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Ben A. Nelson
Stephen H. Lekson
Ivan Sprajc
Kenneth E. Sassaman

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The kiva is the earthly representation of the original, primordial home under the lake (Ortiz 1969:37)

Abstract

One of the great challenges of archaeology is to develop principles that relate changes in social complexity to ideological change. This paper considers how people in four regions – Mesoamerica, Northern Mexico, the U.S. Southeast, and the U.S. Southwest, shaped space in their settlements and configured cultural images of space in the environment on the earth’s surface and beyond, according to local visions of cosmology. Using specific examples, we explore the thesis that indigenous peoples of the Americas kept themselves continuously poised for environmental circumstances that changed seasonally, annually, and on longer time scales by materializing cosmological visions in built space. While conceiving the cosmos as controlled by deified celestial bodies, people shaped space, including built and natural spaces as well as the environment on the earth’s surface and beyond, in accordance with their cosmological visions. They considered themselves responsible for collaborating with the deities to assure socioecological stability and human well being. Built spaces provided powerful venues for regular reiterating sacred propositions. The assumptions underpinning cosmological relationships sometimes changed because they were seriously contradicted by emergent social or environmental circumstances, and these changes were ultimately registered in architectural forms and other material products. Archaeological evidence of such changes is found in practices of moundbuilding, changes from pit house to pueblo architecture, shifts from calendrical to cardinal orientation, and many other phenomena. As the examples in this paper show, the four regions offer intriguing examples with which to experiment theory-building about the relationships between cosmology and social complexity.

Introduction (Nelson)

If we are to understand the evolution of human social complexity from the archaeological record, exploration of preliterate and preindustrial cosmology is essential. Such exploration allows effective understanding of societies’ engagements with their environments and enhances the reading of ancient social complexity itself. Archaeologists used to aspire to acontextual generalizations about these issues but now value the particulars of lived experiences and cultural perceptions and practices. For example, even though it is clear that climatic change and deforestation contributed to the Maya cultural transformation (“collapse”) ca.
A.D. 900, several aspects of the epigraphic and geographic data are incompatible with the proposition that these ecological issues were the only causes (Robichaux 2002). Scholars have suggested that ideological failures, such as the inability of rulers to keep populations persuaded as to their own effectiveness as divine agents, were important causes as well (Schele and Friedel 1990; Schele and Miller 1986). If we were interested only in the physical impacts of humans on the environment, cosmology might have no particular relevance. But if we are interested in how humans draw conclusions about their own possibilities (for example, how societies make bad decisions even when they have good information, or why individuals sometimes subordinate their own interests to those of a larger group), it becomes critical to understand the cultural filters through which information passes on its way to becoming data for decision-making.

The purpose of this paper is to explore some examples from Mesoamerica, the U.S. Southeast, and the U.S. Southwest that built spaces (architecture, public and domestic), the physical environment, and the cosmological visions of different, related peoples. Our thesis is that indigenous peoples of the Americas kept themselves continuously poised for environmental circumstances that changed seasonally, annually, and on longer time scales by materializing cosmological visions in built space. In other words, people shaped space, including built and natural spaces as well as the environment on the earth’s surface and beyond, in accordance with their cosmological visions. Further, the assumptions underpinning these socioenvironmental relationships sometimes changed because they were seriously contradicted by emergent social or environmental circumstances, and these changes were ultimately registered in architectural forms and other material products.

We suffer no illusions about the difficulty of making reliable inferences about such topics. Yet, our interest in the relationships among cosmology, built space, and the environment – for some purposes better conceived as landscape – is owed to the close relationship among these phenomena as cognized by indigenous peoples in the New World. Some sense of the structure of these relationships is revealed in the quote above, which places humans, architecture, and the environment in a metaphorical relationship that fuses architecture with environment and implies the orientative functions of architecture with respect to the cosmos. What the quote does not immediately disclose to the Western mind, but what seems central to indigenous American cosmologies, is that environmental components such as mountains, the sun, and certain stars and planets are considered to be alive. Moreover, humans are obligated to submit to and collaborate with those living entities in order to continually reproduce a liveable world. The companion paper by Schaafsma et al. examples of the personified morning/evening star, which show how cosmological “beings” are woven into propositions about the sky, the earth, and human existence.

Architecture, in turn, provides an everyday setting for reinforcing the “ultimate sacred propositions” (Rappaport 1979) and the unquestioned “doxa” (Bourdieu 1990) that structure social and environmental relations. Architecture
sometimes embodies these propositions in fairly direct ways. For example, Donley-Reid (1990) shows that the *doma*, the most secluded part of the multi-roomed, coral houses of Swahili traders, is furnished with explicit indices of power relations along lines of ethnicity, wealth, and gender. The arrangement in part symbolizes the exclusivity toward the local African-descended population, whose houses have no internal segmentation and are made of mud. In some cases the symbolism is less direct, as in the case of the equation of “north” with “up” or “sky” in the layout of Classic Maya settlements in the southern Maya Lowlands (Ashmore 1991). Sugiyama’s analysis of the calendrical significance of monumental spaces in Teotihuacan leads him to conclude that “the state government created an earthly microcosm where heavenly space and divine time were fused” (Sugiyama 2004:105). Inomata (2006) integrates the cosmological perspective with the pramatic, arguing that Mayan ceremonial sites were performative spaces in which rulers theatrically linked themselves with powerful cosmic forces. His interpretation follows the statement by Carrasco (1982) that Maya pyramids symbolized sacred mountains. Sometimes the cosmological symbolism of architecture is obscure to all but local actors, as in the Berber house described by Bourdieu (2003), which is divided into areas of male and female, light and dark, reproduction and death, inside-related and outside-related, and so on. Architecture frames the behaviors of everyday life and through cultural attribution, continually orients actors and shapes social and environmental relations. Yet as Lekson indicates below, architectural forms sometimes change rapidly, possibly indicating fundamental changes in everyday practices and in the cosmology that underpins them. Such changes may register failures of credibility in the systems of symbols and action that were once counted upon to assure social and environmental stability.

Our training as Western scientists prepares us poorly for grasping these “exotic” tenets. This ideological gap leads to a tension among scholars about how to effectively approach questions relating to cosmology; these tensions are reflected in the different contributions to this paper. Some scholars believe that the data themselves will inform us of important ideological shifts. For others, only cautious synthesis of ethnographic, art-historical, epigraphic, ethnohistoric, and archaeological evidence is likely to identify principles so foreign to our own thinking. While ethnographic analogy harbors significant risks, archaeologists and philosophers of science have developed safeguards against some of the common fallacies (Wylie 1985). The following examples from different parts of the Americas illustrate the feasibility and potential of understanding cosmological expressions in architecture and landscape features. Discontinuites in prehistoric sequences and discrepancies between prehistoric, colonial, and postcolonial architectural forms can be highly informative as to social transformations and the role of cosmology in them. The built environment and the culturally constructed landscape are fertile fields for testing various approaches to comprehending the role of cosmology in social change.
One is tempted to think of built spaces and humanly modified landscapes as direct expressions or reflections of cosmological principles, but in many cases it may be more accurate to say that these spaces constitute settings that petition people to accept those principles. In societies without codified law, right social action is encoded in ritual acts and ratified individually by submission, perhaps often unenthusiastically, to participation in ritual. Aztec codices such as the the Florentine (Sahagún 1950) document complex rounds of occasions such as feasts, processions, reenactments of mythological events, oration, sporting events, human sacrifice, and investments, all of which implicitly recruited subjects to acknowledge simultaneously their dependent role in a fragile cosmos and their allegiance to and status in a powerful and protective state. Monuments such as pyramids, causeways, and plazas were decorated with iconography that helped to fuse the cosmological and social order, and ritual acts at monuments were reinforced by bodily compliance (eating, moving, supplicating, witnessing environmental events such as predicted eclipses). The act of monument building itself must not be left out of these actions, as it, too, constitutes implicit submission to and identity with the social order (Clark 2004a). To say then that cosmology affected history may sometimes be correct, but . We return to this subject after exploring relationships between cosmology, the built environment, and the landscape in Mesoamerica, northern Mexico, the American Southwest, and the U.S. Southeast.

Mesoamerica (Šprajc)

Astronomy and cosmology had a paramount role in Mesoamerican architectural and urban planning. Systematic research carried out during the last few decades has revealed that the most important civic and ceremonial buildings were oriented largely on astronomical grounds, particularly to the Sun’s positions on the horizon on certain dates (Aveni and Hartung 1986, 2000; Aveni 2001, 2003; Galindo Trejo 1994; Šprajc 2001a, b; Tichy 1991). The earliest orientations refer to solstitial sunrises and sunsets, probably because the solstices, marked by easily perceptible extremes of the Sun’s movement along the horizon, must have been the most elementary references for orientation in time. The importance the solstices had since remote times seems to be reflected not only in orientations but also in the concept, apparently pan-Mesoamerican, that the corners and bearers of the sky are located at the four solstitial points on the horizon (Milbrath 1999:19; Šprajc 2001a:281).

The solstitial orientations are not limited to the early periods of Mesoamerica; in later times, however, more complicated orientation principles began to prevail. Recent studies in central Mexico and in the Maya area have shown that the alignments allowed the use of observational calendars composed of calendrically significant and, therefore, easily manageable intervals: the intervals separating the sunrise and sunset dates recorded by orientations at a particular site tend to be multiples of 13 or 20 days, i.e. basic periods of the Mesoamerican calendrical system. The correspondence between the most frequently recorded dates and the
crucial moments of the cultivation cycle suggests that the observational schemes, reconstructed for a number of sites, served for predicting important seasonal changes and for an efficient scheduling of the corresponding agricultural and associated ritual activities (Aveni and Hartung 1986; Aveni 2003; Šprajc 2001b, 2008; Šprajc, et al. 2009). It should be recalled that the Mesoamerican calendrical year of 365 days, due to the lack of intercalations, did not maintain a perpetual concordance with the tropical year of 365.2422 days; direct astronomical observations were, therefore, always necessary. Additionally, at least for central Mexico it has been shown that many important civic and ceremonial buildings were not only oriented to the Sun’s positions on certain dates, but were also built on carefully selected places that allowed some prominent mountain peaks on the local horizon to be employed as natural markers of horizon calendars: the sunrise and sunset dates corresponding to both architectural orientations and conspicuous horizon features at a particular site tend to be separated by calendrically significant intervals. Both types of alignments marked not only agriculturally critical moments of the year, which could thus have been determined by means of direct observations, but also some other dates that must have had an auxiliary function: if the observational schemes were composed of elementary periods of the formal calendrical system, it was relatively easy to anticipate the relevant dates, knowing the structure of a particular observational calendar and the mechanics of the formal one. Particularly important for these purposes must have been the 260-day calendrical count, in which the cycles of 13 and 20 days were intermeshing, so that every date had a name composed of a number from 1 to 13 and a sign in the series of 20. Given the structure of this calendrical count, the sunrises and sunsets separated by 13-day intervals and their multiples occurred on the dates with the same numeral, while the events separated by periods of 20 days and their multiples fell on the dates having the same sign (Šprajc 2001b).

This anticipatory aspect of observational calendars must have been of foremost importance, not only because direct observations of the Sun on crucial dates may have been hindered by unfavorable weather conditions, but also because these dates, assuming they were related to subsistence activities and the corresponding ceremonies, needed to be announced ahead of time. It is worth noting that both the predictive nature and the agricultural function of observational calendars evidenced by Mesoamerican alignment data is in perfect agreement with the ethnographically recorded practices in the US Southwest (Zeilik 1985; 1991).

While the orientations in Mesoamerican architecture are predominantly solar, a few alignments to Venus extremes have also been identified; the preferred targets were the evening star extremes, probably because they approximately delimit the rainy season and, consequently, the agricultural cycle (Aveni, et al. 1975:56; Šprajc 1993a; 1996:20-22).

Even if the observational function of architectural orientations indicates their relationship with practical needs, which is in accordance with what we know about the adaptive value of astronomical knowledge and its consequent importance in
archaic civilizations (Aveni and Hartung 1986; Iwaniszewski 1989; Reyman 1975; Šprajc 1996), the alignments cannot be understood in purely utilitarian terms. A number of buildings in central Mexico have been found to be oriented both astronomically and to prominent mountain tops, located either along the structures’ north-south or east-west axes (Šprajc 2001b: 57). This fact probably reflects the significance of mountains in the Mesoamerican world view (Broda 1991), even though the peaks on the eastern and western horizon may have also facilitated astronomical observations.

Furthermore, it is well known that the Mesoamerican architectural orientations, in spite of exceptions found in certain periods and areas, tend to be skewed clockwise from cardinal directions (Aveni and Hartung 1986: 10; Aveni 2001: 233; Tichy 1991; Šprajc 2001a; 2001b), which means that the orientations referring to the Sun and exhibiting this skew recorded sunrises in autumn and winter and sunsets in spring and summer. This peculiarity, considering it cannot be compellingly explained in practical or observational terms, must have been based on the symbolism related to the world directions: the south-of-east/north-of-west skew of orientations implies that the dates recorded on the eastern and western horizon fell mostly in the dry and wet seasons, respectively, and this is precisely what the Mesoamericans most probably intended to achieve. There is evidence indicating that the dry season was conceptually related to the eastern and the rainy season to the western side or part of the universe. The symbolism and directional associations of the Sun, Moon and Venus are particularly revealing: the Sun, presiding the east, was related with heat, fire and drought, whereas the Moon and Venus, primarily its evening manifestation, were associated with the west and, on the other hand, with water, maize and fertility. A large amount of data supporting this conclusion, as well as the observational facts that may have accounted for these concepts, have been extensively discussed elsewhere (Šprajc 1993a, b; 1996; 2004). It is thus highly likely that one of the most pervasive features of architectural and urban planning in Mesoamerica has a cosmological rationale.

Since the repeatedly occurring directions are most consistently incorporated in monumental architecture of civic and ceremonial urban cores, entailing considerable effort, they must have had an important place not only in the worldview but also in the cosmologically substantiated political ideology. This can be understood if we consider that the apparently immutable and perfect order observed in the sky, obviously superior to the one reigning on the earth, must have been the primary source of deification of heavenly bodies, whose cyclic behavior thus was not viewed as being simply correlated with seasonal transformations in natural environment but rather as provoking them. Assuming, therefore, that timely occurrences of these changes were believed to be conditioned by the arrival of celestial bodies, particularly the Sun, to specific points on the horizon, the directions corresponding to these events, particularly to those considered to be critical for a proper development of the agricultural cycle, must have acquired a sacred dimension. Since the beliefs composing the worldview were incorporated into political ideology of rulers, who as man-gods pretended to be responsible for the
proper functioning of the universe (López Austin 1973; Rivera Dorado 2001:41ff; Šprajc 1996:102ff), the alignments reproducing significant astronomical directions in civic and ceremonial architecture can be interpreted not only as a sanctified materialization of the amply documented union of space and time in the Mesoamerican worldview (cf. Aveni 2001: 148ff), but also as a manifestation of the attempts of the governing class to recreate the cosmic order in their earthly environment and to perpetuate thereby, in accordance with principles of magic, the proper functioning of the universe (Ashmore 1989:272f; Aveni 2001:217ff; Broda 1982:99f; Šprajc 1996:21f; 2001b:154f, 411ff; 2005:211f).

**Northern Mexico (Nelson)**

Cosmological symbolism is very evident in northern Mexican ceremonial centers such as Epiclassic La Quemada and Alta Vista (500-1000 CE), particularly in the light of structural parallels from the Wixárika (Huichol). The conceptual building block of the prehispanic ceremonial center in the “Northern Mesoamerican Frontier” or “Greater Chalchihuites” region is the patio-banquette complex (Hers 1989), which consists minimally of a sunken patio surrounded by a raised banquette supporting various buildings. A single ceremonial center may have as many as 60 of these complexes (Nelson 1997). Prehispanic patio-banquette complexes can be regarded as similar to Wixárika *tukipas*, with some important discrepancies (Nelson, et al. 2010). The *tukipa* is the temple, along with its associated patio and buildings, at which the Wixárika hold traditional ceremonies. The Wixárika temple and the other spaces are a single unit (/tuki/ temple /-pa/ around or at the place of). Ritual actors move frequently between temple and patio; the smaller buildings around the patio are shrines where ritual paraphernalia are kept. The structures and paraphernalia belong to ceremonial offices, not officers; the paraphernalia cannot be touched by anyone, even the cognizant officer, except at specified times. Other buildings surrounding the patio are communally owned houses that are used by the current holders of ritual officers and their families during times of ceremony. These officers are responsible for the timing and successful conduct of ceremonies in which cosmological vision is a central goal.

The annual round of celebrations (called *cultura* or *tradiciones* in Spanish) is organized to coordinate with the solstices, which mark the cosmic struggle between the sun and certain stars of the night sky or underworld from which the sun must emerge each day. Maintaining awareness of the cosmos is paramount to Huichol ceremonial officials and practitioners, who continually strive to orient themselves in relation to the sun, the stars of the night sky, many sacred animals such as eagles and deer who have special powers and visionary capabilities, and above all the ancestors, who dwell in the underworld or night sky. Many places on the landscape are considered relevant to maintaining this orientation and are the scenes of offerings and sacrifices; the most important such place however is the tukipa. People carefully monitor the shift of the position of sunrise on the horizon throughout the year in relation to the *tukipa* (all *tukis* are on the west side of their patios and face eastward; some, similarly to the public structures noted by Šprajc,
above, are aligned so that sunrises on key dates align with mountain peaks in the background). The Wixárika consider solstices, when this gradual shift annually reverses directions, to mark transitions that parallel the liminal contrasts of day-night and night-day, but on an annual scale; the rainy season is a kind of night and the dry season is a kind of day (Neurath 2002).

Human contributions to these celestial processes, through ritual actions, sacrificial offerings, and intense labor by certain ceremonial officials, are essential to success of the transitions and therefore to the agricultural cycle, since they aid in initiating and terminating the rains. Venus, as the morning and evening star, is a key actor in these annual cycles (Preuss, 1998 #672); as morning star it ushers the sun out of the underworld and assists in defeating the night stars, while as evening star it leads the sun into moist, deathly, but fertile underworld. Eagle-serpent symbolism is also closely tied to these contrasts, the serpent representing the night sky-underworld and the rains and the eagle representing the sun and dry season, although this is an oversimplification (Rodríguez Zariñan 2009). Dance movements knit together the inside and outside space of the temple; for example during hikuri neixa, a ceremony corresponding roughly to the summer solstice, dancers move in a circle inside the temple, then go outside into the patio for the lighting of a huge torch formed by a bundle of cane; five times this lighting occurs and each time the torch is returned to the temple (which symbolizes night) to be stomped out. The final extinction of the flame signifies (aids in causing) the beginning of the rainy season. In addition to being tied to the contrast between the rainy and dry seasons, the ceremonies are also organized in relation to pilgrimages to distant, sacred places such as Wirikuta, during which jicareros (ceremonial officials) obtain peyote from the most distant eastern point of their “world.” The period of duty for a jicarero is five solar years, which is the time that it takes Venus to go through eight 584-day cycles of inferior and superior conjunction and once again begin its next cycle at the same time in relation to a solar year (Aveni, 2001 #2053).

Prehispanic monumental architecture appears to have provided places to practice the regular affirmation of similar cosmological principles. One finds a number of structural similarities between the prehispanic patio complexes and the Wixárika tukipas, including details of the temple such interior benches, post arrangements, overall form including roof style, placement of the temple on the west side of the patio, asymmetry of size relative to other buildings around the patio, and size of opening onto the patio (Nelson, et al. 2010). There are also interesting and important discrepancies. One is that today’s temples are located at discrete sites, whereas in a prehispanic ceremonial center such as La Quemada, many are found in a single site. Another is the fact that the interior benches of today’s temples run all around the wall, whereas the one excavated prehispanic example (Nelson et al. 1992) has a shorter bench spanning only the wall opposite the entrance. Temples today are larger than the commonplace ones of prehispanic times. However, there is a class of prehispanic super-temples known as colonnaded halls, which are much larger than any current examples. These discrepancies
indicate the presence in prehispanic times of a social component that does not exist today, and thus a higher degree of social complexity (Nelson et al. 2010).

Other cosmological aspects of northern Mexican architecture include the orientation of prehispanic buildings to both solstices and cardinal points (Aveni, et al. 1982) and the presence of the same “indigenous meter” (Lelgemann 1996) that Teotihuacan architects played out in calendrical increments to structure the layout of that city (Sugiyama 2004). Medina (Medina González 2000) shows that the road network of La Quemada forms a quincunx (four cardinal points and a central point), a common cosmological symbol in Mesoamerica. The road system embraces a 10 x 12 sq km area, lacing it with connections and integrating the human-made and natural features (Trombold 1991). Medina suggests that these roads or causeways are best understood as procession ways, and that the grand staircase of the site appears to be a life-size version of a model which the Cora use ritually to help the sun rise against the stars of the night sky. Prominent in these monumental centers are concentrations human bones, not deposited as burials, but as dioramic displays forming complex patterns that apparently represented different social personae such as revered ancestors and defeated enemies (Kelley 1978; Nelson, et al. 1992; Pérez, et al. 2008; Pijoan and Mansilla 1990). The juxtaposition of these features suggests that prehispanic people of Northern Mesoamerican Frontier ceremonial centers had the same preoccupations with the forces of life, death, landscape, and celestial bodies as today’s Wixárika. Built space is structured partly to help humans synchronize with seasonal changes in climate and systematically observe (or cause) key cycles of behavior in deified celestial bodies.

**American Southwest (Lekson)**

Cosmologies in ancient southwestern societies were notably varied and changed, dramatically, in the dynamic histories of the Southwest’s several regions. For example, the Hohokam region evinces at least three major shifts in belief systems, religions, and (presumably) cosmologies. In the early Pioneer period (pre-AD 700) cosmologies were represented by ubiquitous human figurines; in the following Colonial and Sedentary periods (AD 700-1150), figurine-focused beliefs were replaced or displaced by cosmologies reflected by ballcourts and associated cremation funerary ritual; and finally in the Classic period (after AD 1150) ballcourts were decommissioned and replaced by platform mounds, while burial ritual shifted from Colonial/Sedentary practices to inhumation. Similarly, in the Mogollon region, elaborate, ideologically-charged Mimbres Black-on-white bowls ceased to be made, rather suddenly, around AD 1130, and were replaced by black smudged, burnished bowls. Compared to the Mimbres style, the black smudged bowls constitute an “anti-design,” and an evident rejection of elaborate Mimbres iconography. And a final example: the startling changes in ideologically-implicated art and architecture in the Anasazi/Pueblo region, before and after AD 1300. Indeed, AD 1300 can be usefully seen as a “watershed” before which societies were ancestral to, but socially and ideologically quite different from modern (ethnographic) Pueblo societies. The histories of modern Pueblo ideologies
effectively began at about AD 1300—the differences were that profound—with the super-positioning of multiple, complex, eclectic religious and ritual practices in a rich amalgam or assemblage that almost defies analysis. The situation prior to AD 1300 is, of course, less easy to know, but clearly cosmologies involved fewer, simpler ideas—at least as expressed in art and architecture. Ceramic and mural arts shift dramatically from relatively simple, black-on-white geometric styles before AD 1300 to bold, dynamic, polychromatic and asymmetric styles—rich with ideological content—after AD 1300. Architectural change was equally marked: small round rooms (conventionally called "kivas") were ubiquitous prior to 1300, while after AD 1300 they were almost completely absent. Prior to AD 1300, every family house had a round room, the last of a nearly millennium-long tradition of round, below-grade "pit houses." After AD 1300, the pit house no longer appears, save as a short-term post-migration "pioneer" residence (as at Point of Pines). House form is fundamental to culture and enculturation, and sometimes house form is fundamentally cosmological (e.g., Oliver 2003; Rapoport 1969). The abandonment of the old pit house form at AD 1300 signifies a revolutionary break with tradition. The significance of this change is clouded and confused by a long-standing archaeological canard, labeling round rooms prior to AD 1300 as "kivas." They weren't; they were pit houses. That mistake has launched a thousand interpretive slips, and retarded our understanding of ancient Southwestern ideology and cosmology. The architectural break at AD 1300 is dramatic and (in retrospect) unmistakable; yet the persistence of mistaken "kiva" attribution to pit houses before AD 1300 remains a chronic impediment to understanding cosmological change in the ancient Southwest.

At Chaco Canyon cosmologies are likely expressed in orientations of major buildings ("great houses"). Prior to AD 1020, Chaco buildings (reflecting centuries of previous practice) were sited or aligned loosely to the southeast: a cosmology presumably based on calendrics. After AD 1020, several major buildings were constructed on strict cardinal lines (north-south, east-west), departing from centuries of Anasazi/Pueblo practice. It appears that something of an ideological/cosmological contest began among great house families, with Pueblo Bonito (the largest and perhaps most important great house) shifting notably from a solstitial to cardinal orientation. That shift was followed shortly by the recreation of the entire settlement about 90km due north, at Aztec Ruins. While Aztec Ruins location was predicated by cardinal directions, the new city itself addressed the southeast. A split decision? I have suggested (Lekson 1999) that cosmologies expressed as cardinal orientations were perpetuated and elaborated at Casas Grandes (aka Paquimé), far to the south, after AD 1250.

Some aspects of southwestern cosmologies reflected deep-seated, “archaic” themes and motifs common to many later societies—for example, “hero twins” depicted in both Mimbres and Maya art and beliefs (Thompson 1994), and the idea of emergence from earlier under-worlds (Brotherston 1992). Other ideas were almost certainly “imported” into the Southwest—for example, the horned serpent macacoatl, which appears first (rarely) on Mimbres pottery, then more broadly
across several media and architecture at Casas Grandes, and finally, ubiquitously, on Pueblo V rock art and modern Pueblo ceramic art. Still other ideas were adopted and adapted to local circumstances—for example, the social and cosmological idea of noble families (Gutierrez, Lekson and Pauketat n.d.).

How does all this play out in architecture, built environment, and landscape?

**House-form** is fundamental (Rapoport 1969), and often reflects principles and ideas we would call cosmological. Hohokam houses consisted of several free-standing, single-room structures, clustered around and opening onto a small patio (“courtyard groups”). That configuration characterized much (most?) domestic architecture in northern Mesoamerica and West Mexico. It seems likely that Hohokam cosmology—as expressed in house-form—echoed Mesoamerican themes and beliefs. Anasazi/Pueblo domestic architecture, on the other hand, centered on a deep pit house. (There are hints of courtyard groups in the Late Pithouse Period Mogollon, as well.)

From Late Archaic to AD 1300, most Anasazi/Pueblo homes included or focused on a pit structure (incorrectly called a “kiva”). After AD 900, a small above-ground structure of perhaps six contiguous rooms was typically built behind the pit structure. A “midden” area (not truly trash, in the modern sense of that word) was often sited in front of the pit structure. Thus, Anasazi/Pueblo domestic architecture consisted of a line of features—small room block, pit structure, midden—usually aligned to the southeast or south-southeast. After AD 1300, the pit structure or pit house effectively disappeared, and a house consisted of an “apartment” of connected above-ground masonry rooms, seen in today’s Pueblos. Thus, Anasazi/Pueblo house-form was NOT Mesoamerican in form, and probably reflects a very different cosmology than “courtyard groups” (Hohokam) or “patio groups” (Mesoamerica).

**Public/ritual architecture** agrees with the evidence of domestic architecture. For Hohokam (in the Colonial and Sedentary periods), oval ballcourts were prominent public/ritual structures. While these vary in form and detail from Mesoamerican courts, it is generally agreed that they supported a form of the Mesoamerican ball game. Every medium to large Hohokam settlement had one or two courts. The ballcourts of Casas Grandes are essentially Mesoamerican: “I” shaped, but lacking (apparently) the raised ring goals of many Mesoamerican courts.

A counterpart form in Anasazi/Pueblo was the Great Kiva. From Late Archaic times on through today, each village or large settlement typically had one or two conspicuously large pit structures, often near the center of the settlement. These became highly stylized in Chaco times (AD 900 to 1150) and—unlike much Anasazi/Pueblo ideologically charged material culture—survived the “watershed” of AD 1300. It is very likely that the kivas seen today at Rio Grande Pueblos are the formal “lineal descendents” of pre-historic Great Kivas, although the ceremonies and functions of modern structures no doubt differ, to a degree, from older forms.
Earthen monumental architecture was created by both Hohokam and Anasazi/Pueblo. For example: platforms (or “mounds”) most famously at Hohokam sites but also at Chaco Canyon (Anasazi/Pueblo). Both regions had linear monuments (“roads”) most conspicuously in Chaco Anasazi (but also apparently predating Chaco in the Anasazi/Pueblo region). Similar linear features were also apparent at several Hohokam sites, but they are far less well known. Southwestern linear monuments recall the “roads” of Classic period La Quemada, and presumably indicate shared concepts of cosmological landscapes.

Some of the most remarkable solid earthen monuments were built at Casas Grandes (Paquimé). These include several conical or pyramidal platforms/mounds, and quite remarkably, effigy mounds one of a headless bird and another of a horned serpent (about 100m long, running north-south). I am not aware of effigy mounds in Mesoamerica. The closest parallels for effigy mounds are, of course, in the Mississippi and Ohio river drainages; these mounds are mostly much earlier than Casas Grandes (AD 1250-1450). Intriguingly, the famous serpent mound in Ohio was recently re-dated to the AD 11th or 12th centuries (Brad Lepper, p.c. 2010).

Elite residences can be expected to demonstrate cosmological, ideological and political ideas more emblematically than domestic housing. At Chaco Canyon (and within its region), elite residences were (at least initially) similar to commoner domestic housing in plan (described above) but greatly larger in scale, and more “expensively” and permanently built. “Great Houses” of Chaco Canyon represent one of the clearest examples in archaeology of stratified housing. Great Houses began (around AD 800) as scaled-up normal domestic structures, but after AD 1020, Great Houses added significant non-residential spaces—most conspicuously, masses of what appear to be storage rooms (warehouses?). By the end of Chaco’s “building boom” (ca AD 1100), Great Houses were mostly storage rooms, with only one or two domestic areas (indicated by “kivas”). It is possible that building became competitive, with groups of noble families showing economic and political power by building larger and larger warehouses for goods that they may or may not have controlled. At one Great House in Chaco Canyon, an overtly Mesoamerican colonnade was added to the main plaza-facing wall in one of the last construction events (AD 1105+). Pueblo elite residences (Great Houses) disappear after AD 1300.

It is difficult or impossible to identify elite residences in Hohokam, until about AD 1250. After the ideological shift away from ballcourts (and their associated ritual complex) about AD 1075, larger Hohokam settlements typically included a small “platform mound”—an earth-filled rectangular platform, usually over 1.75m tall and perhaps 20 m by 25 m in plan [SHL estimate; I will track down some real figures]. About AD 1250, elite houses were built atop these mounds, obscuring or replacing earlier structures and functions. These houses mirror Hohokam domestic architecture of their time, but were notably larger, better built, and of course elevated atop platform mounds.
“Biwall” and “Triwall” structures constitute a remarkable class of Anasazi/Pueblo buildings which appeared first at Chaco Canyon (ca AD 1105+); the single example at Chaco was built late, than (almost immediately?) razed—a ideological/cosmological statement in both construction and destruction. Tri-walls re-appear, almost immediately, 60 km to the north in the successor capital, Aztec Ruins (AD 1110-1280), in the Mesa Verde region. The actual function of bi- and tri-wall structures remains uncertain. Only three have been excavated: the example at Chaco, a minor tri-wall at Aztec, and a bi-walled "tower" at Yellow Jacket. Several archaeologists have suggested that they were elite residence (Plog REFS); others suggest they were circular "pyramids" (Reyman 1985)—and idea not so outré as it might initially sound. No comparable structures were built after AD 1300. The form seems very specific to Aztec and the Mesa Verde region.

At Aztec Ruins, monumental triwalls fixed key points of the city plan (Stein and McKenna 1988). Aztec Ruins centered on the largest tri-wall ever built, the huge unexcavated circular mound at the very center of the city. Bi- and tri-walled structures were built over a very large area, often alongside older Chacoan "outlier" Great Houses (for example, at Yellow Jacket, 100 km from Aztec; for their distribution see Glowacki 2006); I argue that they mark Aztec's region, much as Great Houses and road segments (both of which continued in use through 1280) marked Chaco's at AD 1100. Donna Glowacki (2006) notes a markedly exclusive distribution of bi- and tri-wall structures (in the central and eastern Mesa Verde region) and remarkable, small "D"-shaped structures (in the western Mesa Verde region). Several archaeologists have suggested that "D"-shaped structures recall the iconic form of Pueblo Bonito. Thus, the mutually exclusive distributions of tri-wall and "D"-shaped structures might reflect an ideological/cosmological split in the Mesa Verde world which (if real) no doubt hastened the fall and abandonment of that region in the AD 13th century.

Landscape and alignment(s) were importantly ideological and cosmological. We can safely assume that cosmologies and societies in the ancient Southwest were shaped by landscape, the genius loci: dramatic contrasts between canyon and mesa, vast vistas, and of course the sky above. Space and distance are defining characteristics of the Southwest. Even today, Southwestern cities sprawl (for better or worse) simply because space is available. One resource the Southwest had in abundance was space.

The ability to see over long distances—vistas spanning many scores of miles are common—must be incorporated into any interpretation of Southwestern cosmologies and societies. Contrast the densely wooded southeast or tropical Mesoamerica, with pyramids poking up out of the forest. Central and northern Mexico shared Southwestern landscape scales (or vice versa); cosmologies and societies expressed on those vast scales might perhaps share ideas and concepts more than cosmologies nurtured in dense jungles—a topic I will not pursue here.
For Chaco, distance itself became an element—perhaps a fundamental principle—of political and (perhaps) ideological power. John Fritz (1978) and others (Lekson 1999; Van Dyke 2007?) noted that the central cityscape of Chaco was structured by a north-south axis running between Pueblo Alto and Tsin Kletsin—an axis of arguably great antiquity. Fritz demonstrated that major buildings in central Chaco Canyon were sited and planned in reference to this central axis, and to symmetries across it. Buildings at Chaco were separated by significant distances: the two largest central buildings, Pueblo Bonito and Chetro Ketl, were almost 500 m apart. The distance between buildings at Chaco represents a different concept of urbanism (Fletcher 1995) reflecting, I think, Chacoan cosmology and society. The Great Houses (among other functions) were almost certainly residences of competing noble or princely families (Lekson 2006); distances between Great Houses were probably a political as well as cosmological statement. Again: space was fundamental to Chaco’s architectural vocabulary, an architectural semiotic foreign to our’s and perhaps to Mesoamerica’s.

Space and distance between settlements structured Chacoan political and economic systems. Indeed, power over distance was a defining character of Chaco at its height. "Roads" commemorated historical and social linkages, and monumented Chaco’s centrality to far-flung "outlier" communities. Members of a Chacoan community at Bluff, UT (for example) may never have visited Chaco (200 km distant), but a "road" segment pointing back to the central city was a constant reminder of who was periphery, and who was central. Indivisibility between and among Great Houses and an elaborate, far-reaching line-of-sight communication system literally de-lineated the Chacoan region and Chacoan power (Lekson 2009; Van Dyke REFS). Chimney Rock (140 km from Chaco) provides a dramatic example, with line-of-site fire-signaling from Chimney Rock to a well-documented intermediate fire-signaling station atop Huerfano Butte, and thence into Pueblo Alto at Chaco. Importantly, the "repeater" at Huerfano demonstrates the reality of a Chacoan regional "system:" there was no Great House community at Huerfano, so the repeater station would have to be manned (permanently? on a fixed schedule?) for the communications system to work. That is, it was someone’s job to pick up the phone and forward the message.

Beyond relatively concrete (but ideologically charged) "roads" and signaling systems, long-distance alignments were evidently important. The best known was the "Chaco Meridian:" a north-south axis of power along which were built the largest, most complex and (archaeologically) most interesting sites of each major stage of Anasazi prehistory—Basketmaker III: Shabikeschee/423; Pueblo I: Blue Mesa/Ridges Basin; Pueblo II: Chaco Canyon; Pueblo III: Aztec Ruins (Lekson 2009).

Larger landscape alignments have been suggested, with the Chaco Meridian projected south to Casas Grandes—the most interesting Pueblo IV site (Lekson 1999). Dennis Doxtater has suggested that the location of key sites and settlements reflected the intersection of axis between major sacred mountains (Doxtater 2002,
2003)—a concept which recalls Johanna Broda’s work in the Basin of Mexico (Broda 1991).

**American Southeast (Sassaman)**

Archaic communities of the American Southeast put considerable, resolute effort into sculpting the land with deposits that, through their emplacement and acknowledgment, materialized root metaphors of cosmology. We know this to be the case for later communities in the region, notably those of the Mississippian period (Knight 1986; Pauketat 2008) and the Middle Woodland, the time of Hopewell and its affines (DeBoer 1974; Hall 1979). Mound building among these later communities is relatively well known to us, although its historical connections to traditions of greater antiquity are not self-evident. Indeed, the five or six major mound-building traditions of the eastern Woodlands, beginning some 6500 years ago, are separated by major disjunctures in time, space, and form. Nonetheless, linking together the situated practices of mounding that appear unique and discontinuous are ontologies of practice that drew on narratives about the past and root metaphors of cosmology to negotiate identity for communities of oft-changing affiliation.

Conceptualizing mound building as historical process helps to expose the relationship between history and cosmology. In Mississippian ontologies, such relationships were embedded in institutions of communal practice that apparently existed in dialectical relationship to institutions of chiefly privilege and authority (Knight 1986). Mounds were symbols of the earth, and acts of mounding forms of human intervention. These were expressive acts of renewal that drew on directionality and color symbolism to “reinvent” the cosmos as rationale for reinventing (or reproducing) society. Pauketat (2008) illustrates this process in the case of Cahokia, where structured deposits symbolic of earth and sky were emplaced to alter “history” in the context of major transformations in society. Importantly, major transformations in this sense were not simply the consequence (or cause) of changing social fields (e.g., migration, abandonment, coalescence), but rather a redistribution of symbolic referents that informed experience. Novel in the Cahokian case was a redistribution of the symbols of earth and sky such that they became associated with founding ancestors. Following Pauketat (2008:62-63), these were acts of *enchainment* (*sensu* Chapman 2000) and *citationality* (*sensu* Butler 1993) that involved historical practices as familiar to archaeologists as digging test pits to reveal the structure of earlier depositional practices, and, again familiar to archaeologists, its interpretation based on observation and the symbolic referents of contemporary practice.

It follows from this example that cosmology was the basis for historical practice in that its symbolic referents became enchained across objects, processes, bodies, places, and temporalities, and in that agents made citation to previous practices as rationale for their own practices (conformant or subversive). Major
historical change, as Pauketat (2008:62) sees it, involves a significant restructuring of “agentic forces” (including nonhuman agents, sensu Gell 1998) in the larger relational fields of human experience, change akin to what Gamble (Gamble 2007:26) calls “novel social premises.” The histories of Archaic mound builders in the American Southeast push back several millennia the sort of transformations we see in Mississippian and Hopewell traditions, each manipulating cosmology to redistribute symbolic resources in the context of novel social premises.

Two locations in the sixth millennium B.P. were locations of early, eventful mounding: northeast Louisiana and northeast Florida. These respective traditions appear to be vastly different and there is little material evidence to suggest a direct historical linkage. Those of northeast Louisiana are staged conical mounds, usually in sets of two or more (up to eleven) and made from earth, often in multiple construction stages. Three locations of five mounds or more show that complexes were (1) sited on terraces abutting wetlands; (2) configured to enclose central space (plaza?); (3) engineered with a precise calculus (Clark 2004b); and (4) arrayed spatially to recapitulate ranked properties (Sassaman and Heckenberger 2004).

Geometric and proportional regularities among three complexes do not seem to be tied into any sort of astronomical alignments, and they vary in orientation relative to cardinal directions. While it might seem that these complexes are independent of one another within a broadly shared belief system, there is tantalizing, albeit inconclusive evidence that complexes were parts of an integrated whole (Sassaman and Heckenberger 2004). This would suggest the existence of pathways or circuits of movement among complexes, perhaps cyclical and indexed to rhythms of nature, but also possibly sequenced spatially and temporally in a narrative of cosmogonic myth. At this scale of abstraction one has to ponder how larger social fields of participation inflected local histories. Unlike Poverty Point and the Woodland and Mississippian traditions that followed, the Middle Archaic mound building experiences of northeast Louisiana did not include participation in exchange networks outside the region of the mounds themselves. Arguably, as detailed later, the regional complex of mounds symbolized cosmogony, not fully unlike those of later traditions, but with its symbolic referents (mounds) distributed widely across a regional landscape. It follows that each place was enchain with others in webs of citation, all subject to alternative interpretation by those who drew symbolical resources from these places.

The second venue for early, eventful mounding is in the middle St. Johns valley of northeast Florida. Ridges and mounds consisting largely of shell vary in size, shape, and composition (Randall 2010). Some are evidently locations of dwelling, with strata of stacked living surfaces and midden, often interspersed with mantles of clean shell or sand. But others suggest that former locations of dwelling were capped with shell and then received multiple layers of structured deposition intermittently over the next century or two (Sassaman and Randall 2011). Simultaneously, the first mortuary mounds were established in the region, which, in addition to shell, involved the emplacement of white sand and black swamp muck
over burial clusters (Aten 1999). Shell mounds, whether mortuary or not, routinely express structured deposits that juxtapose light matrix (unburned shell, white sand) with dark matrix (burned shell, muck, brown sand). Among later mound builders, color contrasts such as these indexed a variety of relationships, such as direction, earth and sky, or birth and death (Buikstra, et al. 1998; DeBoer 2005), while the capping mounds was an expression of rebirth (Knight 1986). But in this earlier context, water appears to have been the core symbolic referent. For many centuries before mounds were erected, communities across peninsular Florida buried their dead in ponds. Not coincidentally, pond burials appear to have ceased (at least for a few millennia) when the first mounds went up. Given this apparent transformation in practice, it is worth considering that shell mounds were symbolically inverted ponds (Sassaman n.d.), with light substances symbolizing water and dark substances symbolizing earth. Taken one step further we find potential resonance between the emplacement of light and dark substances and the cosmogonic Earth Diver myth, which, in widespread form, is a narrative about original earth emerging from water, and thus a metaphor for the life cycle. Whether it was the abandonment of a settlement or the interment of an individual, the repeated emplacement of shell, sand, and muck at locations in the middle St. Johns enabled actual human experience to be enchained to cosmological process/events for the benefit of community formation. Shortness of space precludes further discussion about the shifting social fields in Florida at this time, but suffice it to note that these were inextricably linked to a dynamic landscape of changing ecologies and extralocal connections (Sassaman n.d.).

And finally, the most elaborate Archaic expression of cosmology through mounding is the one that has confounded generations of archaeologists. Poverty Point in northeast Louisiana defies quick description (Gibson 2000), so we will restrict ourselves here to a few related points. Foremost, Mound A at Poverty Point—second in size in North America to only Monks Mound at Cahokia—was thrown up in less than three months and it was constructed as an enactment of the Earth Diver myth. This is the inference of Kidder (Kidder 2011) after recent stratigraphic excavation, and his case is compelling. Putting this act into its own historical context, Poverty Point communities were always in a dialogue with its past. In addition to citing (and sighting) mounds of the Middle Archaic tradition long since past, the objects of Poverty Point indexed other places and times materially, through acquisition of all sorts of nonlocal materials, and metaphorically in its six-ridge earthworks, which, when scaled upwards in multiples of six, captures successively greater arrays of social interaction and history (Sassaman 2005).

More on the cosmology of mound building in the American Southeast and the greater Eastern Woodlands requires longer treatment. There is a good literature on the built environments and architectural grammar of the Woodland and Mississippian traditions (refs). When viewed as situated historical practice, mound building traditions enchained bodies and places and meanings in a variety of ways, but they all drew on elements of prior experiences as rationale for practice. The major transformations attending changes in mound traditions entailed the
redistribution of symbolic resources under novel social premises. Cosmological principles were exposed, transposed, and materialized in these eventful circumstances.

**Conclusions (Nelson)**

The ancient regions considered show clear evidence of active and varied manipulation of the built and “natural” environments to express and reinforce cosmological principles. In so doing the ancient populations rooted themselves in time and space, making it possible to observe natural cycles on seasonal, annual, and longer time-scales. From ethnographic and ethnohistoric examples we infer that these manipulations were often direct expressions of cosmological principles, some of which to us seem highly metaphorical, e.g., “our primordial home under the lake” (Puebloan). The act of creating built space and landscape architecture secured the commitment of a local human group to a social identity and a set of principles that were simultaneously social and cosmological. The constructed products provided durable frames of reference through which people could observe and interpret the ongoing unfolding of the world according to such principles. Important social changes, in social complexity, for example, may also be marked by architectural stability and change. “Unfolding” refers both to the stable, predictable repetition of events, such as the daily and annual movements of “Our Grandfather Sun” (Wirárika), and Venus (Aztec, Wirárika), and to social discontinuities, which are marked by abandonments, cessations and adoptions of styles, and astronomical reorientations, among other things.

The examples show that creative manipulations began early, ca. 6000 BP and reveal pronounced changes through time within single regions. In Mesoamerica, major public monuments were oriented both to facilitate observation of important astronomical events. These observations did not simply allow the passage of time, but encapsulated cyclical change, associating cyclical changes with divine agents (east with dry season, drought, fire and the sun, west with wet season, moisture, maize fertility, the Moon, and Venus). In Northern Mexico, these practices are alive and well among the Wirárika (Huichol). Public architecture provides prominent settings for ritual activity that help to register (and cause) seasonal, annual, and longer cosmological cycles. In the American Southeast, it has long been recognized that Hopewellian and Mississippian mounds symbolized earth-sky relationships; very recently archaeologists have shown that Archaic-period constructions did so as well. Patterns of periodic renewal, mound placement and orientation, and juxtaposition of light and dark layers symbolized cosmological principles and reenacted myths. The examples from the American Southwest, treated here without referring to ethnographically derived conceptions, show equally interesting changes that demand explanation. Unlike the other parts of this paper, observations about the Southwestern materialization go beyond architecture to include shifts involving figurines as well as ceramic styles. Important architectural changes noted are from
ball courts to platform mounds, pit houses to surface pueblos, and from calendrical to cardinal orientations of buildings. These shifts may correspond to tipping points in history, where new sacred propositions were championed and eventually became doxa, perhaps when previous premises were falsified too often by tangible events. One line of reasoning suggests that the introduction of “noble houses” might explain the enigmatic architectural changes in Chaco Canyon. Another, while agreeing that power differentials are manifested, holds that the idea of nobility is part of a package of ideology, economy, and polity that is not applicable to these world regions. This is not to argue that social complexity was invariant. Powerful social actors, such as reknowned shamans, prophets, or cult leaders may have promoted changes, as Michael Mathieowicz suggests in the Schaafsma et al. paper. The shaping of space in relation to changing social complexity merits much further discussion.

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