Parallel Universes on the Colorado Plateau: Indications of Chacoan Integration of an Earlier Anasazi Focus at Canyon de Chelly

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Certainly one of the hallmarks of "civilization" has always been the scale, style, and prestige of architecture, in both its built and social components. In today's largely electronically mediated, thematic world, however, it is becoming increasingly clear that few buildings can attain such traditional grandeur. One reason why architecture historically developed its now problematic rhetorical definition as a contributor to the highest of cultural achievements lies in the assumptions of early architectural historians and archaeologists. Living and working as they did, a century or so ago, within a very culturally conscious milieu, surrounded by stylistic and monumental architecture, they logically concluded that the social and symbolic development of early people could be measured to a large degree by their architectural capabilities. This was particularly true of the ancient, preliterate, archaeological societies where the primary evidence was architectural in one form or another. The more developed the architecture, the more organized or civilized the society was assumed to be.

It follows that the primary mark of distinction for the Chacoan "achievement" focused on Chaco Canyon is the number of large, monumental great houses, e.g., the well-known Pueblo Bonito. Although these structures exhibit little stylistic rhetoric beyond their scale, still imposing today, most scholars feel they represent a significant emergent from a less culturally organized, more primitive way of living, a process that had begun when Basketmaker Anasazi on the southwestern Colorado Plateau developed pottery and surface pueblo architecture some four centuries earlier. Initially viewed as residential pueblos, Chaco Canyon is now interpreted more as ceremonial or religious pilgrimage destinations for the entire region, but the assumption of...
architecturally based cultural evolution remains. The logical culmination in this regard is the cities, temples, and pyramids of Central Mexico. The missing variable in the conventional evolutionary equation of architecture and culture is the symbolic and ritual relationship between built ceremonial sites and the larger landscape. While symbolic landscape features—sacred mountains, springs and other features, rock art, and folk terminology—have been recorded, no theoretical distinction exists between architectural-landscape relationships among, for example, the earliest Basketmaker sites and Teotihuacan. The common view of landscape across this seemingly immense cultural gulf is one of relatively unorganized space which self-interested social groups, whether clans or kingdoms, occupy and control in essentially territorial or hegemonic ways. Dwellings or pyramids built on a site express group identity and power. Hegemony contrasts with integration, a term more frequently used for the social purposes of ritual in Pueblo societies than for the theocracies of Central Mexico. But again, this social distinction does not link specifically to architecture, landscape, or their relationship, although we often intone that ancient societies with the largest architecture are the most hierarchical, or least socially integrated.

The only clear ethnographic example of a larger, more organized, less territorial symbolic space and social integration—an exception to the norm—is Alfonso Ortiz’s account of Tewa space, time, ritual, and society (Ortiz 1969). Based on San Juan, the “mother” pueblo of this Rio Grande group of Anasazi-related people, Tewa social and religious groups are organized according to two axes formed by four sacred mountains (see figure 1). Each axis has six landscape features or ritual destinations, two on each side of the central pueblo. This symbolic framework, to use Ortiz’s term, corresponds in ritual use to “becoming” within three levels of Tewa religious groups. Such an integrated system represents a social and political alternative to self-interested membership in clan or kinship structures. The social logic of the geometry follows what Witherspoon and Peterson (1995:34) describe among the Navajo as “bipolar symmetry” (i.e., social meanings associated with opposite ends of an axis, and “bilateral symmetry” (i.e., meanings associated with opposite sides of an axis or sphere).

San Juan Pueblo actually sits several kilometers from the point of intersection of axes between the four sacred mountains of the Tewa, and in reality no architecture marks the center. Conceptually, however,

![Diagram of Tewa sacred sites, a cultural framework that organizes social/religious groups via bipolar and bilateral geometry on the landscape (from Ortiz 1969).]

Ortiz treats the sipapu (i.e., opening into the underworld) in the central plaza of San Juan as the center. Which comes first, the sacred mountains that create the center, or the pueblo from which axes radiate inaccurately to the four peaks and other features? Ortiz is somewhat ambivalent about whether the sipapus in the peaks are more or less powerful than the one in the pueblo plaza. The architecturally figured plaza seems to function as a mediator for making contact with the most powerful spirits who live furthest out in the landscape on the sacred peaks. Shortly after Ortiz’s volume, and influenced by it, I described a similar spatial concept, though with three axes, for the Hopi (Doxtater 1978; these ideas eventually helped inform my dissertation in 1981). The evidence in this case, however, rests less on actual landscape definition and more on the ubiquitous use of cross symbolism and the hypothetical association of a pair of religious societies associated with each axis and its two opposed calendrical rituals (bipolar symmetry again in Witherspoon and Peterson’s terms). The snake dance shown in figure 2 represents the Summer or North pole of the vertical North-South axis of the Zenith and Nadir. The ceremony focuses on the primary pueblo sipapu in the central plaza of Walpi on First Mesa. Many features of the Hopi landscape are symbolic in one way or another, especially the pilgrimage site of the great sipapu in the Grand Canyon (junction of the Colorado and Little Colorado Rivers). While additionally the Hopi speak of a similar
number of sacred peaks, no crossing axes have yet been defined as an actual symbolic landscape frame.

Figure 2. The association between the Hopi ritual cycle and bipolar and bilateral oppositions hypothetically laid out on the landscape (from Dozier 1978); photo of a snake dance in Hopi village, during the zenith, or northern pole, of the framework that integrates diverse religious societies (from Hough 1990).

If some uncertainty exists about whether the historical architecture of the pueblo creates other sacred peaks are in this sense secondarily organized, or whether the process actually worked in the reverse, the interpretation of the much more culturally developed Mesamerican sacred cities is less ambiguous. In reading accounts of Aztec temple city symbolism (Broda, Carrasco, and Moctezuma 1987), one is struck by the image of a military force moving into the area of Mexico City, establishing a center on the island, and then building pyramids and temples oriented to the four directions but without specific peaks as reference points. Even the gods seemed earlier to have been living in some mountain or another, but to have become reduced by the Aztecs to figurines moved about by priests, perhaps in much smaller scale representations of earlier landscape ritual. Here one is reminded of Vincent Scully's (1962) original thesis about the orientation of Greek temples to significant natural features of the visual landscape. In spite of the reference to visible features, the gods clearly reside in the architecture (temple), not the landscape. Scully (1989) later turned these interests in architecture-landscape relationships to the Pueblo cultures of the Southwest. While his description of ritual dance appears to integrate the two kinds of settings, he makes no theoretical distinction regarding differences in where the spirits reside or between the early democratic processes of the Greeks and possible integrative balancing between Pueblo groups based on landscape ritual frameworks.

LARGE-SCALE CHACOAN FRAMEWORKS

Compared to the scale of the Chacoan sphere, with its outliers and roads across much of the southern Colorado Plateau connected to the Chaco Canyon center, the Tewa four-mountain framework is small and even visible from San Juan Pueblo. Its extent is less than one hundred kilometers, compared to three or four hundred kilometers for the non-intervisible sites of the Chacoans. A few years ago I put forward the idea that even at this large scale, some sort of symbolic ritual framework, not unlike that of the Tewa, might have been part of Chacoan religion and social organization (Dozier 1991). Aside from Fritz's (1978) previous, archaeologically novel idea of a cardinal set of relationships between four of the central great houses within the two- or three-kilometer center of the canyon itself, no one had imagined such possibilities at very large, non-intervisible scales. In my exploratory
piece I used the best physical map combinations possible to discern a rough pair of cross axes between four intercardinal prominent natural features in an approximate 150–200-kilometer circle around Chaco Canyon—the high points of Mesa Verde, Chimney Rock, Mount Taylor, and Hosta Butte. Their intersection point in the canyon could not be accurately located, but the angles of the axes appeared to correspond to the two great houses just east (Pueblo Arroyo) and west (Chetro Ketl) of the central and north-south oriented Pueblo Bonito.

More recently, Steve Lekson, a well-known mainstream Southwest archaeologist described a north-south (meridian) landscape relationship between a first Anasazi center in Chaco, a second due north at Aztec, and a third down at Casa Grandes in Chihuahua (Lekson 1999). He feels the Anasazi moved their centers in succession along this meridian. Much more geometric and planned than are the forced Chacoan roads connecting sites in often seemingly unorganized patterns, Lekson’s meridian remains, nonetheless, far less integrative than the multiple contemporaneous axes described by Ortíz. Contrary to my idea of center mountains creating the Chacoan center, Lekson’s conception is a more Aztec-like scenario where a group or powerful leader decided to locate in the canyon, creating the radiating meridian at subsequent times when the center was moved.

Such a hegemonic, territorial view doesn’t explain the fundamental differences between Chacoan and Mesoamerican cities. Whereas in Central Mexico structures tend to be organized into more or less designed layouts with dominant principal pyramids, the locations of various great houses of the Chaco Canyon center reveal no immediate hierarchical layout. A certain autonomy reigns for each structure. Not only did different tribal groups build different great houses, as evidenced by construction techniques and even measurement systems, but also Pueblo Bonito itself was built and rebuilt by distinct subcultural groups. Furthermore, the largest great kiva of the canyon, Casa Rincónada, sitting across the wash from the major great houses at the center, has none of the three- to four-story room blocks found around other great kivas in the great houses. Its semi-subterranean form clearly reads as architecturally constrained, a pure threshold as it were between this world and the world of the spirits.

It was not until I began to use a MathCAD application graciously made for me by Richard Thompson of the University of Arizona Math Department, that I could accurately describe large-scale Chacoan possibilities. My recent article on this subject begins with a technical discussio

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Figures 3. Mount Wilson, Colorado, 14,240 feet, the highest mountain in the center of the southern Colorado Plateau. From Ahaja Peak, the equinox sun rises exactly over this peak. (Photograph courtesy of www.lefjarsen.com)
Nadir the most prominent mountain directly to the south, Haystack Mountain (see Figure 4). Both early-eleventh-century Pueblo Bonito and the later Casa Rinconada fall within the described range of accuracy of this line. The 276-kilometer line actually hits Casa Rinconada, map measurements notwithstanding.

During the radical mid-eleventh-century building expansion at Chaco, priest-surveyors appear to have reconciled the fact that the intersection point for the two axes from the four corner mountains occurs about a kilometer east of the Wilson-Haystack construct. They needed more effectively to channel spirit power from all six points to one principal point of ritual contact, Casa Rinconada as it turns out. The article describes a unique, naturally coincident, large-scale pattern that may have provided significant religious efficacy in this reorganization of Chaco. As illustrated in Figure 5, the bisect of the angle from Mount Wilson to the two southern corner mountains, Hosta Butte and Mount Taylor, coincides naturally and accurately with the intersection point of the two axes from all four corner mountains. Based upon the location of the Chacoan site called Pierre's Butte on this central axis and accurately due north of Haystack Mountain, a primary spirit axis is created from this point into the canyon to Casa Rinconada. The great houses of the canyon were laid out according to this axis.

The article coins the term "geospatial" for this kind of large-scale socio-religious phi.

Figure 4. Alignment between Mount Wilson and the most significant natural feature directly to its south, Haystack Mountain. The location of Pueblo Bonito aligns from the Sun by 0.005 degrees, Casa Rinconada by 0.009 degrees.

Figure 5. Above: Naturally coincident relationship of the bisect of the angle from Mount Wilson to Hosta Butte and Mount Taylor, and the intersection point of the cross axes from Bonito, Chimney Rock, Mount Taylor and Hosta Butte. Below: Enhancement of this relationship in Chaco Canyon, with the location of the Four Corners.
nemonon and concludes by suggesting that such a framework could have worked similarly to the Iowa and Hopi one, by integrating tribal groups around the plateau. One of the primary social effects of such landscape symbolism and ritual might have been the elimination of potential territoriality as various drought-impacted groups had to pick up and move to greater parts of the region. Rather than enter a new area as interlopers, a family or clan might invoke a long-standing membership in a spatially defined religious group, common perhaps to homologous scales throughout the Chacoan sphere. In this integrative perspective one can better appreciate the motivation for constraining the architectural rhetoric between groups (great houses) in the canyon center. Some such meaning undoubtedly occurred in the sheer size and scale of the structures, yet ideally the great houses were subordinate to the pure threshold of Casa Rinconada and the visiting spirits from perimeter mountains.

**Indications of an Earlier Universe**

If Chaco, with its constrained architecture, represents a more integrated geopolitical process than do hegemonic Mesoamerican cities and precints, what can we surmise about earlier Anasazi societies, both Pueblo and Basketmaker? Did the Chacoans invent geopolitical frameworks on the Colorado Plateau, or perhaps borrow the concept and technology from the south? Do we interpret the architecture of these earlier periods as again being indicative of a less civilized culture—simple as these pithouse and early pueblo forms were—or conversely, as the expression of an even more complex framework on the landscape and an even greater constraint on the self-serving individuality of architecture. Socially, what would have been the need for an integrating bipolar and bilateral symmetry in times when people did not live as densely populated as in historic pueblos or Chaco homesteads surrounding ceremonial structures (lower great houses) and did not rely upon as intensive agriculture?

One clear ethnographic indication of at least the existence of such ritual frameworks in earlier, purportedly more primitive, societies can be found in the Warao of the Orinoco Delta in Venezuela. Wilbert (1993: 18) describes a three-axis cross structure not unlike that of the Hopi laid out on a virtually flat landscape—about two hundred kilometers across, yet with specific land features for the six points and a north-south axis skewed off Polaris by only about nine arc minutes. While Wilbert accurately demonstrates the symbolic equivalence between their physical cosmology and their round dwellings (the entire village in one structure), the use of the large-scale landscape framework seems almost more psychological than social. Shamans access the powers of the gods associated with the six landscape points for relatively individualized purposes of curing, rites of passage, and the like. No architecture or ceremony is associated with the actual intersection point as such, though each tribal group conceptualizes itself and its dwelling structure as being at the center, an obvious geographic impossibility for all the various subtribal groups. On the “civilization” scale the Warao have very limited architecture, nothing beyond the thatch-built, round village dwelling house.

Did the early Anasazi have some such cosmology founded on prominent natural landmarks, whether or not some point of intersection or center, like Chaco, was geographically rather than symbolically defined as with the Warao? If so, then Chaco might be seen not as a totally original religious process, but as one evolving or splintering off from something already established. This could help explain the eventual limitations of the Chaco phenomenon, including its overall temporal and cultural context and occasional shift, as well as illuminating a level of social organization heretofore unrecognized in the early Anasazi.

One of the plateau’s largest scale, most naturally and geometrically coincidental pattern of the intersection of three and perhaps four axes, from seven or eight peripheral features, focuses at the very head of Canyon de Chelly (see figures 6 and 7). All eight mountains or otherwise significant natural peaks of the diagram are clearly recognized as being sacred by Native Americans of the region. The vertical axis from Alaja Peak to Baldy Peak, the sacred mountain of the White Mountain Apaches, is off true north by about 1° 9’. The northwest-southeast pair of Brian Head and Mount Taylor, with its sipapu on its peak (Blake 1999), are the highest peaks of their respective areas. Humphreys Peak (in the San Francisco mountains near Flagstaff) is most sacred to the Hopi, while the Navajo recognizes it and its northeastern partner, Blanca Peak, as a pair (their West and East). Blanca Peak, another fourteener was believed for some time to be the highest mountain in
Colorado. These three axes intersect coincidentally within about 250 meters of a common point located about four kilometers northeast of the Canyon de Chelly visitor center.

In addition to this coincidence, it is also true that the exact point of perpendicular intersection between the line from the great sipapus at the junction of the Colorado and Little Colorado Rivers in the Grand Canyon and the vertical axis from Mount Abajo to Baldy Peak also occurs about 250 meters from the common point for the three axes. As also indicated on the diagram, both the northwest-southeast axis and the line from the Canyon de Chelly center to Chimney Rock might have been used in association with summer solstice sunrise and sunset rites.

Figure 6. Naturally coincident intersection of the three axes from six significant mountainous peaks at the head of Canyon de Chelly, as well as the perpendicular relationship of the confluence point of the Colorado and Little Colorado Rivers in the Grand Canyon to the vertical axis from Abajo Peak to Baldy Peak and the possible solstice relationship of the Brian Head-Mount Taylor axis and the summer solstice sunrise site of Chimney Rock to the Canyon de Chelly intersection points.

As the rising summer solstice sun streams through the well-known Chimney Rock aperture, and across the Chacoan site on the ridge, it literally points off in the landscape to the Canyon de Chelly center.

It was at first disappointing that neither architectural ruins nor other significant archaeological features have as yet been discovered at or near the common point at the head of Canyon de Chelly. Theoretically, however, early geospatially focused sites might have gone beyond the constrained kiva threshold of Casa Rinconada, there being a proscription against any architectural definition. The lack of architectural confirmation of a geospatial site does of course make ideas of early geospatially more difficult to prove. While Basketmaker Anasazi may have had the
technical abilities to understand large-scale relationships, the question remains whether they knew of the remarkable natural coincidence focused on Canyon de Chelly and whether they used it religiously. One strategy for establishing such a use rests not on the pattern itself, but in the way the more architecturally prone Chacoans apparently related to it.

**AN INTEGRATIVE LANDSCAPE FRAMEWORK**

The first indication that the Chaco framework was a subsequent, eastern version of that at Canyon de Chelly, with particular emphasis on their vertical axes, comes from the observation that Chaco's most powerful northern peak, Mount Wilson (37° 50' 21.0") lies very exactly due east of the summit of Mount Abajo (37° 50' 21.8"), the hypothetical northern mountain of Canyon de Chelly's cross. In terms of some possible ritual effect, the sun would rise precisely over the sharp Mount Wilson peak on the equinoxes, perhaps a symbolic indication of a parallel relationship. But again, without archaeological evidence, this naturally coincident relationship may or may not have been known and used.

![Diagram showing parallel relationship of the two vertical axes of Canyon de Chelly and Chaco Canyon](image)

**Figure 8.** Parallel relationship of the two vertical axes of Canyon de Chelly and Chaco Canyon with respect to Ship Rock.

It appears that the Chacoans were intent upon duplicating on a larger scale the triadic (ritual) layout evident in both phases of the Chaco Canyon center. One finds cardinaly oriented elements at the center (Pueblo Bonito, Pueblo Alto, and Tsin Kletsin), flanked by two great houses, east and west, whose orientations represent their cross axis constituencies (northeast-southwest is Pueblo Arroyo, and northwest-southeast is Chetro Ketl). Taken to the plateaus scale, the pattern of a center with two east and west entries seems to have its bilateral homologue in Chaco Canyon's intersection to the east, and Canyon de Chelly's to the west (see figure 8). The most prominent natural feature between these two foci is Ship Rock (see figure 9). While setting up the more than four hundred MathCAD inquiries of the Chaco layout (geometric relationships between two and a maximum of eight sites), I had several times looked in vain for a pattern involving this spectacular volcanic plug lying between Chaco Canyon and Canyon de Chelly. Archaeologist Gary Matlock (1988) thinks the landmark was important to the Anasazi, in addition to the Navajo, though he gives no reason for this speculation.

The evidence for this largest scale construct comes from the position and features of two Chacoan outliers. I describe their relationships to the two canyon foci and Ship Rock as Chacoan priest surveyors might have laid them out. Later I compare the large-scale landscape geometry of these sites with that of some number of random points associated with each of the Chacoan sites.

Presumably, it would not have sufficed for the Chacoans to have considered Ship Rock as merely a middle point between the two universes; rather it would have had to be a center point of a middle vertical axis derived additively by north and south points, just as in the cases of the vertical axes of Chaco Canyon and Canyon de Chelly. Alternative-

![Ship Rock](image)

**Figure 9.** Ship Rock (photograph by the author).
ly, as a logical reversal to these two axes, perhaps the natural feature in the middle of the plateau (Ship Rock) would be at the center with endpoints marked by built ceremonial sites. Given the all-powerful symbolism of North, the northern site would be positioned first. Influenced as well by the coincidental bisect at the heart of the ultimate Chacoan layout in the canyon (see figure 8), surveyors might well have been intent upon some bisect relationship between a northern terminus for the Ship Rock axis and the two canyon sides. Illustrated in the left diagram of figure 10 is the character of such a bisect laid out as a slightly curving line (because of the different lengths of the two side rays). Every point on the centerline has an equal-angle relationship to the three known landscape points. The canyon points used appear to have been the common point in Canyon de Chelly and the bisect-cross intersection in Chaco Canyon. In spite of Casa Rinconada’s focal power in ritual, the purity natural and coincidental point farther east in the canyon may also have been highly sacred and even more architecturally constrained.

Figure 10. Left: Paths of bisect relationships moving north from Ship Rock with respect to side rays to the Canyon de Chelly common point (De Chelly X) and the coincidental bisect-cross intersection point in Chaco Canyon (Chaco X). Right: Bisect paths moving north from Chaco X with side rays to Ship Rock and the Mesa Verde high point. Points within about 250 meters on either side of the curving bisect paths are accurate within 0.005 degrees of deviation.

How did the Anasazi then determine a second large-scale line to intersect with this first one, thereby establishing the actual point on which to build their ceremonial point of contact with the spirits? The right side of figure 10 illustrates a second bisect centerline constructed from Ship Rock, Chaco X (the bisect-intersection point), and the most powerful existing Chacoan point in the area, the Mesa Verde high point (Pak Pinti Lookout). The decision may not have been a simple question of choosing the adjacent Chacoan corner point, but may have been influenced by the dominion wielded by the Anasazi from the Mesa Verde area. The Chacoan center great house representing this northwest-southeast axis and bipolar points, Chetro Ketl, is actually the largest great house in the canyon Overall, the influence of the Mesa Verde people on Chaco extends well beyond Chetro Ketl.

The centerlines of these two bisects actually encompass a swath of topography about five hundred meters wide; any point within this path will be accurate within the stipulated range. The two centerlines intersect at the Chacoan great kiva site called Lowry Ruin, about thirty kilometers northwest of Cortez, Colorado (see figure 11). I take a closer look at this repeatedly most northern of all Chacoan sites after describing the position of its bipolar southern partner.

The locations of Lowry Ruin and Ship Rock establish the central vertical axis between Canyon de Chelly and Chaco Canyon. What remained in the layout process was to extend this line to the south and to create an additional intersecting line to determine the southern Chacoan site. Anasazi surveyors logically would have sought at least to

Figure 11. Intersection of two bisect paths at Lowry Ruin.
understand the southern bisect from the two canyon foci and Ship Rock. As another example of remarkable natural coincidence, the curving southern bisect generated by the three points passes accurately through Haystack Mountain, the southern terminus of the Chacoan vertical axis to Rinconada and Wilson (see the left side of figure 12). As illustrated, however, this centerline only intersects the plateau central axis at Ship Rock itself, and thus could not be used to determine the southern site. When one uses Haystack Mountain in combination with Ship Rock and Chaco X, however, as shown in the right side of figure 12, the intersection of this bisect centerline and the Lowry–Ship Rock extension occurs at the Chacoan site of the Village of the Great Kivas, just northeast of Zuni (see figure 12).

![Figure 12](image)

**Figure 12.** Left: Path of the bisect relationship from Haystack Mountain to Ship Rock, with side rays to Canyon de Chelly. Right: Path of the bisect relationship moving southwest from Chaco X with side rays to Ship Rock and Haystack Mountain.

The accuracy of the Village of the Great Kivas bisect, as shown in figure 14, is about 0.038°. The two angles are 39° 52' 40” and 39° 48' 04”. Using the center point between the two horns of Ship Rock, the alignment between Lowry Ruin's great kiva, Ship Rock, and the upper great kiva of the Village of the Great Kivas has an angular deviation of 0.061° (this is an average of the two angles from endpoints of the line). The distance from Lowry Ruin to Ship Rock is almost exactly 100 kilometers, and that from Ship Rock to Village of the Great Kivas is 166.1 kilometers. The exact line from Lowry to the Village of the Great Kivas point misses the center point of Ship Rock by 122 meters. The rock itself is about 400 meters across from east to west.

Considering the northern two bisects that created the Lowry Ruin position, the two patterns (De Chelly X–Ship Rock–Chaco X, 0.030°, and Ship Rock–Chaco X–Mesa Verde high point, 0.050°) share a common angle and, thus, all three angles are equal (within the stipulated...
range), forming a trirect from west to east, 22° 57' 25", 23° 02' 43", and 22° 56' 37". If one holds the three points of the western bisect—De Chelly X, Lowry Ruin, and Chaco X—on their exact latitudes and longitudes, the center axis from Lowry Ruin 100 kilometers to Ship Rock will miss the center point of the feature by about 52 meters.

**Evidence from Site Layout and Architecture**

Lowry Ruin (see figure 15) was excavated some time ago by Paul Martin, Lawrence Roys, and Gerhardt Van Buren (1936-1939). One conclusion from their report is that the great kiva had significant religious importance, given its continued usage throughout the classic Chacoan period in spite of five or six distinct occupations and reuses of portions of the room block to the west. The great kiva was built first, with only a couple of small rooms in the location of the eventual larger room block. Martin and colleagues interpret the great kiva site as being a community focus for residential pueblos in the surrounding area. The pottery and construction techniques clearly point to both Chacoan and Mesa Verdean participation, as the eastern bisect point for Lowry Ruin would suggest.

Early archaeologists were probably less interested in the orientation of the great kiva, particularly with regard to any potential geometric relationships between it and distant peaks. Even though their reconstruction of the kiva foundations may well have altered the structure’s geometry somewhat, the orientation may nevertheless fit nicely into the present argument. I engaged a professional surveyor from Cortez to take GPS readings along the two sets of pillar foundations and along a kiva axis that included the central fire feature and the north door on the perimeter wall. The average of the three readings was about 6° 30’ east of north. Given the logic of Lowry as a symbolic center ("North") in relation to Mount Abajo and Mount Wilson, in addition to its position as the northernmost Chacoan site, one would predict an orientation related to both northern peaks. A bisect of the angle from the Lowry kiva to the two peaks seems logical. The orientation of the center bisect line is 5° 44' 45" east of north, within a degree of the actual kiva orientation. The orientation of Chacoan great houses, in contrast, is generally less accurate than their position vis-à-vis distant natural features. Two of the cardinal houses in Chaco Canyon (Pueblo Alto and Tsin
Kletzin), for example, have orientations right around 89°, about a full degree off.

The Village of the Great Kivas (see figure 16) was excavated a few years earlier, in 1930, by Frank Roberts (1932). Again we see simultaneity of building and use with the major eleventh-century expansion phase of Chaco. Building techniques and pottery show the presence not only of Chacoan culture but also of a group more indigenous to the southern region of the plateau. Both room blocks reveal construction by both subcultures. The northern great kiva, the only one excavated, is Chacoan. Roberts similarly sees the great kiva form, and particularly the rare occurrence of two such paired structures, as evidence of an important religious function to some larger surrounding community. He suggests in his conclusion that the two unusual great kivas, side by side, might have related to two distinct moieties or subgroups of whomever was using the site. Roberts and others have commented on the remarkable art found on the imposing rock faces just above the site (see figure 17).

![Figure 16. Site plan of Village of the Great Kivas (after Roberts 1932) and the alignment of the two great kivas in the north and south complexes to a line from Ship Rock to Lowry Rain.](image)

*Figure 16. Site plan of Village of the Great Kivas (after Roberts 1932) and the alignment of the two great kivas in the north and south complexes to a line from Ship Rock to Lowry Rain.*

One of the questions Roberts did not entertain is whether the two room blocks and two great kivas represent one outlier site or two. Of course, they weren’t called outliers in those days. In their survey list of Chacoan outlier footprints, Powers, Gillespie, and Lesko (1983: 313) actually omit the southern room block and kiva of the Village of Great Kivas site. If we were to consider the layout as two separate outliers, then examine the footprints shown in figure 18, two things might come to mind. First, all Chacoan great house or outlier structures exhibit great formal variation, making one easily distinguishable from the other. Second, not only are the form and orientation of the lower room block very similar to those at Lowry Ruin, but also similar are the general site relationships between these room blocks and their great kivas. What this symbolic expression might have meant in terms of social or religious purpose is beyond speculation at this point. Suffice it to say that given the axial relationship of the Village of the Great Kivas to the most prominent landscape feature directly north, Ship Rock, and to Lowry Ruin, it appears very likely that the southern site layout contains a clear bipolar simulation of its northern counterpart.

Furthermore, the two GPS positions taken from the approximate centers of the two kivas (one backfilled, the other unexcavated) suggest an alignment with the larger geomtrial axis to Ship Rock and Lowry Ruin. The northermost of the great kivas reads as one meter off the large line from the southern kiva to points north. The bearing from the lower kiva to Ship Rock is 4° 13' 44" west of north, and that to Lowry Ruin is 4° 16' 16.7". The one meter deviation at the close distance
between the two kivas is, however, at 3° 07' 09", quite inaccurate in terms of the longer line and should be taken only as a rationale for more precise surveying. This central plateau vertical axis does, of course, deviate from true north because of the manner in which it was laid out—i.e., its bisect relationships to De Chelly X, Chaco X, Mesa Verde high point, and Haystack Mountain.

Testing the Actual Archaeological Sites Against Random Ones

With additional, recently developed software, it now becomes possible more efficiently to describe large-scale geometric relationships between points in the landscape. A research associate with considerable computer expertise and I had spent some time trying to adapt GIS software to do precisely this kind of analysis. In the end we needed once again to turn to a purely mathematical tool developed by a small custom software firm with related experience in astronomical patterns. An important feature of the new device is its ability to create any number of random points relative to a particular landscape point (e.g., archaeological site). The relationship of each of these points to distant natural and built features can then be calculated and ultimately compared with relationships to the existing archaeological target site. While we cannot yet provide a hard statistical figure for the "artifactuality" of a particular site location, we can begin to get a sense of how unusual it might have been for the ancients to choose a particular site within a certain vicinity.

Illustrated in figure 19 are two 20-kilometer square areas, each focused on the sites of Lowry Rain and Village of the Great Kivas. The computer distributed 100 points randomly within each of the 2 km-by-2 km smaller squares of the two grids. The large-scale relationships were then calculated between each random point and nine distant points on the plateau (Alajo Peak, De Chelly X, Baldy Peak, Ship Rock, Mesa Verde high point, Hota Butte, Mount Wilson, Chaco X, and Haystack Mountain). In the Lowry grid, nine random points revealed one bisect relationship each (with the random point as vertex). One point had two superimposed bisects, side arms to Ship Rock and Chaco X, with a central axis to Hota Butte and Haystack Mountain (the two are aligned with the random point). Around the Village of the
Great Kivas, fourteen random points each had one bisect relationship to distant points.

We then asked whether any of the points with bisects in the two test areas aligned with each other through Ship Rock. One point in the Lowry grid aligned with two neighboring bisect points (same bisect pattern for each) in the Village of the Great Kivas. Thus, of the patterns created by two hundred random locations, only one appears potentially similar to that created by the two existing archaeological sites. These two patterns are compared in figure 20. While a clear symmetry does exist between two bisects from southern and northern random points, the random pattern is somewhat symbolically illogical. Would Chacoans connect the two bipolar entities of a western vertical axis to the two bilateral points of the intercardinal or cross axes of an eastern focus, particularly as mediated by a vertical relationship between the random points and Ship Rock?

What is the chance that the Chacoan Anasazi first of all randomly chose the only northern point of the 101 points of the grid that created a bisect relationship between the center of all three vertical axes of the plateau—De Chelly X, Ship Rock, and Chaco X? Furthermore, Lowry Ruin is the only point of all 202 that has a bisect relationship to three distant points—De Chelly X, Ship Rock, Chaco X, and Mesa Verde high point.

Figure 19. Comparison of large scale geometric patterns created by one hundred random points around both Lowry Ruin and Village of the Great Kivas, showing only one pair of random points, one in each grid, with bisect patterns that align with Ship Rock.

Figure 20. Left: Pattern of randomly generated bipolar bisects and their alignment to Ship Rock. Right: The pattern created by the Lowry Ruin and Village of the Great Kivas archaeological sites.

What are the additional odds that this already unusual point would randomly align via Ship Rock with one of the 101 Village of Great Kiva points with a bisect pattern? Finally, what are the chances that the actual bisect of the Village of the Great Kivas point that aligns with Ship Rock and the actual Lowry Ruin is the only one of the fifteen total points in the southern grid whose center axis runs to Chaco X? It is also the only point whose three bisect endpoints are all on vertical axes. While we do not yet have the computer capacity to statistically state such probabilities, if these sites were random or ecologically determined, the Chacoans’ location of Lowry Ruin and Village of the Great Kivas were remarkably propitious, to say the least, with respect to the great natural features of the southern Colorado Plateau.
CONCLUDING REMARKS

This initial exploration of geoturalism certainly generates more questions than answers. Much of the analysis in different cultures at all scales of space, as well as development of technique, remains. While I believe there is a very good chance that the patterns I describe were consciously designed and had two by the Anasazi, understanding more specifically their symbolism and ritual use is a huge problem. Lacking multiple, focused geotural investigations in ethnographically extant societies, such as that Ortiz provided for the Tewa, we may never know such things. More possible, however, may be a more general understanding of a natural history or evolution of culture as influenced by landscape and architecture.

In terms of the Anasazi, we may be able to determine whether the Basketmakers associated distinct subcultural groups with different landscape axes. Given this context, subsequent association of tribal groups with Chacoan patterns should begin to paint a clearer picture of social and political change on the plateau. More interesting still may be the evolution of geotural after the decline of Chaco Canyon, including Aztec, Paquimé (Casas Grandes in Chihuahua), the short-lived aggregated pueblos, and then ultimately the historical pueblos. How do these processes then compare to the more “civilized” landscapes and architecture of Mesoamerican? Does the greatest integration occurs in the most natural geotural framework, the one with the most constrained architecture? Was Chaco pushing the limits with its monumental, minimally practical, but still largely faceless structures?

What, eventually, will be the geotural vision of landscape and architectural history say to contemporary architects, specifically here in the Southwest? Certainly it will further diminish the appeal of traditional, monumental or rhetorical meanings of form, even critical regionalism, in a milieu where architecture is less and less competitive with more fluid sources of cultural representation. And in spite of our related preference for natural landscape, whether in terms of intrinsic beauty or extrinsic symbolism, a prehistoric, geotural organization of modern culture via landscape frameworks is, of course, out of the question. Even the recently popular individual interest in spiritual landscape cannot seriously pretend to integrate even small subgroups of our socially diverse, media-driven culture. So what is left when we eliminate monumental stylistic buildings and truly sacred landscape?

Geotural appears to have had two primary social effects. First, it tended to eliminate territoriality in lieu of a symbolically defined landscape framework. Second, it integrated crosscutting social groups beyond the kinship definitions that were not always clear. Ritual integration may occur only in relatively rare, small-scale circumstances of modern societies (see, e.g., Dostert 1990, 1994), the greatest social effect possible for today's architects and planners is more in the mitigating of excessive territoriality. Not only should negative architectural rhetoric of style, presumed monumentality, and territorial position be again constrained—perhaps ideally masked by intrinsically interesting natural and architectural form—but the counterbalancing, socially spontaneous spaces of life should be clearly associated with shared landscape settings. Culturally, they should again be dominant.

REFERENCES


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