THE GREAT NORTH ROAD AS ANASAZI ORIGIN RITUAL:
Chaco and Totah in context with triadic plateau structures

Dennis Doxtater
College of Architecture and Landscape Architecture
University of Arizona

Ethnography of the Historical Pueblos clearly illustrates spatially cognitive examples in ritual, myth and art of dualistic entities with a mediating third threshold component. This paper argues that the prehistoric basis for religious practice on the Southern Colorado Plateau can be found in large-scale triadic symbolic frameworks among most prominent natural features and ceremonial sites in the landscape. These likely ritual structures may have been surprisingly early, centuries before triadic architectural expression in the eastern hemisphere at Chaco Canyon and Aztec (Totah). It is presently argued first, that not unlike the western hemisphere of the plateau, the eastern structure itself consists of a dualistic pair of axes mundi with a third or middle feature; and second, that late in this eastern exuberance, the pilgrimage path between the two centers, the Great North Road, was laid out with remarkable precision in relation to the two “verticals” to express not only primarily triadic site design and architecture of the centers, but the much earlier origin, evolution and framing of the entire Anasazi plateau itself. While referencing adjacent work involving the techniques and probability analysis of large-scale surveying, the intent of the present work focuses more exclusively on the logic of Ancestral and Historical Pueblo religious space.

[11,774 words]

Unlike ancestral evidence found in the site and architecture of Chaco Canyon and Aztec, Historical Pueblos of the Hopi, Zuñi, and Tewa/Keres do not exhibit similar obvious design dualism at scales beyond that of the kiva. The highly oppositional mythic and ritual meaning of these small ceremonial rooms is extensively discussed in the literature, e.g. Hieb 1994. Much less is written about symbolic structuring and actual ritual experience in the larger landscape surrounding the pueblos, this in spite of also extensive discourse about Pueblo religious concepts of space or “cosmos” as derived mostly from myth, particularly those about origins, e.g Geertz 1984. Limited documentation exists about ritual pilgrimages such as the Hopi take to the confluence of the Colorado and Little Colorado Rivers in the Grand Canyon, Titiev 1937, or the
Figure 1. Triadic structures expressed in Pueblo ceremonies and landscape. Hopi (top) from Doxtater 1979; Keres (middle left) from Snead and Preucel 1999; Tewa (middle right) from Ortiz (1969); prehistoric Rio Grande pueblo (below) from Fowles 2009.
Zuñi journey for similar ritual purposes to Koluwa:wa or the junction of the Zuñi and Little Colorado Rivers (Ferguson & Hart 1985:125).

Somewhat exceptional in this regard is Alfonso Ortiz’s (1969) account of the Tewa “world”, consisting most importantly of a triadic framework of ritually used points in the landscape surrounding the “mother” pueblo of San Juan, see figure 1. All twelve points are sipapu, ritual openings in the ground to the other world below. Religious energy flows at threshold points on the landscape, a manipulation of relationships between humans and spirits. Also illustrated in figure 1 is Sneed and Preucel’s (1999) extension of Ortiz’s work to the nearby Keres landscapes, also along the Rio Grande. They talk about these structures as “ideology”, reflecting a certain bias for myth as source of expressive process over actual ritual practice. Even Ortiz, though clearly defining real experience in the landscape, sources meaning of the “Tewa World” to their origin myth. We must keep in mind that the historical pueblos are essentially reduced microcosms or even territories compared to the much larger organized prehistoric Anasazi or Ancestral Pueblo region (Barnardini 2005). Pueblo origin myths might well reflect some earlier, larger scale practice in the landscape, even though associated with more “localized” actual ritual.

Most recently, the archaeologist Fowles (2009) found evidence of a similar structure adjacent to a 14th century aggregated Northern Tiwa village in the same geographical region, see also figure 1. The positioning of shrines north and south of each other at the edge of the pueblo, however, is at an even smaller scale than Ortiz or Sneed and Preucel describe. Fowles speaks of a “pervasive dualism” in the layout of his investigated “villagescape”. Significantly, his prehistoric time period of interest comes just after the breakup of the large-scale Chacoan phenomenon during which the Anasazi for the most part didn’t live permanently in ceremonial foci with great houses and great kivas, but in surrounding so-called “small sites”. The unusual period of aggregated domestic pueblo living that followed, as Fowles points out, has generally been felt by archeologists to have included less religious use of landscape compared to a new focus on more hermetic plaza ceremony.

Influenced by Ortiz (1969), the present writer investigated similar spatial bases to Hopi ritual (Doxtater 1979), see also figure 1. While ethnographic data was not available about where Hopi ritual participants go to deposit prayer feathers out in the landscape, it was nevertheless possible to hypothesize a symbolic spatial structure that organized the major yearly ceremonies.
Consisting of three axes, compared to two cardinal ones in the Tewa, each was owned by a pair of religious sodalities, taking turns conducting rituals at opposite times of the year, i.e. a clock of sorts. Each spatial direction, possibly running out to shrines in the larger landscape, expressed a particular calendrical ritual and a particular social group in the village. Thus the more self-interested motivations of kinship and clan were apparently moderated by spatially defined organization that worked on the tribal scale, not unlike the Tewa.
The hypothetical Hopi landscape points of spiritual contact, like the known destination of the Great Sipapu in the Grand Canyon, are distinct from the more territorial shrines identified in Zedeño’s mapping of the Hopi land (1997). It may well be that the relatively small scale ring of territorial shrines relates to contentious relationships with the surrounding Navajo Nation. Zedeño discusses more distant ritual points in the landscape, such as Humphrey’s Peak, which involve still active histories of clan migration from across the plateau.

In the Navajo, Witherspoon and Peterson associate important cognitive and cultural attributes, e.g. motifs on rugs, sand paintings, masks, clothing, staffs, hair buns, and rock walls to the formal (spatial) structure of their large-scale horizontal and vertical directions anchored at four distant mountains, together with mythology of the emergence through four underworlds or previous stages of existence (1995:34). Figure 2 illustrates the four mountains—Humphrey’s Peak, Blanca Peak, Hesperus Mountain, and Mount Taylor—intersecting in the vicinity of Aztec, where the Navajo first moved into the Anasazi plateau sometime around the 15th or 16th centuries A.D.. Lamphere’s overview of Native American groups of the Southwest (1983:743) identifies considerable overlap between Navajo and Pueblo ceremonialism. For Witherspoon and Peterson, the spatial concept and diagram structures opposed symbolic domains. The two ends of any one axis are called “bipolar”, while spatial oppositions between halves of the cosmos created by the “vertical” or central axis are “bilateral” (ibid:38).

Given the clear spatial structuring of Pueblo and Navajo ritual landscapes, we now move to considerations of the prehistoric Anasazi record. The relation between historical Pueblo ceremonialism, mostly understood as having emerged in the fourteenth through sixteenth centuries (Adams 1991), to earlier prehistoric periods recognizes significant overlap of the “kiva and sipapu complex” (Ware and Blinman 2000, 403). But did this include frameworks on a much larger landscape?

Adjacent work on surveying techniques and comparisons with random geometry
No existing literature provides evidence that, in spite of landscape symbolic conceptions, either the Pueblo people or the Navajo ever actually surveyed accurate alignments and the like between sacred points (which were known on a less precise cognitive map). If one calculates the intersection point created by the two “cardinal” axes created by Ortiz’ four Tewa mountains, for example, it lies several kilometers outside of the mother pueblo of San Juan. Any argument that
earlier Anasazi were in fact doing so must therefore depend on serious discussion about possible techniques and means of distinguishing random geometry from designed patterns.

The technical issue is turning out to be the least problematic. Actual field testing and computer simulation of accuracies by the author (Doxtater 2002, 2007, 2009) describe very plausible ways that simple tripods with plumb lines could have been used to align interim points between distant features down to visual acuity at about 0.017°. Lekson’s volume on the Chaco Meridian (1999) provides an extensive discussion of possible surveying practices in the SW. Description of other ancient surveying techniques (Gallo 2004, Söderman 1999, Lewis 2001:223) even include trial and error processes where points between two very distant points, not visible from each other, can eventually be aligned. The author’s custom application, Geopatterns (Doxtater 2007), along with Google Earth based add-ons that profile sight lines on a curved earth surface make it possible to carefully simulate a survey process across a specific landscape. Recently, the author sent such a simulation, as part of a larger paper, to the editor of the *Journal of Surveying Engineering*, Tomàs Solar, an expert in the field with NOAA. The goal was a more technical critique of surveying issues. While the article didn’t fit the equipment oriented profile of the journal, he did read the paper thoroughly. After e-mail exchanges about technical issues were over, the author still didn’t know if the editor believed that the Ancestral Pueblo could have done this kind of surveying. After a simple message asking this question, the editor replied: “why not?”

The issue of comparing accurate existing large-scale patterns to random ones is much more critical and in many ways more challenging. Ideas of prehistoric alignments have been presumably debunked by computer applications clearly showing that points in the landscape can align randomly (Papadopoulous 2001, Williamson & Bellamy 1983, O’Carroll 1979). Other more situated analyses, however, by archaeologists in particular site contexts, are beginning to develop greater discourse. At Cerro Moctezuma, a ritual mountain top involved in Anasazi frameworks discussed herein, Swanson’s (2003) GIS analysis compared existing layouts to random phenomena, validating the intentional design of signal fire alignments at scales of several kilometers. In the Old World archaeology of Scandinavia, Stahlqvist (2000) took a related approach, enlisting statistical university faculty for his novel dissertation seeking to prove that Neolithic peoples used the locations of small burial mounds to create cardinal cross centers associated with territorial boundaries.
Sections on probability analysis also occur in Doxtater (2003, 2007, 2009). In a very recent, unpublished paper dedicated only to probability comparisons of alignments, the author used Geopatterns software to compare existing alignments among 61 great kiva sites and 21 most prominent natural features on the Anasazi plateau (see figure 3) with patterns created by random points in the same geographical test area. Ten different accuracies were tested ranging from 0.015° to 0.15°. At each accuracy, existing patterns were compared with those of 100 random sets of 61 each (the natural points are constant). Built sites create more three-point alignments than any of the 100 random at five accuracies; only one random is better of the 100 at three accuracies, and two randoms of the 100 are better at the two remaining accuracies. Earlier patterns (Basketmaker III/P1 500-900 A.D.) were stronger than later (P1/III 900-1300 A.D.). In contrast to dismissing outright all possibilities of designed landscape structures when random patterns are shown to be possible, methodologies are needed to discern designed patterns from a larger field that includes random phenomena. While the goal of the present paper is to primarily
map possible triadic symbolic and ritual patterns, future work must strive to test these structures against the random.

All alignments and cardinal relationships discussed in the main body of the paper are at an accuracy of 0.075° or lower; most are much more accurate. Calculated three-point alignment figures are provided in table 1 of the appendix. The average deviation degree is determined by averaging the deviations from both end points of the line. As an accuracy example, a 0.034° average deviation (two times visual acuity) of an interim (center) mid-point of a 100 km three-point line translates to about 30 meters. Positions in Geopatterns software are entered to tenths of an arc second (about 3 m). GPS and other map making and reading errors are considered to be in a maximum range of about 5 meters. The author has taken accurate GPS locations from many of the sites mentioned, and verified others from a combination of sources including site publications, state site archive maps and Google Earth. Theodolite sun shots have been taken on about fifty great house structures to determine wall orientation.

EARLY PLATEAU FRAMEWORKS

At least five hundred years before the climax of Chacoan construction in the 11th century A.D., Basketmaker people were clearly engaged in extensive ritual practices. Evidence exists at two remarkable rock art panels, the first from the walls of Comb Ridge, figures 4 & 5, as it hits the San Juan River. The “Kachina Panels” as they are called, vividly illustrate spiritual beings doing something at this location; their scholarly definition is “San Juan Anthropomorphic Style” dated from around 500 A.D. or earlier (Schaafsma 1980:109-119). The second example, also shown in figure 4, provides a snapshot near the Basketmaker III great kiva site of Broken Flute Cave of a ritual procession, or even pilgrimage with numbers of Anasazi moving toward a large kiva (right edge of graphic); larger scale spiritual beings are superimposed. Robins and Hays-Gilpin (2000:241) suggest in passing that these practices were linked to religious conceptions of directions and the landscape. They mention “cosmic realms” together with possibilities of intercommunity ritual.
WEST: Comb Ridge / Ganado / Abajo-Baldy

Two symbolically powerful, very accurate, alignments radiate eastward from the Great Sipapu point in the Grand Canyon, figure 5. They are impressive, among other reasons, because of the way they pair up two major ceremonial foci, Comb Ridge and Ganado, located in a dualistic axis mundi or north-south relationship. Archaeologists Winston Hurst and Jonathan Till are just finishing the first major comprehensive survey of the Comb Ridge area. In conference papers, their overall theme emphasizes the structure of meaning and ritual in the natural landscape. They mention that Native American sources still regard the intersection point of Comb Ridge and the San Juan River as a kind of “cosmic center” (personal communication).
Figure 5. Sipapu relationship to two north-south intersection foci in the West: Comb Ridge and Ganado.
The Kachina Panels on this intersection, shown in figure 4, were surely part of extensive ritual practice, perhaps even pilgrimage. The panels’ azimuth relationship to the Great Sipapu may even have been understood for its solstice sunrise coincidence (within the two degrees or so that archaeoastronomers use as their deviation range). The rock face for the main section of the panels may have even been chosen because of its orientation to the Great Sipapu (though not part of any precise survey). Subsequently however, perhaps late Basketmaker or early Pueblo periods, 500’s to 800’s, the location of the Lowry community ceremonial focus could have been very precisely located on the line from the Great Sipapu through the Kachina Panel. Part of this new surveying precision could be the extremely accurate alignment of the trio of great kivas that also form a good mathematical part of the overall five-point line. The great kiva/shrine feature at the topographic point of Comb Ridge, called “Rincon” was apparently chosen at a somewhat later time to locate the great kiva at Bluff (Cameron 2009). The mathematical line from the center of Rincon to the center of the Lowry great kiva, 80.059 km distance, misses the center of Bluff’s great kiva by less than one meter.

If Comb Ridge expressed an early wholly natural and coincidental axis mundi, where the Anasazi perhaps made contact with ancestral spirits involving both north-south and west-east (Sipapu) directions, new religiously embedded technologies of surveying at much larger scales may have modified the aboriginal simplicity of this “cosmic center”. Surveying could have discovered the best coincidental pair of north-south mountain features on the plateau, Baldy Peak to the south and Abajo Peak to the north, both highest in their region. The Baldy Peak-Abajo Peak line might have formed a dualistic partner to the more ancient Comb Ridge axis mundi. Little can be reported about Anasazi or more recent Ute or Paiute religious use of the Abajo range, the highest point of which is actually known in the literature as “Blue Mountain”; it is called “Furry Mountain” by the Navajos who believe it has a male spiritual inner form (McPherson 1992). Mount Baldy, for its part is the highest peak in the White Mountains and second highest peak in the state of Arizona. The White Mountain Apache tribe regards the mountain as one of their most sacred (Welch 1997:90).

In most cultures dualistic pairs require a central, threshold or mediating element (Van Gennup 1960). Toward this end, the southern center site of Ganado might have been established, ultimately with its vertical line laid out from Baldy Peak, through Ganado and up to the major site of Cottonwood Falls (Severance 2004) with its largest of great kivas in SE Utah. The bearing
of this line is about twenty arc minutes from true north. At the San Juan, this “middle” axis mundi runs between Rincon and Bluff. In addition to Cottonwood Falls’ aligned position, its topographic location places it visually (phenomenologically) between Comb Ridge and Abajo Peak. Ganado’s position, while not created by a coincidentally oriented natural feature or a solstice alignment to the Sipapu, nevertheless has considerable symbolic power. Its line from the Sipapu runs accurately to Mount Taylor, highest mountain in the SE and ubiquitously religious to Native Americans. On its top is a six-foot deep hole, three feet in diameter, presumed to have been dug by indigenous people for sipapu related ritual (Snead and Preucel 1999:176).

Humphrey’s Peak, the highest in the SW region and San Francisco Range initiates the complementary SW-NE intercardinal axis in Ganado’s formalistic cross: the Hopi have a documented high religious regard for the San Francisco range of mountains (e.g. Bernbaum 1997:9). The eastern point on the Humphrey’s line, which created the cross and Ganado’s location is a modest natural butte with a Basketmaker village and great kiva on its top, “Tohatchi Village” (Marshall et. al. 1979:285). Some trial and error adjustments would have been necessary to make prolongation from Baldy up to Cottonwood Falls as cardinal as possible. Tohatchi is also part of early structure surveyed in the region between western and eastern Anasazi areas, discussed shortly. Eventually the Humphrey’s Peak-Ganado-Tohatchi line might have been prolonged to help locate site “560” one of the two great houses of the East Chacoan community (Windes et. al. 2000), linking organization in the west and middle to the east.

Given the symbolic strength of natural features in the Ganado cross (even including Tohatchi when its position is more fully considered), this location is even more impressive for its evidence of perhaps the largest Late Basketmaker-Early Pueblo great kiva site, containing five large depressions as possible ceremonial chambers. With this number and its 490,000 sq.m., it easily tops the list of seven early Chuska (central plateau) sites with great kivas; the next largest number of kivas, three, occurs at Kiva Mesa in a site area of 24,800 sq. m. (Gilpin and Benallie 2000). If Tohatchi’s Basketmaker III participation in Ganado is a reasonable indication of framework dating, then the new central focus in the west might have occurred quite early.
EAST 1: The Mount Wilson Meridian, Chaco and Kin Bineola

Some symbolic weight that the Abajo – Baldy axis was a known symbolic feature can be added for its participation in a seemingly very formal, coincidental cross of three lines between most prominent natural features that intersect about 300 meters from a common point near the gateway to Canyon de Chelly, figure 6. One of the cross lines, from Humphrey’s Peak to Blanca Peak, is part of the Navajo cross (figure 2). Also coincidental is the right angle relationship of the Sipapu point to the common intersection point. The angle to the precise Abajo Peak – Baldy Peak “meridian” is 90.072° (to Baldy).

![Diagram of the Mount Wilson Meridian and Chaco's axis mundi.](image)

Figure 6. Early possible axis mundi and cross in the East: dualistic relationship between Abajo Peak and Mount Wilson.

Perhaps the most powerful logic for ancient knowledge of the Baldy-Abajo axis is the symbolic dualism of its relationship with Chaco’s axis mundi, described previously (Doxtater 2002). The coincidental cardinal pattern between the two northern poles, Abajo Peak and Mount Wilson, might well have been the religious stimulus for the development of much of the dualistic plateau framework(s). From the top of Abajo Peak, the observed equinox sun rises precisely
from Mount Wilson, the clearly visible highest peak in the San Juan Range. Their latitudes are only 0.8 of one arc second apart. The Mount Wilson meridian, for its part might have been formed by the coincidental location of an additional natural feature, McCarty’s Flow, the latest volcanic event in the Zuñi-Bandera field just southwest of Mount Taylor. Based on collected legends, Nichols (1949) dated the flow to 700 A.D., or within collective memory of present day Pueblo Indians, particularly at Acoma. More recent, and more technologically advanced analysis, pushes the geological date back, somewhere between 500 and 2,000 B.C. (http://geoinfo.nmt.edu), perhaps within the memory of Basketmaker Anasazi. Mount Wilson deviates coincidentally from a precise true north from McCarty’s Flow by 0.152°.

The Wilson meridian has one Basketmaker III great kiva site (29SJ423), two PI sites with later construction (the great house in Chaco, Peñasco Blanco, and the outlier Andrews), the north Late Bonito Phase complex (Aztec), and the later ceremonial hilltop adjacent to Paquimé (Cerro Moctezuma, mentioned earlier). Lekson (1999) describes a less accurate meridian relationship between Aztec, the Chaco center, and Paquimé, without including the two natural features of Mount Wilson or McCarty’s Flow or Peñasco Blanco and 29SJ423 (about 600 meters apart north-south), or Andrews. Assuming a more accurate surveying ability, the seven points of the Wilson meridian form six three-point alignments and nine cardinal pairs under 0.075° (see appendix).

Just as the Chelly X cross intersection point lies some 6.287 km east of the Ganado axis mundi, near Chaco Canyon too, one finds an even more coincidentally accurate cross intersection point adjacent at Kin Bineola, about 12.696 km west of the Wilson meridian. These three axes make use of four of the mountains of the more symmetrical Canyon de Chelly cross, figure 6. As a coincidental cross, the deviation of the three lines to their common point of intersection is very accurate, ranging from 0.003° to 0.008°, or a maximum deviation of about 19 meters. About 602 meters SE of this point one finds the great kiva and adjacent very large Chacoan great house, shown in figure 7 (Marshall, et. al. 1979:57, Powers, et. al. 1983:207). The cross point occurs on a modest shelf and cannot be seen from the architectural structures below.

In the outlier surveys, no structure on the site is dated earlier than the 900’s, about the same time the first three great houses were being built in the Canyon proper. It is not impossible, however, that the Kin Bineola points had earlier relationships to the first two great kiva sites in
Chaco Canyon. One of these two Basketmaker III great kiva villages, first of all, suggests parallel development of both axis mundi and cross. 29SJ423 lies precisely due north of McCarty’s Flow (one arc second apart in longitude) and part of the multiple alignments of the Wilson meridian, figure 8. The line from McCarty’s Flow to Mount Wilson misses 29SJ423 by about 348 m to the east, a comparatively high deviation of 0.122°. One doesn’t know whether this is due to the topography of the 29SJ423 site perched very near the edge of the south rim of the canyon, or rather a preference for an accurate cardinal prolongation from McCarty’s. Association with Mount Wilson becomes more evident by the very accurate line apparently laid out in a later period between Peñasco Blanco, immediately north of 29SJ423, and the center kiva at Aztec. It is also true that if 29SJ423 had been moved farther southeast along the rim, it couldn’t have formed a line with the second great kiva site of Shabik’eshee, also on the south rim, running directly through the natural amphitheater called “Curved Rock That Speaks” (Loose
2008), a position just between the largest two eventual great houses of Pueblo Bonito and Chetro Ketl. This line is spoken of by Wills et. al. (2012:342) and Lekson (May 15 2012 blog) as defining a Basketmaker III community.

During the 500-600’s, village-like sites with large more specialized ceremonial structures are the exception, not the rule, among the more numerous strictly residential clusters across the landscape (Gilpin and Benallie 2000:172). In Wills and Windes review of earlier fieldwork at
Shabik’eschee, great kiva villages “featured new integrative mechanisms for supporting sedentary communities” (1989:347). Even though the largest pit house in the village appears to exhibit some territoriality as might be associated with a lineage chief in its position quite close to the great kiva, there is a much more average sized pit house that is actually closer. One of the primary reasons that Wills and Windes feel this was not a “big-man” village, however, is in the communal economics of storage strategies of small cists or bins which are not clearly controlled by any particular family, but distributed somewhat independently from the pit-houses (ibid:357). They suggest that only a core of families permanently occupied the village, and some larger number arrived to participate in activities seasonally. Shabik’eschee village was apparently much larger than shown in figure 8; no graphic reconstructions are available for 29SJ423.

The geometric, landscape relationship between the two Chacon great kiva villages and Kin Bineola points expresses possibly designed, cardinal, triadic features. The latitude of Shabik’esche is only 30 arc seconds higher than the Kin Bineola cross intersection point. Furthering the image of a triangle is the average deviation of the two distances from the vertex (29SJ423) to the end sites, only about 150 m (average distance is 14.955 km). An extremely precise isosceles triangle occurs when one considers the position of the eventual great kiva at Kin Bineola. The two equal angles (dotted in figure 8) are 29.712° and 29.727°, while the average deviation of the two distances from the vertex is 3 m (average distance is 15.098 km). While it seems highly unlikely that Anasazi surveyors could have measured distances this accurately with cords, precision in determining larger scale angles between points of a triangle might have been more possible. Prehistoric surveyors could also error on the side of greater accuracy.

Assuming for the moment that this precise triangle was in fact intentionally designed, perhaps in the 800’s or early 900’s, was the motivation simply greater accuracy with better surveying techniques? Or was it part of a new component being added to Chaco Canyon focusing on the amphitheater and the eventual center actually down in the canyon? In this vein, an accurate bisect (0.047° average deviation) of the isosceles triangle runs down to the high point (today’s benchmark) on the modest but cardinally symmetrical butte of Haystack Mountain, figure 8.
Part of this new consolidation in the canyon center might have been Casa Rincoñada’s location. While the present great kiva at this point was not built until the mid-1000’s, it is not unreasonable to think about some earlier shrine or sipapu-like feature at the site. It would
symbolically need to link to the most sacred northern point, Mount Wilson, as well as a complementary east-west association. Toward this end, surveyors could have easily established a line from the canyon’s north rim above the amphitheater to Mount Wilson (only one interim sighting point is needed in the 200 km). This line might then be prolonged south, looking for some natural feature associated with lava fields around McCarty’s Flow. Casa Rincoñada lies very accurately on the line from Mount Wilson to Haystack Mountain (a meridian off true north about three quarters of a degree), again figure 9. In a symbolic sense, this early axis mundi’s relationship with the Mount Wilson meridian mimics the Baldy Peak – Ganado axis the way it sits to the east of the most ancient meridian, perhaps Comb Ridge.

A second line to intersect with Haystack – Wilson, is necessary to create Casa Rincoñada’s accurate location. As mentioned, comparisons of existing alignment patterns with large numbers of randomly generated ones clearly shows that hypothetical designs must be distinguished from some number of purely coincidental alignments. Though it also seems true that Anasazi priests looked for coincidental relationships, e.g. a Sipapu – Comb Ridge solstice relationship or the equinox link between Abajo Peak and Mount Wilson, particularly among natural features. There is no natural coincidence in the way Casa Rincoñada sits on a quite accurate line from Ganado to Wheeler Peak. In itself this simple three-point alignment might well be one of many random geometries. Taken symbolically, however, the relationship of the meanings of the three points has a strong logic. All three might have been among the most important points in their respective areas: Ganado as center of the west, Casa Rincoñada as center of the east, and Wheeler Peak as the highest mountain in the East.

Given the Haystack-Rincoñada-Wilson axis, no third element yet exists at Chaco that might simulate the Baldy Peak – Abajo Peak axis, without which the transformation from the Basketmaker III triangle, with 29SJ423 as vertex, toward a ritual and perhaps pilgrimage center in the canyon would not be complete.

**EAST 2: The great crosses of Chaco’s eastern axis mundi**

Doxtater (2002) described an accurate pair of axes between four natural features that intersected at a point, Chaco X, east of Casa Rincoñada in Chaco Canyon, see figure 10. While the natural partner to Mount Taylor on the NW-SE axis, the high point of Mesa Verde (present day fire lookout) is a modest feature to say the least, there are five Chacoan great house and/or great kiva
sites that appear to participate in this Chaco X line (see appendix). The natural characteristics of both points of the NE-SW construct are pronounced. A Chacoan outlier house and great kiva are built right on the Chimney Rock ridge with its investigated astronomical alignments (Malville 2004), and Hosta Butte is perhaps the most prominent feature to the SW as seen from Chaco Canyon’s rim and may be associated with the terminus of the South Chaco Road (figure 16).

The religious rationale for creating cross axes to accompany the coincidental Wilson meridian (and Haystack axis), in the 2002 paper, was taken as a need to move cross symbolism from Kin Bineola’s coincidental focus to the evolving Chaco Canyon center, integrating it more closely with the Wilson meridian. The dating of the Chaco cross was felt to be part of the major 1000’s, early 1100’s activities, most evident by the number of large great houses built or remodeled. Subsequent understanding of the plateau’s western frameworks, however, suggests that Chaco X might also or preferably be seen as an earlier structural compliment to the Ganado cross. One element of the Chaco cross which might well have been added during in the 1100’s, or later, and was diagrammed in Doxtater 2002, is the accurate line from Chaco X, through Haystack, down to the later ritual and signaling site of Cerro Moctezuma (Swanson 2003), adjacent to Paquimé. While working on the 2002 paper, the author was aware of a second cross intersection point sitting very accurately as a more northern feature of the line from Chaco X - Haystack (and later Cerro Moctezuma). This point didn’t make temporal or cultural sense because it is the intersection of the Navajo cross formed by Humphrey’s Peak – Blanca Peak and Hesperus Peak – Mount Taylor.

Personal conversation and a subsequent blog from Steve Lekson discussing a populous 800’s site farther north, “Ridges Basin” (preliminary report in Potter & Chuipka 2007) --as an additional point on his loosely cardinal “Chaco Meridian” combination--led to the inclusion of the site in recent analyses. The location of the ceremonial focus of the area, a modest rise in the basin called “Sacred Ridge” (figure 10), interacts with a moderate accuracy, as shown in the appendix, in a line including the Navajo cross point, Chaco X, Haystack, (and Cerro Moctezuma). This suggests reinterpreting the “Navajo” point as something much earlier than their initial incursion into Anasazi landscapes in the 14th or 15th century, around the triangle formed by the San Juan and Animas Rivers. The Navajo today call this area “Totah”, topical in recent archaeological work looking more closely at the huge complex of 1000/1100’s (and later) building at Aztec and the singular great house/great kiva of Salmon (Reed 2008).
Figure 10. Second major axis mundi in the East, the north-south duality between Chaco X and Totah X in the East; northern community termini of Totah at Grass Mesa and Sacred Ridge (top).
While there is little evidence of any major ceremonial construction in PI Totah, the idea of “Totah X” might be taken as a kind of logical equivalent to the northern focus around Comb Ridge, and at the same time pairing up with the southern Chaco center and its cross, just like Ganado does with its vertical partner in the west. Interpreting Totah X, however, becomes more complicated in the discovery of an additional line connecting the eventual Aztec complex center point, precisely on the Mount Wilson meridian, with Totah X. Not unlike the large populated area of Sacred Ridge in relation to the Totah X – Chaco X – Haystack line, this apparent axis runs north to the population surrounding the very large PI great kiva and village called “Grass Mesa” (Lipe et. al. 1988). Its southern terminus is the natural feature of Cabezon, the highest volcanic butte in the area.

In thinking about how the Chaco and Totah crosses could have been laid out together, surveyors would likely have discovered some coincidence of pattern that was incorporated into the ritual landscape. The Chaco cross point was straightforward. Then, assuming a previously established Casa Rincoña and Haystack, its line to Chaco X could have been prolonged up to intersect with the long Humphrey’s Peak – Blanca Peak line (607.582 km). If the coincidental cross at Canyon de Chelly had been surveyed (or was part of creating Totah X), then the power of this axis might well have precipitated the location of Totah as sacred Anasazi area. The fact that these two lines establish the Totah X point raises questions about its other two axes. Totah and Cabezon might have been prolonged north to create the Aztec point (where it intersects with the Wilson meridian) and Grass Mesa. Some coincidence exists here in that topographically, as seen in figure 10, this line ends at the tip of the peninsula confluence of the Dolores River and Beaver Creek (recently submerged by a dam). The establishment of this point would have been similar to the prolongation of the major dual cross line up to create the focus, and perhaps community around Sacred Ridge.

Missing at this stage of the layout is a kind of middle axis between Grass Mesa and Sacred Ridge (assuming the Mount Wilson meridian was part of something at the larger scales of east (with Chaco) and entire plateau (paired up with Abajo Peak axis). While Hesperus Peak can be seen from the Grass Mesa community, and is just behind Babcock Peak in terms of visibility from Sacred Ridge, its accurate intersection with Totah X as a three point alignment to Mount Taylor would have been coincidental. Both Chaco and Totah crosses are created by major natural features, and their intersection points align with a ninth natural feature, the high point of
Haystack Mountain at the very accurate average deviation of 0.011°. Anasazi surveyors might have discovered this coincidental fact either before or after the prolongation of the two Totah cross axes to Grass Mesa and Sacred Ridge. It seems likely, however, that the northern cross was completed sequentially after creating the point itself by intersecting Haystack-Chaco X and Humphrey’s Peak – Blanca Peak. The depopulation of these two northern areas by 900 or earlier obviously creates interesting questions about later architectural and probable ritual emphasis on these points.

**MIDDLE: a mediating vertical between West and East**

Each of the two hemispheres of the plateau may well have had triadic *axis mundis* at their respective scales of symbolic landscape and probable ritual: Comb Ridge/Ganado/Abajo and Wilson-McCarty’s/Haystack-Rincoñada/Chaco X-TotahX. At the scale of the Anasazi “world” itself, one would logically find a triadic vertical at least attempting to integrate the perhaps more aboriginal West with an emerging East. This construct might not have been laid out after the Basketmaker III or PI organization on both sides, especially considering Ganado and the two eastern crosses, but at the same time, perhaps socially facilitating development of a commonly practiced plateau wide religion.

The idea of “parallel” universes, and a mediating middle axis, was floated in an early piece describing a vertical four point line anchored on the majestic volcanic plug called “Ship Rock” (Doxtater 2003). In this paper, the north and south poles of the Ship Rock axis were formed by the Chacoan outlier sites of Lowry and Village of the Great Kivas, with an aligned additional interim site of Tohatchi, see figure 11. While the position of VGK was defined as in part created by its position on a line from Baldy Peak through Kin Bineola X up to Chimney Rock (one of the Kin Bineola X axes), Lowry, for its part was assumed to have been positioned by some variety of bisect angles. Later work largely discounted this assertion after understanding the very high frequency, much more so than three-point alignments, of random points between such “bisect” foursomes (a vertex point and lines to three equally angled distant points). The alignment of Tohatchi, a Basketmaker III great kiva village, remained unexplained in the context of the Chacoan structures built on Lowry and VGK during the 1000/1100’s.

Much more recently, the inclusion of the Comb Ridge sites provided a key missing element in the location of Lowry, i.e. as part of the described great line to Sipapu. Considering
the early dates of the Kachina Panels, Rincon and even Bluff (Cameron 2009), the Basketmaker III or PI community around Lowry (Kendrick & Judge 2000), might well have participated in creating the northern end of the middle axis, even though the great kiva at this point wasn’t built until the latter part of the 1000’s (Martin 1936). Thus we have diagonals from undoubtedly powerful features like Sipapu and Baldy Peak that provide respectively for Lowry and VGK one line each for their locations. But given the apparent symbolic need to run the vertical through Ship Rock, what created its four degree angle and the final positions of the two poles sites? The
Figure 12. Site analyses of orientation features at Lowry and Village of the Great Kivas.
modest, yet singular butte on which Tohatchi Village sits provides one rationale, particularly if it was located as part of both the middle axis and the eastern terminus of Ganado’s SW-NE line from Humphrey’s Peak. The angle of Ship Rock’s radiating ridge, a few degrees off and similar direction to the surveyed axis, may have provided additional symbolic resonance to the design.

Some of the best evidence for the pairing up of Lowry and VGK comes from the site layout, architecture and other built features occurring in the peak Chacoan period. The upper great house and great kiva at VGK are actually built in the early 1000’s (Roberts 1932), about the same time as the possibly first formalized great house in Chaco, Hungo Pavi. The lower and unexcavated great kiva at VGK, figure 12, might have been earlier. The angle between the centers of the two great kivas mimics that of the Ship Rock axis itself. The front walls of the lower great house orient, for their part, quite accurately to Baldy Peak, expressing VGK’s location on its axis to Kin Bineola (great kiva) and Chimney Rock.

Most architecturally interesting, at least considering the author’s professional design background, is the similarity of plan layout between the lower VGK great house and the more prominent, excavated western great house at Lowry. In addition to this dualistic symbolism between south and north poles of the Ship Rock axis, the (sun shot) azimuth of Lowry’s stabilized great house varies from its southern partner, but remarkably also points accurately to Baldy Peak (at Lowry’s higher latitude). Like VGK, the Lowry community also builds a pair of great houses, but in a more west-east disposition. Using the GPS positions of the ends of the three prehistoric road segments radiating out from the western great house at Lowry (BLM data), the great house pairs are connected by a road feature orienting very accurately to the visible Mount Wilson. The middle of the three road segments is about two degrees from mimicking the Ship Rock axis, off perhaps because many of these lines were surveyed two or three hundred years earlier and weren’t resurveyed at the time of major great house/great kiva construction. The third road at Lowry accurately reproduces the orientation of the Baldy Peak – VGK – Kin Bineola – Chimney Rock axis (not involving Lowry’s position). This segment would have required the services of priest surveyors.
THE ARCHITECTURALIZATION OF THE EAST AND THE GREAT NORTH ROAD

Keepers of the Cross: Hungo Pavi and Salmon/Aztec

While three organically formed great houses had been built in Chaco Canyon as a triad relating to Casa Rincoñada’s location in the early 900’s, see figure 19, following Lekson’s dating of great houses (1984), the first architecturally formalized structure could have been Hungo Pavi in the

Figure 13. “Keepers of the Crosses”: plan similarities of Hungo Pavi and Salmon.
first decades of the 1000’s, figure 13. Not unlike the less commented on plan relationship between great houses at VGK and Lowry, archaeologists recognize common design goals in Hungo Pavi in the south at Chaco, and Salmon to the north in Totah. Hungo Pavi, for its part lies
1,006 meters due east of Chaco X and possesses the most accurate cardinally oriented (north-south) wall of all the larger great houses in Chaco Canyon and beyond, figure 14. The wall faces the intersection point. As discussed in Doxtater (2002), Chaco X sits somewhat symmetrically to the east of the “mini-meridian” that runs from Pueblo Alto on the north rim to Tsin Kletzin on the south rim. The orientations of the larger back walls of these two great houses, while about one degree off being perpendicular to true north, are nevertheless much less accurate than Hungo Pavi’s west wall.

That Hungo Pavi not only expresses some religious function concerning Chaco X, but the Pueblo Alto – Tsin Kletzin meridian as well, may be evident in Pavi’s back wall orientation. It very accurately mimics the bisect angle from Chaco X to the “gate” points (midway between Pueblo Alto and New Alto) of the meridian. The reason why Hungo Pavi is located where it is on the due east axis from Chaco X, could be its cardinal relationship to the northern terminus of the Chaco X – Totah X line, Sacred Ridge. It should be evident from the diagrams of figure 14, however, that three major vertical axes were understood in the canyon: the Wilson meridian running through Pueblo Peñasco (adjacent to 29SJ423) on the western edge; the mediating mini-meridian from Pueblo Alto to Tsin Kletzin at the ritual focus or center; and the eastern Sacred Ridge – Haystack axis passing through Chaco X, adjacent to Hungo Pavi. The fact that the two west and east axes of this symbolic triad accurately extend south to meet at the ceremonial signal peak of Cerro Moctezuma has been mentioned (see appendix).

Up in the Totah triangle, what cross did Salmon keep, located as it is some 9.893 km west of the intersection point? The Salmon great house and great kiva were built slightly before the giant Aztec complex began (early 1100’s). If the Totah X point had been laid out centuries earlier, in the time of Sacred Ridge, then its non-architecturalized ritual use might well have fallen into some disuse. Furthermore it had been about a century since Hungo Pavi had been located in relation to Chaco X. Yet Salmon’s plan clearly speaks to the same intent as Hungo Pavi’s. Perhaps the first cross to be religiously embellished by this great house architecture was not Totah X, but the intersection point of the Wilson meridian and the longest and perhaps initiating axis of Totah, the line from Humphrey’s Peak to Blanca Peak, figure 15. Salmon’s position lies at a respectful distance from each of these lines, not unlike Hungo Pavi’s location in relation to Chaco X. Salmon’s back wall quite accurately orients to Blanca Peak, and otherwise roughly parallels that major cross axis. Site investigation errors notwithstanding, the centers of
Salmon’s two kivas align very accurately to Hungo Pavi (whose pair of kivas align to Kin Ya’a, an important Chacoan outlier to the southwest of Chaco and likely terminus of the great south road).
If Salmon’s relationship to Totah X seems less explicit than Hungo Pavi’s, the same cannot be said about the location of the organizing central kiva of the Aztec complex. Initially diagrammed by Stein and McKenna (1988), the formal site layout canters curiously to the southeast, unlike the clear cardinal framework and building orientations at Chaco: Pueblo Bonito, Pueblo Alto, Tsin Kletzin and Casa Rincoñada. The reinterpretation of the Navajo cross as Totah X now explains why. First of all, even bolder than Salmon, the Aztec centroid sits very accurately on the line from Peñasco Blanco to Mount Wilson. The second most important line, creating its position on the meridian was apparently the Grass Mesa – Cabezon axis of Totah X. This is clearly evident by the strong site axis from the central kiva point between the two West and East great houses up to the North great house on the terrace above. The prehistoric road segment that runs from below to beyond Aztec North reinforces the overall site orientation.

The Great North Road

Archaeologists agree that the prehistoric north road, in places a dualistic pair of features, is a wholly symbolic construct facilitating some sort of religious practice between Pueblo Alto on the north rim of Chaco Canyon’s center and the Aztec complex. Its general north-south alignment,
as an *axis mundi*, helps confirm this accepted definition. The south road from Chaco, on the other hand, angles considerably to the southwest, connects only to smaller outlier sites, and thus receives less interpretative interest. But to all who have looked closely at the pieces of built roadways, north and south, e.g. attaching lat/long positions to Kincaid’s (1983) mapped sections and checking for consistent overlaps of alignments with Geopatterns software, these roads were apparently not surveyed. Sofaer (et.al. 1989:3) summarizes the route of the north road thusly:

“From there (Pueblo Alto) the road runs 13 degrees to the east of north for 3 km to Escavada Wash. It then heads within 1/2 percent of true north for 16km, where it articulates with Pierre’s Complex, an unusual cluster of small buildings on knobs and pinnacles. The road then heads close to 2 degrees east of north for 31 km and ends at Kutz Canyon. It appears to terminate at three small, isolated sites, and a stairway recently located by the Solstice Project (Marshall and Sofaer, 1988) that descends from the Kutz Canyon escarpment to the canyon floor.”

Copeland (2012), an archaeologist with the BLM in Farmington, NM (Totah area) and their expert on prehistoric roads, has recently added information about the layout and ritual use of the north road, in conclusion suggesting cautiously that the only symbolic reason for its less than precise cardinal layout might be similarities to the cant of the Milky Way. Most interesting in this work is the additional mapping of diversely oriented road segments and documentation of the ritual breaking of pots that occurred along these ritual avenues. The linear scatters of sherds are so extensive that they have become a greater indicator of roadway than actual berm features themselves. Scatters cannot of course be discerned at the scale of Copeland’s map, figure 16, but the reader can make out the kinky route between the two centers. Because the stairway that Sofaer et. al. (1989) discovered is not a Chacoan house structure it is omitted from his map. Yet he is aware of a possible house site, called “Arena Alta”, in the sand mounds right adjacent to the stair (personal conversation); he provided a map of this site for the present work.

Doxtater (2002) argued that a surveyed line of pilgrimage entry to the canyon ran from Pierre’s Butte (see extensive survey in Powers et. al. 1983:95) accurately through the “gate” between Pueblo Alto and New Alto on the North Rim, and down to Casa Rincoñda. It was recognized that Pierre’s Butte formed a meridian with Haystack. The outlier sites of Halfway House and Twin Angels did not calculate to be accurately part of this construct. When recently adding the stairway point into Kutz Canyon, things fell further into place. Using the points of the actual roadway at Pierre’s Butte, at Halfway House and at Arena Alta (stairway), they not
only align extremely accurately among themselves, but to the Alto Gate and Casa Rincoñada (numbers provided in figure 17). Twin Angels, for its part, lies precisely on the line from the Aztec centroid to Arena Alta. While the road position at Pierre’s Butte is most accurate as a cardinal from Haystack, the Twin Angels site would have had to have been located in the wash to be on this line. As shown also in figure 17, surveyors chose to preference the other line from Aztec to Arena Alta locating the site up on the south rim of Kutz Canyon.

![Alignment of Pilgrimage Points](image)

**Figure 17.** Location of Twin Angels great house in relation to intersection of Haystack meridian and Aztec CK - Arena Alta (stair) line; accuracies of three point alignments of great north road intersection points (above).

The final realization about the great road route came in understanding why the stairway was located as far east as it was. It lies accurately on the cardinal from the northern pole of the great line of Chaco X and Totah X, Sacred Ridge to Hungo Pavi in Chaco Canyon, figure 18. Thus, not unsurprisingly, there are three meridians expressed in the road layout: Mount Wilson –
Figure 18. Great North Road pilgrimage route integrating three Eastern *axis mundi*.
McCarty’s, Haystack (and Casa Rincoñada), and an eastern component from Sacred Ridge. The pilgrimage route is comprised of two simple lines. The first begins in the west, crossing the Middle at Twin Angels, moving to the east stair. Then the procession to Casa Rincoñada turns westward down to Halfway House at the intersection point with the Chaco X – Totah X line itself, to Pierre’s Butte on the Haystack cardinal, and then down through the Alto Gate. The complete return to the western meridian might have been symbolized in the position of Casa Rincoñada on the Haystack – Mount Wilson line.

What we hadn’t been able to realize in this relatively narrow corridor of sites of the great north road, is that the positions of the road at symbolic intersection points was clearly laid out by priest surveyors. The actual building of road segments, perhaps by pilgrim groups themselves across different years in the late 1000’s/early 1100’s, was not; they only needed to connect to the intersection points where structures were built and undoubtedly specific alignment related rites were performed.

TOWARD AN INTERPRETATION OF ANASAZI LANDSCAPE FRAMEWORKS

Why would the Chacoan Anasazi architecturalize and ritualize apparently earlier patterns that focus on sites—Grass Mesa and Sacred Ridge—depopulated for some two hundred years? Is this part of a religion founded in the early development and layout of plateau frameworks? In the late expression that was the Great North Road, pilgrims might have begun at Aztec, symbolizing first of all the Basketmaker III duality between Western and Eastern hemispheres, and in particular Aztec’s relation to the Wilson Meridian. Then, still at Aztec, but within the Eastern side itself, the large ancestral community around Grass Mesa might have been emphasized for its “Western” heritage (Aztec lies to the west of Casa Rincoñada as does Pueblo del Arroyo and both can be linked through their unique tri-wall kivas).

The first logical stop for the pilgrims, as mediating threshold to the East, would be at the Middle, i.e. Twin Angels and the Haystack meridian. Then movement to the Eastern meridian associated with Sacred Ridge and Hungo Pavi would in effect add these ancestral spiritual powers, creating a duality of participants as they turned down toward Casa Rincoñada. Much of the road is comprised to two files from this point on. The creation of the Arena Alta stairway location—and the azimuths to Aztec and Casa Rincoñada—might have been part of the positioning of the mini-meridian axis (Pueblo Alto and Tsin Kletzin) and Alto Gate relative to a
pre-existent Casa Rincoñada. The location where the Sacred Ridge – Hungo Pavi meridian strikes the southern rim of and entrance to Kutz Canyon appears to create the survey point for the two route lines and the location of Chaco’s mini-meridian.

Additional importance to this key pilgrimage point seems to have existed in the way the primary pilgrimage road (there is much less documentation of roads in Kutz canyon) begins at the stairway with its association to Sacred Ridge. The intersection of the major pilgrimage route and the great “X” axis at Halfway House further suggests additional religious and political weight to the Eastern axis. This emphasis, however, is logical considering how the “X” axis organizes both Totah and Chaco crosses, ultimately embracing most of the major sites and areas of the East, even Grass Mesa. The extension of this line to Cerro Moctezuma must also be considered in its symbolic importance, though its dualistic partner, the Wilson Meridian does so as well. Yet in comparison, the Wilson axis mundi organizes less within the scale of the East, per se, then on the southern plateau as a whole. This, presumably, would all be part of pilgrimage “origin” rites. Nevertheless, the fact that the turn at Arena Alta is on the Sacred Ridge – Hungo Pavi meridian, and not on the “X” axis itself speaks to a certain dominance of Chaco X and Sacred Ridge over Totah X (and Grass Mesa area) raising questions about possible integrative motives for the Aztec to Chaco pilgrimage.

Pilgrim rites at Pierre’s Butte might well have been conducted by priests of the Middle, given the road location here precisely cardinal north of Haystack. Expression of the Haystack meridian might effectively have set up the efficacy of mediation by Middle people in climaxing rites in the canyon itself. The Alto Gate and mini-meridian could have been a smaller scale replica of the Haystack cardinal. At both scales, Casa Rincoñada is similarly situated slightly to the west (on the Haystack – Wilson line). Rites at Pierre’s Butte could have begun the process of miniaturizing actual ritual routes in the landscape in preparation for the now architecturalized “cosmos” in the canyon. The next aligned road feature after Pierre’s Butte is the Alto Gate with its scaled down cardinal equivalence. Who were the Middle people, presumably having greater ritual influence with Pueblo Alto/Tsin Kletzin, Pueblo Bonito, Pierre’s Butte and even Casa Rincoñada itself? Was this the large population around Haystack Mountain in the Red Mesa Valley?

But these possible socio-political relationships come only from the eastern side of the plateau and its triadic connections. Was the origin ritual of the Great North Road so persuasively
expressed from Aztec to Chaco that it appealed as well to people from the western and middle regions of the plateau? They, after all, had possibly been just as involved early on, perhaps even more so, in the creation of the triadic symbolic and ritual basis of their belief. Did they fully participate in respective West, Middle and East activities of elaborate facilities at Chaco and Aztec?

It is possible that long before the architecturalization of sacred intersection points, most dramatically in the east, the Anasazi frequently traveled to important locations, both natural features and great kivas, as part of an integrating large scale framework. The symbolically defined and ritually experienced landscape was the religion, enabling a relatively peaceful domestic mobility and other exchange in a climatically challenging environment. The later building of miniaturized cosmos’ as great houses, great site complexes (figure 19) and similarly structured reenactments of their religious history—ritual as origin myth—may have represented an increasingly competitive, incipient rhetoric to the fundamental way the religion had worked for centuries.

It is unfortunate that researchers have been naturally drawn first to this rhetoric, i.e. the apparent symbolic, mostly orientation aspects of great kivas, great houses, and great roads. Not only might these elements be quite late in terms of an ancient plateau religion, but their “cosmic” inferences remain less convincing because of their lack of integration with larger scale symbolic frameworks. Wills (2012) offers a necessary critique of current assertions about cosmic symbolism of a “world tree” in Pueblo Bonito, great house wall orientations, the Great North Road, and as a single example of possible surveying, Lekson’s “Chaco Meridian”. The author’s earlier paper on “parallel universes” (2003) is included in the introduction, but without specific comments. Missing here is a discussion about technical abilities of Anasazi surveying. In conversations with Steve Lekson, it is clear that he feels the kind of accuracy seen in the present paper would not have been valued by pre-scientific Puebloan people, even though many of their great houses clearly exhibit remarkably precise design skills. Most archaeologists would seem to agree, leaving us with the notion that even if they were surveying, accuracies would be in the range of one or two full degrees, not unlike the tolerances assumed by archeoastronomers.

This question is hugely important. The clear, elegant logic of the intersection points and their structures of the Great North Road depends on understanding Anasazi surveying at
Figure 19. Triadic expression at plateau, center complex (Aztec and Chaco), and great house scales (Pueblo Bonito).
quite precise accuracies. Furthermore, the same accuracy has been shown to make understandable related, larger scale symbolic patterns at scales of the two hemispheres and the southern plateau as a whole. Considering the cosmic meanings of small scaled architectural elements, in the absence of the founding landscape frameworks, obviously invites greater speculation about religious meaning and effect. It is essential for archaeologists to incorporate serious research about surveying into their discourse, leading to a much more precise mapping of site location. Testing existing patterns against random phenomena will also be essential.

The interpretation of symbolic objects and their spatial context is part of a much larger theoretical concern. Even though discussed thirty years ago (Doxtater 1984), symbolic anthropology still largely lacks significant spatial theory, often giving preference to linguistically based expression. Not unlike structuralist thinking of the 60’s and 70’s, spatial structures tied intimately to actual ritual practice are seldom distinguished from organized symbolism flowing through more “discursive” channels of language, particularly myth and folklore. Ortiz, as mentioned, and even Eliade both saw language as the primary medium for putting symbols together. The culprits mentioned by Wills, perhaps, also seek some sort of mythically mediated “cosmic” explanation of architectural or landscape features. As Roy Rappaport once said in seminar, the reason ritual has a greater social and experiential power, over other more fluid forms of symbolism, is in its inability to support a “lie”. While it is quite possible that in Historic Pueblo societies myth played an important cosmological role, in earlier times, however, frameworks of most significant natural features and ceremonial sites, and their ritual practice, may well have been much more primary to religious process and social organization.

The perhaps overly systematic, increasingly rhetorical, triadic Anasazi religion began to break up shortly after the great north road was laid out and pilgrims had practiced for a few decades. Yet even in the aftermath of the Chacoan decline, remnants of the old landscape religion can be found in the locations of the three major Historical Pueblo tribes, more testimony to the likelihood that the architecturalized religious practices of the east were part of, or at least descendant from, larger plateau frameworks. Figure 20 illustrates that the Hopi, squarely on the Humphrey’s Peak – Blanca Peak line (and even the Navajo) might have thought of themselves as descendants of West traditions. The Rio Grande groups, with San Juan as the “Mother Pueblo” located their religious focus precisely due east of Casa Rincoñada as East (recalling the
Rincoñada related asymmetry of the principal entry route into the canyon from Sacred Ridge). The Zuñi, known as the “Middle People”, located their central village due south of Ship Rock, the middle of middles at the scale of the plateau.
### Appendix 1: accuracies of three point alignments discussed


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5. Sipapu – Rincon – Kachina Panel – Bluff – Lowry

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<td>Baldy – VGK – Chimney Rock</td>
<td>0.058</td>
</tr>
<tr>
<td>Baldy – Kin Bineola – Huerfano</td>
<td>0.048</td>
</tr>
<tr>
<td>VGK – Kin Bineola – Huerfano</td>
<td>0.051</td>
</tr>
<tr>
<td>[Baldy – Kin Bineola X – Chimney Rock (constructed)]</td>
<td>0.007</td>
</tr>
<tr>
<td>[VGK – Kin Bineola X – Chimney Rock]</td>
<td>0.046</td>
</tr>
<tr>
<td>[VGK – Kin Bineola X – Chimney Rock Great Kiva]</td>
<td>0.063</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Alignment</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lowry – Ship Rock – Tohatchi</td>
<td>0.028</td>
</tr>
<tr>
<td>Lowry – Ship Rock – VGK</td>
<td>0.057</td>
</tr>
<tr>
<td>Ship Rock – Tohatchi – VGK</td>
<td>0.068</td>
</tr>
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</table>

4. Grass Mesa – Aztec CK – Totah X - Cabezon

<table>
<thead>
<tr>
<th>Alignment</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grass Mesa – Aztec CK – Totah X</td>
<td>0.074</td>
</tr>
<tr>
<td>Grass Mesa – Aztec CK – Cabezon</td>
<td>0.037</td>
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<tr>
<td>Grass Mesa – Totah X – Cabezon</td>
<td>0.026</td>
</tr>
<tr>
<td>Aztec CK – Totah X – Cabezon</td>
<td>0.040</td>
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</table>

3. Mount Wilson – Casa Rincoñada – Haystack

<table>
<thead>
<tr>
<th>Alignment</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mount Wilson – Casa Rincoñada</td>
<td>0.011</td>
</tr>
</tbody>
</table>

3. Ganado – Casa Rincoñada – Wheeler Peak

<table>
<thead>
<tr>
<th>Alignment</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ganado – Casa Rincoñada</td>
<td>0.027</td>
</tr>
</tbody>
</table>
Ganado Cross

Sipapu – Ganado – Mount Taylor 0.039
Baldy Peak – Ganado – Cottonwood Falls 0.014
Humphrey's Peak – Ganado – Tohatchi 0.037
Humphrey's Peak – Ganado – 560 0.023

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