

# Location and Orientation of Teotihuacan, Mexico: Water Worship and Processional Space

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“Processions and pilgrimages produced a continuous movement that animated the landscape, thus we are dealing with fundamental ritual processes that created the sacred landscape.”

Johanna Broda, this volume

## Introduction: The Cultural Ecology of Teotihuacan's Placement

In this paper, the ritual practice of procession is argued to have provided an impetus for the location and orientation of the ancient city of Teotihuacan within its environmental context, the Teotihuacan Valley. Cultural ecology and ethnohistory will illuminate the rich corpus of information about the city's development and the valley's geographical features, and suggest that the city's topographical situation was generated by its regional landscape and the needs of its planners to urbanize the site while supporting a growing population, which involved increasing agricultural productivity and intensifying the propitiation of fertility deities. Teotihuacanos maximized crop production in their valley's different growing zones, while gridding their city with processional avenues and arenas. These features, and the many depictions of procession in murals found throughout the mature city, suggest that processions were a strong component of the city's ritual behavior honoring the sacred intertwined principles of water, fertility, and time. Processions heightened public experiences of solidarity and piety by the immediate connection among the celebrants and with surrounding mountains and water features.

The city's planners fine-tuned Teotihuacan's orientation and location to resonate with its natural environment, the

Teotihuacan Valley, as well as with the city's cosmological setting. The grid's orientation addressed practical problems such as grading and drainage while it maximized ardent efforts by worshippers to connect with the living world they revered: the same urban plan that channeled psychic energy toward sacred elements of the environment also channeled water and waste through the city and onto agricultural fields.

Supporting the idea that the city's orientation and location were deliberate adaptations to the Teotihuacan Valley, and that processions were a vital component of calculations to insure continued fertility, evidence is drawn from:

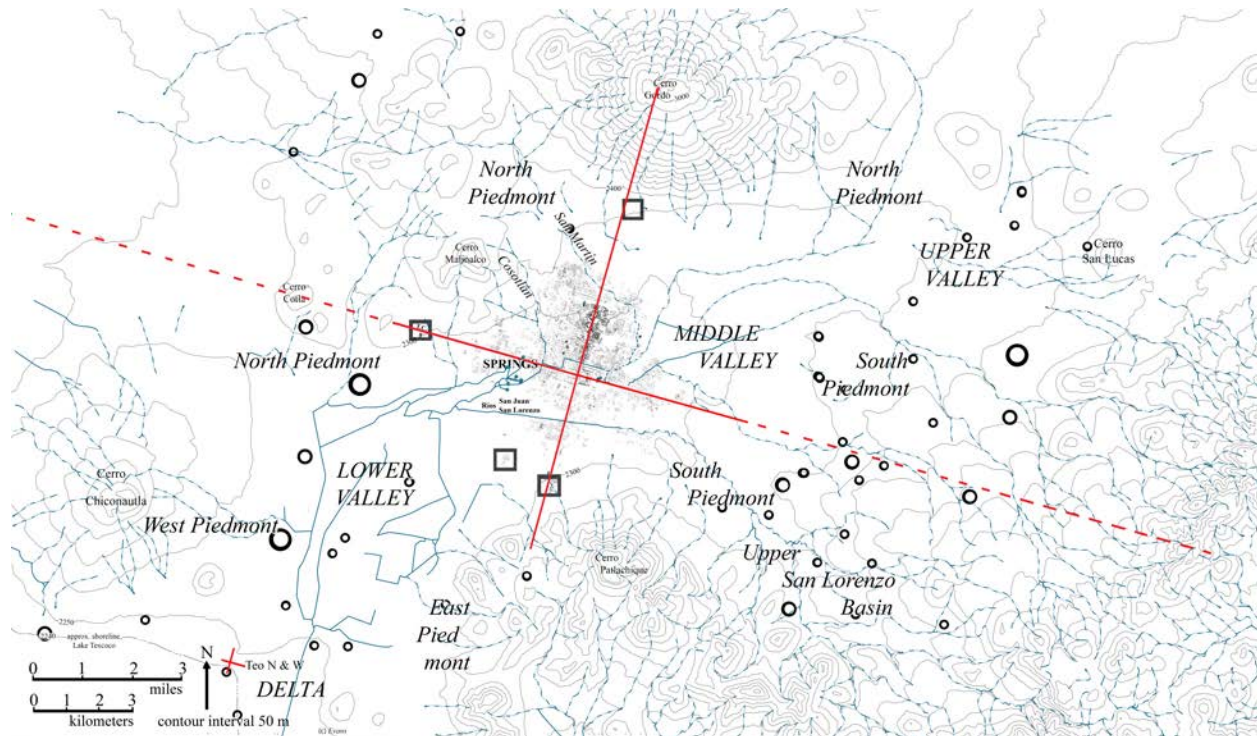
- the Teotihuacan Valley's natural environment and potential for settlement and crop production;
- Teotihuacan's history of urban development, the chronological context of
  - the Teotihuacan experience of *time*, particularly the relationship between *water worship and the agrarian year*, and on the city's role as the place where time began;
  - water- and fertility-worship *rituals*, including processions, as suggested by the *ethnohistory* of the contact-era Central Highlands of Mexico; and
  - Teotihuacan's *mural paintings*, as they depict processions and water worship.

## Teotihuacan Valley Natural Environment and Cultural Potential

Teotihuacan's culture and developmental trajectory can only be understood from the context of its natural environment. Most immediately, the city lies in the middle Teotihuacan Valley, mostly on the lower piedmont (**Figure 1**), the northeastern arm of the Basin of Mexico<sup>1</sup> in the Central Highlands of Mexico, which is a set of high-altitude basins and valleys critical to the Mesoamerican culture area for at least the last two thousand years (**Figure 2**).

With its chilly dry climate and high altitude, the Teotihuacan Valley is an unlikely setting for one of the ancient world's most luxurious cities.

Teotihuacan's success lay in a continuous culture-ecological process of adaptation to changing conditions wrought by the steady increase of the city's population to the time of its maturity, and mastery of the valley's hydrological potential.



**Figure 1.** The Teotihuacan Valley is defined by its drainage pattern, and most of the valley's streams were situational. The drainage lines of the lower valley are largely based on recent maps, such as Mexico's Cetenal series, but much of the canalization is as ancient as the city of Teotihuacan. Green dots mark the most important remaining springs. Black circles and squares are settlements contemporaneous with the mature city, located by the Teotihuacan Valley Project. The city's map (Millon et al. 1973) is superimposed, and Teo North and Teo West orientations are marked in red. Maps and plans in this article are oriented toward true north. (map by S.T. Evans based on Cetenal maps, Sanders 1965, Fig. 3, 1996a, Fig. 242, and Millon et al. 1973)



**Figure 2.** Mesoamerica, showing the Central Highlands and Teotihuacan, as well as other major regions. (adapted from Webster and Evans 2013: 597)

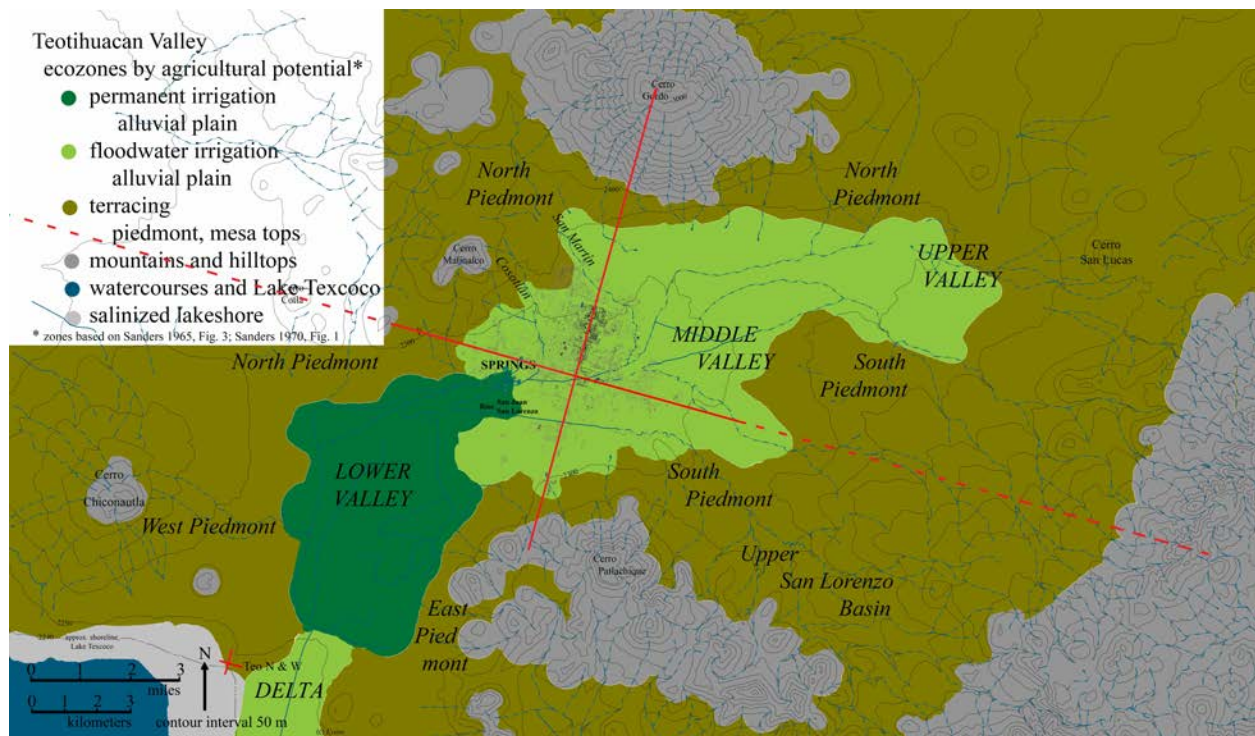
## Topography

The valley's area of about 500 square kilometers (nearly 200 square miles) is defined by the drainage patterns of two rivers, Río San Juan and Río San Lorenzo. They flow southwest into Lake Texcoco, the great central lake of the ancient Basin of Mexico (see Fig. 1). From the Teotihuacan Valley's lakeshore (ca. 2240 meters above sea level; 7,349') northeast to the upper valley plain (ca. 2400 masl), a distance of about 20 km (12 miles) covered several distinct zones (**Figure 3**). The valley's eastern boundary of low hills separates it – and the Basin of Mexico -- from the Plain of

Apam and drainage (and travel routes) toward the Gulf of Mexico.

Many of the hills in the Teotihuacan Valley are eroded volcanic cones, reminders that the valley was carved out of a Pleistocene landscape of active volcanoes by the cumulative effects of many thousands of storms throughout many millennia. With the onset of modern climate conditions about 10,000 years ago, rainfall became a strongly seasonal, summer phenomenon. During winter the land dried out, leaving the soil vulnerable to erosion when the rains returned (**Figure 4**). This gullied the slopes and deepened the soil on the alluvial plains.





The Teotihuacan Valley landscape is dominated by its highest peak, Cerro Gordo, the eroded cone of a Pleistocene volcano (**Figure 5**). It rises to 3,050 masl (10,006') on the north side of the middle valley. The ancient city of Teotihuacan was situated on the lower south-southwestern slopes of Cerro Gordo, and the great mountain's southwestern outliers form a line of low hills that constitute the valley's northwest boundary and the city's western horizon. To the south of the city lies the lower valley plain receding down to Lake Texcoco, and

to the southeast, the profile of the Patlachique Range (**Figure 6**) is echoed by that of the Pyramid of the Sun.

In the distance, south of the Patlachique Range but not visible from the city, are the Basin of Mexico's great eastern mountains: Tlaloc, Popocatepetl, and Iztaccihuatl.

The Teotihuacan Valley's ring of hills grades down to an angle of repose in the slope of the broad piedmont zone that surrounds the set of step-wise alluvial plains stretching down toward the lake.



**Figure 5.** Cerro Gordo, seen from the southwest, from Cerro Malinalco, one of its outliers. The ancient city is beyond the photo, at lower right.

The contours of the gentle slope in the foreground are terraced, edged in maguey (*agave*), and they are perpendicular to the dark line of vegetation indicating the upper reaches of the Barranca Cosotlán, at Teotihuacan's western natural boundary. (Teotihuacan Valley Project photo, 1960 [357])



**Figure 6.** From the Moon Pyramid, the view south shows the Sun Pyramid echoing Cerro Patlachique, concatenating several water mountains, fictive and real. In the distance, the Feathered Serpent Pyramid (to the right of the Sun Pyramid's lowest tier) also offers a visual reiteration of the Patlachique range's western extension. In processions along the upper Street of the Dead, water mountains surrounded the celebrants. (Teotihuacan Valley Project photo, Dec. 17, 1963)



## Hydrology

Teotihuacanos were preoccupied with the availability of water, as is obvious from their efforts to control the flow of this limited essential resource through their landscape, as well as from their ideology (to be discussed below), and by the imagery in their murals (Evans and Nichols 2016: 33-34). Long before their gridded city plan encompassed the permanent springs in the lower valley, Teotihuacanos focused on rainfall and how it circulated, apparently sharing the indigenous Central Mexican belief that all water was bound in a system of recirculation, with underground connections between mountains and the sea.

The Teotihuacan Valley's distinctive annual pattern of rainfall demands close attention by farmers. Average annual rainfall is low -- barely 550 mm (22") -- close to the minimum for rainfall-dependent cultivation of maize, the most important staple crop in the Central Highlands of Mexico. Furthermore, there is an "extraordinary range of rainfall from year to year (almost

100 percent)" (Sanders 1965: 24).

Permanent springs emerge at the northern edge of the lower valley alluvial plain. In the mid-twentieth century there were about 80 permanent springs (Sanders 1965: 23), irrigating an extensive lower valley area of drained fields. While some drainage canals near the springs have been dated to Teotihuacan times (Gamboa Cabezas 2000; Sánchez Sánchez 1982), efforts to date the system of drained fields have not yielded evidence of Early Classic exploitation (Gazzola 2009; González-Quintero and Sánchez-Sánchez 1991: 363; McClung de Tapia 2012: 153). Admittedly, tests have been limited and the lower valley has deep soils that have been subject to modification for centuries; for example, still obvious on modern maps (see drainage, Fig. 1), is Aztec period canalization of the lower valley's drainage, rerouting water to the northern Texcoco plain (Sanders et al. 1979: 387-389). Quite probably, the importance of floodwater irrigation (**Figure 7**) has been

underestimated (Mejía et al. 2016).



**Figure 7.** On the alluvial plain of the Teotihuacan Valley, level fields with embankments were flooded in the growing season, tapping runoff from surrounding hills by a series of canals. (Teotihuacan Valley Project photo)

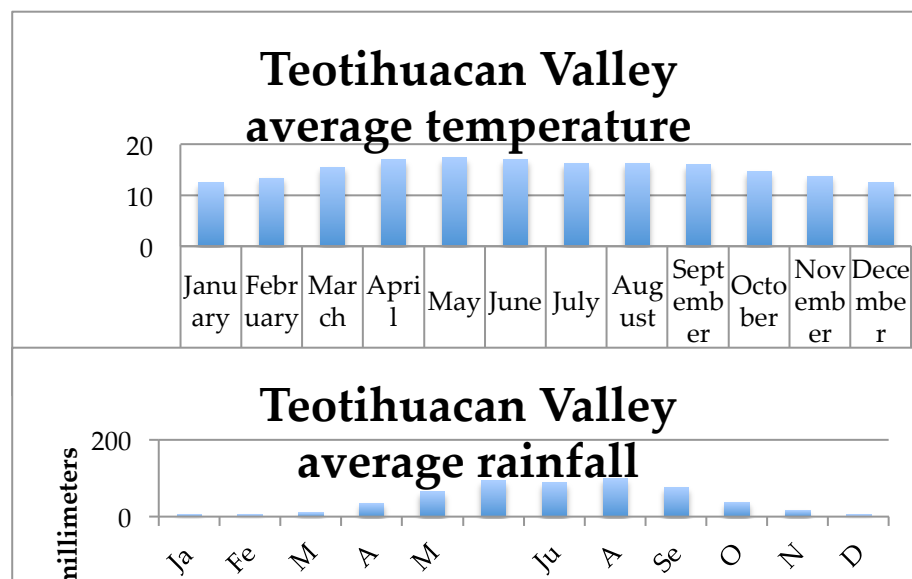
Was administration of the springs important to Teotihuacan's early development? We know that by the beginning of the Early Classic period there is evidence of Teotihuacan state control over the springs and their use to irrigate the fields of the lower valley (Evans 2010a), to be discussed below. But while we lack good

settlement pattern data from the lower valley for this early period, the known hamlets elsewhere in the valley and the probable original drainage patterns suggest that a spring-based irrigation system could have been cooperatively maintained by local families (Carballo et al. 2014: 119-120, applying a model by Ostrom [2003]).

### Climate and Annual Weather Cycles

Both temperature and rainfall follow similar gradients, producing a dry chilly winter followed by springtime warmth (highest temperatures in late spring) and, somewhat later, the onset of the rainy season

(Figure 8a and Figure 8b). Because rainfall lags behind temperature, the warmth of late spring can harm emergent crops if the rains do not appear promptly.



**Figure 8a.** Mid-20<sup>th</sup> century temperature values, in Centigrade. (based on Sanders 1965: 23-24).

**Figure 8b.** Mid-20<sup>th</sup> century rainfall values. (based on Sanders 1965: 23).

The valley's temperature, measured at the meteorological station in the archaeological zone in the 1960s, had an annual average high of about 15.5° Centigrade (about 60° Fahrenheit). The winter average high is about 12.4° C (about 54° F); summer average is just over 17° C (about 63° F). The moderation implied by these values masks considerable variation from year to year. In fact, frost is common

from September into April, occurring dozens of times. Very occasionally, it snows.

Rainstorms start in late spring and taper off by the autumnal equinox, and the histogram of annual rainfall in the mid-twentieth century demonstrates this strong seasonality. While the rain is concentrated in summer, it can also vary during these peak growing months, and July can bring a drought called a "canícula"<sup>2</sup> that can

threaten immature crops. The rainfall pattern also varies over the course of the day, with torrential storms on summer afternoons causing streams to swell. And when rainfall follows its established pattern, it falls so predictably that householders could readily divert runoff to irrigate their terraces as a simple and regular task.

The regularity of these daily and seasonal patterns would have influenced Teotihuacan's rituals toward annual rites to anticipate and celebrate the relatively regular and consistent changes in the natural world, in contrast to, say, propitiation of

### Soils and Potential for Crop Production

On the next page, a panoramic photo of Teotihuacan and the middle and lower Teotihuacan Valley in the mid 1960s shows the view from Cerro Gordo looking to the south-southwest (**Figure 9a** and **Figure 9b**). It encompasses not just the ancient city, dominating the center view, but also its valley setting and the cultivation zones most important to the ancient city. The photograph gives a strong sense of the city's placement, its position anchored by a three-mound group of mountain effigies centered in a natural landscape of noticeable contrasts. The Street of the Dead is as obvious as the pyramids, and even at this distance we can discern its perpendicular, the canalized course of the Río San Juan. The river's course runs from the photo's lower left corner to the eastern edge of the city, where the Teotihuacanos canalized it, first at a diagonal to the city's grid, and then rectified so that its course ran straight along

unpredictably live volcanoes. From earliest settlement in the valley, rainfall was crucial to survival and shaped strategies for crop production. The upper valley plain has little available water besides rainfall, but the middle valley can, situationally, exploit the collective flows of several watercourses for seasonal irrigation to create more secure conditions for plant cultivation. The lower valley was buffered from variation in rainfall by the springs, but full exploitation of their potential was probably only fully realized when the city matured.

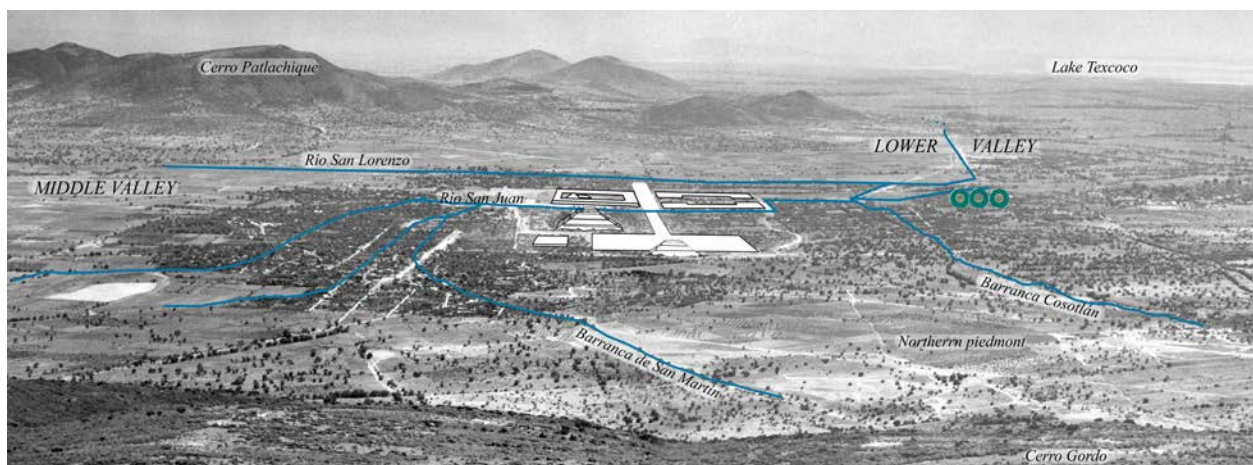
the upper edge of the Ciudadela and Great Compound, crossing the Street of the Dead. At the southwest edge of the city, the river has a long diagonal course toward Lake Texcoco as it moves through the lower valley downstream from the spring line, marked by green circles. In the upper right corner of the photo we see the remnants of the Basin of Mexico's central lake.

The panorama reveals several of the valley's characteristic environmental zones, each with a different potential for exploitation by indigenous cultures.<sup>3</sup> The middle valley alluvial plain appears as a level rectangular grid of fields, left of center. This flat plain could be irrigated more readily than the piedmont slope, but in the upper and middle valleys it could only draw upon limited rainfall and downslope runoff, channeled through feeder streams of the two rivers. Most of the land in the photo was, in pre-Columbian times, challenging to farm.





**Figure 9a.** The lower middle and lower Teotihuacan Valley, looking south-southwest from Cerro Gordo. (photo by William Mather III for the Teotihuacan Valley Project, courtesy of William Mather III and Kirk French)



**Figure 9b.** Annotations of the valley's features and major archaeological monuments. Green disks indicate approximate location of the springs.

Nevertheless, human ingenuity and considerable natural potential permitted populations in the Teotihuacan Valley to thrive as well as survive. In general, the valley's soils are fertile and can sustain repeated cultivation without fallowing and are amenable to cultivation with pre-Columbian implements and techniques (Sanders 1965: 25). Soil depth in the lower valley can measure seven or eight meters, while the soils of the upper valley plain and

piedmont may be much less than a meter, or even completely eroded, exposing a subsoil base of *tepetate* (Nahuatl, meaning "stone-mat") compacted volcanic ash "relatively impervious to water" (Sanders 1965: 24). Tepetate actually conserves water for cultivation when soil over it is sufficiently deep. Rainfall can be collected for later use in constructed ponds, called *jagüeyes* (Taino, pron. hahways).

Potable liquid for drinking was another essential resource. In Aztec times, a thousand years after Teotihuacan's apogee, fresh *agave* sap was a readily accessible beverage providing nutrition.<sup>4</sup> There is iconographic and botanic evidence of agave use in Teotihuacan times, but archaeological evidence indicates that, as a well-integrated adaptive strategy, *maguey* (Taino, meaning "agave", pron. mahgay) terrace farming was brought into the Basin after the decline of Teotihuacan, by Coyotlatelco peoples (Cobean and Mastache 2010). Teotihuacanos probably met their potable liquid needs with a range of sources, including fresh water from the springs; the distances from the springs to homes up on

the piedmont were no greater than those in some ethnographically known populations.

Two thousand years of cultivation and natural cycles of erosion and regeneration of the Teotihuacan Valley's alluvial plains have inevitably resulted in changes in the landscape, but for most of that time, pre-Columbian farming methods were practiced and they were not deeply intrusive. Building on Manuel Gamio's encyclopedic study (1922), William Sanders's (1957) ethnographic research in the Teotihuacan Valley in the 1950s documented traditional farming methods – some essentially unchanged since pre-Columbian times -- and features of the landscape before modern methods like chisel-plowing wrought serious changes.

## The Development of the City of Teotihuacan

The mature city, of, say, CE 400 was planned to a degree impressive in the ancient world; Teotihuacan's great processional ways marked out an orthogonal grid pattern followed by more than 2,000 buildings extending over 20 km<sup>2</sup> (8 miles<sup>2</sup>). The grid's orientation is not true north, but ca. 15°25' east of north. Nearly every street, civic building and house in the mature city closely conformed to this "Teo North" orientation, which was probably established with the second stage of the Pyramid of the Moon (the first known monumental structure at the site), about two thousand years ago. With the mature city's

orientation in place and with the Street of the Dead as its backbone, the civic-ceremonial center developed; the city grew and thrived for at least 500 years. But this plateau of prosperity began to erode with violent damage and burning of the ceremonial center, probably some time in the sixth century CE. This crisis of confidence in the city's power prompted a precipitous population decline. The remaining population lived in a few villages ringing the empty center. The largest, nearest the springs, became the new Teotihuacan, and today, as San Juan Teotihuacan, is still the local capital.

## Early Settlement in the Teotihuacan Valley

Of all the regions of the Basin of Mexico, the Teotihuacan Valley was among the last to be settled, centuries after the southern basin, which had permanent villages in the Early Formative period (see

Sanders et al. 1979 for an overview). The southern basin was richer in readily cultivated farmland than the Teotihuacan Valley; it was far warmer and wetter, with about 1200 cm (48") of annual rainfall.

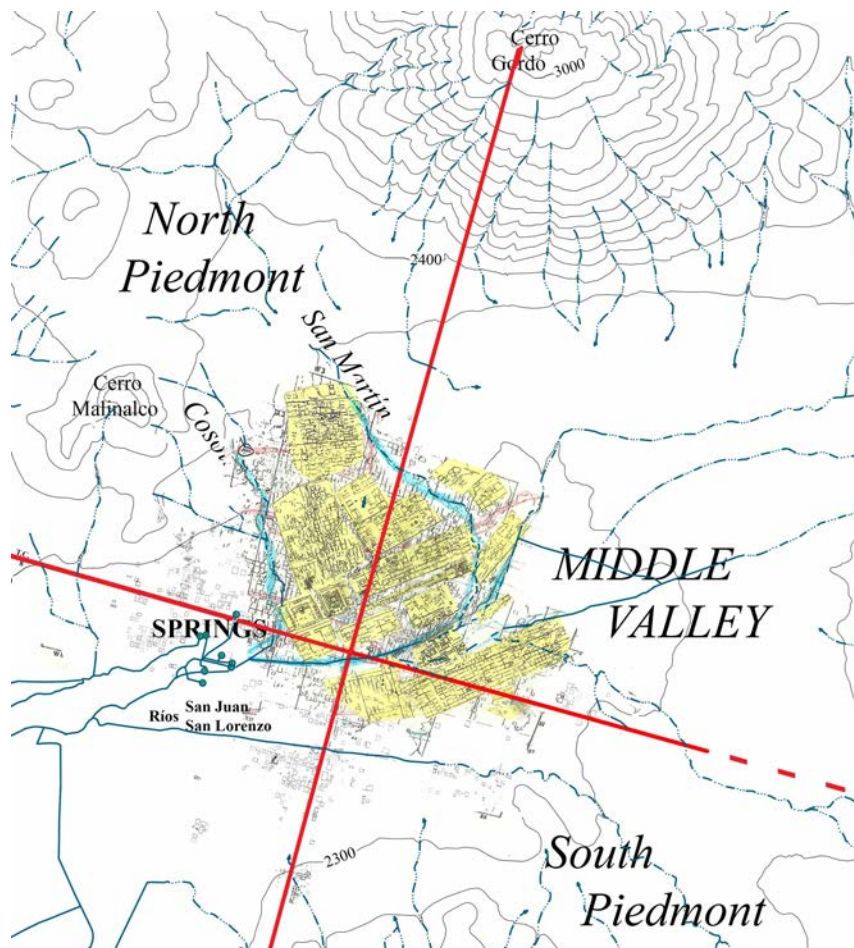
Population growth in the Basin eventually pushed colonization into the more marginal Teotihuacan Valley. The earliest known settlements are small “hamlets” (terminology of the Teotihuacan Valley Project [Sanders et al. 1979: 96]), often situated along the barrancas that cut down through the sloping piedmont zone of the middle valley. The early farmers probably enhanced the water supply to their fields by setting up check dams to divert rainfall runoff from the barrancas.

The city would grow up between two major barrancas: de San Martín (aka Piedras Negras), marking the city’s traditional northeastern boundary, and Cosotlán, which snakes southeast along the western edge of the city (see Figures 1 and 8). They both run northwest to southeast to intercept the Río San Juan, with the “Old City” lying uphill from the ceremonial center, according to René Millon (Millon 1973: 34; Millon et al. 1973: N6W2 and 3, N7W2 and 3).

This neighborhood may still bear traces of its original layout, which was probably terraced in contour with the slope, a pattern that has been found elsewhere in the city (Nichols et al. 1991) and that no doubt extended over the piedmont before the grid. Behind these contour terraces, deep and moisture-retentive soil would accumulate from the downhill flow of

rainfall, eroding soil, and household waste, a boon to farming and a problem when population densities rise and efficient runoff is desirable.

Like the piedmont gradient itself, the barrancas are oriented roughly between 20° to 30° W of N. These values become significant in considering the orientation of the city as it was planned and established, which was at a diagonal to this slope and its contours. Had the city continued to develop in conformance to the slope, its plan might have looked like **Figure 10**, a crude approximation of the evolved city (in contrast to a planned and engineered city). In the natural-contour city collage, ceremonial architecture has been arbitrarily arrayed just above the natural course of the Río San Juan just west of the Great Compound. The collage uses a true north orientation, as do the other figures in this paper, in an effort to keep in mind that Teotihuacan’s Teo North plan is “unnatural” and required serious civil engineering to create the ceremonial core, the grid, and the rerouted watercourses. The grid aligns nearly every wall in the city, and the significance of Teo North and Teo West would have been a matter of daily observance for the city’s residents and visitors.



**Figure 10.** Teotihuacan as it might have developed as a “natural-contour city”, without changing its early pattern of contour settlement. It still lies mostly between the two barrancas but, unlike the Teo North city, the city plan does not substantially alter the natural drainage except to establish contour terraces. Teo North and West are not considered in the “natural city” -- red lines indicate their paths along the actual city’s Street of the Dead and East-West Avenue. (collage by S.T. Evans with annotated detail of Figure 1; yellow areas are photocopied from Millon et al. 1973).

## Establishment of the City

Efforts such as terracing would have maximized the security of crops for the early colonists, but the growing community’s population at the turn of the millennium may have been well over 10,000. Teotihuacan became a sizable city during the same period that the southern Basin of Mexico and western Puebla experienced ash fall and eruptions from Popocatepetl and Ixtle volcanoes (see Plunket and Urñela 1998). Long before lava flows covered the Basin of Mexico’s first city, Cuicuilco, it was clear to people in the southern Basin that they

should try to find safety far away from such problems.

Teotihuacan seems to have been one such refuge, as suggested by rising population size and, more subtly, by household ritual paraphernalia.<sup>5</sup>

Teotihuacan’s rulers were able to provide sanctuary, work and food to this valuable labor force. The city’s rising population permitted planning on a monumental scale, starting with a ceremonial platform that was the first stage of the Pyramid of the Moon (Sugiyama and Cabrera 2007).



Teotihuacan's developmental phases reveal the linked trajectories of population growth and agricultural intensification. To secure larger harvests, Teotihuacanos exploited different water sources: they intensified the rainfall-dependent piedmont zones, channeling runoff, and developed drained fields in the lower valley to be used as nursery beds, crowded with early seedlings to plant out on the alluvial plain in time for the rains.

These strategies required dependable rains and effective irrigation techniques, so different water-related deities became standard fixtures in the city's artistic program. The city's imagery and orientation may reflect a changing pattern of water worship, with early emphasis on rain deities and a later, added concern with springs and felines (Evans and Nichols 2016). Note, newly important water-related deities do not replace established ones, but join an expanding group. The Storm God is worshipped throughout Teotihuacan's history, and jaguars and serpents are featured in murals that date from the early city, in lower levels of the Street of the Dead Compound, Teo IIA (Tlamimilolpa phase, Cabrera 1995f: 4.1: 46), or possibly even from Teo I-II (Tzacualli-Miccaotli phases, per Magaloni 1995: 200). The "Jaguars and

serpents mural" (Cabrera 1995f: 4.1: 45-46) may be an early instance of an important and enduring theme in Teotihuacan art: felines and serpents and the relationship between the deities associated with them, which the Aztecs would call Tezcatlipoca and Quetzalcoatl.

The two worked together to reconstruct the universe before the Age of the Fifth Sun could be instigated at Teotihuacan (Ossio 2015: 213). This brought forth a liminal time-space zone, emerging from time that was before the present, Fifth Sun, *anecumene* ("not of this world" – or mythic) domain of time, and initiating the *ecumene* ("of this world") domain of the Mesoamerican space-time continuum (López Austin 2015: 30-31)

Honoring the rain gods with monuments and rituals had the practical effect of keeping the growing population occupied, reasonably satisfied with their standard of living, and loyal to the government. The grid provided an expanding set of arenas for processions attended by participants and onlookers and monitored, from the pyramids, by the city's rulers, who could consequently keep track of piety and loyalty, even at the household level.

### ***Teotihuacan Chronology: Cultural Periods and Ceramic Phases***

With the first stage of the Pyramid of the Moon, the monumental ceremonial center was established, and we enter the chronology of the new city (**Figure 11**). This chronology is systematized through several correlated sequences that pertain to the city and its culture-ecological contexts, the Teotihuacan Valley and Mesoamerica. Mesoamerican and Teotihuacan cultural periods are characterized by trends in culture history and associated material cultural

remains, and phases capture the changing patterns in key diagnostics such as ceramic vessel type and decoration. Teotihuacan's phase sequence is generally accepted.

Mesoamerican and Teotihuacan cultural sequences provide "relative dating" in the sense that each expresses a progressive sequence of connected segments that occurred in a particular order, relative to each other, but may lack strong linkage to "absolute" dates, calculated in years before

present. Furthermore, if one of the phases is linked to a new absolute date, the others must maintain their relative order and must be fitted into a different time frame.

A recent crop of absolute dates has moved back in time important markers such as the arson that signaled the city's sharp decline. The date of the burning is critical to the rest of the sequence, and readers should note that older scholarly and popular publications use dates in the eighth, ninth, or even tenth century. The recent absolute dates suggest that if Teotihuacan, as a functioning city centered on the Street of the Dead, outlasted CE 600 it was not by much.

We do know that the relative and absolute chronologies stretch through at least five centuries of urbanization, from the first stage of the Moon Pyramid to the end of Teotihuacan's active life as a city, and that the pre-burning sequence of cultural events, associated with ceramic types, must be fitted into a shorter sequence than previously thought.

The chronological table (**Figure 11**<sup>6</sup>) presents a plausible correlation of cultural periods for Mesoamerica and for Teotihuacan, with ceramic phase names and some tentative absolute dates.

Short version, immediately below.

**Chronology of urbanized Teotihuacan:** relation of Mesoamerican cultural periods to TEOTIHUACAN CULTURAL PERIODS and *ceramic phases*:

Urbanizing:

Early: Late Formative period's last century, ca. 100 – 1 BCE

PROTO-TEOTIHUACAN PERIOD; *Patlachique phase*;

Terminal Formative period, early-mid, ca. CE 1 – ca. 170

TEO I, IA, AND II PERIODS; *Tzacualli* and *Miccaotli phases*;

Early Middle: Terminal Formative period, late, ca. CE 170 - 250

TEO IIA PERIOD; *Early Tlamimilolpa phase*;

Urbanized:

Middle: Early Classic period, early, CE 250 – 350

TEO IIA-III TRANSITION PERIOD; *Late Tlamimilolpa phase*;

Mid-Late: Early Classic period, mid, CE 350 – 450

TEO III PERIOD; *Early- mid Xolalpan phase*;

Late: Early Classic period, late, CE 450 - 600

TEO IIIA AND IV PERIODS; *Late Xolalpan and Metepec phases*;

De-urbanized, after the burning and demographic collapse:

Late Classic and Epiclassic periods, CE 600 - 900

*Oxtotitpac* and *Coyotlatelco phases*;

Early Postclassic period, CE 900 - 1200

*Mazapan phase*;

This stretch encompasses four Teotihuacan culture periods and six ceramic phases.<sup>7</sup>

Figure 11. Table of Teotihuacan Chronology

Mesoamerican culture periods	dates		Teotihuacan cultural periods[1]	Teotihuacan phases[2]	Teotihuacan valley & city benchmarks
Early Postclassic	1100-1050		Mazapan	Atlatongo / Tollan	
	1000-950			1000-900	
	900-850			900-850	maguey farming;
	850-800				
	800-750			Coyotlatelco	
Early EpiClassic and Late Classic	750-700		Oxtotitpac		squatters in the city;
	700-650		proto-Coyotlatelco	Early EpiClassic / Oxtotitpac	village focus at SJT
	650-600		600 Collapse	600 Collapse	
	600-550		550: BURNING	550: BURNING	precipitous loss of population
	550-500				
	500-450	Late	TEO IV =	= METEPEC	maintaining but not expanding
Early Classic	450-400		TEO IIIA =	= Late XOLALPAN	
	400-350	Mid-Late	TEO III =	= Early	city at its peak
	350-300				Teo influence abroad;
	300-250	Middle			apt. compounds;
	250-200		TEO IIA-III transition =	= Late	adosado mask, FSP;
	200-150		TEO IIA =	--TLAMIMILOLPA-- = Early	city population 80-90% max
	150-100				Sun Pyramid complete [9]
	100-50	Early	TEO II =	= MICCAOTLI	
Terminal Formative	50-0				
	0-50		TEO I =	= Late TZACUALLI = Early	
	50-BCE		BCE / CE	BCE / CE	
	50-100		Proto-Teo (Patlachique)	PATLACHIQUE	--BCE / CE-- Moon Pyr. established;
Late Formative	100-150				
	150-200		Proto-Teo (Tezoyuca)	TEZOYUCA	
	200-250				
	250-300				
	300-350				villages shift to valley floor
	350-400			CUANALAN	
Middle Formative	400-450				
	450-500				
	500-550			550	
	550-600				
	600-650				
	650-700			CHICONAUTLA	
	700-750				
	750-800			750	
	800-850				
	850-900				
	900-950			ALTICA (to ca. 1150 BCE)	

## **Proto-Teotihuacan and Teo I: Pyramid of the Moon and Power of Teo North**

Teotihuacan cultural periods Proto-Teotihuacan, Teo I and IA (usually correlated with late Patlachique and subsequent Tzacualli ceramic phases) mark initial efforts at monumental construction on the ceremonial center.<sup>8</sup> The Teo I population already numbered tens of thousands of people -- migrants seeking security and locals perhaps newly privileged by the arrival of homeless outsiders who became an instant lower class. Supporting this demographic wealth with increased food production could be achieved by the continued intensification of their valley and exploitation of food-producing areas within transportation range of the city.<sup>9</sup> Controlling a sizeable, ethnically diverse population would require an urban plan with venues for orderly gatherings designed to

increase social solidarity, and with potential for monitoring the population.

Teotihuacan did not evolve, as most cities do, from its earlier patterns of settlement and land use. The mature city was not a series of haphazard responses to stress, a mass of situational and diverse additions along the contours. The natural-contour plan, shown above, is in strong contrast to the Teo North orientation initiated by the planners with the second stage of the Pyramid of the Moon. This set the course for the Street of the Dead as it extended south, and for all the parallel and perpendicular streets and alleys in the mature city, a plan to accommodate growth for centuries. What motivated the planners?<sup>10</sup>

### ***Why This Orthogonal Orientation?***

Food production is a basic component of the culture-ecological equation, but to the Teotihuacanos, another was securing fertility by successfully petitioning the great forces essential to their universe and to farm fields, the deities and sacred principles in charge of water and abundance. From the emic perspective of the culture-bearers, both praying and farming were essential for successful harvests.

Offerings to the gods in the Postclassic Central Highlands were debt repayments – the gods underwent torture and privation so that the cosmos could come alive, setting in motion the sun and moon and time, events that are supposed to have happened in Teotihuacan. The gods created humans and gave them that most fundamental food, maize. But for farmers to grow maize, the gods must every year offer

the gift of water in season, and divine generosity should be encouraged by active human efforts, offering sacrifices and monuments and rituals such as processions.

Famines due to crop failures induced by irregular climate patterns in the Basin of Mexico occurred regularly in pre-Columbian times (e.g., in the mid-1400s, according to Sahagún 1979b [1569]: 8: 2), and Teotihuacan's relation to its challenging local climate was precarious. Given the valley's low rainfall, any delay in the onset of the summer rains was a crisis, especially with the growth of the city's population, which simultaneously created an increased need for food while transforming productive farm terraces into sprawling shantytowns. As the rainy season approached in late spring, the sunset moved north along the western horizon and was watched more anxiously than at any other time of the year.

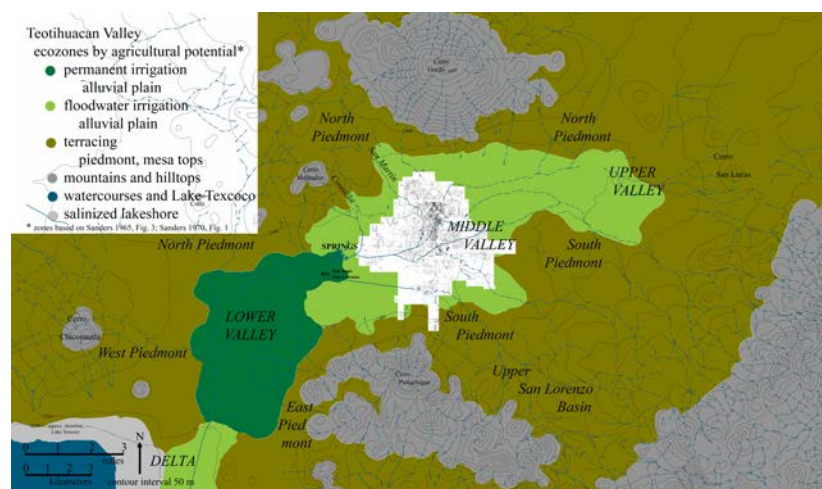


The workers' shantytowns were later replaced by planned apartment compounds squarely oriented toward Teo North and its perpendicular, Teo West (ca. 16° N of W). Teotihuacanos could track the changing seasons along the tall, smooth exterior walls of compounds and monuments. Late spring sunsets illuminated increasing areas of south-facing walls until the due-Teo-West sunset flooded the city's grid in a semi-annual high tide of light. Teotihuacanos could bathe in this light, in direct and potent contact with the sacred forces controlling the rain, through prayers expressed in dances and processions taking place in the city's major causeways, canals, plazas and monuments. Particular parts of the city may have developed signature sensory assemblages – the combined quality of light, sound, fragrance, viewshed and other features of the ambiance. Particular places may have become meaningful as through sensitivity to a multiplicity of sensory stimuli, and the accumulated history of their uses.<sup>11</sup>

Like many scholars, I believe that the orientations honored essential sacred

principles such as time and rainfall, while I further posit that the planners had two other motives for this particular orientation of the grid: taming the potentially destructive capability of rainfall as runoff; and creating arenas for processions along these vectors, as an important means of maintaining social solidarity and expressing veneration for time and water. Furthermore, the city's orientations and situation provide other practical advantages, in contrast to the "natural-contour city" or, perhaps, the "true-north" city. If we assume that Cerro Gordo was an important anchor in the city plan (Tobriner 1972), why was this alignment, Teo North, chosen over a huge range of potential axes radiating out from its summit, including true north?

Anchoring the city's layout on Cerro Gordo with a true north orientation could have been achieved by establishing the city just a few kilometers to the east (**Figure 12**). But this would situate the city too far up-valley to use effectively its limited runoff. Also, the true west perpendicular could not deliver the practical and ideological benefits bestowed by Teo West, discussed below.



**Figure 12.** Teotihuacan as a "true-north city" oriented to the summit (real or ideal) of Cerro Gordo and at roughly the same elevation on the slope of the piedmont. The ecozone map accentuates the true-north city's awkward positioning in the center of the middle valley. Although the actual city required a monumental civil engineering project in rerouting Río San Juan, the true-north city would entail even more. Furthermore, the true-north city's grid would run along natural contours, reducing grid's efficiency in diverting runoff.

(collage by S.T. Evans)

Teotihuacan's monumental architecture counted out the days with the dimensions of great rectangular structural footprints (Sugiyama 2005: 41), but the orthogonal grid served another, more practical purpose. The city's planners made water as much a part of the grid as was

### ***Diagonal to the Slope, An Urban Advantage***

Thus the Teotihuacan orientation and grid had a practical effect. The grid is pitched at a diagonal of 35° to 45° to the direction of the downward trend of the piedmont slope, an orientation that tempers the erosive power of runoff while enhancing civic hygiene by channeling rainwater and wastewater through the city.

At just over 3%, the city's slope is so gentle that most modern visitors to the city assume that the site is on a level plain.

### ***Pyramid of the Moon, A Water Mountain***

The temple atop the Moon Pyramid faced south, but the monument's greatest power may lie in its function as a focus for worshippers on the Street of the Dead, facing Teo north to see the temple pyramid

water worship; the expanding orthogonal framework of the city formed a skeleton knit together by a water-bearing vascular system. Drainage was built into the apartment compounds, the streets, canals, canalized waterways and irrigation systems (Angulo 1987b).

However, even a slight gradient affects the pattern of runoff and its almost inevitable Teotihuacan Valley consequence, erosion, and the barrancas that frame the city testify to its down-cutting power. This pragmatic hydrological consequence of Teotihuacan's orientation may have been accidental and quite secondary to more geo- and cosmo-mantic concerns, but our growing understanding of the city's planners suggests that they included capable civil engineers.

point directly at Cerro Gordo's summit in its idealized form, the imaginary apex truncated by the mountain's volcanic crater (**Figure 13**).

**Figure 13.** Looking north along the Street of the Dead at its intersection with East-West Avenue, showing the Sun Pyramid at right and the Moon Pyramid and Cerro Gordo, just left of center. The line of trees marks the course of the Río San Juan; just beyond it is the Street of the Dead Compound. (photo by S.T. Evans)





In the vast cosmo-hydrological system that connected the water-storing mountains and the sea through rainfall and underground channels (**Figure 14**), the

Teotihuacanos constructed their first effigy mountain, the Moon Pyramid, in part to honor Cerro Gordo as a great water mountain.



**Figure 14.** The water mountain from Teotihuacan's Tepantitla apartment compound illustrates the Central Highlands tradition that the known world's water circulates through the landscape, filling mountains and then being released as rain or as water from the springs. In the 16<sup>th</sup> century, Sahagún's informants said that the mountains were "magic places, ... like ollas or like houses; ... filled with the water" (Sahagún 1963 [1569]: 11: 247).

(Image:

[upload.wikimedia.org/wikipedia/commons/a/a5/Tepantitla\\_Mountain\\_Stream\\_mural\\_Teotihuacan\\_%28Luis\\_Tello%29.jpg](https://upload.wikimedia.org/wikipedia/commons/a/a5/Tepantitla_Mountain_Stream_mural_Teotihuacan_%28Luis_Tello%29.jpg) (Teseum) accessed June 9, 2016)

These water mountains were controlled by the Storm God, whose depictions are among the earliest deity representations at the city, in the Terminal Formative (Proto-Teotihuacan and Teo I) period. We recognize the Storm God as ancestral to the Aztec Tlaloc, and as descended from an already ancient line of representations of sacred principles of water and fertility. Water worship as an early and major focus of Teotihuacan's rituals is demonstrated by ceramic Storm God vessels in Teo I, IA and II (Tzacualli and Miccaotli ceramic phases). The Storm God's diagnostic goggle eyes may represent and in turn be referenced in the pierced disk *chalchihuitl* symbol, a sign of preciousness and sanctity that became indelibly associated with the day count and also with

droplets of blood and water, and also became a signature of Teotihuacan on monuments in distant cities. Storm God worship in Teo I-II would be consistent with dependence on rainfall as the major source of water for crops grown on the piedmont slopes and the rainfall-dependent middle and lower valley alluvial plains.

When runoff coursed through streams and canals and into ponds, reservoirs, and lakes, it was part of the domain of a water goddess known to the Aztecs as Chalchihuitlicue (She of the Jade Skirt; **Figure 15**) and represented in Teotihuacan art by at least one great monolithic statue (**Figure 16**). The water goddess statue was found in the Moon Pyramid plaza, but cannot be placed in Teotihuacan's chronology.



**Figure 15.** Chalchihuitlicue (as shown in the Codex Borgia, 65), “a powerful being whose forces could destroy a society, as indicated by the people caught in the flood that she has unleashed” (Umberger 2013: 3). (copyright-free image from [https://upload.wikimedia.org/wikipedia/commons/2/2e/Chalchihuitlicue\\_copy.jpg](https://upload.wikimedia.org/wikipedia/commons/2/2e/Chalchihuitlicue_copy.jpg) accessed June 9, 2016)





**Figure 16.** Statue commonly identified as a water goddess, found near the Pyramid of the Moon, now in the Museo Nacional de Antropología, Mexico City (over 3 m high and weighing 22 metric tons). (photo by Wolfgang Sauber adapted from Wikipedia commons, [https://commons.wikimedia.org/wiki/File:Teotihuac%C3%A1n\\_-\\_Chalchiuhtlicue.jpg#filelinks](https://commons.wikimedia.org/wiki/File:Teotihuac%C3%A1n_-_Chalchiuhtlicue.jpg#filelinks) accessed June 9, 2016)

Some of Teotihuacan's earliest known murals may date to this period, and most feature abstract designs (see Appendix, Teotihuacan Murals, which is found at the end of this paper). Simple geometric designs found at the Temple of Mythological Animals (northern Street of the Dead) seem consistent with the style of Teo I (Tzacualli phase; Lombardo 1995: 18-19), and copies of murals uncovered at the Temple of Agriculture, along the northern Street of the Dead included some that may be of similar age (Lombardo 1995: 18-19; Magaloni 1995: 205). Some of the murals found at various levels of the Street of the Dead Compound (Cabrera 1995d: 3.1: 27-28, 3.2: 28-31; Cabrera 1995f: 4.2: 46; Miller 1973: 89-90), depicting abstractions such as green pierced disks and interlaced volutes, may date to Teo I-II (Tzacualli-Miccaotli per Lombardo 1995: 18-19 and Magaloni 1995: 200).

## **Teo II and IIA: Teotihuacan Growth, in Size and Monumentality**

From the combined effects of the influx of migrants and intrinsic growth of established populations that began in Teo I, the maturing city developed population densities and an overall size rivaled by few other indigenous settlements in the New World. With the city's major orientation in place, all subsequent construction would

strengthen Teotihuacan's relationship to water, time, and fertility. In Teo II and IIA (Miccaotli and Early Tlamimilolpa phases, roughly CE 100 to 250), monumental construction continued and the city grid extended along the Street of the Dead to the Río San Juan.

## Pyramid of the Sun and the Power of Teo West

The construction dates of later levels of the Moon Pyramid seem to overlap with construction of the Sun Pyramid, over the course of about 150 years of Teo IIA (ca. CE 170 to 310, per N. Sugiyama et al. 2013; also, Cowgill 2015: 83), with state monumentality at its peak in the early 200s (Sugiyama et al. 2016). From a plaza at the foot of the Moon Pyramid to the front of the Sun Pyramid, the Street of the Dead ran unobstructed for over half a kilometer, and together with Cerro Gordo, the pyramids and avenue created a theater for rituals glorifying water.

The city's mural art developed on the walls of new structures that rose along the Street of the Dead and elsewhere (Miller 1973: 19-20), presumably depicting ceremonial traditions already in place. Enduring themes appear in this early-to-

middle period: felines, serpents, freshwater symbols, and irrigation canals (see Mythological Animals, in the Appendix).

The presence of a water goddess statue near the Moon Pyramid led Saburo Sugiyama to conjecture that the Moon Pyramid and Sun Pyramid might represent an ideological dichotomy similar to that represented by the twin temples atop the Templo Mayor pyramid in Aztec Tenochtitlan: northern water deity, southern sun deity (2013: 6). Both Aztec temples faced west, but at Teotihuacan, the Pyramid of the Sun was the first Teo West-facing major monument. The city's rulers could more dramatically perform rituals pertaining to the rains as they occurred in the course of the year, while continuing to venerate the rains stored in the water mountains.

## *Pointing Toward Toxcatl: Lessons from the Aztec Solar Year (Xiuhpohualli)*

“The fundamental concern of Aztec ritual was with rain and fertility”  
(Broda 1987: 71)

The annual ritual cycle in Teotihuacan can be elucidated by an examination of the Aztec solar year, assuming that cultures of the Central Highlands of Mexico shared and honored certain beliefs and sacred principles essential to their shared agrarian year. There are of course problems with using the Aztec calendar to interpret that of Teotihuacan: the Aztec calendar as reported by the chroniclers has inconsistencies, and modern scholars do not agree over certain matters of interpretation. Nor do all modern scholars see a strong link between Aztec culture and that of Teotihuacan – the matter of a shared Nahuatl language is disputed, and shared

language is a major factor in overlap of customs. Despite these complications, I agree with Nicholson's perspective: Aztec iconography is fundamentally important for Mesoamerican studies, it reflects earlier systems and constitutes a synthesis of them (Nicholson 1973: 72). Furthermore, the Teotihuacan Valley lies within the Aztec heartland, the Basin of Mexico. Accepting this point of view, I here present basic information about the Aztec calendar to support the thesis that Teotihuacan's grid, marking a critical point in the agrarian year, served as an arena for processions designed to intensify the power of its rituals.

## The Importance of Leap Year:

In one of their most important ritual calendars, the Aztecs divided the 365 full days of the solar year into eighteen “months” – twenty-day periods known by the Spanish word *veintenas* (“twenties”), plus a period of five dead days, *nemontemi*, at the end. How did they deal with the rest of the solar (tropical) 365¼-day year? Without the intercalation of a day every fourth year, the sequential months of the Aztec *veintena* calendar would become disassociated from the solar year’s cycles of time marked by climate and agrarian practices; the calendar would represent a vague year. In only a few decades, the seed-planting or harvest ceremonies of the Aztec *veintenas* calendar, celebrating the changing natural world, would lose their meaning.

But, in fact, the practices associated with the *veintenas* show “the intimate connection that existed between the agrarian cycle – or, if you prefer, of vegetal germination and growth – and that of the successive religious celebrations of the ancient Mexican calendar” (Castillo 1971: 77).<sup>12</sup> An extended description of agricultural and ritual practices associated with the *veintenas* by Milbrath “demonstrates a clear link with seasonal cycles” (2013: 24; also Milbrath 2007: 172<sup>13</sup>).

Nonetheless, scholars do not agree that the Aztecs – or any other Mesoamerican culture –intercalated a day every four years in order to maintain congruence with the natural annual cycle.<sup>14</sup> In fact, a leading specialist asserted that none of the native calendars “ever had intercalary leap-year days, at least before the Conquest” (Edmonson 1988: 9). This blanket statement notwithstanding, there are good reasons for believing that the Aztecs and

many other cultures of Mesoamerica incorporated the extra day into their calendars, and the reverence offered to groups of four (and to time in general) may have its roots in the gift from the gods of this extra day, every four years. The extra day completes the group of four as the center completes the quincunx.

Aztec use of leap year corrections is posited by both Durán and Sahagún.<sup>15</sup> “These people observed the leap year much as we do” (Durán 1971 [1579]: 469). In a rebuttal to assertions by Motolinía, Sahagún wrote: “in the count which may be called a true calendar they count three-hundred and sixty-five days, and once every four years they counted three hundred and sixty-six days with a feast which for this reason they observed every four years” (Sahagún 1979a [1569]: 4: 141). He conjectured that this took place at the end of the year, in the *veintena* *Izcalli*, or in the *nemontemi*, in a one-day great and riotous festival involving the entire populace and filled with dancing, processions, and general drunkenness. “And every four years there was ‘The Taking Out of the Children’ and ‘The Drunkenness of the Children’ and the rulers danced the dance [Nahuatl: *mitoa*] of the lords. ... And the celebration was done in one day, and at sundown a procession [Nahuatl: *tlayavalolo*] was held” (Sahagún 1997 [ca. 1559]: 67).<sup>16</sup> Motecuzóma II himself attended, “a special personal appearance ... extravagantly costumed for the Princely Dance” (Hajovsky 2015: 87).

Furthermore, a “[p]ardon for ... sins was granted every four years on the jubilee” (Durán 1971 [1574-1576]: 97). At their first every-fourth-year *Izcalli* festival held after their birth, Aztec children had their ears pierced, were given godparents, and

probably established a social identity as members of the same age set and defined themselves chronologically, throughout their lives, by that particular bissextile ceremony. Other four-year counts involved individual life passages: at age four children were weaned, and began training in basic skills, and the end of life began a four year passage into oblivion. Regardless of the afterlife an Aztec had achieved through the manner of death, the soul would disappear after four years and ritual observances of the person's passing would cease.<sup>17</sup>

There are other more circumstantial reasons for believing that the Aztecs, and probably other Mesoamericans, used the solar year with its regular bissextile correction. One is the prevalence, throughout Mesoamerica, of the ancient use of horizon markers that provide meaningful benchmarks for important points in the sun's yearly track, particularly equinoxes and solstices. So common are these sightlines that it is difficult to imagine that the site planners and ritual specialists did not use them to readjust calendars, particularly where regular sharp seasonal changes signaled successive phases of the agrarian cycle. The culture's timekeepers understood the fundamental importance of maintaining this knowledge when they incorporated it into the plans of site layout – such as Teotihuacan's.

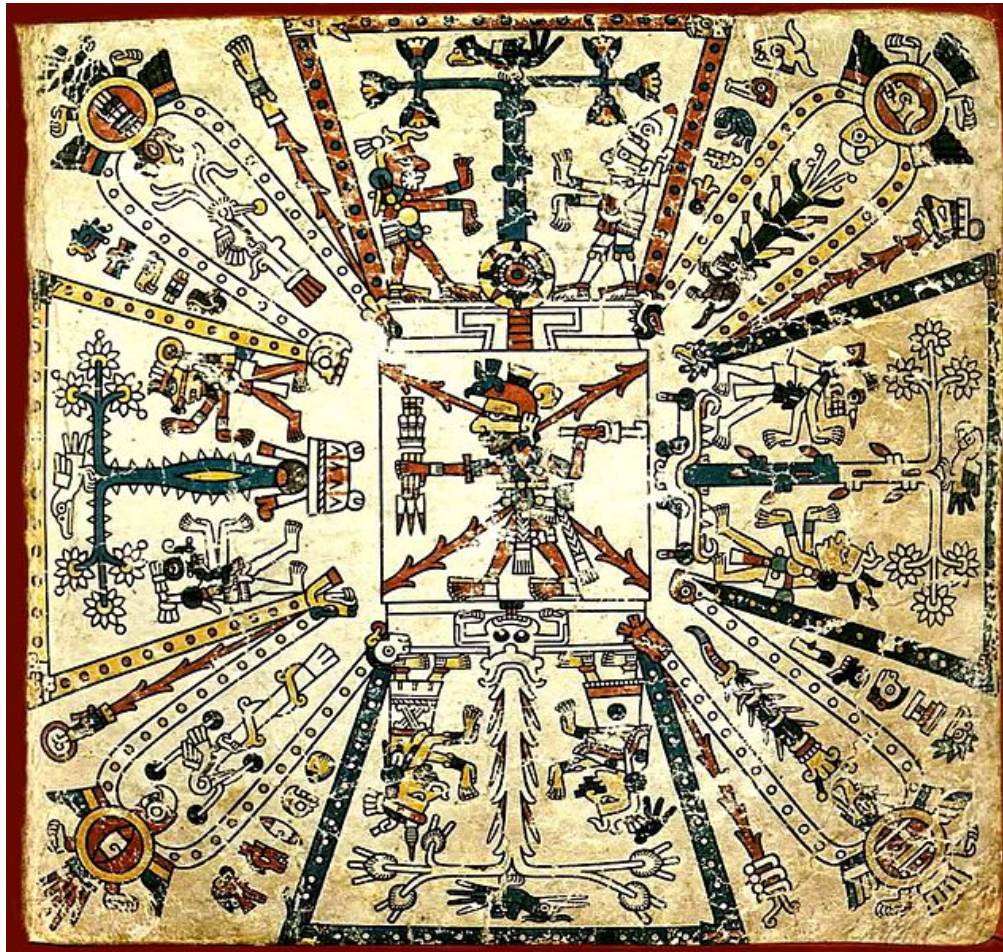
Another important yearly marker, the zenith passage, could be noted by those observing their own shadows (Tichy 1981: 231, 233). Colonial officials of the late 16<sup>th</sup> century were cautioned, in the *Relaciones Geográficas* (see, for example, Castañeda 1979 [1580]: 211), to watch for any untoward native attention to the passing of the sun directly overhead (see also Aveni

2001: 40-42). The authorities were concerned about the continuing practice of pagan rites, but their acknowledgment of native attention to these events of the solar year suggests that in prehispanic Central Mexico, the empirical perception of the natural calendar took precedence over the 365-day *veintena-plus-nemontemi* vague year, and that adjusting the calendar to maintain consistency with the agrarian year was routine.

Aztec traditions provide circumstantial evidence for a bissextile intercalation in the iconographic and ritual importance of the count of four. Each year took, as its year name, one of four day-names from the twenty day-names of the *tonalpohualli* divinatory year (see Boone 2007: 15-18). These same four names recurred for thirteen cycles of four years to comprise the Aztec "century" of 52 years. It would seem that the calendar itself honored the importance of marking each four years as a set, receiving the added dimension of an extra day.

Four also had spatial connotations: the Aztec capital, Tenochtitlan, was divided into quarters, and had a four-part plan centered on a spiritual axis that connected the plane of the earth to the levels of the cosmos. Describing the first page of the *Codex Fejerváry Mayer* (**Figure 17**), Aveni noted "If there is a central theme about order in the universe ..., it is the idea that all things are arranged in categories of four" (Aveni 1989: 265; see also Aveni 2012: 75-82). Perhaps this fundamental numeric theme was initiated in the natural cycle of marking out groups of four years by the remarkable occurrence of the extra day borne within them.





**Figure 17.** Codex Fejerváry Mayer, page 1, emphasizes counts of four. (Wikimedia Commons file, accessed August 28, 2015)

### *The Aztec Year of Veintenas, and the Agrarian Cycle*

If rituals pertaining to rainfall and the onset of the rainy season were essential to Teotihuacan's orientation, one must also assume that the Teotihuacanos, like the Aztecs, understood the importance of adding an extra day to the calendar every four years. The ceremonies they performed no doubt constitute some of the roots of Aztec rituals, and therefore the Aztec calendar of veintenas offers insight into Teotihuacan practices.

Sources vary as to when, relative to our modern calendar, the Aztec year began, and this is complicated by the transition

from the Julian to the Gregorian calendar, which Spain recognized in 1582, and for most of the 16<sup>th</sup> century required a correction adding ten days. The chroniclers agree that the Aztec began their new year in late winter, but neither they nor modern scholars have achieved consensus.<sup>18</sup>

Commonly used names for the eighteen veintenas of the solar year, and their commonly ascribed attributes, are listed in **Figure 18**, including some of the deities honored and associated offerings and activities.

**Figure 18.** Table of Aztec Months (Veintenas) of the Solar Year, with a concordance with possible modern dates and main ritual features.

Veintena	Timing, Gregorian*	Debt-payment to Gods**	Offerings and Activities
I <i>Atl cahualo</i> , aka <i>Quauitl eua</i> , ("raising of poles")	Feb 12 – March 3, or Feb 23 – March 14	Tlaloc, Chalchihuitlicue, also Quetzalcoatl	child sacrifices for rain***
II <i>Tlacaxipehualiztli</i> ("flaying of men")	March 4 - 23, or March 15 – April 3 ( <i>equinox</i> = ca. Mar. 20)	Xipe Totec	child sacrifices for rain; <b>tribute payments due</b>
III <i>Toçoztontli</i> ("little vigil")	March 24 – April 12, or April 4 – 23	Tlaloc; also Coatlicue	child sacrifices for rain; first flowers
IV <i>Hue Toçoztli</i> ("great vigil")	April 13 – May 2, or April 24 – May 13	Cinteotl (maize), Chicomecoatl (maize)	child sacrifices for rain; young maize plants
V <i>Tóxcatl</i> ("dryness" or "drought")	May 3 – 22, or May 14 – June 2	Tlaloc, Chalchihuitlicue, Tezcatlipoca, Huitzilopochtli	dances and processions of lords and of commoners
VI <i>Etzalcualiztli</i> (eating etzalli [a dish of corn and beans])****	May 23 – June 11, or June 3 – 22 ( <i>solstice</i> = ca. June 20)	Tlaloc (rain) gods	sacrifices to rain gods; food & púlque offerings, incl. to farm tools; <b>tribute payments due</b>
VII <i>Tecuilhuitontli</i> ("little feast of the lords")	June 12 – July 1, or June 23 – July 12	Uixtociuatl, goddess of salt	exchange of flowers
VIII <i>Hue Tecuilhuitl</i> ("great feast of the lords")	July 2 – 21, or July 13 – August 1	Xilonen ("goddess of the tender maize")	first green maize tortillas, amaranth greens, marigolds
IX <i>Tlaxochimaco</i> - <i>Miccailhuitontli</i> ("little feast of the dead")	July 22 – August 10, or August 2 - 21	Huitzilopochtli (war); Xochipilli (flower lord)	flowers: in bloom: dahlias, ranunculus, many others; fear of crop loss to early frost
X <i>Xocotl Huetzi-huey</i> - <i>Miccailhuitontli</i> ("great feast of the dead")	August 11 – 30, or August 22 – Sept. 10	Xiuhtecutli (fire); Mictlan- tecuhlti and Mictlancihuatl (rulers of underworld)	climbing of poles (sacred trees); <i>Xocotl Huetzi</i> means "fall of fruit"
XI <i>Ochpaniztli</i> ("day of sweeping")	August 31 – Sept. 19 September 11 – 30 ( <i>equinox</i> = ca. Sep. 22)	Teteo innan (mother of gods), Toçl ("our grandmother")	general cleaning, rituals by women physicians; <b>tribute payments due</b>
XII <i>Teotl Eco</i> ("arrival of the gods")	Sept. 20 – Oct. 9, or October 1 - 20	all the gods	weapon-making
XIII <i>Tepeilhuitl</i>	October 10 – 29, or October 21 – Nov. 9	mountains	amaranth seed figures
XIV <i>Quecholli</i> ("flying spear")	Oct. 30 – Nov. 18, or November 10 - 29	Mixcoatl	weapon-making
XV <i>Panquetzaliztli</i> ("raising of banners")	Nov. 19 – Dec. 8, or Nov. 30 – Dec. 19	Huitzilopochtli, Tezcatlipoca	<b>tribute payments due</b>
XVI <i>Atemoztli</i> ("coming down of waters")	December 9 – 28, or Dec. 20 – Jan. 8 ( <i>solstice</i> = Dec. 21)	rain gods	mountain ceremonies
XVII <i>Tititl</i> ("to stretch")	Dec. 29 – Jan. 17, or January 9 - 28	llamatecutli / Tonan ("our mother"); Camaxtli	dances and games involving men and women
XVIII <i>Izcalli</i> ("growth")	January 18 – Feb. 6, or January 29 – Feb. 17	Tlaloc; Xiuhtecutli (fire)	end of year ceremonies, may include bissextile calendar correction
Nemontemi ("useless")	February 7 – 11, or February 18 - 22		very little activity as everyone waited out the useless days

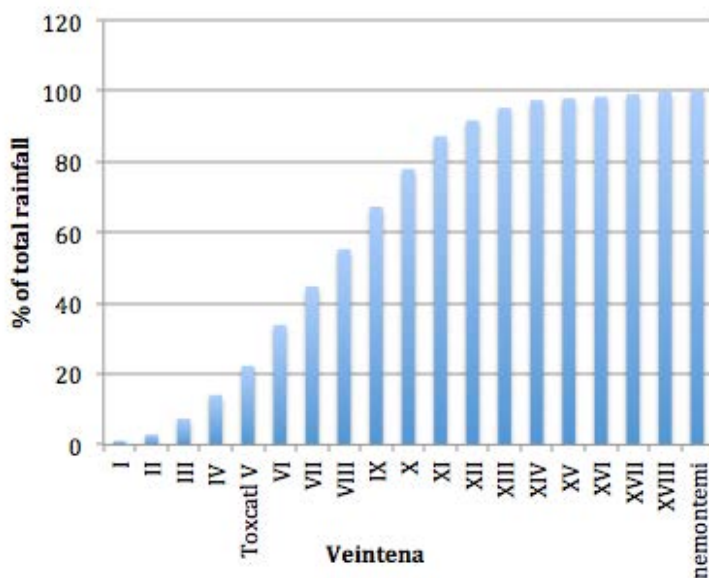
\* showing two correlations now in use by scholars; the first is based on Sahagún, Book 2, the second, on Tena 1987.

\*\* From Sahagún, Book 2, and Durán *The Ancient Calendar* 1971 [1579]

\*\*\* Child sacrifices: I Atlcahualo ("buying them from their mothers") "until the rains began" (Sahagún Book 2: 8).

The relation of these ritual offerings to the yearly cycle of rains is made clear by a histogram of cumulative rainfall values by veintena (**Figure 19**). If rainfall knew no season, the cumulative histogram would follow a straight gradient. But in fact the six veintenas from the summer solstice (VI) through the autumnal equinox (XI) – about a third of the year – account for nearly two-

thirds of the rainfall. Shortly after the autumnal equinox, rainfall declines sharply, reduced to an average of a fraction of an inch per veintena, until after the vernal equinox. In worst-case scenarios, the minimum recorded values at Teotihuacan, there is no rain between October and May, a period of more than ten veintenas (plus the nemontemi) – more than half the year.



**Figure 19** Teotihuacan Valley rainfall histogram of veintenas by cumulative percentage was estimated from mid-20<sup>th</sup> century values collected at the meteorological station at the archaeological site of Teotihuacan (based on Sanders 1965: 23).

### The Importance of Toxcatl:

The onset of the rains, about 50 days before the summer solstice, was the critical hinge of the agrarian year. Aztec rituals pertaining to the timely end of the dry season took place in veintena V, Toxcatl, usually translated as “dryness” or “drought.”<sup>19</sup> During Toxcatl, Aztec-era Teotihuacan Valley farmers took early-crop seedlings grown in the permanently irrigated lower valley, and planted them in the rainfall-dependent floodwater fields in the middle valley; they ritually offered some

maize seedlings as a sign of good faith that the rains would come to water them.<sup>20</sup> No wonder that Toxcatl was a period of watchful attendance to important rituals petitioning for the end of the dry season, and the next veintena, Etzalcualli, was celebrated (if all went well) with the delicious extravagance of a dish that included beans *and* maize, as indicated by the Nahuatl name, “‘eating of etzalcualli’ (a maize-bean porridge)” (Milbrath 2007: 188; see also Broda, this volume).<sup>21</sup>



Of all the *veintena* names, only Toxcatl (*tohshcaht*) has achieved a place in world history, because of Pedro de Alvarado's "Toxcatl massacre" in Tenochtitlan in May of 1520 (**Figure 201**), opening the hostilities leading to Spain's conquest of the Aztec empire. Since the arrival of the Spaniards in Tenochtitlan the previous November, an uneasy peace had

prevailed, with Motecuzóma II under house arrest in his Old Palace, nominally presiding over a hybrid Aztec-Spanish court. Cortés had given permission to the Aztec lords to celebrate "the most important of all the feasts. It was like Easter, and fell near Easter Sunday" (Sahagún 1981 [1569]: 2: 9).



**Figure 202.** The Toxcatl massacre, May 1520, took place in the Templo Mayor precinct of Tenochtitlan. (illustration, Durán 1994 [1581], Chapter 75; accessed June 10, 2016, as [http://www.wikiwand.com/es/Matanza\\_de\\_T%C3%B3xcatl](http://www.wikiwand.com/es/Matanza_de_T%C3%B3xcatl))

Toxcatl's ceremonies were critical to the agrarian year, and honored the water deities Tlaloc and Chalchihuitlicue. Celebrants played the rattle stick (*chicahuastli*), thought to encourage the rain through its sound (Broda 1971: 97) and adding a distinctive audial dimension to

processions at this time of year. The rituals also honored their tribal deity Huitzilopochtli, and the great god Tezcatlipoca, supreme diviner and random trickster, who could visit humankind with disaster or grace regardless of the supplicant's virtue or vice.



Toxcatl involved dances and processions by priests, young warriors, maidens, and, of course, by the lords. One could imagine the scene as described by Sahagún's informants: "the women ... went along dancing (Nahuatl: *qujtlayavalochtitivia, quiyavaloaya*) ... they went in procession (Nahuatl: *qujtlayavalochtitivia, quiyavaloaya*)" "And at night all the priests everywhere and the young constables and their lords [danced] (Nahuatl: *mitoaya*) what was called the 'Toxcatl Leap.' The whole night they danced ... It was called 'Winding In and Out,' and the women danced in their

popcorn necklaces, their arms around each other." (Sahagún 1997 [ca. 1559]: 58, 59).

In 1520, these rituals were violently interrupted, left incomplete, lacking essential prayers and offerings to the sacred powers thought to control the regular expression of the agrarian year's fertile seasons. The slaughtered lords were ritual specialists with a purportedly closer relationship to the gods than the commoners had, another aspect of cultural trauma. More obvious to the modern observer, the massacre represented a tragic loss of Mexica military and government leadership just at the onset of critical hostilities with the Spaniards.

### **Aztec Veintenas, Processions, and Dances:**

After the 1520 Toxcatl massacre, Tenochtitlan's ritual life was never the same. In the past, the next veintena, Etzacualli, brought "a procession (Nahuatl: *tlayavaloloya*). ... They tied birds to poles; when the youths carried them in procession (Nahuatl: *tlayaloloya*) they went dancing (Nahuatl: *mitotitivia*) along with them. ... they had [the impersonator of] Tlaloc dance (Nahuatl: *quitotiaya*) all night. .... when he had died, once again there was a procession (Nahuatl: *moyavaloaya*) around the temple." (Sahagún 1997 [ca. 1559]: 59).

This and other veintena descriptions from Sahagún's *Primeros Memoriales* (dated to 1558 to 1560; Garibay 1948) stress processions and dances, often in the same context. Many Aztec dances were line dances<sup>22</sup> and definitions of the Náhuatl terms and root-words defined as pertaining to dances and processions show the close relationships between the two (see Molina 1977 [1571]: I: 98v; II: 120v; Simeon 1984 [1885]: 80, 586; Karttunen 1983: 163, 304, 334; also Broda, this volume).<sup>23</sup> The tradition of processions carried on by the Aztecs had deep roots in Mesoamerica, including in Teotihuacan.

### **Teo IIA–III transition and Teo III: Río San Juan and the Southern Complex**

Such dances and processions would be well accommodated by Teotihuacan's layout by the time of the city's early maturity (Teo IIA–III and III; Early Tlamimilolpa through Early Xolalpan ceramic phases). The city's last projects involving monumental architecture were

completed at the southern end of the Street of the Dead: the Ciudadela and Temple Pyramid of the Feathered Serpent; and the Great Compound. The Río San Juan's natural course cut across this area diagonally (see Figure 10), so that even prior to major construction, the builders had to reroute the

river and its tributary streams, and build a reservoir upstream from the construction (just east of the Ciudadela).

We should note the ingenuity of Teotihuacan's civil engineers in carrying out such a project, and also keep in mind that they were acting within constraints set by the drainage from the city's northeastern sector and adjacent countryside, and the drainage of Río San Lorenzo, about a mile south of the Río San Juan. Thus the location of the southern complex depended in part on where the river could be routed toward Teo West, a problem requiring close knowledge of slope and drainage, including the

accumulated drainage of many up-valley streams that would naturally converge at the Street of the Dead over a mile south of the Moon Pyramid. All this water was constrained to Teo West, slightly north of its natural inclination, for about 1,400 meters.

The idea that the Teotihuacan's planners would need to engineer a project several kilometers long and involving many thousands of cubic meters of earth in order to divert the Río San Juan seems contrary to the present reality of its narrow stream (**Figure 21**). However, today's water table is much lower than in antiquity (Sanders 1965).

A higher water table would have promoted the landscape's tendency to flood, creating a larger floodplain if unusually heavy rains fell and required diversions and reservoirs. Despite the best efforts of the planners to divert water, the floor of the Ciudadela may have flooded occasionally, become a sheet of water, watery underworld made real (Coggins 1986; 1996: 25; Gómez 2013: 11-13; Sugiyama 2005: 47, 52).

The Río San Juan became an orthogonal watercourse at least 5 km long that merged with city drainage and then with outflow from the springs to feed the irrigation systems of the lower valley.



**Figure 21.** As it runs through the modern archaeological site of Teotihuacan, today's Río San Juan is a vestige of its former self, here shown with a possible segment of West Avenue on the other side of the tree line. (photo by David Carballo, June 2, 2014, near La Ventilla)

While the deity most often associated with the southern complexes is the Feathered Serpent, it seems likely that the Water Goddess cult would have had much to celebrate in the creation of these

### The Ciudadela Complex

The Ciudadela complex was bounded by a great square perimeter platform that enclosed a plaza with constructions mostly on its east side, where the central focus is the Pyramid of the Feathered Serpent (**Figure 22a** and **Figure 22b**), completed some time in the fourth century CE (S. Sugiyama 2013: 7, citing Gómez and Gazzola 2004). Its façade features swimming serpents, their bodies

precisely oriented waterways and pools. They no doubt shared with the Aztecs the belief that the Water Goddess “*was the water*” (Bassett 2015: 196).

forming long cartouches enclosing and framed by emblems of aquatic life (and war and sacrifice), an iconographic program suggesting that this was another water mountain. The Feathered Serpent deity had many areas of patronage, among them rainfall, as well as associations with creativity, artisanal mastery, warfare, sacrifice, and mercantile activity.



**Figure 22a.** Pyramid of the Feathered Serpent and its *adosado*, from the northwest. (Teotihuacan Valley Project photo, 1960 [#470])



**Figure 22b.** Detail, façade of the Pyramid of the Feathered Serpent, from the *adosado*. (Teotihuacan Valley Project photo, 1960 [#475])





There were probably seven levels to the original façade.<sup>24</sup> An architectural program of seven levels of serpents suggests a reference to Seven Serpent (Chicomecoatl), who, as an Aztec period fertility and maize deity, was honored in rituals celebrating the earliest maize plants in early spring and the onset of the harvest in late summer (**Figure 23**).

Her temple in Tenochtitlan-Tlatelolco was called Cinteopan (rough translation: maize-god place).<sup>25</sup> Chicomecoatl was revered as having “made all our food” – all the varieties of maize, beans, amaranth, and chia (Sahagún 1981 [1569]: 2: 65), and perhaps the seven-level serpent pyramid embodied this sacred principle of rainfall-dependent abundance, along with its myriad other associations.

**Figure 23.** Chicomecoatl (“Seven Serpent”), “they said she was the maker and giver of all those things which are the necessities of life, that the people may live” (Sahagun Book 2: 7). Here, the figure is a priest dressed in the skin of a sacrificed impersonator of Chicomecoatl, as illustrated in the *Codex Borbonicus*. (detail, adapted from Mexicolore website, [http://www.mexicolore.co.uk/images-6/676\\_15\\_2.jpg](http://www.mexicolore.co.uk/images-6/676_15_2.jpg))

### *Teo West as a Gnomon*

The Feathered Serpent Pyramid, like the Pyramid of the Sun, faces Teo West, and scholars have long noted the importance of the east-west axis and its intersections such as the plaza in front of the west-facing Pyramid of the Sun, and the East-West Avenue as it crosses the Street of the Dead between the Great Compound and the Ciudadela.<sup>26</sup> In fact, Teo West has its own set of important meanings, and these may

have determined the best orientation for Teo North.

Teo West’s horizon is a line of low hills along which sunsets move north and then south in an annual circuit. At two times of year, the sunsets shine directly into the city along its grid, and these dates mark two events critical to the city: the beginning of the yearly rainy season at the end of April (Tichy 1981), and the beginning of time



around August 12<sup>th</sup>-13<sup>th</sup> (Aveni and Gibbs 1976; Millon 1993: 35, Note 7). The Maya long count began around August 11<sup>th</sup>-13<sup>th</sup>, 3114 BCE, but the earliest Maya monuments bearing long count dates were erected centuries after the plan of Teotihuacan was established. Besides, Teotihuacanos were famed throughout Early Classic period Mesoamerica for their self-promotion as masters of time, sharing their iconography honoring time, such as the A-O year sign and the pierced disk *chalchihuitl*.<sup>27</sup>

The Aztecs of Mexico believed that creation of the present Fifth Age had taken place in Teotihuacan (Sahagún 1978 [1569]: 3: 1). Hence the beginning of time may have been commemorated in the second Teo West sunset of the year, 105 days after the first.<sup>28</sup>

East-West Avenue was thus potent with meaning for processions of city folk and pilgrims at festival times, or of priests or merchants – in fact, anyone traveling along West Avenue toward the city's main crossroads would see the Temple of the Feathered Serpent straight ahead, rising above the perimeter platform of the Ciudadela. When the course of West Avenue joined by that of the outflowing Río San Juan, the river's origin would seem to have been claimed by the Feathered Serpent pyramid, where it flowed along the levels of the pyramid's watery, serpent-y façade. Reading the dramatic messages rendered in paint and bas-relief, pedestrians approaching it would acknowledge this concatenation of sacred elements.

Unfortunately, we cannot share this dramatic view, which has been made unrecognizable by modern development. In antiquity, the Feathered Serpent pyramid interrupted East-West Avenue (the city's

major perpendicular axis), which ran in both directions for miles.<sup>29</sup> East-West Avenue is still discernible in the archaeological record as a major component of the grid (Millon et al. 1973), and the temple's orientation toward Teo West made it an important observation post for sunsets at the end of April and in early to mid-August.

As the afternoon sun streamed east through the doorway of the temple of the Feathered Serpent, the view from there to the sunset encompassed West Avenue and the canalized Río San Juan, shimmering with light like the glittering scales of serpents. The temple may have been crowned by a feather panache made of heavy ceramic pieces, spelling out the authority ruling the city (Sugiyama 2005: 76-77). By posting these powerful iconographic messages in the city's size, organization and monuments, Teotihuacan declared its greatness.

The river's course turned away from West Avenue at the western edge of the Great Compound, thought to be the city's center of mercantile activity (Sload 1987). Between the Great Compound and the Ciudadela ran the Street of the Dead, and the north view of the pyramids was unobstructed and dramatic (see Figure 12).

While the Street of the Dead above the Río San Juan was highly restricted, the East-West Avenue seems to have been a common path, put to practical use by merchant caravans, pilgrims from afar, and ordinary citizens going about everyday lives. But the heavy investment in iconographic propaganda suggests that this was also a processional way, a place to celebrate festivals and honor the gods.

### Teo III: The Mature City and Integrated Hydrological System

During Teo IIA through III-B (Tlamimilolpa and Xolalpan ceramic phases) the city achieved greatness and beauty, with the extension of the grid across Teotihuacan's greatest area, about 20 km<sup>2</sup>. Housing on the grid replaced contour terraces of arable land, thus demanding steady extension of the rainfall-dependent floodwater cultivation method on the alluvial plains of the middle and upper valley, all above the spring line. In the lower valley, population increase would spur regulation of dispersal of water from the

springs. All these factors heightened dependence on water management, and Teotihuacan's rulers responded by channeling the rains, either directly or as runoff, controlling the outflow from the springs, and enlisting the help of the gods.

The murals thought to date from this period are abundant and explicit in concerns with water and fertility, and with ritual processions. In the Temple of the Plumed Shells, they show buildings surrounded by orthogonal freshwater streams (**Figure 24**).

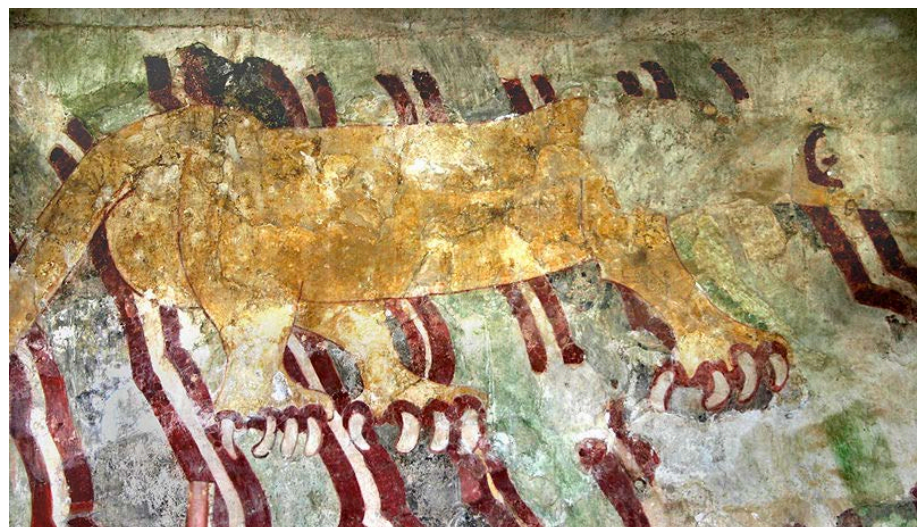


**Figure 24.** In the deeply buried reaches of the Temple of the Plumed Shells, Substructure 3a, murals 1 - 3 probably depict architecture, with a border of rectilinear freshwater canals. (adapted from Fuente 1995k: 113, Fig. 11.3; Miller 1973: 61)

The "Gran Puma" mural, on the east side of the Street of the Dead, has a background of irrigation canals and bottom border of pierced chalchihuitl disks

(**Figure 25**). It was probably part of a series of murals showing pumas stalking south, in procession.

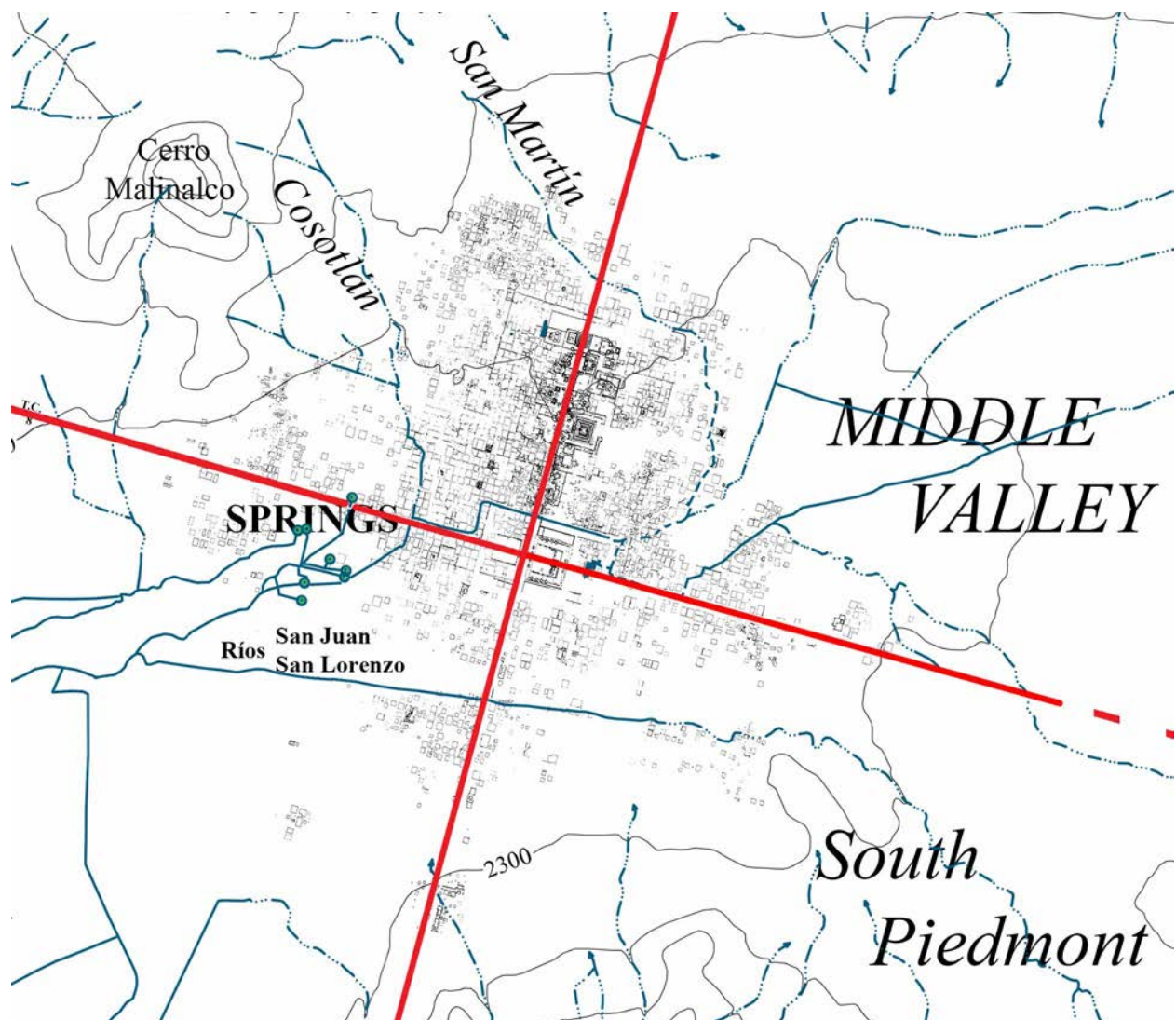
**Figure 25.** On Platform 16 along the northern Street of the Dead, the "Gran Puma" heads south, probably part of a puma procession. (mural 2: •Fuente 1995l: 7.1: 83, 85; Miller 1973: 69). ([https://commons.wikimedia.org/wiki/File:Jaguar\\_Mural,\\_Teotihuacan.jpg](https://commons.wikimedia.org/wiki/File:Jaguar_Mural,_Teotihuacan.jpg) (image by Victor Hugo de Lafuente Flores; the Creative Commons Attribution 3.0 Unported; Attribution: Vhla Fuente at English Wikipedia))



## Emergence of the Mature City

The Teotihuacan Mapping Project determined that the mature city (Teo III and IV) covered about 20 km<sup>2</sup> and included all its major ceremonial monuments and a secular one as well: the monumental housing project that built about 2,300 residential compounds, each capable of housing several dozen people (**Figure 26**). A popular

estimate for the total maximum population is about 100,000. Calculating the probable maximum population by various means, Cowgill presented a range from 30,000 to 140,000, noting “the difficulty of estimating prehistoric populations. For what it’s worth, the midpoint ... is 85,000” (2015: 143; see also p. 144), and this is a plausible estimate.



**Figure 26.** The mature city of Teotihuacan in its setting.  
(detail of Figure 1)

### **Apartment Compounds:**

Most scholars agree that construction of substantial houses called “apartment compounds” took place after the southern complex was established, perhaps even after the prestige of the Feathered Serpent cult was diminished by the damage to the original façade and construction of the *adosado*.

Apartment compounds probably grew out of clusters of ramshackle patio groups that had been built by the city’s workers for themselves (Angulo 1987a).

### **The Street of the Dead Compound**

It may have been at this time, with the construction of the apartment compounds, that the largest of them – indeed, the largest multi-room building in the city – was elaborated, straddling the Street of the Dead and measuring over 300 meters on a side, fifty times larger in area than a typical compound measuring 43 meters on a side.<sup>30</sup> The Street of the Dead compound may have been the city’s main administrative palace during Teo III times, and while parts of this massive building are quite old, its mature architectural expression is situated just north of the Río San Juan and so may post-date canalization. The new river course cut across the plain and through a slight rise in elevation for about 500 m, crossing the path of the Street of the Dead.

Unlike other Teotihuacan civic-ceremonial structures, the Street of the Dead compound does not pierce the skyline with an effigy mountain. Still, its massive presence was a major obstacle against accessing the Street of the Dead, midtown and north. As Figure 13 showed, the Street of the Dead compound’s southern façade is a barrier to continued northward progress,

In what was clearly a state-directed effort, new apartment compounds enclosed and formalized insubstantial room groups, transforming them into multi-patio residences surrounded by high walls, conforming to Teo North and West. The grid of the expanding city included drainage through and around the compounds, routing runoff and household waste down to the spring line where it joined the flow from the springs.

the first of six platform barriers for pedestrians to surmount before reaching the southern edge of the Sun Pyramid and open access to the northern avenue and the Moon Pyramid (from which there were at least two other exits).

We should remember that in addition to the sense of visual and kinesthetic restriction for those south of the barriers, there would also be an energetic cost for believers permitted to enter the Street of the Dead compound and continue north, winding up and down the platform barriers in order to pass review by the city’s rulers and finally, on the other side, gain unobstructed connection with the great water mountains grouped on the other side. The barriers shaped the choreography and rituals of the processions that moved over them, and as the last, northernmost barrier was surmounted, pedestrians would have a heightened sense of relief and open space.

The view north toward the Pyramid of the Moon from the Street of the Dead south of the Pyramid of the Sun deliberately disorients the viewer and lends a jolt of animation to the landscape (see Figure 12)



(Evans and Berlo 1992: 9; also Headrick 2007: 1-2). The Moon Pyramid seems encased within the looming bulk of Cerro Gordo, which pulls toward us, an optical illusion resulting from the relative sizes, shapes, and positions of the Sun and Moon pyramids and the mountain. The pyramids have similar proportions and their summits are of equal elevation, but the Sun Pyramid, downslope from the Moon Pyramid, has markedly greater volume and height.

The planners seem to have counted on the common human perception that two

### ***The Springs and Rulership***

The water mountains gave birth to the springs, which, at Teotihuacan, pulsed out from beneath the southwestern edge of the basaltic shelf constituting the outer edge of Cerro Gordo. Over time, apertures of

things of similar shape will be similar size, and perhaps on the common expectation that the focal pyramid at the end of the causeway would be larger than one along the side of the monumental causeway. We are disoriented by having to reconcile the effects of this subtly altered reality, which makes the sacred landscape seem even more dynamic, intensifying the sensory experience of any celebrant in this setting. Here, the city's planners accomplished one of their cleverest manipulations of cognition.

springs erode into caves, the habitats favored by felines, including (in Mesoamerican tradition) jaguars, sacred to the Aztec rulers and to their mercurial great god, Tezcatlipoca (**Figure 27**).<sup>31</sup>



**Figure 27.** Priest costumed as Tezcatlipoca's jaguar avatar in his guise as Tepeyollotl. (Codex Ríos (1964 [after 1566])).

Felines are pervasive in Teotihuacan art, and their association with rulers may be substantiated by a young puma buried in the Moon Pyramid. It may, as Nawa Sugiyama argues, have contributed to the transformation and animation of “the monument into one of the sacred mountains, possibly an *altepetl*, thereby becoming a place embedded within the highly dynamic socio-cultural landscape during a period of rapid development of a highly hierarchical urban metropolis” (2013: 46).

The mature city's grid encompassed the springs at the city's southwestern edge, and they were probably under the control of the state (Evans 2010a; 2010b; Evans and Nichols 2016). The extension of the grid of streets and canals to the springs opened up opportunities for more productive use of the lower valley alluvial plain. Canals that were cut through boggy areas to drain the land would further increase the area's agrarian usefulness and systematize the canal system, which may have (seasonally) connected to the lake. These permanently watered fields were probably used as perpetual seedbeds rather than as fields where crops were grown

to maturity.<sup>32</sup> Seedlings planted out to the fields of the middle and upper valley at the end of the dry season matured early, as long as the rains were timely and sufficient.

Some of the city's murals suggest that the springs were secured by the state with water temples decorated with symbols of rulership, guarded by jaguars, discussed in detail below. While felines appear in Teotihuacan art throughout its chronology, netted jaguars (aka net jaguars) became particularly prominent in later periods, Teo III and IIIA (Xolalpan), and even Teo IV (Metepec).

### **Teo IV (The Problematical Metepec Phase): Vigorous But Losing Strength**

Teo IV, the Metepec ceramic phase, is widely regarded as the last during which the city functioned effectively, with evidence for construction in the ceremonial center and "some of the finest mural paintings ...[demonstrate that] the Metepec phase was not a time of obvious decline. It may even represent a resurgence, a conscious effort to 'turn around' and to restore the city's appearance of prosperity" (Millon 1988: 144). Most Teotihuacan scholars agree that during the Metepec phase, the city continued to function while seeming to experience a decline in its overall prosperity, by such measures as diminished presence of luxury materials (Sempowski 1992: 51), and chronic health stresses such as malnutrition and infections (Storey 1992: 266). As the settlement systems in surrounding regions expanded, there were fewer immigrants into the city to replenish its population.

The wealthy, however, continued to

afford displays of conspicuous consumption: luxury goods were still in use, and fine murals were painted during Metepec.<sup>33</sup> Elite support for such indulgences was unlikely if the ceremonial center had already been burned and then deserted by powerful and wealthy people seeking refuge in other cities in the Central Highlands.

As these and other chronologies attest, Metepec marked a city still sociopolitically integrated and economically active, but showing signs of weakening. And productivity may have declined as a consequence of the "nuclear winter" caused by the eruption, in CE 535, of proto-Krakatoa (Keys 1999) and a global cold spell, CE 530-590 (Gill 2000: 293). Closer to home, Ilopango (El Salvador) had a massive eruption in the period between CE 441 and 535 (Dull et al. 2001: 27). If the elite could not control the forces of nature, then their privileges could no longer be justified.

## The Burning: Beginning of a Calamitous Decline

Metepec – and Teotihuacan’s urban chronology -- ended with the desecration of the ceremonial center by burning.

Thereafter, the city’s slow decline became precipitous, with emigration to other regions and ruralization of local settlement pattern.

When did the burning occur, or begin to occur? Scholarly and popular publications offer a range of dates stretching over several centuries, even as late as CE 900, but as our knowledge has grown about cultural trends there and in other parts of Mesoamerica, many scholars began to adjust their chronologies toward earlier dates, perhaps CE 750. In 1990, a burned context was yielded an archaeomagnetic date of about CE 475 or 500 (Wolfman 1990). More recently, dates of burned contexts at the Xalla compound were recorded as ca. CE 550 (López Luján et al. 2006: 30, citing analysis by Ana Soler). As more contexts are tested using different methods, a larger number of dates will clarify the timing of the burning, which may have consisted of multiple episodes.

The burning was not casual arson. "The fires were concentrated in the city's center, on and near the 'Street of the Dead' from the Ciudadela north to the Moon Pyramid ... [and] formed part of a systematic process of ritual destruction carried out on a monumental scale with such rigor, such intensity, and such violence that its purpose must have been political -- the annihilation of those who led Teotihuacan and the ideology with which they were identified. The result was the annihilation of Teotihuacan political dominance" (Millon 1992: 346).

The burning damaged murals, and seems to have ended the mural tradition in the city. At the southwestern edge of the

Pyramid of the Sun, a wall dated to “la fase final de Teotihuacan, en Xolalpan-Metepec” (Fuente 1995c: 81) was found to bear “remains of the burning, conserving even at the base of the tablero two fresco paintings unfortunately very badly treated by the fire.”<sup>34</sup>

A recent interpretation of absolute dates of burning in mid-to-late 6<sup>th</sup> century brought into question the viability of Metepec phase culture at Teotihuacan. Based on dates recovered from the Teopancazco compound, the authors posited that “[d]uring the Metepec phase ... the city's political and administrative institutions no longer existed” (Beramendi-Orosco et al. 2009) but they do not cite any source for this unusual, if not unique characterization of Metepec phase Teotihuacan. They also state that among their 32 radiocarbon ages, “there are no radiocarbon determinations for the Metepec occupational phase in the site.” Because ceramic phases are defined by a set of material culture diagnostics, this must mean that either there were no Metepec materials at Teopancazco, or that they were not associated with dateable materials.

Declaring Metepec as post-urban is simply puzzling, and would require rethinking its diagnostics, which would be redefined as have been produced by squatters like those of the subsequent Coyotlatelco phase presence at Teotihuacan, traditionally regarded as the first post-urban, post-burning occupation of parts of the site. Fitting five ceramic phases, Tzacualli through Metepec, and cultural periods Teo I through IV into a plausible absolute chronology is an ongoing challenge for Teotihuacan scholarship, and composing the “Chronology Chart” (see Figure 11) is universally regarded as an unrewarding

chore, almost certainly needing revision with any further publications. However, the cultural associations of phases have not changed, but seem to have occurred even

more rapidly than previously thought. Metepec phase, as before, ends with the burning.

## **The Golden Age of Murals, Teo III-IV (Late Tlamimilolpa through Metepec)**

Returning to the city at its apogee, we would see the effects of completed construction projects, including the neighborhoods of apartment compounds – and their plastered walls potentially numbering in the hundreds of thousands. On walls of buildings private and public flourished one of the city's great artistic programs, the murals. Teotihuacanos continued to create Mesoamerica's earliest known true murals: polychrome paint on specially prepared stuccoed walls (Fuente and Staines 2010: 492). Dazzling lush colors and fantastic themes illuminate our perspective on life in the city. What remains to us is only a tiny sample (about 500 murals, almost all of them fragmentary), which provides a wealth of information, however skewed. The surviving murals favor the middle and later phases of the

city's active maturity, and larger buildings, which provided more protected contexts.

The murals range widely in size and condition. They have been exhaustively catalogued (Fuente 1995a and 1995b; also Miller 1973), creating a resource of great value for many scholars. The organization of the Fuente catalogue is based on the city's roughly two dozen locales with murals (see Appendix, Teotihuacan Murals).

**Figure 28** offers an instant view of the distribution of mural locales at Teotihuacan. Some locales have many murals, others a fragment or two. The murals cover many themes – warfare, fertility and blood sacrifice, for example – but for the purposes of this study of water worship and processions, three subjects are most important: water (in 80% of the mural locales), processions (ca. 65%), and felines (ca. 50%), all widely distributed.<sup>35</sup>

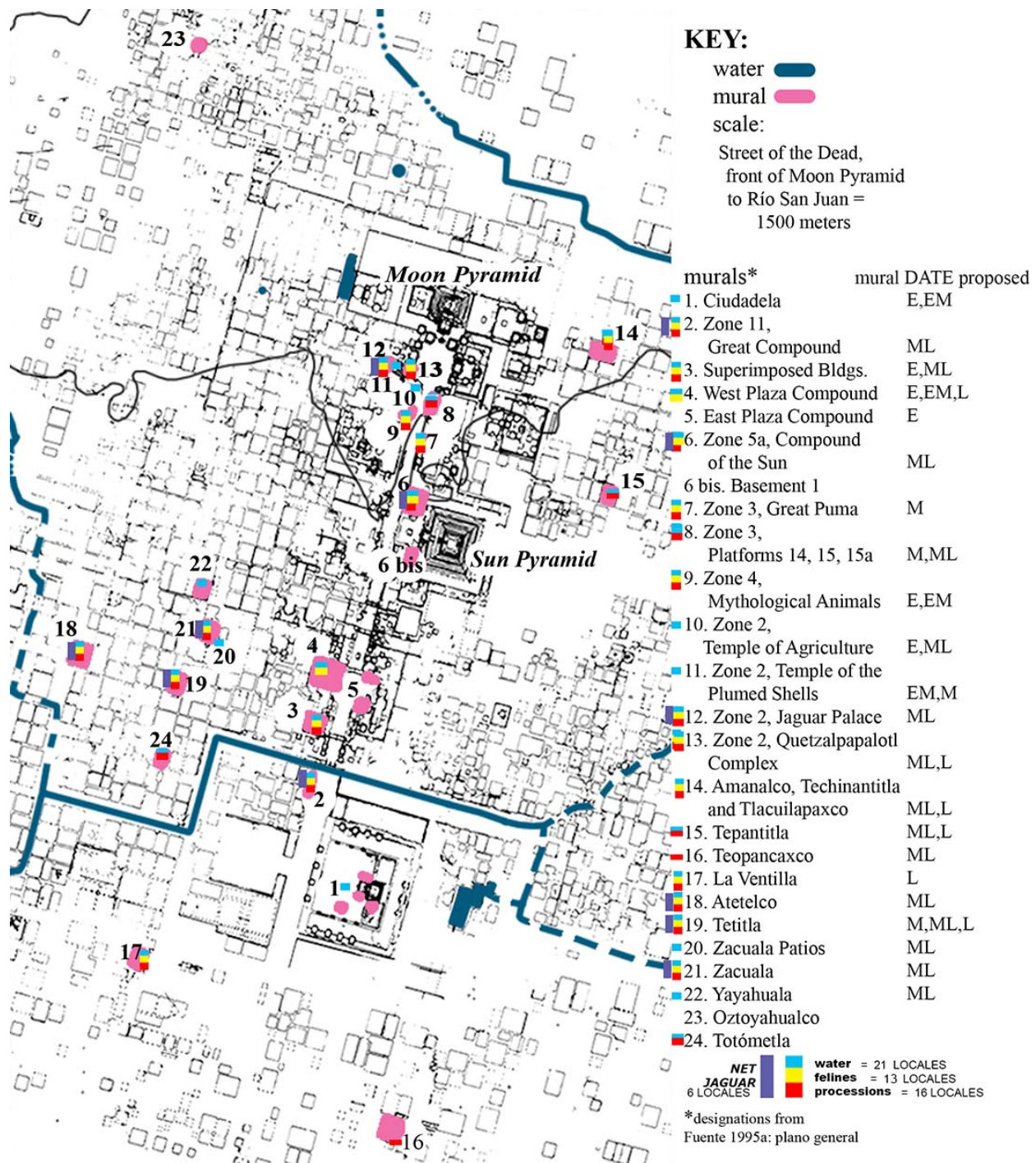
### **Water (and Time) Worship**

Of the three themes, water is the most prevalent, possibly because indicators of water have a broader range than those of processions and felines. Water symbols included the obvious rippling blue panels depicting canals and irrigated fields, as well as others more obscure, such as the “eye” symbol for fresh water, often in a canal; others were shells, Tlaloc attributes, and pierced disks (Angulo 1995: 74-78). At the north end of the Street of the Dead, the substructures called “Temple of the Plumed Shells” (under the Palace of the Jaguars and the Quetzalpapalotl Compound) yielded

profile birds with freshwater streams from their beaks, dated to Teo IIA-III.

As noted, the *chalchihuitl* pierced disk carries several big meanings, water among them, as well as the count of time. Other symbols may be appropriate to water and to time, but the focus here is on the annual agrarian and rainfall cycle. Symbols pertaining to other, larger, cycles (ritual and cosmological) are beyond the scope of this study. Nor does space here permit exploration of the effect of water flowing through the compounds, connecting them with the grid.





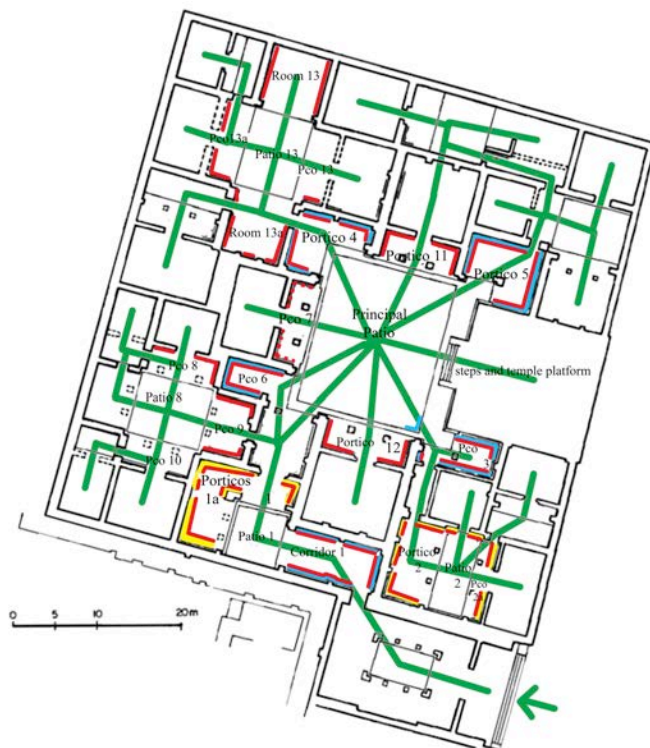
**Figure 28.** The locations of murals at Teotihuacan and their proposed chronology (see Appendix: Teotihuacan Murals).

## Processions

Processions, shown in nearly two-thirds of mural locales (and in 180 of the 500+ murals/ fragments), are suggested by such indicators as figures in profile, particularly multiple figures, often depicted as engaged in scattering of treasures, with song scrolls (or bleeding hearts) emanating from mouths; footprints suggest processions and choreography. The figures are humans, animals, and hybrids. Some are costumed in regalia of rank; others are unadorned (e.g., the Great Puma along the Street of the Dead).

Processional figures line up along the walls of nearly all the apartment compounds that have been excavated, plus on buildings along the Street of the Dead, including the Street of the Dead compound. This widespread distribution illustrates the importance of processions as an activity involving the whole city<sup>36</sup>, marshaling those

in the lineage-based compounds to make kinesthetic and audial offerings – costumed, choreographed processions with singing and chanting -- designed to control nature and enhance societal solidarity. The plan of Zacuala palace shows locations of murals depicting processions (**Figure 29**). When enhanced by the results of a spatial access analysis by Matthew Robb (2007b), it reveals that even in the remotest reaches of the compound, depictions of processions covered the walls. We can speculate that at the start of great processions, members of the household left their own patio rooms in a customary order, falling into line and departing the compound to join in one of the city's most characteristic rituals. Teotihuacan's walls lent themselves to procession depictions, just as its avenues and grid seem designed for processions.



**Figure 29.** The Zacuala Palace plan links all rooms in the compound to the Principal Patio (green lines, based on Robb 2007b), with murals featuring processions (red lines) found well represented throughout. (Themes under study: water, felines, and processions.) (Plan adapted from Fuente 1995g: 320, Plano 21).

## Felines

The murals record a preoccupation with cats at Teotihuacan, depicting them in half the locales. Teotihuacan muralists were careful to distinguish between pumas (mountain lion or cougar, *Felis concolor*) and jaguars (*Felis onca* or *Panthera onca*).<sup>37</sup> Teotihuacan is within the natural range of pumas, and some may have occasionally been encountered in adjacent rural regions. Live felines, incapacitated

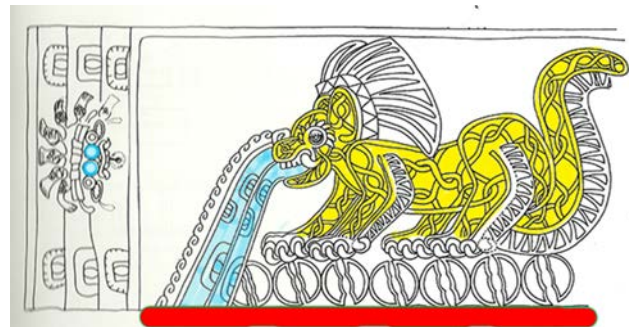
by nets used to trap them and then by cages, were probably brought to Teotihuacan as gifts or in tribute. That may have been the history of the young puma sacrificed in the Moon Pyramid Teotihuacan; skeletal anomalies suggest that she spent much of her life in a cage (N. Sugiyama 2013: 43-44).

Live jaguars in the city would have been much rarer, but possibly brought as gifts or tribute, and the pelts would have been treasured in long-distance trade with the tropics. Live felines may have been carried to their final resting places (such as the Pyramid of the Moon) in processions in

which their strength and power were celebrated.

Felines and serpents have been said to represent powerful lineages at Teotihuacan, with possible dual rulership from the Street of the Dead compound. Teotihuacan's art program, insofar as we assume a reasonable sample over time, features many jaguars, but also shows feathered serpents everywhere, and they are found together.<sup>38</sup> And depictions of goggle-eyed Storm Gods also continue, abundantly represented in various forms including abbreviated insignia, and associated with processions (**Figure 30**).

**Figure 303.** At the northeast corner of the Great Compound, a mural dated to Teo III-IIIa depicts a netted jaguar in procession over a row of cacao beans, spewing fresh water from its mouth while in the mural's border, the Storm God keeps watch. (Themes under study: **water**, **felines**, and **processions**.) (drawing adapted from Cabrera 1995g: 25, Fig. 2.2)



### Water, Processions and Felines in Murals of Teo III-IIIa and Teo IV

Contexts in the mature city included the walls of civic-ceremonial structures as well as of the apartment compounds. Once again acknowledging the mural sample's many biases, which inhibit serious generalization on the basis of presence/absence of traits, we note that commonalities are interesting.

The city's civic-ceremonial center murals from this mature-city period are found from the Moon precinct to the Great Compound. In the northern sector of the Street of the Dead, the themes of interest

here are well represented in murals of the mid-to-late and late periods of Teotihuacan's urban history. Near the Moon Pyramid, in the Palace of the Jaguars (overlying the west side of "Plumed Shells"), the dais room faces Teo West; all murals are thought to date to Teo III-IIIa (Xolalpan), and the themes of water, processions, and felines are robustly represented (**Figure 31a** and **Figure 31b**). Contemporaneous murals in the adjacent Quetzalpapalotl Compound share themes of processions and felines (**Figure 31c**).

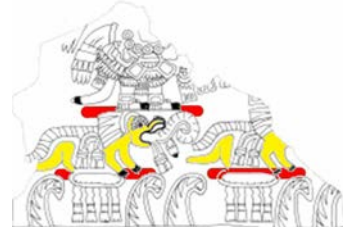




**Figure 31a.** From one of the porticos around the dais room's courtyard at the Palace of the Jaguars, ritually garbed felines in procession play conch trumpets that drip with songs and freshwater.  
(drawing adapted from Fuente 1995h: 115, Fig. 12.1)



**Figure 31b.** From the Palace of the Jaguars, a netted jaguar being held by human arms, possibly in procession.  
(drawing adapted from Fuente 1995h: 121, Fig. 12.7)



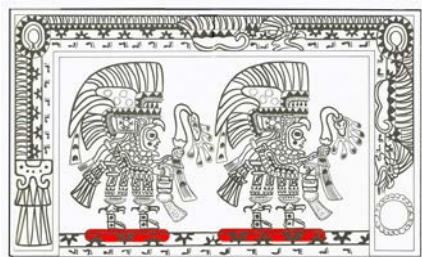
**Figure 31c.** Adjacent to the Palace of the Jaguars, the Quetzalpapatl Compound also features felines in processional stance, the posture of the costumed canid above them.  
(drawing adapted from Fuente 1995i: 128, Fig. 13.4)

Elsewhere along the northern Street of the Dead, more Teo III-IIIa murals show human figures in procession (**Figure 32a**, from Platform 14; **Figure 32b** from the Compound of the Sun). In the Compound of the Sun, netted jaguars and water imagery

combine (see Portico 3 and Portico 13, in the Appendix). The Great Compound murals, whose netted jaguar was noted above, also had human processional figures (**Figure 32c**).



**Figure 32a.** Costumed priests in procession are depicted on Platform 14, echoing the living processions that would have filled the Street of the Dead at festivals.  
(drawing adapted from Fuente 1995i: 88, fig. 8.2, 8.3, 8.4; "según dibujo de Abel Mendoza, 1962-1964")



**Figure 32b.** Avian-costumed warriors carry bleeding hearts impaled on knives in this mural from the Compound of the Sun.  
(adapted from a drawing by Manuel Romero [Séjourné 1966: 294-295, fig. 173])

**Figure 32c.** Priests in procession are shown in murals at the northeast corner of the Great Compound.  
(drawing adapted from Miller 1973:, Fig.149)

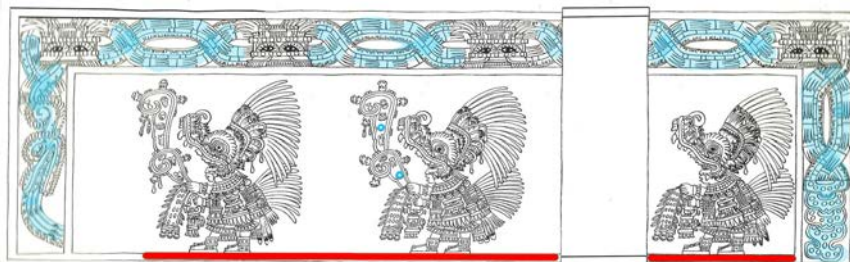


Murals from the apartment compounds tell more complicated stories than most of what remains to us from civic-ceremonial contexts, and feature many processions and demonstrations of water worship, and felines ranging from unadorned pumas to lavishly costumed jaguars. Almost all the apartment compound mural contexts have been dated to Teo III-IIIa or IV (Xolalpan or Metepec; for details, see the Appendix).

In apartment compounds on the upper east side of the city, murals represent the three themes under study. Techinantitla's set of costumed, Tlaloc-faced personages on the north and west walls (**Figure 33a**) are dated to Metepec by ceramic association (Cabrera 1995a: 132), and other fragments, thought to have originated at Techinantitla, probably also date to Metepec (Pasztory 1993: 194). The Tepantitla compound's seed-sowing priests (**Figure 33b**) are part of the muralistic riches of Portico 2.



**Figure 33a.** Surviving murals from Techinantitla suggest that processions were an important theme. (drawings adapted from Cabrera 1995a: 131, fig. 14.1; 136, fig. 14.4; 133, fig. 14.3; 136, fig. 14.4 [all, “según Saburo Sugiyama en Berrin, 1988”])



**Figure 33b.** Tepantitla's wealth of murals includes processional figures such as these seed-sowing priests, with chalchihuitls in their emanation scrolls. Surrounding them, is a feathered serpent, fresh water coming from his mouth. (drawing adapted from Miller 1973: Fig. 173)

At Tepantitla's Portico 2, water mountains preside over “Tlalocan,” Tlaloc's paradise (**Figure 34**) and are surmounted by a deity flanked by profile figures (suggesting a procession, or the completion of one).<sup>39</sup> A detail shows canals and fields (**Figure 35a**), drawn with the rectilinear regularity characteristic of drained fields. Perhaps the image pertains to this kind of intensification to permit cultivation of boggy parts of the

lower valley, or to flooded rimmed fields in the middle valley. This pattern contrasts with a different type of canal system depicted, for example, in the background of the netted-jaguar-and-water-temple murals of the Tetitla compound (**Figure 35b**), with its blue ribbons of water curling over a landscape of red fields, clearly a depiction of canals irrigating dry land.



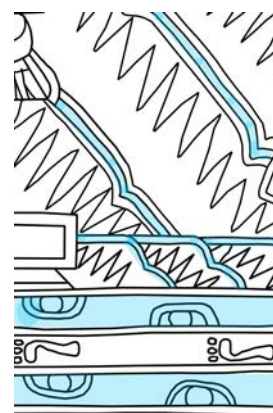


**Figure 34.** The richness of meaning conveyed by this wonderful mural (Tepantitla Portico 2, Mural 3) is largely beyond the scope of the present study, but water is clearly being circulated in a scene of ideal plenty.  
 (image, courtesy of <https://commons.wikimedia.org/wiki/File:Tlalocan.jpg>  
 [Escocia1; licensed under the Creative Commons Attribution-Share Alike 3.0 Unported license])



**Figure 35a.** Tepantitla's murals venerate water in many forms, and here we see canals alternating with rectangular fields, a pattern common to drained field cultivation, but also to irrigable expanses of the lower and middle valleys, often floodwater-irrigated. (drawing by S.T. Evans from Miller 1973: 98, fig. 167)

**Figure 35b.** In other murals, such as Tetitla's Room 12, Mural 8 (also dated to Teo III-III A or IV), detailed here, irrigation canals fed by the springs bring water to feeder canals of increasing range, probably into the alluvial plain of the lower valley. (detail of drawing by S.T. Evans of Tetitla Mural 8, now in the Bliss Collection, Dumbarton Oaks, Washington DC)



Apartment compounds in mid-town west reveal strong muralistic expressions of processions and water, and are thick with felines. Due west of the Street of the Dead compound lie Atetelco, Zacuala Palace, and Tetitla, all larger than the average compound, but long thought of as typical in size and layout because so few other, smaller compounds had been excavated. Atetelco features several mural sets – vertical tableros over sloping taluds – with processional figures in lines, below, and above, where they are set within cartouches formed by crisscrossing diagonal bands of design.<sup>40</sup> Zacuala Palace also has processional figures and references to the Storm God and to water markers such as shells, and its feline collection includes a

netted jaguar mask, carried by a “Red Quetzalcoatl” (Portico 2, in Appendix).

These three compounds are the only known residential mural locales for netted jaguars.<sup>41</sup> If the jaguar holds the highest rank in the Mesoamerican hierarchy of living creatures (Sahagún 1963 [1569]: 1), then adorning it with valuables, and clothing it in a net must further elevate its status. The netted jaguar has been creditably interpreted as an earlier avatar of the all-powerful jaguar-related god known to the Aztecs as Tezcatlipoca (see Figure 27; Séjourné 1962: 88-90, Figure 102; Taube 1983: 111, 127), patron of rulers and a guardian of caves, which were associated with springs. Tezcatlipoca was also a major focus of prayers and offerings just before the rainy season.



## Netted Jaguars in Procession to the Water Temples and to the Teo West Sunset

The most famous netted jaguars are found in the Tetitla apartment compound (**Figure 36**), with 22 known complementary scenes of a water temple and a netted jaguar, linked by the footprint choreography of a procession on the causeway between canals. These scenes were found in three rooms (12; Cor. 12; Cor. 12a) adjacent to the compound's main entry courtyard, Patio 13, whose portico murals showed processions of costumed, singing human figures and animals.

Room 12's eight netted jaguar murals are in two processions toward the Teo West sunset at the start of the rainy season (and on the birthday of the cosmos). The processions converge at the door leading into Room 12a and facing its Teo West wall, where Mural 5 features a horizontal line of red disks, each about 0.5 meters (20") across (**Figure 37**). These symbolize the sunset at due Teo West, positioned to mark the end of the dry season and the birth of time.<sup>42</sup>



**Figure 36.** Tetitla apartment compound, showing entry Patio 13 and adjacent areas with netted jaguars and (Room 12a) sun disks (drawing by S.T. Evans, based on Miller 1973).

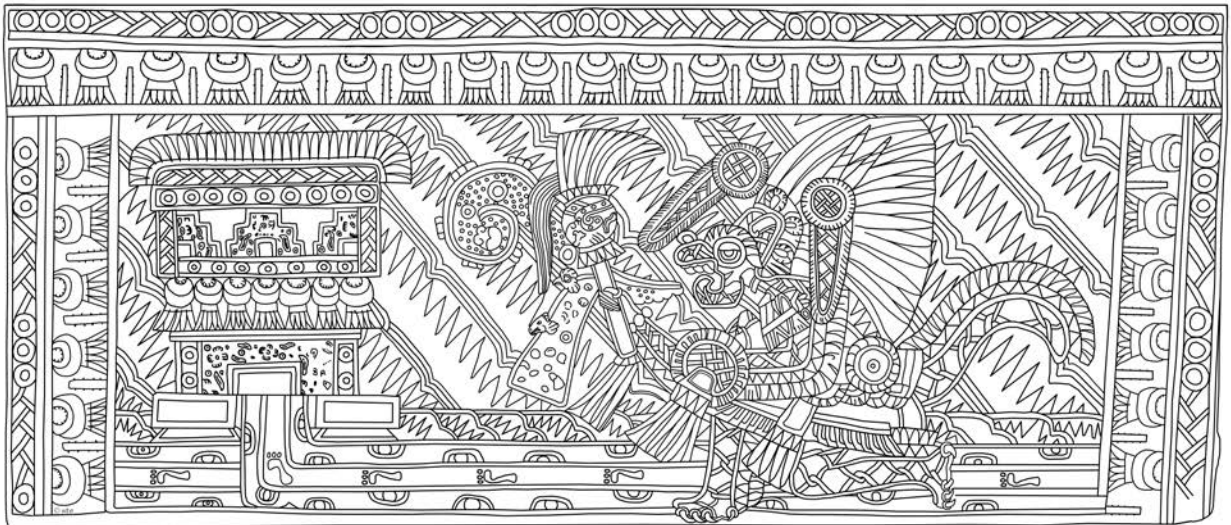
The more immediate focal points for Room 12's jaguars are the water temples. The water temples are important iconographic signals of state control over the springs, permanent freshwater sources in an arid environment. The water temples and mural borders teem with important signifiers of state power and rulership: jaguar skin, tassels, jade disks, mat, plumes, and sawfish

**Figure 37.** The west wall of the Tetitla compound's Room 12 features facing murals and a doorway through to Room 12a, with a Teo West wall of red suns. (collage combines [from left] Mural 7 reconstruction drawing by Aurelio Sánchez [Fuente 1995d: 305, Fig. 19.38]; doorway border reconstruction by Santos Villasánchez [Fuente 1995d 306, Fig. 19.39]; Mural 5 [setting suns] in Room 12a, photo by Leticia Staines [Fuente 1995d: 301, Lám. 74]; Mural 8 reconstruction drawing by S.T. Evans)



rostra. The temples gush spring water into rectilinear canals with causeways, linked to smaller irrigation canals snaking over the fields in the background. In this scene, the jaguar is the supplicant, the worshipper

before the temple and its flow of fresh spring water (**Figure 38a**), much like the angel bowing before Saint Mary in Leonardo's "Annunciation" (**Figure 38b**).



**Figure 38a.** Reconstruction drawing of Tetitla Room 12 Mural 8, now in the Bliss Collection at Dumbarton Oaks, Washington D.C. (drawing by S.T. Evans, based on Mural 7 and Mural 8)



**Figure 38b.** In another balanced scene of reverence, the angel Gabriel bows before the Virgin Mary in Leonardo's "Annunciation" (1472-1475). (drawing by S.T. Evans, after and reversing the image by Leonardo da Vinci; see also Evans and Nichols 2016: 39, Figure 2.6)

The netted jaguar murals depict water worship and procession at Teotihuacan, and express many ways in which the jaguars show respect and beg for

blessing from the springs: in posture, costume, song, offerings. The footprints along the causeways next to the freshwater canals provide the choreography for processions to and around the water temples,

and continuing toward the Teo West sunset. The springs would be linked to all other aspects of hydrology, requiring regular rains for replenishment; concatenating worship of springs and rainy season made acts of veneration even more intensive.

While these scenes may draw on the city's general mythology (the netted jaguar appears in other contexts), they may also refer to a totemic lineage, and suggest some of the costumes of figures in real processions, and the meaning of their songs and the sounds of their rattles.

## Water Worship and Processions Under Spanish Rule

After the demise of the civic-ceremonial center in the 6<sup>th</sup> century CE, the city's great period of artistic ascendancy also ended. Visual records ceased and the central governmental system that kept the grid and canals in order stopped functioning. A circle of villages formed around the deserted core of the site, and the largest village, Teotihuacan, was at the springs. Teotihuacan remained "the largest urban

center in the northeast Basin throughout the Postclassic" (Nichols 2013: 65).

With the conquest of Mexico by Spain, the town was renamed San Juan Teotihuacan, and the church of Saint John the Baptist was established next to one of the most vigorous springs (**Figure 39**). The saint's name was another acknowledgment of the association of an important water source with sacred principles.

**Figure 39.** In the close of the Cathedral of Saint John the Baptist at Teotihuacan, a quiet pool marks the outflow of one of the surviving springs.

(photo by William Mather III for the Teotihuacan Valley Project)







**Figure 40.** The “Maguey Plan” (1990 [1557–1562]) was painted a thousand years after the walls of Tepantitla and Tetitla and other compounds showed scenes of canals and drained fields, and has much in common with Teotihuacan’s compositional language: footprints along the causeways and the canal’s blue swirls seem descended from Teotihuacan symbols. The settlement pattern is different, because unlike the chinampa-dwelling Aztecs, Teotihuacan farmers lived in the city and commuted to their plots. At top center, a water temple overlooks and probably controls a crucial intersection of canals and causeways. (adapted from Evans 2013: 471, Figure 17.14)

## Water Worship, Processional Space, and Teotihuacan’s Orientation

In the landscape of the Teotihuacan Valley we see the reasons why the city was carefully situated in its mid-valley location. Teotihuacanos were water-worshippers who learned practical and spiritual ways to insure the best use of the valley’s scarcest essential resource. Their grid pointed west to the rains and to the start of time, and north to a commanding water-mountain. The nexus, the crossroads of these powerful resources was the intersection of the Street of the Dead and East-West Avenue. It was directly

Throughout Early Colonial Mexico, churches were built on temple platforms, to take advantage of the spiritual prestige already accrued to the site, to simplify church construction, and sometimes to take possession of a key resource. The church of San Juan no doubt occupies the former site of a water temple, a cultural tradition easily traced back to Teotihuacan from Aztec times (Figure 40).

Processions are very much a part of the Christian tradition, particularly for the Roman Catholic Church. Here where the springs created the Teotihuacan Valley’s only permanently irrigated fields, processions at the church over the past five centuries have continued to honor this sacred place.<sup>43</sup>

overlooked by the Temple Pyramid of the Feathered Serpent (and more distantly by the Pyramids of the Sun and Moon). The arena-like space created by the intersection would concentrate the animated power of the sacred principles worshipped by the Teotihuacanos.

The spiritual forces that motivated Teotihuacanos are still not well understood, but through many lines of evidence we comprehend better its ritual life. We can imagine a procession approaching



Teotihuacan along West Avenue, city dignitaries wearing broad hats decked with tassels of office that would swing in synch with the great communal songs and dances. Perhaps the procession included celebrants returning to the city from rites at the water temples situated over the springs, or from rites honoring the sunset at the time of the rains. Their songs may be poems, tributes to all the signs of fertility and riches – the imagery that filled the net jaguar’s scroll. They might be extolling the right of the state to control the city’s hydrological resources, praying that the late spring rains would be

dumped from the afternoon skies as if from great ollas. The water draining over the city would become a glittering lattice of straight lines moving toward the setting sun in hydrological procession.

Regardless of the details of any processional ritual, Teotihuacan’s art and built environment are rich with clues about Teotihuacanos’ reverence for water in all its forms, and how this essential resource prompted their innovations and changes in landscape modification and in water worship deities and rituals. Teotihuacan was built for water-worshipping processions.

## Acknowledgments

Much of this research was based on the results of the Teotihuacan Valley Project, directed by William Sanders; the project’s documentation of the valley’s cultural ecology and changing patterns of settlement is crucial to understanding the city’s orientation and position.

Thinking about the city’s orientation involved long conversations with Tony Aveni, carried out almost entirely in my own head. I thank Tony for being an inspirational teacher and colleague, and of course do not hold him responsible for his side of our intra-cerebral chats. Chip Stanish, another follower of processions toward the sunset (Stanish 2014), encouraged me in further study of Teotihuacan, a pursuit that had become serious during an extended fellowship at Dumbarton Oaks, when I studied the “Net Jaguar Mural” (more properly, the “Water Temple and Net Jaguar Mural”).

This paper presents and discusses several lines of evidence substantiating the importance of processions at Teotihuacan. Previous abbreviated treatments of the topic (Evans 2014; 2015a; 2015b) have prompted much-appreciated comments and suggestions by Lorraine Aveni, Tony Aveni, Sue Bergh, Elizabeth Boone, Clemency Coggins, Tom Cummins, Ken Hirth, Susan Hirth, Leonardo López Luján, Diana Magaloni, Juan Antonio Murro, Emily Umberger, David Webster, Lucy Wilson, and Scott Wilson. I appreciate the use of images shared by David Carballo, Larry Gorenflo, and William Mather III, and particularly access to Teotihuacan Valley Project images, curated by Kirk French.

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## Notes

<sup>1</sup> Prior to about CE 1600, the Valley of Mexico was a hydrographic basin, and therefore “Basin of Mexico” is used in discussions of the setting in antiquity and the Early Colonial period. Total area was about 8,000 square kilometers, including the lake system.

<sup>2</sup> A drought named after summer “Dog Days” when the “dog star” Sirius is ascendant (López Corral 2011: 120-129).

<sup>3</sup> The valley’s cultivation zones were categorized according to access to water, as shown by ethnographic research done by William Sanders in the Teotihuacan Valley in the 1950s. See Figure 12, below.

<sup>4</sup> At least half the Teotihuacan Valley’s Aztec era population were maguey farmers living on terraced farm plots edged with *agave* (Evans 1980); fresh maguey sap supported potable beverage and nutritional needs (Evans 1990).

<sup>5</sup> Household ritual items include imagery associated with the Old Fire God, such as braziers in his image and bearing his signature rhombus design, honored at Cuicuilco, along the edge of the brazier bowl (the god’s round hat). The great pyramid at Cuicuilco was a truncated cone, suggesting volcano reverence, but no Teotihuacan

pyramid was conical. These circumstances suggest a scenario that the Old Fire God was brought to Teotihuacan by people who did not dominate the city's ideological agenda but who retained this veneration for personal rituals.

<sup>6</sup> Figure 11: [1] INAH designations, concordance with ceramic phases based on Millon 1976: 213, who cites Acosta 1964: 58; [2] based on Cowgill 2015: 11, Table 1.2, and 83, Table 6.1; other sources include Lopez Lujan et al. 2006; Nichols 2015; Robb 2007; Stoner et al. 2015: 21; Sugiyama et al. 2013: 419; Sugiyama 2012 (Fig. 15.4 chron table): 221. Dates of burning: CE 550 burning: López Luján et al. 2006; CE 500 burning Wolfman 1990.

<sup>7</sup> The phases are usually presented in the same order, with some anomalies: Armillas's pioneering ceramic sequence reversed two phases (Xolalpan, he and Linné believed, predated Tlamimilolpa) and does not mention Metepec (Armillas 1991 [1950]: 223).

<sup>8</sup> The terminology established by the Instituto Nacional de Antropología e Historia de México (Teo I, etc.) has much to recommend it, not the least of which is pronounceability. What we cannot pronounce, we have difficulty comprehending, so it is regrettable that the ceramic phase names (in Nahuatl) are in more common use than INAH's cultural periods. With all due respect to those who devised, instituted, and continue to use Teotihuacan's ceramic phase names, they are impenetrable to non-specialists, including many students. Pronunciation: the phase names, in order, are: kwahnahlahn, pahlahcheekay, zahkuallee, mickahohlee, tlahmeemeelohlpah, showlahlpahn, mehtahpehk, and koyohlahtellkoh. Or, use the INAH system: *tayoh* One, *tayoh* Two, and so on. Teo III (Late Tlamimilolpa and Xolalpan ceramic phases) is the apogee of the city.

<sup>9</sup> Teotihuacan also seems to have drawn upon nearby regions of the Basin of Mexico for sustenance, such as the Cuauhtitlan area (e.g., see Clayton 2013).

<sup>10</sup> The maguery-edged farmstead terraces established in the Postclassic period followed the contours of the land, perhaps reusing maguery terraces established much earlier, in Teotihuacan times. In the Classic period, the valley's farmers lived in the city and worked on fields on the piedmont and in the plains of the middle and lower valleys, as shown by the settlement surveys of the valley (Sanders, Parsons, and Santley 1979; Sanders (ed.) 1994; 1995; 1996a; 1996b).

<sup>11</sup> Discussing a Maya concept of an individual's ambient space, the *-ichnal*, Houston and Stuart write: "How are we to relate this to movement and perception in Classic Maya buildings? The meaning of a place comes not only from architectural setting, usually vertically disposed, but from the fact that something is being done and that several people are involved in undertaking or supervising such an action. In this view of place, architecture becomes, not surprisingly, a prop — even if a grand one — for reciprocal, socially meshed behaviour that has the formulaic repetition of ritual." (2000: 289).

<sup>12</sup> My translation of "la conexión íntima que existía entre el ciclo agrícola -o si se prefiere de germinación y desarrollo vegetales-, y el de las celebraciones religiosas que se sucedían dentro del sistema calendárico de los antiguos mexicanos" (Castillo 1971: 77).

<sup>13</sup> Milbrath cites Umberger (1981); Broda (1982: 93) and Aveni et al. (1988: 289-90).

<sup>14</sup> Edmonson wrote that in Mesoamerican calendars "the correspondence of the months from one calendar to another is only partial ... [but] all such relations among the native calendars are permanent and invariant, because none of them ever had intercalary leap-year days, at least before the Conquest." (Edmonson 1988: 9, also 78, 83, 85, 88-90, 97, 107-09, 136, 192, 204). In contrast, Tichy believed that the solar year (365.25 days) was followed by the Aztecs (1981: 231, 233, 236-237).

<sup>15</sup> Other sources were identified and assessed by Rafael Tena; see 1987: 53-75; 118.

<sup>16</sup> Sahagún said, of Izcalli, "And every four years, in this same feast, they slew slaves and captives in honor of this god. And they pierced the ears of all the children who had been born in those years, and they gave them godfathers and godmothers." (Sahagún 1981 [1569]: 2: 33). Also, "[t]here is conjecture that when they pierced the boys' and girls' ears, which was every four years, they set aside six days of Nemontemi, and it is the same as the bissextile which we observe every four years." (Sahagún 1981 [1569]: 2: 35). In Castañeda's 1580 "Relación de Teutiúacan": "sobraran cinco dias en un año que ese era bisiesto porque cada quatro años serraban al numero de beynte [sic] que era vna fiesta en vna placa [sic] grande que se hazia entre los dichos cues" (1979 [1580]: 222). "And it was called 'The Drunkenness of the Children' because all the children still lying in the cradle danced [Nahuatl: *vnmitotiaya*] in the Temple of Ixcozauhqui [and] everyone became intoxicated, [including] the children. ... exactly what was done in Atemoztli was likewise done [now]. It occurred on the thirty-first of January; hence it was called 'The End of



Izcalli.” (Sahagún 1997 [ca. 1559]: 67). “Taking Out the Children” “They took all the small children there to the temple of the devil [and] they had indeed all of them dance [*quimitotiaya*] and drink *octli*.” Note 26, by Thelma Sullivan: “The Spanish versions of the *Historia* (Sahagún 1975: 168; 1988, I: 193) do not translate this passage but do specify that this ritual occurred every four years in Izcalli.” (Sahagún 1997 [ca. 1559]: 78).

<sup>17</sup> An exception was made for warriors, who, four years after death, would return to earth as butterflies or hummingbirds (Ortiz de Montellano 1990: 49).

<sup>18</sup> I follow Sahagún’s date, February 2<sup>nd</sup> Julian (thus the 12<sup>th</sup>, Gregorian), used by Johanna Broda (this volume), recognizing that the same seasonal changes are linked with the agrarian ritual calendar regardless of variation in new year dates. See Sahagún 1981 [1569]: 2: 1; Durán used March 1<sup>st</sup> Julian, thus the 11<sup>th</sup>, Gregorian (1971 [1579]: 212). Alfonso Caso’s interpretations are accepted by many scholars. In Caso’s 1971 overview article, Durán placed Izcalli as the first *veintena*, beginning January 24<sup>th</sup> Julian, February 3<sup>rd</sup> Gregorian (1971: 341). Recent scholarship by Rafael Tena places the beginning of the Aztec new year at Gregorian date February 23<sup>rd</sup> (see 1987: 104-109).

<sup>19</sup> But Heyden posits that “Toxcatl signifies ... ‘that which is slippery’ -- that is, the dryness does not end with a bang but slips into the wet season at that time” (1991: 188).

<sup>20</sup> “Toscatl, cuja serimonia era tomar maiz de las sementeras e tostallo...” (Castañeda 1979 [1580]: 216).

<sup>21</sup> Eating corn and beans together reflected confidence that crops were maturing satisfactorily, that “[t]here was to be no famine .. indulgence was given to eat this combination, thus indicating abundance” (Durán 1971 [1579]: 431). As Durán wrote, “[s]ince during my childhood I ate [etzalli] often, I can explain that it is a sort of bean stew containing whole kernels of corn. It is ... very tasty, ... so greatly desired that it is small wonder it had its own special day and feast on which it was honored.” (1971 [1579]: 430).

<sup>22</sup> Important sources on Aztec dance include Dallal 1986, Kurath 1960, and Martí and Kurath 1964.

<sup>23</sup> In contrast to these descriptions, Sahagún’s informants for the *Florentine Codex* Book 2 only occasionally mentioned dance and procession, having instead a focus on protocols for repaying debts to the gods, particularly related to the preparation of deity impersonators and their sacrificial rituals.

<sup>24</sup> See Cabrera Castro and Sugiyama (1982: 167); based on the height of the surviving inner mound, the summit height included a level above that derived from Marquina’s (1999 [1951]) reconstruction of six levels, and this revised estimate of seven levels accounts for differences among published reconstruction drawings.

<sup>25</sup> Chicomecoatl’s feast day was around September 8<sup>th</sup> (Durán 1971 [1569]: 29, note by Horcasitas and Heyden), and the Aztecs celebrated Ochpaniztli, the harvest *veintena*, by ceremonies to maize deities Centeotl (male) and Chicomecoatl (female) (see DiCesare 2009; Nicholson 1971: Table 3 [between pps. 408 and 409]; Sahagún 1981 [1569]: 2: 62-63).

<sup>26</sup> These are two of only three access points to the northern Street of the Dead in the mature city (Murakami 2014: 38, 39, Fig. 2.2).

<sup>27</sup> The pierced disk motif directly represents a *chalchihuitl*, and is iconographically associated with sanctity, particularly the sacred status of the rulers (Evans 1991; 2010b; 2010c). It has these associations as early as the Middle Formative period in Guerrero (Grove 1970: 17, fig. 13) but in the Early Classic period came to signal Teotihuacan influence elsewhere in Mesoamerica. The motif is interpreted as representing Teotihuacan contact in the Guatemala highlands (Borhegyi 1965: 24), at Copan (Structure 26, see Fash and Fash 2000: 456), and especially at Tikal, where a platform base in the Central Acropolis uses both talud and tablero architecture and the disk motif. Of course, the ball court marker in the Teotihuacan-influenced Mundo Perdido section of Tikal has a pierced disk frame resembling the collars of Feathered Serpent heads at Teotihuacan’s pyramid honoring the Feathered Serpent, and honors Spearthrower Owl, a Teotihuacan-associated figure dating to CE 378, in Teotihuacan’s greatest period of power (Stuart 2000: 483).

<sup>28</sup> Scholars have long noted the symmetry of this period with the stretch of 260 days (length of the *tonalpohualli* divinatory almanac “year”) separating the two sunset events through winter (see S. Sugiyama 2013: 5). The importance of the Street of the Dead and east-west orientation in Teotihuacan time worship is substantiated by calendrically significant counts of measurements of the mature city’s monumental architecture in TMUs (Teotihuacan Mapping Units, about 83 cm [ca. 33”]), elucidated by S. Sugiyama (2005: 41). On the basis of these measurements, Sugiyama believes that the city’s “religious center was spatially divided to symbolize centrally the 260-day ritual calendar unit” (2013: 3) and that “the size of the original Sun Pyramid and Building 4 found in the

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Moon Pyramid represented 260-day period and 105-day period respectively according to TMU studies; they would together have symbolized one solar year cycle (365 days)” (2013: 5).

At about 83 cm (per Sugiyama 2005: 41), the TMU is a little longer than the standard military step length of 70 cm (30”), which is about the longest stride a healthy modern adult male can comfortably sustain. However, the step-length in a procession would be highly variable, as would choreography and other factors such as the pace of those carrying or hauling structures, including litters (David Webster, personal communication 2014).

<sup>29</sup> Site TC 8 (Maquixco Bajo), a small town, was five kilometers west of the Street of the Dead, straddled the course of the East-West Avenue, and had a gridded layout (Sanders 1994: 10-41).

<sup>30</sup> Cowgill notes that areas of the city vary as to apartment compound dimensions (2015: 155). Those in the northwest are unusually small, those in midtown are closer to the traditionally accepted “average” dimensions of 60 m by 60 m, which reflects a sampling bias toward the larger compounds nearer the ceremonial center of the city. The actual average size is probably about 43 by 43 m (about 140 feet on a side) (ibid. 142).

<sup>31</sup> In discussing Teotihuacan’s caves and jaguars, Heyden pointed out that “en los códigos pictóricos, y el glifo para ‘cueva’ está formado por la boca abierta del monstruo con caracteres de jaguar” (Heyden 1978: 30).

<sup>32</sup> Relación de Acolman (Castañeda 1979 [1580]).

<sup>33</sup> The Tetitla compound’s Water Temple/Net Jaguar murals were dated by Millon to mid-Metepec, based on analysis of the stratigraphic pit in Room 12a excavated by the Teotihuacan Mapping Project (Millon 1992: 348).

<sup>34</sup> My translation of “huellas de incendio, conservándose aún en el fondo del tablero dos pinturas al fresco desgraciadamente muy maltratadas por el fuego”, by Batres (1906), quoted by Fuente (1995c: 81).

<sup>35</sup> In the color blocks, blue marks water, yellow marks felines, and red marks processions. This color coding is maintained throughout the long table of murals (see Teotihuacan Murals, an Appendix).

<sup>36</sup> Similarly, Mardi Gras festivals in New Orleans (and other cities) involve many small neighborhood processions in addition to the lavish displays by wealthy krewes.

<sup>37</sup> See overview, Evans 2013: 166-169. The mural painters also distinguished canids -- coyotes -- from the cats by painting distinctive characteristics such as fringes of fur on the edge of the ears, backs of the legs, and tail (see Atetelco, White Patio, Portico 2, murals 1-4).

<sup>38</sup> Perhaps they are “possibly locked in an epic battle” as Uruñuela and colleagues found in a depiction of jaguars and feathered serpents while investigating the Great Pyramid at Cholula (Uruñuela et al. 2013: 102).

<sup>39</sup> A 5<sup>th</sup>-century visitor to Tepantitla, a handsome apartment compound about half a mile east of the Street of the Dead in the city’s upper east side, entered the west side of the building, into an unroofed main courtyard about 5 by 8 meters (about 16.5’ by 26’). Across the courtyard were walls rich with vibrant primary colors, with the promise of even finer paintings beyond, in the compound’s porticos and inner rooms. The visitor to Tepantitla’s Portico 2 would behold a world of meaning (see Figures 14 and 34). The painted frieze on the lower wall showed a paradise of cavorting figures, some sliding over a mountain made of sweet water, its base formed by streams of sweet water and rectangular farm plots. But this elaborate scene is just the foundation for a set of masked frontal figures sprouting branches while uniformed elites (probably in procession) faced them with offerings, all resting on a painted garland of Storm God busts holding Storm God masks. More murals decorate the next and farthest room in the suite. There the walls commemorated a procession: a dozen helmeted figures marching around the room, sowing seeds and offering jewels and poems and incense. The meaning of this procession in progress would resonate with the visitor, who would understand at least some of the messages presented in these figures and the rituals they were performing – and even to reflect on processions experienced and observed, along the Street of the Dead and other city avenues. The “house” of Tepantitla clearly had some rights to a procession extolling fertility, wealth, and water, and on their walls they declared themselves to be water-worshippers, carrying on one of Teotihuacan’s oldest ritual traditions. (The iconography of the Tepantitla murals is discussed most thoroughly in Browder 2005, Furst 1974, Pasztory 1976 and Uriarte 1995)

<sup>40</sup> This pattern also appeared in Tepantitla (Patio 9, Mural 3).

<sup>41</sup> Netted jaguars have been found in six mural locales, either on the Street of the Dead (Palace of the Jaguars, near the Moon Pyramid; Compound of the Sun, at the northwest corner of the Sun Pyramid base; Great Compound, northeast corner) or in apartment compounds of midtown west (Atetelco, Zacuala Palace, and Tetitla).

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<sup>42</sup> At Zacuala, the temple platform looks Teo West to Portico 7, across the Principal Patio, and its murals feature frontal avian figures that Sejourné identified as the Solar Eagle (per Fuente 1995g: 339).

<sup>43</sup> A quick search for YouTube videos of the cathedral reveals several involving processions.

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