

## DID THE MAYA BUILD ARCHITECTURAL COSMOGRAMS?

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*I criticize recent applications of the “cosmogram” concept to ancient Maya architecture and cities. Although cosmograms—graphic representations of aspects of the cosmos—are known from Late Postclassic and early colonial Aztec and Maya sources, there is no textual suggestion that buildings or cities were viewed as cosmograms. Numerous authors, however, assert confidently that architectural cosmograms abounded in Classic Maya cities. I examine known cosmograms, describe recent studies of architectural cosmograms, and discuss problems that occur when highly speculative interpretations are phrased as confident empirical findings.*

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*Hago una crítica del modelo de “cosmograma” aplicado a la arquitectura y las ciudades mayas. Hay cosmogramas (modelos gráficos de aspectos de la cosmovisión) en las fuentes aztecas y mayas de los periodos Postclásico Tardío y colonial temprano, pero no hay evidencia en textos de que la gente antigua consideraron edificios o ciudades como cosmogramas. Muchos autores, sin embargo, afirman con seguridad que había cosmogramas arquitectónicas en las ciudades mayas. Discuto cosmogramas conocidas, describo estudios recientes de cosmogramas arquitectónicas, y discuto los problemas que ocurren cuando se expresan interpretaciones muy especulativas como resultados empíricos fuertes.*

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In 2003 I published a comment (Smith 2003) on a report by Wendy Ashmore and Jeremy Sabloff (2002) in which I criticize their interpretations of possible cosmological influences on Maya city planning. At the time of writing (2002), I was unaware of an impending explosion of publications on Maya cosmology and city planning the following year. In comparison with the work of Ashmore and Sabloff, most of these studies are more speculative and less grounded in empirical data. Yet, unlike the cautious and judicious language of Ashmore and Sabloff's article and prior publications by Ashmore (e.g., 1989, 1991, 1992), these recent works are phrased in the language of confident, well-supported research conclusions. My purpose here is not to continue to criticize cosmological interpretations of Maya city plans (my views should be clear in the 2003 comment) but, rather, to point out the degree to which poorly supported speculations are being treated like established empirical findings. I find this trend troubling and worthy of public discussion within the scholarly community.

The studies I am concerned with focus on the

concept of the “cosmogram.” Although this term has been used in Mesoamerican studies for some time now (Freidel and Schele 1988b; Méluzin 1987–1988), I could find no explicit definition of it until 2004.<sup>1</sup> In a glossary to a textbook, Hendon and Joyce offer the following definition: “Cosmogram. A representation of the entire universe through symbolic shorthand or artistic metaphor” (2004:326). This definition seems to depart slightly from customary usage within the field of Mesoamerican studies, where *cosmogram* typically refers to a graphical representation of particular aspects of cosmology (rather than “the entire universe”). The dominant meaning of *cosmogram* prior to the flurry of the “new cosmogram studies” in 2003 focused on depictions of directional cosmology. Most or all ancient Mesoamerican cultures had a four-directional symbolic-spatial cosmology. The cardinal directions—each associated with particular deities, colors, birds, trees, and other symbolic elements—were important components of Mesoamerican mythology, cosmology, and ritual practice (Boone 2000; Brotherston 1976; Carrasco 1999; León-Portilla 1963; López Austin 2001).

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A number of Late Postclassic and early colonial sources depict four-part cosmological scenes that have been called cosmograms. A clear discussion of these can be found in Aveni's work in a section labeled "The Union of Time and Space in Mesoamerican Cosmology" (2001:148–152). Four of these cosmograms are illustrated in Figure 1. The first two images are complex cosmological scenes from the Maya Codex Madrid (Figure 1A) and the central Mexican (Borgia Group) Codex Fejérváry-Mayer (Figure 1B) that incorporate multiple levels of symbolism about the 260-day ritual calendar and the iconography of the cardinal directions. These scenes have been much analyzed by Mesoamerican iconographers and others (e.g., Aveni 2001:148–152; Boone 2000; Brotherston 1976). The third image (Figure 1C) is a depiction of the Aztec 52-year calendar round in the form of a circle and cross, with the cardinal directions labeled on the four sides. The fourth image, the face of the "Aztec calendar stone," is less often called a cosmogram, but in Townsend's (1979:63–70) interpretation this monument fuses imperial ideology, the calendar, and the four cardinal directions. His description of the central message of the monument is labeled "Time, Space, and the Ascendancy of Tenochtitlan" (1979:63).

Most scholars agree that the four images in Figure 1 are pictorial symbols of Maya and Aztec directional cosmology. Each one incorporates time (in the form of one or more calendrical systems), space (the four directions), and a number of additional symbolic and mythological elements. In short, these are cosmograms. Depictions of the vertical elements of Aztec cosmology as shown in the Codex Vaticanus A (Codex Vaticanus 1979: Figures 1–7), analyzed by Quiñones Keber (1995), might also be called cosmograms, as might other spatial-temporal images in Aztec codices and monumental sculptures (Boone 2000; Townsend 1979; Umberger 1998). A quartered circle figure common at Teotihuacan and other Classic period sites may also be a cosmogram (Coggins 1980).

Freidel and Schele (1988b) published the earliest explicit application of the cosmogram concept to Classic Maya society. They identify recurring sets of iconographic elements in sculptures and stelae as representations of the ancient Maya cosmos. Although my lack of iconographic training prevents me from following all of the details of their

rich exposition, their use of numerous examples in diverse media from many sites, coupled with an explicit and clear logic of argument, suggests to me that this is a rigorous and convincing analysis (see also Freidel and Schele 1988a; Freidel et al. 1993; Schele and Freidel 1990). The "new cosmogram" studies, in contrast, are based on the untested assumption that Maya directional cosmology was expressed in many or most buildings and cities. But what is the evidence for this?

The most common interpretations of Maya architectural cosmograms focus on the layouts of key architectural compounds and whole cities. In some cases individual buildings or compounds are interpreted as cosmograms, including the Murielagos group at Dos Pilas (Demarest et al. 2003:142) and the east court of the Acropolis at Copán, which has been labeled "a giant cosmogram" (Fash 1998:250). In other cases, the layouts of entire cities are interpreted as cosmograms (although that phrase is not always used). For example, at Uxmal, "the quadrilateral layout and approximate correspondence of the principal buildings to the cardinal points represents an effort to replicate the well-documented quadripartite organization of the Maya cosmos" (Kowalski and Dunning 1999:280); the same phrase is repeated by Kowalski (2003:215).<sup>2</sup>

Reputed Maya cosmograms are not limited to buildings. At Tikal, for example, four reservoirs "located approximately in the cardinal directions" formed "a water cosmogram of the site" (Scarborough 1998:154–155). Tate labels certain monuments at Yaxchilan as "cosmogram stelae" (1992:101, see also 119, 131–132). *Sacbes* (raised causeways) are also called cosmograms: "Serving as *axis mundi*, *sacbeob* may have represented the Milky Way. . . . [*Sacbeob*] served as cosmograms, or models, of the Maya universe" (Shaw 2001:266). Even the bodies of Maya kings could be cosmograms! "Thus not only the temple centers from which they ruled but also the rulers' bodies themselves constituted living terrestrial cosmograms" (Gossen 1996:295). The word *cosmogram* is evidently so appealing today that some scholars have decided to use it to replace the term *cosmology*: "The sun rising in the east, climbing to the zenith at noon, setting in the west, and passing through the nadir at night, united the tripartite vertical and four-part horizontal divisions of the world into a

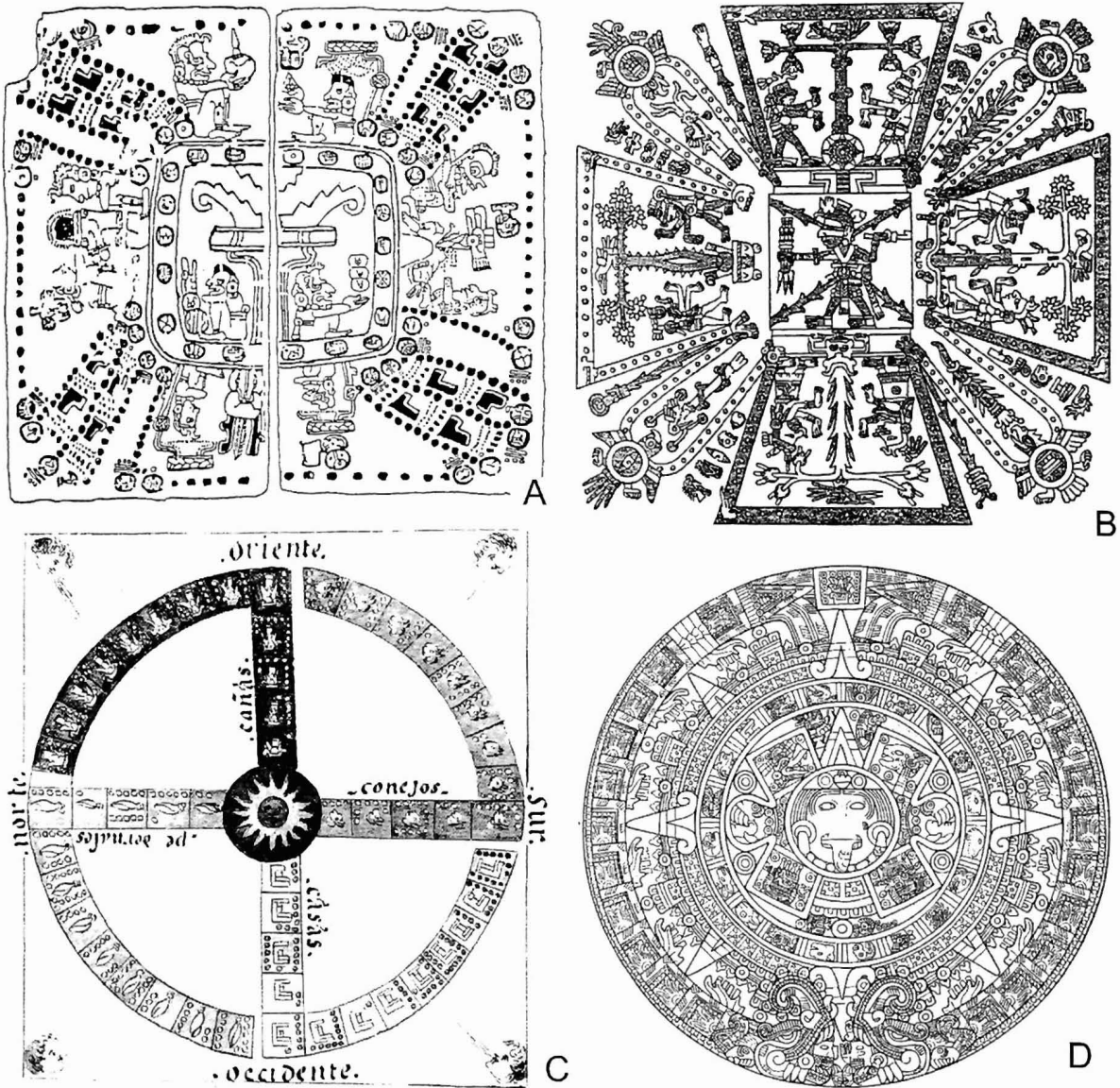


Figure 1. Conquest-era Mesoamerican cosmograms from Maya (A) and Aztec sources (B–D). A: Cosmological scene from the Codex Madrid (Anders 1967:75–76); the image is from Bricker and Vail 1997:41, after Villacorta C. and Villacorta 1976:374, 376. B: Cosmological scene from the Codex Fejérváry-Mayer, p. 1 (Burland 1971:1); drawing by John M. D. Pohl. C: Calendar wheel from *Book of the Gods and Rites and the Ancient Calendar*, by Fray Diego Durán (1971: plate 35), copyright 1971 by the University of Oklahoma Press. D: The so-called Aztec calendar stone; drawing by Emily Umberger. All images used with permission.

holistic cosmogram” (Christie 2003:292). Was the cosmos itself viewed as a model of the cosmos, or does the author just mean “cosmology,” not “cosmogram”?

A newly discovered cache at the site of Cival has been interpreted as a cosmogram (Estrada-Belli et al. 2003). John G. Fox (1996) makes similar cosmological interpretations of caches, although he does not use the term *cosmogram*. For example, a cache with nine obsidian blades demonstrates that ballcourt features symbolized the Maya underworld (Fox 1996:485), and a cache with one shell and one

bead in a Copán ballcourt “provides a microcosmic model of the universe, with the bead representing the earth and the shell the cosmic ocean” (Fox 1996:486).

Closely related concepts include the “*axis mundi*” and the world tree: “The Castillo and the Cenote Ch’en Mul formed the *axis mundi* (the primordial mountain-cave) of Mayapán, virtually standing between cosmic planes at the beginning of time” (Pugh 2003:943); also, “the five serpent temples at Mayapan form a quincunx layout, which represent the quadripartite division of the Maya

universe" (Pugh 2001:255). And at Xunantunich, the buildings and plazas are interpreted as a world tree (Yaeger 2003:132).

By 2003, usage of the architectural cosmogram concept was rampant in the Maya region, and it had spread to Oaxaca (Joyce 2004; Méluzin 1987–1988), Central America (Graham 2003:291), and even the Andes (Swenson 2003:274). The uncritical acceptance of this concept now appears in popularized accounts: "The ceremonial center was not just the political heart of the kingdom, it was also the sacred center of the polity and was designed as a cosmogram, re-creating the Maya world order" (Foster 2002:229).

Tourtellot et al. take the notion of the cosmogram to a higher spatial level by interpreting the distribution of settlements as a cosmogram: "We argue that the middle-level sites around La Milpa are organized in a concentric and cardinally aligned cosmogram" (2003:95). I find the use of the present tense here significant. In most models, the cosmogram is asserted to be an ancient phenomenon that archaeologists try to identify today in the ruins of ancient Maya cities. By phrasing their cosmogram interpretation in the present, not the past, however, these authors unwittingly suggest the most reasonable interpretation of the phenomenon: Maya architectural cosmograms are modern phenomena, invented by scholars to satisfy their desire to reconstruct ancient cosmology from fragmentary evidence. I am flabbergasted at some of the quotes above for presenting highly speculative interpretations as if they were reasoned and unproblematic conclusions based on empirical evidence.

I find this trend troubling from a methodological viewpoint. These studies contrast with Ashmore's methods. She starts with empirical distributions of buildings and architectural compounds within Maya cities, identifies spatial patterns (e.g., north–south orientations, the placement of ballcourts), and then provides cosmological interpretations for those patterns. My criticism of her work focuses on the subjective and impressionistic nature of her methods, which have proved difficult to replicate or validate. Šprajc (this volume) provides another example of a rigorous approach to the topic of cosmology and city planning.

The new cosmogram studies, on the other hand, start with the assumption that directional cosmology

must have been expressed in architectural settings. They identify a case in which buildings or features seem to have some kind of cardinal orientation or arrangement and then assert confidently that the building/compound/city/reservoir/stelae in question formed a cosmogram. Authors of most of these studies offer little or no iconographic or epigraphic evidence for the presence of a cosmogram or cosmological symbolism in the settings they analyze. They rarely step back to consider the larger issue of whether Mesoamerican cosmograms were ever expressed in architecture and urban planning.<sup>3</sup>

Contributors to a recent special section of the *Cambridge Archaeological Journal* considered the question, "Were cities built as images?" (Carl et al. 2000). The answer is that in some ancient urban traditions, cities and buildings were clearly planned and constructed as cosmograms. Evidence is particularly strong for ancient China, India, and Thailand (see Smith 2003:222). In other urban traditions, such as in Mesoamerica, there is little or no explicit evidence for this practice. The archaeoastronomical research reviewed by Šprajc (this volume) provides strong empirical support for the astronomical alignments of buildings. The question of whether buildings and cities were viewed as models of the cosmos requires inferences considerably more speculative in scope. I am unaware of any explicit statements in the ethnohistoric or epigraphic sources for direct cosmological influences on Mesoamerican architecture or urbanism.

Given the importance of directional cosmology in ancient Mesoamerica, it seems likely that cosmology may have played a role in architectural symbolism and perhaps even in the design and layout of buildings and cities. But in the absence of the kind of clear and direct evidence available for areas like China and India, scholars need to approach this question cautiously with rigorous and explicit methods. My major criticism of the new cosmogram studies is that few of the authors describe their hypothetical architectural cosmograms using the language of caution and hypothesis; instead, they use the language of confident conclusions. Rather than simply assert that the Maya had architectural cosmograms, however, scholars should undertake empirical research designed to test this notion. Promising directions include the work of Ashmore (1986, 1989, 1991, 1992, 2002; Ashmore and Sabloff 2002) and the

numerical data on building alignments assembled by Aveni and Hartung (1987), Šprajc (2000, 2001), and others.

Discussions of ancient Mayan architectural cosmograms appeared at a rate of approximately one publication per year between 1996 and 2002. In 2003, a plethora of such studies appeared (my count of nine works in 2003 does not include unpublished conference papers, Internet postings, and theses). In my view, these confidently phrased speculations are harmful to the discipline of Mesoamerican studies. They set a bad example by suggesting to students and the public that poorly grounded speculation can pass for acceptable scholarship in our field.

### Epilogue: Reply to Šprajc

The underlying motivation for both of my works—the critique of Ashmore and Sabloff (Smith 2003) and the present opinion piece—is to encourage rigorous and explicit methods in the analysis of the relationship between cosmology and urban planning in ancient Mesoamerica. I do not deny the influence of cosmology on ancient architectural practice, but this relationship needs to be demonstrated empirically, not simply assumed. Šprajc (this volume) suggests that archaeoastronomy provides just the sort of empirical demonstration I am calling for.

I agree with Šprajc, up to a point. I suspect that we may differ in our views of just how far archaeoastronomical data allow us to go in reconstructing patterns of ancient cosmology. Archaeoastronomy does have the ability to identify cosmological influences on ancient building and settlement alignments. Šprajc provides a clear and succinct overview of the kind of rigorous research on this issue conducted by scholars such as Anthony Aveni, Stanislaw Iwaniszewski, Clive Ruggles, and himself. I thank Šprajc for his discussion of the complexities of the topic of astronomical alignments at Tenochtitlan. Although I was aware of his 2001 monograph on central Mexican astronomical orientations, I did not consult it in preparing my articles. This was a scholarly lapse on my part, and I apologize.

I tentatively accept Šprajc's interpretation of the astronomical significance of the layout of Tenochtitlan. I use the word *tentatively* because frankly I do

not understand the astronomical details, but the argument seems rigorous and plausible. Nevertheless, it seems to me that these data provide only tenuous support for inferences that go beyond the notion that the buildings and streets of the Aztec capital were aligned with astronomical phenomena. They certainly do not permit the inference that Tenochtitlan was viewed as a model of the cosmos. Yes, there was astronomical influence on the city's layout, and yes, astronomical phenomena were related to various Aztec cosmological beliefs and landscape practices. But in the absence of textual confirmation, the conclusion that Tenochtitlan was a cosmogram requires a leap of faith that exceeds cautious empirical inference.

I second Šprajc's call for greater interaction between archaeologists and archaeoastronomers. Although the situation has improved since discussed over a decade ago by Kintigh (1992) and Aveni (1992), there is still much that can be done. I am certainly among those archaeologists guilty of not paying sufficient attention to archaeoastronomy. The topic of the political uses of astronomical data by elites, touched on in Šprajc's comment, is a promising avenue for joint research, and there are many others. Archaeoastronomical research alone, however, will not permit the identification of architectural cosmograms in ancient Mesoamerica.

*Acknowledgments.* I thank Cynthia Heath-Smith, Robert Rosenswig, and Anthony F. Aveni for helpful suggestions on earlier drafts of this article. The comments of three referees were very helpful in clarifying my argument, and I benefited from the opportunity to read Ivan Šprajc's contribution before making final revisions.

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## Notes

1. Before I found the definition in Hendon and Joyce's (2004) glossary, all I could find was the definition of *cosmogram* in astrology: "Cosmogram is the cosmobiological term for horoscope. The foundation for casting the cosmogram is the zodiac, through which the Sun moves in one year" (Rauchhaus 1994:147).
2. Kowalski and Dunning (1999) do not use the term *cosmogram*, and two reviewers of this manuscript rightly pointed out that their argument is considerably more rigorous and convincing than many of the other studies I consider in this article. Because this is a brief opinion piece, I do not have space to provide a full discussion of the views of each of the authors I criticize. For a more extensive treatment of the topic of ancient city planning, see Smith 2004.
3. There is a tradition of cosmological interpretations of Mesoamerican urban layouts (see Benson 1981), but the lack of concrete evidence to support those interpretations is striking. To take just one example, Carrasco (1999:43–46) includes a section titled "Architectural Parallelism of Macrocosmos and Microcosmos" in his book on

Tenochtitlan, but it includes no evidence for such parallelism apart from his own interpretations. Many accounts (e.g., Carlson 1981) rely on the universalistic models of scholars like Rykwert (1976) and Wheatley (1971) who assert that all ancient cultures had sacred, cosmologically grounded cities and towns. Apart from the anthropological naïveté and empirical inadequacy of such universalistic notions, empirical

doubts have recently been cast on Wheatley's analysis of ancient China, his main case study of the cosmological importance of cities (Wiesheu 1997, 1999).

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*Received February 16, 2004; Accepted February 9, 2005;  
Revised March 3, 2005.*