit in the Ravine site living room yielded the last date found in the area, 1120 ± 31 years AD (DuBois 2008). The drought of 1090–1100 AD may have been partly responsible for the decline of the Great House culture in general and the decline of trade and pilgrimage to Chimney Rock (Van Dyke 2007). The abandonment of the closest Great House at Salmon in 1125 AD may have played a role. The Chimney Rock mesa appears to have been a link in the trade network that brought meat into the canyon. The growth of Aztec (New Mexico) on the Animas River signalled the major movement of residents from Chaco Canyon to the north (Brown *et al.* 2008). Because Aztec was close to good hunting lands, no longer was there need for a trade network bringing meat to the Great Houses of the canyon. With the decline of a trade network involving Chimney Rock, a damper may have been placed on pilgrimage. Finally, an out-migration from Chimney Rock by the Winter People of the Taos Pueblo appears to have occurred around this time (Fowles 2013, 90–93).

The High Mesa and Peterson Ridge

What led to the construction of the Great House on the remote Chimney Rock mesa? Was it because the upper mesa of Chimney Rock provided an opportunity to worship the deities of the sky and earth as the Moon rose between the sacred spires? The meaning behind construction of the Great House is certainly more complex than a conquest of a weak and unsophisticated community by a powerful neighbour. Because of the unique combination of the Sun, Moon, and rock towers the upper mesa may have been regarded throughout the Chacoan world as a place of spiritual power and the residents of Chimney Rock may have invited other groups to share their sacred space.

There is evidence for two kinds of social and ritual dynamics at Chimney Rock. The first involved the local population who may have created their own ritual centre on the high mesa, perhaps inspired by their discovery of June solstice sunrise above the upper mesa and major standstill moonrise between the chimneys. When those discoveries were made is uncertain. They may have taken place in the decade of 1050 CE, when the first construction of houses on the upper mesa occurred (Eddy 1977). Lekson suggests the first construction on the upper mesa may have occurred early in the eleventh century based upon cutting dates of 1011 or 1018 AD, which came from the recent University of Colorado excavations (Lekson 2011; Todd 2012).

The second stage in the use of the upper mesa would have involved the construction of the Great House in 1093 AD and an earlier date, perhaps 1076 AD, which provided a

more formal acknowledgment of the special nature of that space. Although the design and masonry style of the Chimney Rock Great House have the distinctive characteristics of the Great Houses of Chaco Canyon, its design and construction may not have been the result of Chacoans themselves, but of a cooperative venture between the residents of Chimney Rock and the residents of the nearest Great House at Salmon.

Of the eight sub-communities in the Chimney Rock area, the North Piedra group located on riverine benches above the Piedra River appears to have been the largest. Recent investigations of the North Piedra group (Chuiyka and Fetterman 2013) indicate that it was more extensive than had been previously reported and may have been the power centre of the Chimney Rock community. The small middens on the high mesa suggest that those houses may have been only intermittently occupied during the summer months and perhaps at the times of astronomical ceremonies and pilgrimage events.

To the west of the North Piedra group, across the Piedra River and beyond to Peterson Ridge, is the unexcavated C-shaped unit-type pueblo identified as 5AA8 (Webster 1983; Malville 2004). Twice a year near the dates of equinoxes, the Sun can be seen rising between the two chimneys of the structure (Figures 3 and 5). There are nine pueblos built along the rim overlooking the Piedra River, and only one, 5AA8, is rotated away from north–south to the east, facing the Chimneys. In addition to the 6-m diameter kiva depression in the courtyard, two larger kiva depressions (approximately 7.2 m and 8 m in diameter) are located to the north and south of the structure, indicating the special ceremonial role of the site. Equally as dramatic as sunrises are the frequent moonrises between the spires, which would have provided the opportunity for recognizing both the synodic (27.3 days) and the sidereal (29.5 days) periods of the Moon. Because they are different, the phase of the Moon that appears between the chimneys changes throughout the year. The stacked slab construction is similar to that of the Guard House on the high mesa. It is not unreasonable to propose that it was built by members of the Chimney Rock extended family as a place of devotion for public viewing of the Sun and Moon rising between the Chimneys.

Chimney Rock before Chacoan Influence

Before the arrival of any demonstrable Chacoan influence, the high mesa community of Chimney Rock appears to have developed its own ceremonial traditions, astronomical ritual, and trade networks (Fairchild *et al.* 2007). The fire pit of the upper mesa may have been lit on the morning of June solstice. Jeançon (1922) reported a number of small rooms on the highest part of the mesa next to the fire pit. The community was also the centre of a ritual tradition involving clay objects known as “feather holders” (Sullivan 2004). Two of them were carried to Pueblo Bonito. There is evidence of extensive processing of animal products on the upper mesa, which suggests that the mesa served as a port of trade (Fairchild *et al.* 2007). Portions of large game animals may have been brought in by hunter-gatherer groups living to the north and processed on the high mesa before being traded, perhaps in the form of jerky, to communities in the south. The prominent rock towers would have made the trade centre easy for hunting parties to locate.

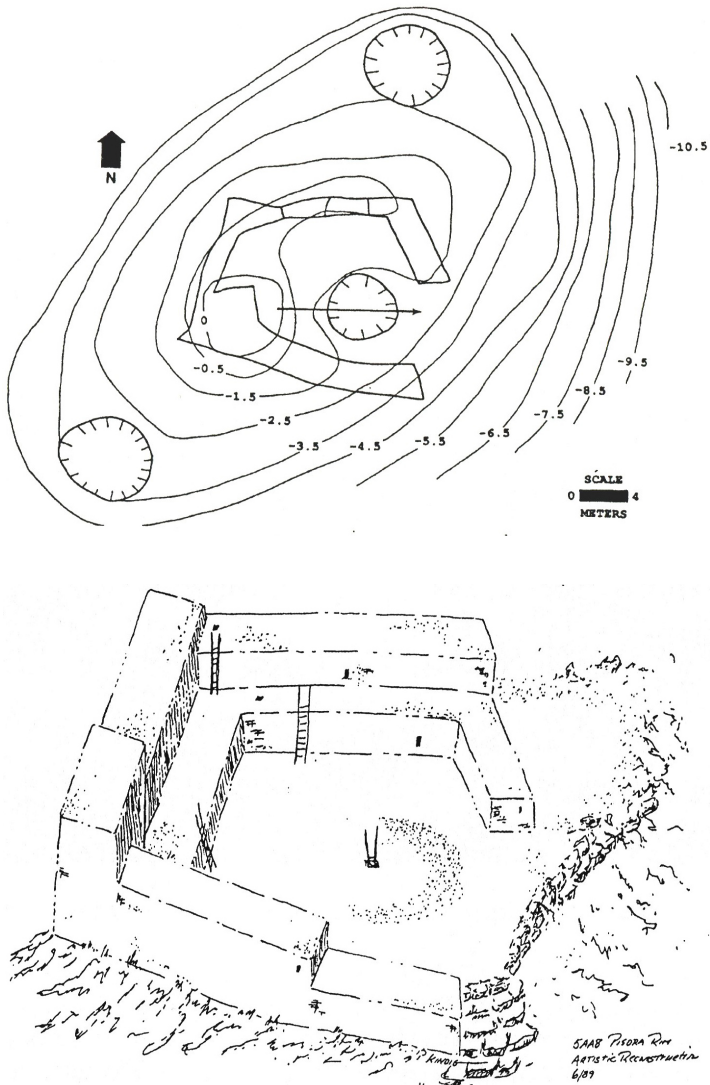


FIGURE 5. The unexcavated unit-pueblo of Peterson Ridge (5AA8): (top) the arrow across the central kiva points to the double chimneys (measurements by the author); (bottom) artist's reconstruction (Jean Kindig).

The Fire Pit on the Upper Mesa

In 1921 Jeançon found a number of small rooms next to “a large depression in the cap-rock in which great fires have burned, as is indicated by the red fire stains in the sandstone” (Jeançon 1922). These may have been the rooms of the keepers of the fire. A ceremonial fire on the highest reach of the mesa at June solstice may have been similar in intent to fires that were lit during the New Fire ceremony at Zuni following winter solstice (Stevenson 1904).

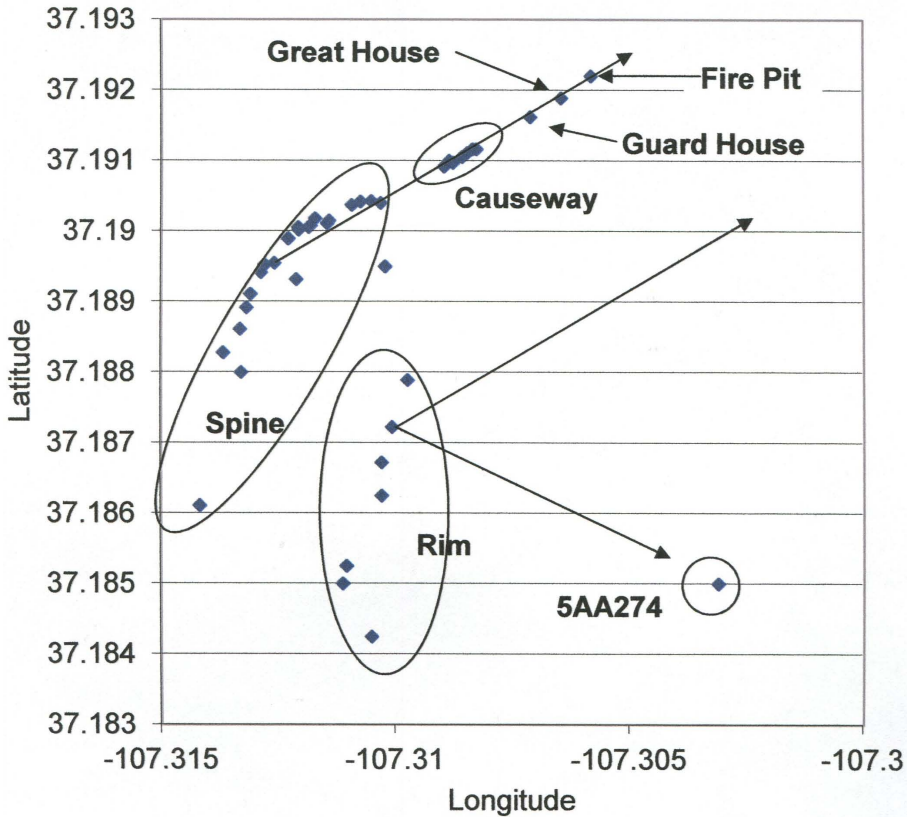


FIGURE 6. Sites of the upper mesa (arrows indicate sightlines to summer and winter solstice sunrises).

The area of exposed bedrock some 50 m to the northwest of the Great Kiva provides an excellent view of the double chimneys. It contains a bedrock basin and a surrounding circle of stones. It is one of a class of features identified by Windes (1978) as Chacoan stone circles (Figure 7). In Chaco Canyon the stone circles and basins are nearly always located at a place with a view of a great kiva, which is the case here (Windes 1978). The Great Kiva (5AA88) is not a typical Chacoan great kiva, but appears to be a synthesis of local and Chacoan influences. It does seem to have been a place for ceremonial feasting on big game animals. It has an artiodactyl index ($\frac{\sum \text{artiodactyls}}{[\sum \text{artiodactyls} + \sum \text{lagomorphs} + \sum \text{turkeys}]}$) of one hundred, indicating only artiodactyls and no rabbits were consumed at the Great Kiva (Fairchild *et al.* 2007) (Figure 8). Part of the experience of the pilgrimage to Chimney Rock may have been feasting at the Great Kiva.

Located approximately in the centre of the community, the vicinity of the stone circle would have been an obvious place for watching sunrise and moonrise throughout the year. It is remarkable that the north wall of the Great House parallels that sight-line to June solstice sunrise, making it one of the few Great Houses that has a clearly defined astronomical orientation. Before its construction the June solstice Sun rising above the fire pit would have been visible from most of the residential structures on the upper



FIGURE 7. Bedrock basin.

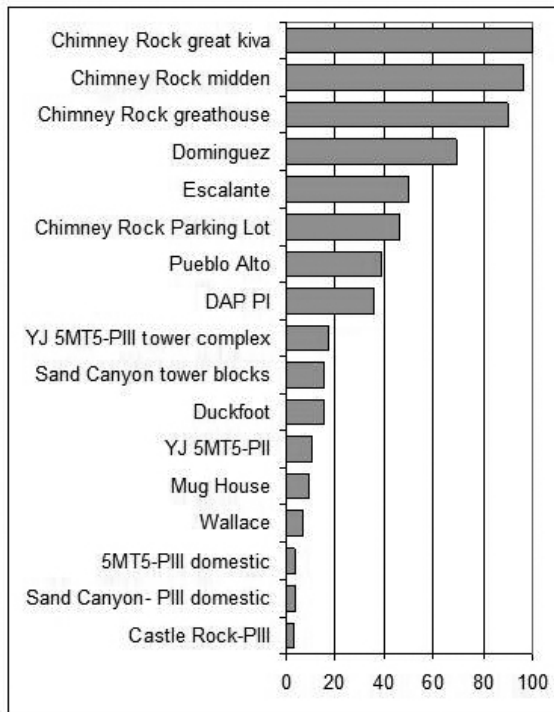


FIGURE 8. Artiodactyl index. Percentage is given on the x-axis (Fairchild *et al.* 2007).

mesa (Figures 6 and 9). We have checked the 32 houses and towers on the mesa for their views of the fire pit (Figure 6). Only seven of them would clearly not have had views of a large fire in the fire pit and the chimneys before construction of the Great House. The Great House obstructs the view of the fire pit from many of the houses of the mesa, suggesting that the fire ceremony was a local tradition that preceded construction of the Great House.



FIGURE 9. June solstice sunrise viewed from the Bedrock Basin. The fire tower is visible to the left of the Sun. The north wall of the Great House is to the right of the Sun.

Causeway Houses and the Guard House

The round and oval semi-subterranean structures that lie along the causeway are anomalous features of the high mesa (Figure 10). They are not like the residential crater houses, the Great Kiva, or the Great House. They lack fire pits, ventilators, or deflector stones, and thus they do not appear to have been residential in function. They are not at locations where one would want to raise a family or tend a field. The style and masonry is not Chacoan. Two possible interpretations are suggested: (1) these may have been built as shelters for the masons involved in construction of the Great House or (2) they may have been used as shelters for visitors and pilgrims. After the Great House had been completed, shelters for workers could have been converted to shelters for visitors and pilgrims. The presence of the feather holders in these structures suggests they served as *dharamshalas* (pilgrims' rest houses).

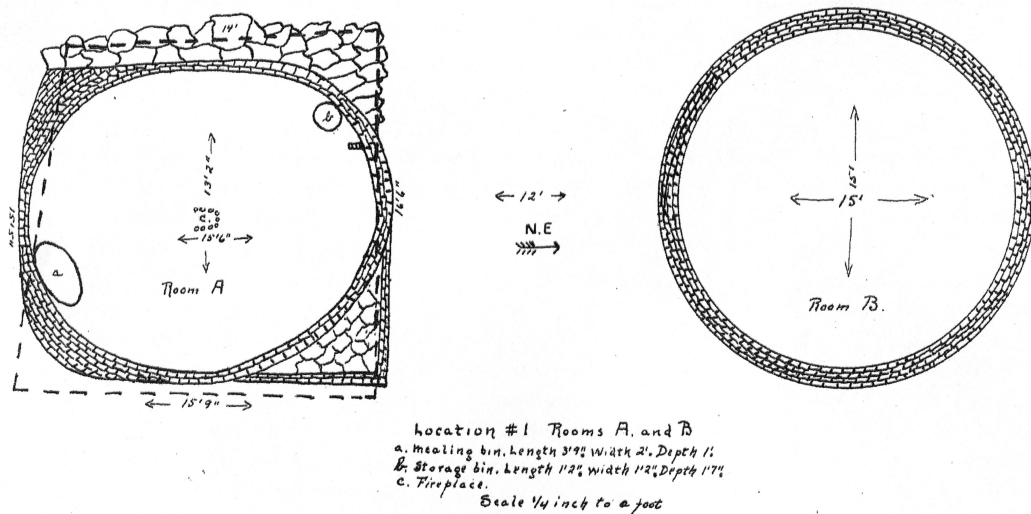


FIGURE 10. Causeway Houses (Jeançon 1922).

After crossing the causeway and climbing up to the high mesa, the first structure that one encounters is the Guard House, so named by Jeançon (1922) (Figures 11 and 12). The Guard House was initially damaged by the 1921 excavations, which were not back-filled, by the subsequent ravages of weather and the use of its sandstone slabs in the construction of the fire tower. Re-excavation was conducted between 1970–1972 by the University of Colorado (Eddy 1977) and later by Fort Lewis College (Havel 1993). At some stage, the remains of the Guard House were almost entirely removed by the US Forest Service in order to remove impediments to tourists who wished to view the Great House.

Based upon the earliest photographs of the upper mesa, which show two high mounds corresponding to the Guard House and the Great House, the Guard House was a substantial structure. Jeançon's diagram (Figure 11) shows it to be a highly unusual structure, which completely filled the southwestern neck of the upper mesa, blocking access to the Great House. The most recent analysis of Havel (1993) confirms how difficult it would have been for visitors to reach the Great House after the Guard House had been constructed (Figure 12). We have no tree ring dates for that structure but because of the difficulty of carrying construction materials around the Guard House, the structure must have been built only after construction at the Great House had ceased sometime after 1093 AD.

Inspection of photographs of the Guard House taken in the 1920s and 1970s reveal how remarkably different it was from the Great House (Figures 11, 12, and 13). Its walls were not the core and veneer structures of the Great House, but were made of stacked tabular sandstone. Compare the wall remaining in 1972 with the wall of the East Kiva (Figure 14). We can draw two conclusions about the meaning and purpose of the Guard House. Since it was not constructed by the same masons who were responsible for building the Great House, it seems likely that the Guard House never functioned as a residence for elites from Chaco or Salmon. Second, the presence of the Guard House

raises the question of what was the nature of the devotional space of the upper mesa. Were activities performed in this restricted space secret and private or open and public (Ashmore 2007, 190)? The Great House contained a stockpile of 29 metates (mortars), indicating intensive food-preparation connected with occasional feasting events, as well, perhaps, with offerings. The high artiodactyl index of 90% indicates little residential activity at the Great House (Fairchild *et al.* 2007). Were there private feasting events at the Great House at the times of moonrise during the period of major lunar standstill and at June solstice sunrise? Public events may have occurred on the days of both major standstill moonrise and June solstice sunrise in the vicinity of the Great Kiva where these astronomical events could have been viewed.

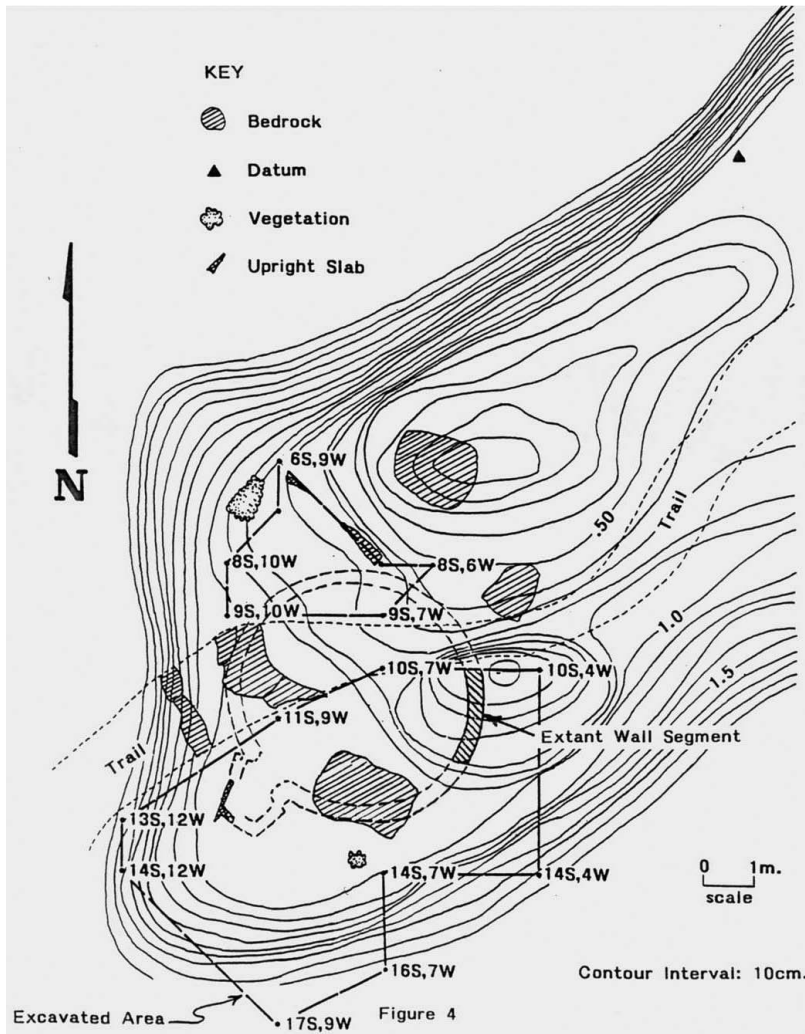


FIGURE 11a. Guard House: 1988 map – note the modern trail crossing its remaining foundations (Havel 1993).

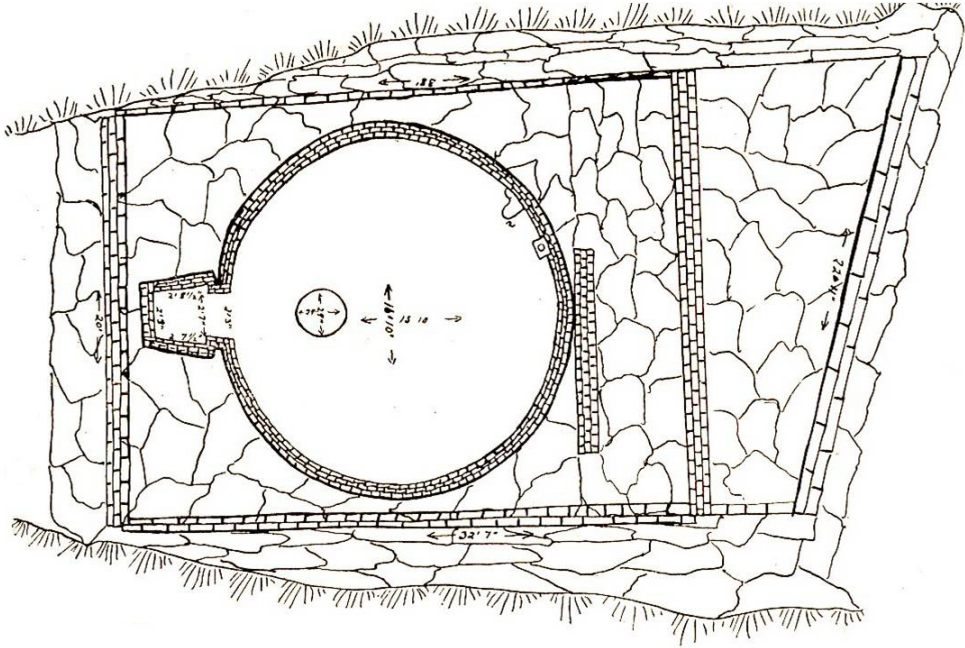


FIGURE 11b. Guard House: drawing (Jeançon 1922).



FIGURE 12a. The Guard House during excavations by Jeançon (Jeançon 1922).



FIGURE 12b. The Guard House during excavations by Jeançon (Jeançon 1922).



FIGURE 13. Remains of the walls of the Guard House 1972 (photograph © University of Colorado).



FIGURE 14. South wall of the East Kiva of the Great House.

The Great House, the Great Kiva, and the Moon

For a period of nearly 30 months, around the time of major standstill the Moon rises between the chimneys on one or two days every month, as seen from the Great House (Malville 2004). Starting with a slender waning crescent in July, approximately a month after June solstice, the Moon then grows in size each month when it appears between the spires, rising approximately two hours earlier each month. Around the time of autumnal equinox, the Half Moon rises near midnight. Finally, it appears between the spires at sunset as a Full Moon near the date of winter solstice. The moonrises are sufficiently frequent that an occasional cloudy night does not prevent the rhythm of these six successive moonrises during the autumn, which may have provided an opportunity for prediction by ancient skywatchers. Moonrises during the spring occur in a sunlit sky and are difficult to observe.

The East Kiva of the Great House appears to have been the first sizeable structure to be built on the upper mesa, although smaller shrines, such as the houses of the keeper of the fire, may have been constructed earlier. The floor of the kiva was initially down-

sloping and irregular bedrock. The date of the first construction phase hangs on a slender bit of evidence from a pole from the lower of its two ventilator tunnels (Eddy 1977). That date, 1076r, a “possible” cutting date, is particularly interesting because it corresponds to the period of the major standstill of the Moon.

The Full Moon rose between the chimneys on 24th December, 1075 AD and the pole of the ventilator shaft of the East Kiva was cut in July–August 1076 AD. The Moon would have been visible between the chimneys perhaps through September 1077 AD, depending upon the observer's location. The construction of Building 16 adjacent to the Great Kiva, for which there are ten cutting dates of 1077 AD, thus occurred while the major standstill Moon was still visible between the chimneys.

Even though we cannot be certain about the meaning of the 1076 AD date, it is clear that there were two construction episodes in the East Kiva. During the next major standstill, the Full Moon rose between the chimneys on 5th December, 1093 AD. Trees used in the major construction episode of the Great House would have been cut in the summer of 1093 AD. The original lower ventilator tunnel, which was roofed with sandstone slabs, had been placed directly upon bedrock. In the second building episode the floor was raised and levelled and the second ventilator tunnel was built over the original. In the same year construction of the Great House occurred, for which there are twenty cutting dates of beams (Eddy 1997; Lekson 2011; Todd 2012).

Table 1 summarizes the cutting dates obtained from the two sets of excavations by the University of Colorado. The first date of 1011 AD corresponds to a minor lunar standstill, but it is unlikely that the Moon played any role in establishing that date. This is puzzling because minor lunar standstills are not unique events and are not easily identifiable if one does not have a detailed knowledge of the moon's cycle. Every year throughout its entire 18.6-year cycle, the Moon passes through the point of minor standstill twice a month. This date also precedes the Classic Bonito Phase (1020–1100 AD), in which the majority of construction of Great Houses occurred. The second date of 1018 AD occurred during a major standstill and that log may mark the early construction by the local community of a shrine on the upper mesa associated with lunar standstill. Lekson (2011) points out that both of these dated beams were from architectural elements. They had surface patina and smoothness, which develops on the exterior surface of beams stripped of bark, such as occurs in beams from Chaco as well as elsewhere. The beams were not pieces of wood that were just lying around. Lekson (2011) believes that these two dated logs indicate either: (1) construction of Chimney Rock Pueblo in the early eleventh century, followed by re-roofing in 1093 AD; or (2) construction of an another structure on the upper mesa from which beams were reused in the Chimney Rock Pueblo. Based upon the analysis of Parker (2004) there is evidence of human presence in both the North Piedra and the high mesa groups during the Arboles Phase (950–1050 AD), and local residents could have been responsible for the building of early shrines on the upper mesa. Lekson (2011, 2015) has noted that masonry in the Chimney Rock Pueblo, as seen in his excavations and in pre-stabilization photography from the 1920s, is Style II, which in Chaco Canyon dates from 1020 AD to about 1050 AD. Although Style II was not used in the Canyon after 1050 AD, it was utilized in the construction of the Salmon Great House (Baker 2006) (also compare the lower

portion of the wall in Figure 14 with that in Figure 15). Note in Table 1 that those periods of construction that are most thoroughly documented, based upon the number of available cutting dates, were 1076–1077 AD and 1093 AD, both at times of major standstill.

TABLE 1. Cutting Dates (AD) at Chimney Rock (Eddy 1977; Lekson 2011).

Year	Number	Location	Lunar event
1011	1	Great House	Minor lunar standstill
1018	1	Great House	Major lunar standstill
1070	1	Great House	
1076	1	Great House	Major lunar standstill
1077	10	Building 16, close to the Great Kiva	Major lunar standstill
1093	20	Great House	Major lunar standstill

Who Constructed the Chimney Rock Great House?

Were residents of Chaco Canyon involved in the construction of the Great House at Chimney Rock as a place for celebrating major lunar standstills? Sofaer and colleagues (Sofaer 2008) have argued that the three-slab site of Fajada Butte contains markings that indicate knowledge of major and minor lunar standstills. Recent evaluation of the spiral petroglyph behind the three-slab sites casts doubt on the notion that any lunar standstill, major or minor, was marked by the feature (Seibel 2013). The features of the petroglyph for which major and minor lunar standstill have been claimed appear to be a series of erosion features. Claimed alignments of Great Houses in Chaco Canyon along minor standstill (Sofaer 2008) do not stand up under critical review (Van Dyke 2007, 134; Malville and Munro 2010). There is no firm evidence that residents of Chaco Canyon knew or were concerned with lunar standstills.

Chimney Rock functioned as a port of trade and ceremonial centre, providing animal products, timber, feathers, feather holders, and ritual practices to other groups. Knowledge of the unusual rock features and astronomy at Chimney Rock could have been spread by traders, who may have been present at lunar celebrations. The isolated upper mesa may have been recognized early in the eleventh century as sacred space, containing shrines to the standstill Moon and solstice Sun before construction of the Great House or East Kiva. The indigenous populations may have invited other groups to sunrise and moonrise ceremonies and willingly shared that space with them. In a manner similar to the construction of Great Houses in Chaco Canyon, Salmon, and perhaps Aztec, the Chimney Rock Great House may have been a cooperative effort of a number of groups north of the San Juan, particularly those living at the nearest Great House at Salmon.

A submissive and deferential connection with Chaco Canyon must be questioned. We must inquire why a group of Chacoans would have expended so much effort to build the Great House in such a remote place. If they came from the canyon, they would have had to walk some 72 km along the North Road, ford the untamed San Juan River, walk past the Salmon Great House, and then proceed another 83 km to Chimney Rock. A team of stonemasons coming from Salmon makes more sense.

The first major construction at Salmon was during 1089–1090 AD (Baker 2008; Reed 2008), and the second phase occurred four years later between 1094–1095 AD. Salmon was the closest Great House to Chimney Rock, and it seems reasonable that the residents of Salmon knew about Chimney Rock’s astronomical phenomena, would have been somehow involved with them, and perhaps may even have assisted in the construction of the Chimney Rock Great House. Construction in 1093 AD occurred during a lull of construction activity at Salmon.

Further evidence of a link between Salmon and Chimney Rock has recently been provided by Marshall and Baker (2014), who have shown that a feature in Room 82 of Salmon may have functioned as a shrine for both the Sun and the Moon, marking June solstice sunrise and major standstill moonrise. That feature had been identified as “altar-like” during the excavation of Salmon led by Cynthia Irwin-Williams (Adams 1980, 158; Irwin-Williams and Shelly 1980) (Figures 15 and 16).

The construction of the Guard House and the consequent limiting of access to the upper mesa by the Guard House appear to establish that space as a sanctuary for ceremonies involving the double chimneys, the Sun, and the Moon. As described by Eliade (1958), the enclosure of a sanctuary signifies the continued presence of a theophany or hierophany within its area. It also protects one from the danger of entering such a space without preparation: “The sacred is always dangerous to anyone who comes into contact with it unprepared, without having gone through the ‘gestures of approach’ that every religious act demands” (Eliade 1958, 370).



FIGURE 15. Altar-like feature in Room 82 of Salmon (photograph by Cynthia Irwin-Williams).



FIGURE 16. (top) A simulation of illumination by the major standstill Moon; (bottom) illumination of the replica altar-like feature of Room 82 by the rising Sun on June solstice 2008 (photographs by Larry Baker and Brooks Marshall).

Conclusion

The approach of this paper has been to explore the possible meanings of the astronomy and ceremonialism of Chimney Rock from the perspective of alternate ontologies. The rock towers could have been perceived as one or another of the following three possibilities: a shrine to the Twin War Gods, the home of the gods, or the Twin War gods themselves. Within a hypothesis based on animism the rock towers would not have been viewed as *representations* but they would have been the actual children of the sun and moon. Viewing the Sun and Moon appearing between their children would have been a powerful experience. The C-shaped structure on Peterson Ridge (5AA8), the Great House as well as the Guard House, and the bedrock basin may have functioned as devotional spaces where offerings to these animate beings were made or other forms of reciprocity between gods and humans were actualized.

Knowledge of the spectacular sunrises and moonrises may have been carried by traders, thereby stimulating pilgrimage to Chimney Rock. Construction of the Chimney Rock Great House may have been facilitated by residents of Salmon Great House, at the request of the residents of Chimney Rock. Tree-ring dates in the Great House and East Kiva correspond to the last two major lunar standstills of the eleventh century. There is no evidence of construction on the upper mesa beyond 1093 AD. The abandonment of Salmon, the breakup of a trade network involving Chimney Rock, out-migration to Taos, and the drought of 1090–1100 AD may have contributed to the die-off of pilgrimage to Chimney Rock. Within a half-century lunar standstills appear to have been celebrated again on the Mesa Verde at Cliff Palace and the Sun Temple (Malville 2008a, 2008b).

A lesson for outliers in general that we can take from Chimney Rock is that its story is certainly more complex than conquest by and subservience to a power centre in Chaco Canyon, serving as a place for counting the days of solar or lunar cycles. Due to the remarkable combination of the rock towers and the interplay of astronomical phenomena, the Chimney Rock area appears to have become an independent centre for ceremony and pilgrimage. There are a number of sites within Chaco Canyon that provide views of sunrises above prominent horizon features, such as Wijiji, Kin Kletso, Robert's Small House, Headquarters, Casa Chiquita, and the Great Kiva of Marcia's Rincon (Munro 2011; Munro and Malville 2011; Malville 2014). Instead of serving as calendrical markers these sites may similarly have been primarily devotional in nature, each providing a theophany of the conjoining of the gods of heaven and earth.

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